

Coping with diverse accented English: Comprehension strategies employed by East Asian international students at an Australian university

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This study investigates strategies employed by East Asian international students to cope with comprehension barriers caused by different types of English accents. While these students face a range of comprehension barriers caused by unfamiliar accented English (from both native speakers and speakers of other languages), little is known about how these students overcome the challenges during their study journey. Using a qualitative survey approach, this study addresses the research question: What coping strategies are employed by East Asian international students to mitigate the comprehension barriers caused by different types of accents? A thematic analysis of written responses from 306 East Asian students at an Australian university revealed that there were two main strategies: (a) verbal strategies, and (b) non-verbal strategies. The first theme emphasises an immediate attempt to repair communication breakdowns via, for example, meaning negotiation. The second theme focuses on self-discipline or actions to enhance overall comprehension skills, such as using authentic materials. Practical implications for improvement of these students' experiences include initiatives to raise awareness of intercultural communication challenges and increased learning support to enhance these students' intercultural engagement.

Keywords: comprehension barriers; accent unfamiliarity; East Asian students; coping strategies

INTRODUCTION

Recruiting international students is a key priority in internationalising higher education (Altbach & Knight, 2007) and universities have dedicated themselves to assisting these students to live and work conjointly in the globalised context (Knight, 1997). Over five million students undertook higher education degrees outside their country of origin in 2017, more than doubling the reported number in 2000 (OECD, 2019). Australia is ranked after the United States (US) and the United Kingdom (UK) as one of the traditional study destinations among these students. The number of international students in Australian higher education has shown persistent growth over the past two decades, from 60,914 in 1999 to 442,210 in 2019 (Australian Government, 2020). This trend in student mobility is anticipated to slow down in the next few years due to the

Coronavirus pandemic (COVID-19). However, Northeast, followed by Southeast, Asian students continue to represent the largest cohorts in Australian higher education.

International students enrolled at foreign universities are generally eager to succeed; nevertheless, their success often entails facing and overcoming a wide range of social and academic challenges. An extensive body of research has been dedicated to investigation of the challenges faced by students whose first language is not English (L2) during their period of study (Campbell & Li, 2008; Hellstén & Prescott, 2004; Khawaja & Stallman, 2011; Malau-Aduli, 2011; Nayak & Venkatraman, 2010; Sawir et al., 2012). These studies have frequently drawn the conclusion that limited language proficiency is a key barrier adversely influencing their social and academic well-being on campus. Notwithstanding that language proficiency is indispensable for L2 students, the argument reinforces the view that insufficient language proficiency is at the centre of their social and academic difficulties and that the solution to the problem lies with the students. However, comprehension barriers (in this case, difficulties in comprehending what the speaker intends to convey)—the focus of this study—are not always related to deficits in basic linguistic abilities of L2 students.

With the increased cultural and linguistic diversity presenting at Australian institutions, multiple variations in accents of linguistically diverse English users exist for L2 students to manage in everyday communication situations. If the interlocutor's accent sounds unfamiliar or is perceived as strong, it can result in interference in L2 students' comprehensibility (i.e., the listener's ability to understand a speaker's message; Matsuura et al., 2014). Such problems that Matsuura et al. (2014) described as "accent unfamiliarity" refer to the limited ability in understanding different pronunciations. Different types of accents (both first language [L1] and L2 accents) have been repeatedly reported by L2 students as one of the major challenges in their social and academic interactions, leading to delays in their adjustment to new learning environments (Campbell & Li, 2008; Nayak & Venkatraman, 2010; Park, 2016; Sawir, 2005; Sawir et al., 2012). Due to their status as L2 speakers, their interlocutors often place blame for miscommunication on these students based on the assumption that the students' proficiency is the sole issue, failing to share their own responsibilities within the communicative act (Lippi-Green, 2012; Park, 2016).

While the challenges caused by accent unfamiliarity have been recognised and even highlighted in the research literature, until recently, existing literature has overlooked this aspect of language barriers encountered by L2 students. This study is a part of broader quantitative research that investigated a wide range of accent-related challenges contributing to East Asian students' study experience and how they coped with these, concentrating on the strategies employed to ameliorate the challenges. This study specifically focuses on coping strategies applied to overcome comprehension barriers caused by different types of accents. All references to "accent unfamiliarity" and "different types of accents" in this work refer to both L1 and L2 accents of English users from different parts of the world. Empirical data were collected through a survey of 306 East Asian students studying at an Australian university. The examination of employed strategies gathered in this study can be used to guide and assist future L2 students and enhance intercultural communication between the students and hosts that, in turn, should increase L2 students' satisfaction with the study experience.

LITERATURE REVIEW

Comprehension barriers caused by accent unfamiliarity

Regarding English as an international language or in the lingua franca context (ELF) in which a wide range of English with distinct phonological characteristics is used, comprehension barriers are likely to occur at the phonological level (Tokumoto & Shibata, 2011). In an earlier study on the factors affecting L2 students' comprehension, Goh (1999) established that 68% of the students reported that their comprehension was adversely influenced by the accent of speakers and by speech styles they recognised as different from the English in which they had been trained. In a more recent study, Matsuura et al. (2014) examined L2 Japanese students' comprehensibility and the effect of speech rate. They found that heavily accented Indian English significantly reduced these students' comprehension, and a slower speech rate facilitated their comprehension of the accented English. Perceived degree of accentedness can differ depending on the native language of the students, their previous linguistic experience, and their language proficiency (Matsuura et al., 2014). This contention means that instances of miscommunication and misunderstanding are sometimes beyond L2 students' language proficiency.

A large volume of higher education research has consistently confirmed the problems with accent unfamiliarity encountered by L2 students during their study journey at foreign institutions (Campbell & Li, 2008; Nayak & Venkatraman, 2010; Park, 2016; Sawir, 2005; Sawir et al., 2012), yet only one study, to our knowledge, has directly probed how accent unfamiliarity plays out in L2 students' social and academic life at Australian universities (Park, 2016). While it is uncertain how much of L2 students' actual comprehension barriers were based on accent unfamiliarity, and how much was caused by other linguistic areas, Sawir (2005) and Park (2016) demonstrated that comprehension barriers were not only related to their academic performance stress but also to the social adjustment required in their university settings. It can be argued that problems with accent unfamiliarity can be deemed as a temporary factor because they may decrease with the passage of time and length of residence (LOR) within the dominant language context. Nevertheless, these are not necessarily significant determinants in shaping L2 students' comprehension experience with different accents (Campbell & Li, 2008; Park, 2016).

A qualitative study conducted by Campbell and Li (2008) identified that Asian students with longer than two years of stay in New Zealand still had difficulties in understanding the lecture content due to the regional accents of the lecturers. The accents of L2 lecturers with low speech intelligibility (i.e., understandability of speech) sometimes were even more challenging than L1 accents because they prevented the L2 students from understanding the course requirements, leading to dissatisfaction with their learning outcomes (Nayak & Venkatraman, 2010). Park (2016) revealed that LOR in Australia did not have a differential effect between students with maximum (5+) stay and minimum stay (< 1) because the frequency of comprehension barriers for these two groups was within the same range, especially when participating in interactive classroom activities such as tutorials and classroom discussions. Other determinants, such as shortened words, slang, idiomatic expressions, speech style, and speech rate are also known to become a burden to L2 students, resulting in difficulties in comprehension of gist and important details. However, these factors were not regarded

as outweighing the challenges caused by accent unfamiliarity (Park, 2016; Sawir et al., 2012).

L2 students' comprehension barriers can trigger stereotyping and create biased judgements in L1 faculty members and peers, such as believing L2 students are less linguistically able due to their status as non-native speakers. The power of standard language ideology positions speakers of different English varieties at a disadvantage and provides a rationale for linguistic discrimination against minority groups (Lippi-Green, 2012). As Kettle (2013) contended, L2 students' accent and speech style serve as a signal in their evaluation as a conversation partner that negatively influences the likelihood of communicative success because they do not conform to the standard. This leads to unequal positions in classroom settings. For example, L2 students, who are not deemed as "legitimate speakers" and who possess no symbolic capital (i.e., commonly perceived and recognised as legitimate, prestige, authority, and so on) in that regard (Bourdieu, 1992), can be silenced, excluded, or at least marginalised compared to L1 students (Kayaalp, 2016).

Several studies have exposed the invisible power relations between L1 and L2 students in classroom interactions, discovering that Asian students sensed an assumption of unintelligence from L1 students due to their accents (Dooley, 2010; Kettle, 2013; Park, 2016). Some East Asian students in Dooley's (2010) study reported that they felt excluded from classroom discussions, and their opinions were not taken seriously. Hence, they believed that they were "looked down upon" owing to their speaking skills and accents. In the worst case, a problem with grouping was discovered; for example, some L1 students rejected L2 students who wished to join a study group, possibly because of prejudice related to L2 students' intelligence and abilities (Kettle, 2013). In a similar vein, Park (2016) found that when L2 students from East Asia struggled with the accent and speech habits (e.g., mumbling and slurring words) of L1 students during class discussions, the common reactions to the communication, as well as to the students, were those of impatience and annoyance. Consequently, the L2 students felt stigmatised and often blamed for miscommunication, as though their lack of language proficiency was the cause of communication failure even though they regarded themselves as proficient.

Apparently, the one-way communicative burden is frequently placed on L2 students due to pre-existing stereotypes towards them (Lippi-Green, 2012). Communicative burden, in Lippi-Green's (2012) words, means that L2 speakers frequently carry all responsibility for communication because L1 speakers may feel justified to refuse their role as an interlocutor. Whoever the speakers and whatever the context of communication, miscommunication is a common and inevitable phenomenon in all communication per se, when the speaker's meaning is misread or incorrectly interpreted by the listener. Even so, in practice, successful interactions are less likely to take place if either of the parties is unwilling to increase their effort or consider the value of the relationship. Unfortunately, Asian students, more than other student cohorts, are exposed to the problems of bias and discrimination (Hanassab, 2006; Houshmand et al., 2014; Lippi-Green, 2012; Park, 2016). Many L2 students feel that L1 students are not willing to engage with them and do not appreciate their efforts to make contact with them (Sawir et al., 2012). Therefore, some L2 students remain exclusively within conational or culturally similar groups and develop a disinclination to go beyond their comfortable boundaries.

Despite L2 students sometimes needing to make an extra effort to comprehend because English is not their L1, pre-existing stereotypes associated with L2 students, together with generalisations about subjective experiences with difficulties in continuing communication with L2 students, can result in communicative breakdowns. It is important to note that L2 students can have a limited ability to recognise the spoken forms of words that they already know in written form. Nevertheless, it is too often the case that these factors are denied due to recognition while the focus (and blame) remains on pre-existing stereotypes or assumptions.

Coping with accent unfamiliarity

Notwithstanding that studying in foreign universities involves challenges, many students still successfully handle their social and academic integration into Australian campus environments. While a large number of studies have emerged in higher education on the subject of ameliorating a broad range of challenges faced by L2 students, including accentedness (e.g., Houshmand et al., 2014; Khawaja & Stallman, 2011; Malau-Aduli, 2011; Park et al., 2017), very few studies to our knowledge have investigated coping strategies in response to “comprehension barriers” caused by accent unfamiliarity (e.g., Park, 2016). Consequently, it is not well known, in detail, how L2 East Asian students manage these barriers. Given the potential adverse consequences on the students’ social and academic lives on campus, more investigation is called for to gain a better understanding of coping strategies employed by these students.

In the coping strategies literature, dealing with an accent has been a recurrent theme as part of students’ broad linguistic challenges or racial and ethnic discrimination. However, some strategies were designed to manage the challenges caused by accent on the part of L2 students. For example, students found withdrawing from academic settings and seeking advice from mental health professionals (Houshmand et al., 2014), mastering English before arrival, and learning through both formal and informal social interactions were useful coping strategies (Khawaja & Stallman, 2011). Malau-Aduli (2011) identified a strategy that could be effective in overcoming the barriers caused by accent unfamiliarity: Asian medical students in the study sought translation help from L1 students when they struggled with the lecturer’s accent. A mixed methods study conducted by Park (2016) revealed strategies that were specifically developed to cope with different types of accents; for example, pretending to understand and keeping a physical distance from heavily accented L1 and L2 speakers in order to reduce the opportunities of interaction. Although students were aware that using these passive strategies would not be effective in achieving communicative success, they were concerned that they could not ask for the information to be repeated by the speakers or the speakers would make incorrect judgements regarding their proficiency, placing blame for miscommunication.

Given that coping with the barriers caused by accent unfamiliarity has not been the main discussion focus in much of the research literature, this study addresses one main research question: What are the coping strategies employed by East Asian international students to mitigate the comprehension barriers caused by different types of accents? Using qualitative survey data, this study seeks to complement the important and growing body of literature. We hope that these findings will contribute to a better understanding of coping strategies that students have developed through their lived experience. It is anticipated that the findings will raise the awareness of faculty

members and university staff with regard to better ways to support future international students and enhance their intercultural learning environments.

METHOD

Participants and settings

This study invited full-time onshore international students from both Northeast and Southeast Asia who were undertaking either undergraduate or postgraduate programs at an Australian university to participate. The university is one of the popular institutions in Southeast Queensland in terms of international student preferences, with over 46,000 students undertaking various degree programs across many disciplines.

The major inclusion criteria for the study were (a) L2 East Asian students from English as foreign language (EFL) countries, and (b) those who started L2 acquisition after puberty in L2 environments. Previous language learning for many EFL students is limited to a native English variety and different varieties of English are rarely incorporated (Matsuura et al., 2014). Hence, it was presumed that students from EFL countries would have far less exposure to varieties of English spoken by both L1 and L2 speakers compared to those from English as second language countries, where localised varieties are embedded in their culture; such differences in the EFL context may influenced a considerable delay in comprehension. Additionally, participation was limited to those who started learning L2 in L2 environments after the age of 15, following the argument of Patkowski (1990) that age of learning matters more than LOR in determining the degree of foreign accents. It was assumed that students with a detectable foreign accent may experience accent-related issues more often than those with a less perceptible accent.

Survey instruments

In order to achieve the objective of this research, a survey was designed based on the existing literature. The initial draft was tested with nine East Asian students from six countries, with the final survey revised in accordance with their comments and suggestions. Twenty-six questions were developed across four major areas: (a) demographic information, (b) background using English, (c) social and academic communication experiences on campus, and (d) the experiences of accent stereotypes and discrimination. Both close-ended and open-ended questions were included to gather their views, beliefs, challenges, and experiences.

In the first section of the survey, students were requested to indicate their gender, age, country of origin, length of stay in Australia, level of education, and areas of study. In the second section, they were asked to report any standardised language test results (e.g., IELTS). In addition, they were asked to evaluate their degree of accent and speaking and listening skills through 5-point Likert scales (e.g., *none* to *very strong* and *poor* to *excellent*). In the following section, communication experiences were measured with two 5-point Likert scales (e.g., *no difficulty/extreme difficulty* and *never/very often*). In the last section, students were asked to report stereotypical and discriminatory experiences and their consequences on their social and academic life on campus via 5-point Likert scales (e.g., *agreement/disagreement* and *never/very often*). At the end of each section, open-ended questions were designed to solicit information regarding how

students overcame the challenges and what assistance was offered from the university community to support them in this regard. This was not only because open-ended questions allowed students to freely express themselves without restricting them to select from a list of predetermined answer categories (Cohen et al., 2018), but also because no published information exists that outlines the actual criteria in predetermining response areas.

In this study, we present data from the open-ended question, “What would be the three top tips that you would give to new international students to better understand others, and why?” Students were encouraged to provide three responses at least but were not limited to three. Asking for three or more strategies was designed to stimulate more responses from them; otherwise, students could provide either no answer or only one strategy.

Procedure

Ethical approval was obtained from the Human Ethics committee at the university before commencing data collection (GU: 2018/159). An online survey may be useful in terms of time and cost of management, whereas a paper survey tends to achieve a higher response rate (Cohen et al., 2018); therefore, both an online and a paper survey were simultaneously used to maximise response rate and counterbalance the potential barriers of both survey tools.

Data collection was carried out over a seven-week period at the selected university between June and July 2018. Both purposeful (also known as selective) sampling and snowballing sampling techniques were utilised to recruit study participants based on the pre-selected criteria (Cohen et al., 2018). Potential students were recruited via both online and in-person strategies on campus. The survey was publicised and advertised on the social media sites of East Asian student associations located at the university. At the same time, students who were approached in person on campus were able to complete either the online or paper-based survey. For those who preferred the online survey, invitations were sent via email or flyers with the survey QR code provided. The researcher also asked them to recommend the survey to their friends and peers. This snowballing technique assisted the selection of additional students via referrals from those who completed the survey or were familiar with the study.

Data analysis

A total of 336 responses from the survey was collected, with some incomplete responses. Following a data cleaning process, cases with 10% or higher missing data were removed from the analysis, leaving a sample size of 306. All students were given the opportunity to provide short written responses for the question about coping strategies; a total of 214 students (70%) provided this detail. A thematic analysis was undertaken on these data. Coding and data analysis were facilitated by a qualitative data analysis tool—NVivo software (version 12). The thematic analysis was conducted in accordance with a six-stage process proposed by Braun et al. (2019). These stages included familiarisation with the data, creating initial codes, searching for themes, revising themes, defining and naming themes, and writing the report. Twenty-four codes were initially generated that stressed relevant quotes directly answering the research question. These codes were then reduced to two themes by clustering the codes

into broad themes based on commonalities, similarities, differences, and the frequencies across the data set. Some themes were eliminated in this process due to insufficiency or irrelevance to the research questions. A further dimension in the analysis was introduced by classifying themes that were divided based on self-reported listening skills (e.g., poor, average, good, very good)—one of the areas from the larger study where significance was identified. Hence, the data were organised into four groups, divided based on the self-reported listening skills.

RESULTS

Participants

Demographic and general information including age, gender, nationality, current university level, and length of stay in Australia was obtained from 306 students. The proportion of female and male students was 52% ($n = 159$) and 48% ($n = 147$) respectively. The age of the students ranged from 20 years to over 30 years. More than half of the students were aged 20–24 (66.7%), followed by 25–30 (21.2%). Students were from China ($n = 169$), Japan ($n = 42$), South Korea ($n = 29$), Vietnam ($n = 21$), Taiwan ($n = 18$), Thailand ($n = 14$), Indonesia ($n = 10$), and Macau ($n = 3$). All students were undertaking undergraduate and postgraduate up to doctorate programs at the university. Most were undertaking a bachelor's degree (59.2%, $n = 181$), followed by a master's degree (28.1%, $n = 86$) across various disciplines. LOR in Australia varied from less than one year to longer than five years, with nearly half staying more than one year but less than three years (42.8%, $n = 131$). A total of 31.4% of the students had recently arrived in Australia ($n = 96$).

Students were asked to evaluate their listening skills on a 5-point rating scheme (1 = *poor*, 2 = *average*, 3 = *good*, 4 = *very good*, and 5 = *excellent*), and it was revealed that their listening skills ranged from poor to very good. A total of 41% of the students saw themselves as attaining average listening skills ($n = 127$), followed by 30.4% ($n = 93$) who viewed their skills as good. In addition, except for those who enrolled via pathway/foundation programs, they provided their standardised language test results. According to IELTS guidelines, people with scores from 6 to 6.5 are defined as competent users. Many students fell into this category (61.5%, $n = 142$), followed by 28.1% who achieved 7 to 7.5 ($n = 65$), who are therefore defined as good users.

Strategies to facilitate comprehension

Thematic analysis discovered two themes: verbal coping strategies and non-verbal coping strategies. Students were requested to provide up to three strategies, so the number of strategies described by the students varied. The results presented in this study proved that similarities existed in developed and proposed strategies, irrespective of students' proficiency levels. However, seemingly, more proficient students tended to use more complex strategies than less proficient students. Additionally, descriptive statistics discovered differences between female and male students in using strategies, with inferential statistics (e.g., t-test) used to explore relationships between the two groups. All extracts presented in illustrating these themes are original and are not corrected for spelling or grammar.

Verbal coping strategies

Of all the strategies students developed and proposed, meaning negotiation was the most favoured strategy ($n = 93$). Meaning negotiation refers to a process that a student as a listener follows to reach a clear understanding of what the speaker is saying. In other words, when a comprehension problem occurs, students may start out with a different understanding of, or a disagreement with, the speaker. However, through negotiation sequences, which include repetition, confirmation, and checking of meanings, students believed that they would achieve mutual understanding. They supported this notion by commenting as follows (students' self-reported listening skills and survey ID are added after each quote):

Confirm what you understand is correct. It's not because our English isn't good. It's just part of communication. (Average, ID: 31)

Repeat what you heard to confirm what the other person said. (Average, ID: 11)

Students made the point that requesting repetition or clarification of a poorly understood statement was better than not asking any questions, indicating their willingness to continue the communication:

I often don't understand non-native English students. I say I don't understand to be honest and then I ask them to say again. Don't give up. Show your willingness to communicate! (Poor, ID: 12)

I sometimes do not understand what they are saying. I realized it is important to ask questions whenever I want to ask. That's very helpful to understand better what they say and improve my listening. (Average, ID 36)

Along with this strategy, students emphasised the need for maintaining social norms and etiquette when requesting repetition/clarification. Students provided some example forms of social etiquette with respect to communicating with others; for example, the need to be polite, especially when interrupting their conversation partners, and avoiding negative expressions with inappropriate tones:

It's important to ask if you don't understand. Don't hesitate to interrupt politely. (Poor, ID: 210)

When you don't understand. Just ask. Don't say yes to everything and don't be rude. Don't say things like "What? Huh? Hey, I can't understand you". (Average, ID: 96)

Asking the speaker to slow down their speech ($n = 14$) was applied and suggested by the students as a strategy for comprehension. They stated that when the speech rate of the speaker was faster than normal from their perspective, they had problems in comprehending information; hence, they requested that the speaker slow down their speech:

Listen carefully. Ask them to speak in slow speed. It's very difficult to understand strong accent people speaking English too fast. (Poor, ID: 267)

If they're speaking too fast, ask them to slow down. When people speak too fast, it is natural for us to have difficulties in understanding them. So, don't worry to ask them. (Very good, ID: 284)

Non-verbal coping strategies

The second theme is labelled as non-verbal strategies. Various actions were undertaken to improve overall comprehension skills, including improving the ability to accommodate diverse accents. Of all the non-verbal strategies, the most popular among the students was self-discipline ($n = 99$). Students proposed two ways to become self-disciplined—using authentic materials to become accustomed to different English varieties and building vocabulary banks to support their comprehension.

Considering students' unfamiliarity with Australian English and the lack of communication experience with speakers with diverse accents, listening to the same English speakers may not be an effective way of enhancing skills in terms of accentedness. In the sense that diverse language varieties are not what students in the EFL context can learn about or gain exposure to in foreign language classrooms, the benefits of using authentic materials, such as TV programs, movies, and YouTube, were recommended by many students ($n = 85$):

Don't simply listen to the same kind of English speakers all the time. Watch news, TV comedies and YouTube. Expose yourself to a variety of different accents, situations and topics. (Poor, ID: 230)

When I came to Australia, the Australian accent was unfamiliar to me. I remembered watching a lot of Australian TV shows and news on TV. When I was in the UK last semester for my exchange semester, I took quite sometimes to get used to the British accents. However, my strategy was to watch TV shows and movies from that particular countries. In other words, to get my ears familiarized with the accents of the region I am in. (Very good, ID: 336)

Again, 'real-life' English conversation was a preferred material for enhancing their comprehension skills. Students stated that listening to conversations of others within their learning sphere and social situations was useful comprehension practice. Hence, they proposed intentionally listening to others' English conversations regardless of where they were:

Overhear other people's conversations and how they sound . . . on the street, buses and wherever you are, and get used to different accents. (Very good, ID: 312)

Listen to other people speaking English (when on buses, trains wherever you go, just listen to people and learn) Keep your ears open. English is everywhere. (Good, ID: 95)

In addition, accent unfamiliarity cannot be the only cause of comprehension barriers: Underdeveloped vocabulary can be one of the major reasons. Therefore, students noted that building vocabulary banks is a critical strategy for helping them improve ($n = 14$), proposing it as a strategy to support their challenges in comprehension:

Improve Your vocabulary. It will help you to understand different accents better. Sometimes, it's not always because of people's accent, but vocabulary. (Average, ID: 122)

In like manner, the potential effects of other factors on their comprehension, such as the speaker's voice quality or background noise, were pointed out by the students. However, they also believed that having a sound knowledge of vocabulary, along with accurate pronunciation, could support their comprehension:

Improve vocabulary. Accent, voice quality and sometimes noise interrupt our comprehension, but if we have good knowledge of vocabulary, it will be helpful. Know how to pronounce too. Learning vocabulary is one thing and using them is another. (Poor, ID: 126)

Comprehensive exposure to the target language as a strategy ($n = 91$) was applied and suggested in order to become familiar with diverse accents and speech styles of English users. Participants' responses indicated that whether or not their conversation partner was L1, having comprehensive communication exposure was deemed important. Hence, they advised two different methods for creating social networks: including their neighbours and joining international student organisations and social events.

Establishing social networks within their neighbourhood, particularly with elderly people, was revealed as a useful strategy for enhancing students' comprehension skills because elderly people were willing to communicate with the students, and they also tended to teach or correct students' English:

Build relationships with your neighbours. There are some elderly people who like to talk to people like us. They love to correct your accent and vocabulary and also it will be helpful for you to understand their speech. (Good, ID: 37)

Sharing accommodation with people who did not share the same first language was also considered a strategy for developing comprehension skills in terms of accented English and management of the challenges. Furthermore, through extensive communication experience, students may feel less anxious when they encounter communication breakdowns:

Live with people who you have to speak English with. Meeting diverse people means you listen to diverse accents. You'll understand different accent or at least you won't be embarrassed just because you don't understand their accent. (Average, ID: 238)

Participating in a range of student organisations and social events was considered as a method to maximise exposure to diverse English accents and enhance comprehension skills:

Try to go international student organisation and talk international students. Put yourself out there, exposure to other accents. (Poor, ID: 147)

There are many events at uni. Whether Australian students or international students, talk to them and spend time with them. You will be able to understand them better. (Very good, ID: 56)

Open-mindedness ($n = 52$) combined with a willingness to listen to diverse accented speakers and understand their phonological diversity was proposed as a strategy. English is a common means of communication for speakers from various first language backgrounds; thus, students' responses indicated that having positive attitudes to better understanding the presence of varieties of English spoken by L1 and L2 individuals is an imperative step in the international context:

Be open-minded to any English. Don't focus too much on how native English speakers speak. International communication is necessary these days, so it's important to have abilities to understand diverse accents. (Very good, ID: 307)

Understanding different accent is very important. Lecturers, tutors and even a lot of students have different accent. So be open-minded and don't avoid people with difficult accent, the first step is spending time and talking to them more often. (Good, ID: 259)

Understanding the main point ($n = 11$) was considered a key strategy for comprehending what the speaker said. Students remarked that understanding every single detail of what the speaker was saying could be difficult, or unnecessary, because without understanding the main idea, nothing could make sense:

It's okay not to be able to understand everything. If it's not important, it's okay to let things go without showing that you don't understand. Try to understand the point of the conversation. (Poor, ID: 142)

It's difficult to understand everything when the accent is difficult. Listen to the words and try to get the main point from the speaker. (Average, ID: 206)

Gender comparison

Descriptive analysis was carried out on both verbal and non-verbal strategies by gender. The number of strategies applied by females and males, with frequency and percentages, are presented in Table 1.

Table 1: Number of strategies used by females and males (N = 214)

Variables	Number of strategies (%)			
	1	2	3	4
F ($n = 110$)	49 (44.5%)	43 (39.1%)	16 (14.6%)	2 (1.8%)
M ($n = 104$)	55 (52.9%)	35 (33.7%)	12 (11.5%)	2 (1.9%)

Note. Both verbal and non-verbal strategies are computed.

With strategies applied to mitigate barriers to comprehension, there were more females using multiple strategies than males. While 44.5% of females used a single strategy, followed by 39.1% using two strategies, more than half the males (52.9%) employed a single strategy and 33.7% of them used two strategies. Descriptive analysis further supported the observation of preferences in using different strategies between females and males, as indicated in Table 2.

Table 2: Number of frequencies of coping strategies by gender (N = 214)

Verbal strategies	Frequencies (%)		Non-verbal strategies	Frequencies (%)	
	F ($n = 110$)	M ($n = 104$)		F ($n = 110$)	M ($n = 104$)
Meaning negotiation	50 (45.5)	43 (41.3)	Self-discipline	48 (43.6)	51 (49.0)
			Comprehensive exposure to the target language	48 (43.6)	43 (41.3)
Asking for slower speech pace	10 (9.1)	4 (3.8)	Open-mindedness	30 (27.3)	22 (21.2)
			Understanding the main point	5 (4.5)	6 (5.8)
Total	60	47		131	122

Note. Both female and male students applied non-verbal strategies more than verbal strategies, hence the total frequency is either lower or higher than the sample size. The percentages would not be equal to 100 as a large number of students employed more than a single strategy (see Table 1).

Both females and males preferred using non-verbal strategies to verbal strategies (131 and 122 instances respectively). Male students were dependent on self-discipline (49.0%) to facilitate their comprehension, followed by comprehensive exposure to the target language (41.3%). Nevertheless, both strategies were equally crucial for females (43.6%), followed by open-mindedness (27.3%). With a verbal attempt, both females (45.5%) and males (41.3%) favoured using meaning negotiation, although the instances were slightly higher in females.

Further statistical analysis was carried out to determine if there was a relationship between females and males' use of coping strategies. Given the violation of the equal variance assumption, Welch's t-test was performed; however, the differences were not big enough to reach statistical significance ($t = 1.1$, $df = 211.6$, $p = 0.3$).

DISCUSSION

Qualitative outcomes demonstrated that L2 East Asian students were resilient in response to comprehension barriers caused by accent unfamiliarity and that they used a broad range of strategies. Although females indicated more flexible attitudes than males in their response pattern (females: 191, males 169 in total), no significant differences were observed between gender groups. Strategies revealed by the thematic analysis were not observed but were self-identified strategies. Hence, the best options for facilitating comprehension issues could differ from the self-identified strategies. Given that the students were asked to complete self-report instruments and propose three "top tips" for future international students, it seems probable that the findings may present a mixture of self-identified strategies and best options.

Verbal strategies such as meaning negotiation and asking for slower speech pace were reported by all proficiency and gender groups. Unlike previous literature that has reported on strategies of silence and avoidance (Park, 2016), in this context, students acknowledged the importance of remaining in communication by attempting to reach mutual understanding. Details of applied strategies included a confirmation check, repetition, and clarification requests for a slower speech rate, which are forms of interactive refinement of understanding until a sufficient point of comprehension is reached. Meaning negotiation ultimately contributes to L2 students' linguistic advancement because they would receive comprehensive inputs and produce outputs by using their own words (Yi & Sun, 2013). While strategies such as silence as a means of communication for East Asian students are often used in interactive classroom settings so that they do not "stand out" or to avoid personal embarrassment (Dodgson et al., 2018), in Westernised classroom settings these strategies can be erroneously interpreted as disengagement or loss of interest. Therefore, future students were encouraged to employ different strategies to accomplish mutual understanding.

Among the non-verbal strategies used, the most frequent was self-discipline, which included the use of authentic materials and building vocabulary banks to support comprehension. In particular, students stressed the use of authentic materials such as TV programs, YouTube videos, and real-life conversations for familiarisation with the

phonological diversity of both L1 and L2 speakers. Comprehension can be challenging for new L2 students from the EFL context because of the myriad accents and speakers who have different voice qualities and who speak at different volumes and speeds in Australia. Although LOR in L2 environments can enhance different phonological units to a certain extent and raise awareness of the diversity that the English language encompasses, this may not be a feasible option for future students prior to their arrival in the host country. Alternatively, using authentic materials could help students to understand linguistic diversity and prepare them for potential challenges they may face upon arrival. Further, as confirmed by Ghaderpanahi (2012), authentic materials benefit L2 students by improving their overall comprehension and by accustoming them to different speech paces, accents, and even dialects that could impede their comprehension.

Students' responses suggested that their limited capacity to accommodate diverse accents and their lack of depth and breadth of vocabulary were two of the major factors contributing to their level of comprehensibility. As well as needing to build vocabulary banks to support their comprehension, future students were also encouraged to learn accurate pronunciation of vocabulary for the efficient use of vocabulary as a coping method in verbal communication. Nevertheless, students do not need to try their utmost to understand every meaning of every word, phrase, and sentence, which Yang (2019) argued is an unproductive learning behaviour of some EFL students. The students recommended that future students concentrate on understanding the main point or gist of the speakers' information. These strategies can better facilitate L2 students' comprehension to a substantial extent by assisting them to advance beyond their lexical level.

For both female and male students, non-verbal strategies associated with both self-discipline and increasing exposure to the target language appeared to be significant. In their responses, emphasis was placed on a natural acquisition setting, where they could pick up the language using both authentic and semi-authentic materials. During their study journey, they intentionally increased communicative exposure to the English language by pushing themselves to establish social networks inside and outside of university. Moving to English-speaking countries and living there for a longer period is not an optimal solution for complex linguistic issues and associated educational consequences. Conscious effort by students should be devoted to acquiring education in their L2. Unlike previous literature that found social interactions with hosts is a method for learning formal and informal English (Khawaja & Stallman, 2011), students in this study highlighted meaningful interactions and ties with diverse people, both L1 and L2, for dealing with the potential impacts of accent unfamiliarity and for increasing overall language fluency. Social interactions with diverse people in the international context would help reduce stereotypes and increase trust among people across cultural contexts, better preparing these students to successfully work in a globalised society.

Limitations of the study

This qualitative study is not without weaknesses. The self-identified strategies may not be explicit descriptors of coping strategies for various reasons. Students may have forgotten to report some strategies they employed because the strategies they developed can be applied at both a conscious and subconscious level. Despite confirmation that self-reported listening skills are related to L2 students' comprehension barriers, their

self-reporting can be potentially biased and subject to reporting errors because their perceptions of their L2 skills can be subjective.

Implications for practice

L2 speakers generally have more limited vocabulary and use simpler expressions without using slang or idiomatic expressions than L1 speakers. However, as students noted earlier, comprehension barriers occur for many reasons; for example, speech intelligibility of the speakers, background noise, or not enough information conveyed by the speakers. Moving beyond a discourse of deficit or viewing them from a deficit perspective, universities should create conditions that reinforce “enablers” that promote L2 students’ successful engagement in culturally complex environments and suppress existing “barriers”, which are imposed by their structures and practices and which may hamper the students’ social and academic well-being.

Universities should consider training all members of their community for intercultural communication to raise social awareness about intercultural sensitivity. In English-speaking universities, L2 students’ efforts to communicate with others are often taken for granted and they seem to carry with them a heavy communicative burden of responsibility. In a BBC news article entitled “Native English Speakers are the World’s Worst Communicators” (Morrison, 2016), Jennifer Jenkins argued that “it is native speakers that are having difficulty understanding and making themselves understood”, especially in an ELF situation. This is because L1 speakers may not feel that they need to accommodate, or adapt to, others. From the viewpoint of Byram (2020), positive attitudes such as curiosity, openness, and a readiness to suspend disbelief and judgement about others’ meaning and behaviours are “preconditions” for successful intercultural communication. Hence, it is important to recognise that effective communication does not concern L2 students’ speaking as unidirectional, but concerns listening and reaching a point of clear understanding altogether. The effectiveness of such training can be (a) a decrease in cultural differences, (b) acquisition of culturally competent knowledge, and (c) an increase in interactions between speakers across different countries.

Given the immense degree of language variation existing in English-speaking universities, other factors, such as accent unfamiliarity, different speech style or habits of diverse English speakers, the use of colloquialisms, and so forth cannot be completely ruled out as potential sources of linguistic barriers for L2 students. It is crucial to note that neither the language tests nor previous language learning are thoroughly designed to provide multiple layers of discipline-specific language and the complexities of local language varieties to directly meet their social and academic needs. As indicated in the Results section, students desire to be included with L1 students in both social and academic interactions. L2 students may be unfamiliar with and feel awkward in interactive classrooms, resulting in their interacting co-nationally or in culturally similar groups. Knowing that such problems exist, academics can support and guide students, focusing on teaching them how to collaborate with each other, thereby ensuring more productive learning outcomes. For example, they could be encouraged to find common ground, share background knowledge, use fewer colloquialisms such as slang and idiomatic expressions, and not speak too fast when they work and mix with students from diverse backgrounds. Instead of interpreting L2 students’ tendency to mumble and stutter as incompetence, they could deconstruct

meaning together through interactions with the help of words and expressions. In doing so, L2 students could feel that they are included and valued and hence become more comfortable participating in interactive classrooms.

Taken as a whole, consideration of ways to counter problems that undermine L2 students' international education experience and reconsideration of pedagogical practice can give rise to crucial differences in L2 students' learning experience, more than can be gained by simply increasing the entry language threshold, because it would directly assist them increase their self-esteem and confidence (Ryan & Viete, 2009).

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China's international education aid to Cambodia in the 2010s: Situation analysis and trends

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Since 2004, China has contributed an increasing amount of annual financial aid to Cambodia, especially from 2010 to 2012. Cambodia's increasing budget shortages in education from 2014 to 2018 motivated its government to seek development aid from abroad. In the context of the ongoing rise in China's overall budget aid to Cambodia, this research studied the circumstances of this educational aid, discerning trends from 2010 to 2019, and evaluating China's position. Data was gathered using descriptive mixed methods, with statistical data gathered from the Cambodia Official Development Assistance (ODA) Database as well as relevant documents.

Results were that 1) China was among the five countries with the overall highest number of development assistance projects in Cambodia (others included Japan, South Korea, the US, and Canada). China was the largest financial contributor with the most concessional loans, with the likelihood of offering further grants by the late 2010s; 2) China provided little educational aid compared to other national providers of educational aid. Yet China tended to increasingly provide educational aid in the school and facilities sector. Notably, most Chinese educational aid programs were unrecorded in the Cambodia ODA Database. Budget amounts for these activities did not vary much from those of Japan to South Korea.

Keywords: Cambodia; China; International educational aid; situation analysis

INTRODUCTION

China's foreign aid became widely accepted and more prominent as the 21st century approached. A major turning point occurred in 2001 when the Cambodian government emphasised China's influence as the highest priority in international relations (Percival, 2007), and China and Cambodia began a relationship with support of the One China policy (Sotharith, 2010) and the establishment of economic and trade cooperation in 2002. Data from the Council for Development of Cambodia (CDC) revealed that between 2011 and 2019, China was one of Cambodia's top trading partners, with its trade value increasing steadily every year (CDC, 2021a). During 1994-2019, China had the largest share of foreign aid at 21.81%, invested in infrastructure, resource development, rubber, and tourism (CDC, 2021b). Statistics from the Cambodia Official Development Assistance (ODA) database show that such aid increased with every passing year (Yang & Ma, 2015). In tourism, the 2018 third quarter figures show that the number of Chinese tourists has increased by 34.5% since 2012, higher than tourists

from South Korea, Vietnam, Thailand, Japan, and the US (Bopharath, 2018). In 2006, cooperation between Cambodia and China covered almost all areas including education (Vannarith, 2009).

Cambodia-China relationships date back centuries, being prevalent in the ancient Funan, the Chenla, and, especially, the Kingdom of Angkor periods. A Chinese diplomat, Zhou Daguan, lived in Angkor city for a year when the two countries had strong relationships in trade, tribute, and migration (Griffiths, 2011). Politically, Cambodia is one of the oldest and closest allies of China. Culturally, Chinese values are rooted in the Cambodian way of life (Pheakdey, 2012).

In 2018, Cambodia declared a key national strategy to join China's "One Belt-One Road" (BRI),¹ realizing that the initiative had great potential to develop the country in all sectors, economically and socially (Royal Government of Cambodia [RGC], 2018). China's assistance has gradually promoted economic, military, and political cooperation under the form "Asia Only" to strengthen its ties with Cambodia, Laos, Myanmar, and Vietnam (CLMV) countries (Weitz, 2011). As Percival (2007) noted, China's use of a tool named "Soft Power" was a popular new mantra in Southeast Asia.

However, China has a different model of development aid from that of traditional donors. In its initial phase, the assistance focused on the development of infrastructure, along with a set amount of funds allocated to human resource development activities (Sato et al., 2011). However, with budget allocations for education from the Cambodian government constantly reducing (Tweed & Som, 2015), the Ministry of Education, Youth and Sport (MoEYS) turned to China for help (MoEYS, 2014). By 2018, the Cambodian education sector received less than 10% of the national budget, which was lower than the global average (15-20%) and was also the lowest education expenditures in ASEAN (Kaewkumkong, 2020).

As stated by Yang and Ma (2015), a new stage of China's foreign aid occurred in 2010 when China's National Conference of Foreign Aid was conducted to review the country's aid policy and plan for upgrading foreign aid in new settings. China released the First White Paper on Foreign Aid in 2011, discussing its foreign aid from 1950 to 2009. The Second White Paper was released later, in which China's foreign aid policy from 2010 to 2012 was discussed. The paper covered activities such as human resources training, youth volunteers and scholarships. It was evident that the number of projects had increased significantly (Zhang, 2014). The announcement of the BRI in 2013 also drove educational aid in that decade. On the Cambodian side, the government operated under the Rectangular Strategy from Phase 3 (2009-2013) onward, which aimed to emphasize education reform and continue to intend implementing the Education for All (EFA) global agenda. A turning point in this period showed that Cambodia made significant progress through reforms of government finance administration, allowing it to successfully cooperate with international partners (Cambodian Rehabilitation and Development Board [CRDB], 2019; RGC, 2013).

This study, acknowledging that China's foreign aid has risen across developing countries, examines the following research questions: (1) What is the overall aid condition of Cambodia and education in particular? (2) What is the Chinese aid trend

¹ The Belt and Road Initiative (BRI), formerly known as One Belt One Road and the author holds the original name here as it was stated in the Cambodian strategic plan in 2018.

during the years 2010-2019? And (3) what is China's unique approach to managing foreign aid and what was the response from Cambodia? The analysis examined aid characteristics, concepts, project type, budget, activities, and feedback from Cambodia. The aim of this study was to increase the discussion of issues within the area of study of China and Cambodia in accordance with the donors and the recipients. As Yang and Ma (2015) specified, there are meager sources in English that discuss China's foreign aid with respect to education. Studies of China's education aid are mostly limited to Africa, with few works on aid elsewhere. Similarly, the World Bank (2008) observed two challenges regarding the most significant implementation of foreign aid policy among emerging donors: (1) limitations in access to the data on types and amounts of aid from these countries, and (2) diverse methods of providing aid to achieve harmony and alignment.

LITERATURE REVIEW

Concept and evolution of foreign aid

Morgenthau's theory of foreign aid (1962) hypothesised that aid is an aspect of foreign policy, essentially transferring money, goods, and services from one country to another. Packenham (1966) supported this concept by calling it one of the tools of international politics. Foreign aid is economic development for the benefit of the giving country. In a narrow sense, Riddell (2007) stated that foreign aid was the provision of assistance to improve the basic welfare and to reduce poverty of the recipient country. Such assistance can be referred to as development aid. With respect to educational aid, Phillips (1976) defined it as the giving country's distribution of educational resources, including teachers, educational equipment, loans, scholarships, grants, exchange programs, and the construction of educational institutions. Aid can further include training to improve the quality of educational systems, students, personnel, and civil servants in developing countries.

Foreign aid, in its modern guise, began in the immediate aftermath of World War II with the development of the Bretton Woods institutions of the International Monetary Fund (IMF) and the World Bank (Ali & Zeb, 2016). It has been used as a tool to drive economic growth and development, support post-war reconstruction, and promote peace and prosperity around the world (Kim, 2016). Over the past six decades, foreign aid has evolved through different stages (Ali & Zeb, 2016). In the 1950s, there was a boom of economic growth ideas. In 1960s, economic progress was still pursued based on the modernisation concepts promoted by economists such as Rostow and Lewis, who projected capital transfer and investment and supply of labour. However, it became clear that aid did not benefit all sectors of society. In the 1970s, the focus turned towards aid for the local economy and rural development for poverty alleviation with the participation of civil society, NGOs, and multilateral organisations.

In the 1980s, a development strategy was replaced by an adjustment strategy. Specific conditions for receiving economic assistance and loans from the IMF and the World Bank were established. Developing countries needed to make structural and policy changes, such as privatisation, trade liberalisation, and reduction in public expenditure to minimise the role of government. Scholars believe it to be the era of neo-liberalism, but recipient countries experienced negative outcomes. By the 1990s, foreign aid tended to decline due to the collapse of communism, the rise of globalisation, greater budget pressures in developing countries and general disappointment in the outcomes of the aid provided. Most donors pursued commercial interests and neglected political

conditionality such democratisation in a bid to increase better outcomes from the provision of aid. The years between the mid-1990s and the early 21st century witnessed wars, internal conflicts, and instability in several states, and the structure of aid was thus shifted to the focus on poverty eradication and Millennium Development Goals (MDGs) and now Sustainable Development Goals (SDGs).

At the beginning of the 21st century, Fengler and Kharas (2010) stated that despite the influx of aid and the increasing involvement of players, the importance of aid had decreased. Foreign aid's new architecture was the result of three major changes. First, strong growth in many developing countries. Since 2000, aid was redefined as many Asian countries became donor countries. Second, the donors' landscapes have changed radically over the past decade with the help of NGOs, foundations, and private corporations. Third, innovation, especially information technology, has created new forms of development assistance. As Heller (2011) explained, in addition to poverty, gender discrimination, and epidemics, the issues of globalisation, global warming, biodiversity loss, and geopolitical turmoil have become major threats to global citizens. As the environment of international aid changed dramatically over the last century, with more players participating, charitable organisations, the private sector, and emerging donors began playing an increasingly important role in supporting poor countries, while the recipient countries also gained more economic and political experience.

China's foreign aid and its agenda

China's foreign aid was driven by political, economic, and humanitarian factors. Politically, the Chinese government has used aid as a foreign policy tool to promote its international status as a power holder. The country's aid budget has increased rapidly since 2004, with 80% of its total allocated to Asia and Africa and has contributed to the boosting of economic growth in recipient countries, particularly in least-developed countries (Zhang, 2018), with Africa the largest recipient (Lönnqvist, 2008). However, Fazzini (2019) argued that the distribution of aid in Africa was not evenly distributed and was politically motivated to build friendships among non-partisan countries, compete with Taiwan and maintain access to oil and minerals for its own economic growth (Lum et al., 2009). Sun (2014) also noted that various Chinese projects operated to access Africa's natural resources and markets, which created business opportunities for Chinese companies and employment of Chinese workers.

Weston et al. (2011) examined various projects implemented by China in Africa and found that although the leaders of those countries welcomed the projects, the local people were frustrated because of issues such as employment of Chinese workers rather than Africans, lax safety measures, frequent accidents in Chinese-managed projects, oversupply of products from China creating a disadvantage for local productivity, substandard buildings and structures, and bribes given by Chinese companies to local officials. Chan and Chung (2015) also remarked that by employing advertising like "Making friends" to gain acceptance, Chinese aid to African partners was, in fact, a political driving force transmitted through different levels of friendly relations with recipient countries.

Nevertheless, Chinese aid has worked towards eradicating poverty and improving people's well-being in developing countries (Fuchs & Rudyak, 2017), though remaining focused on the foundations of the economy, industry, energy and resources, agriculture,

and public facilities, with education and health listed in the category of public facilities (Yang & Ma, 2015).

Between 1956 and 1973, China's aid to Cambodia accounted for 2% of China's overall aid programs and increased by about 24 times from 2017 to 2018 (Cambodia Public Debt Statistical Bulletin [CPDSB], 2019). This was in part to reward Cambodia for its support of the One China policy. China has also assisted Cambodia through the implementation of the BRI, particularly in transport infrastructure (Vathanak, 2021), which has enabled the country to open up to foreign trade markets, increasing employment, and raising the quality of life of individuals (Sullivan, 2011).

However, Pheakdey (2012) pointed out that most of Chinese aid to Cambodia was in the form of soft loans for infrastructure projects. Compared with those of other donors, loans from China had higher interest rates with shorter amortisation and periods of grace. Moreover, China's aid also caused negative social impacts. Most of the aid sponsored the construction of factories, hospitals, airport, a teacher-training college and a TV broadcast station. China also provided technical assistance (Griffiths, 2011). Pheakdey (2012) argued that China's aid to Cambodia did not always lead to development but to tragic outcomes. For example, from 1975 to 1979, China provided financial and political assistance to the Khmer Rouge through military aid, armament, construction of a military airfield, and oil refinery repair. When Vietnam occupied Cambodia, the Khmer Rouge retreated and settled along the Thai border, continuing to receive supplies of weapons from China and Thailand.

Sullivan (2011) was also critical of Chinese aid, pointing out that the lack of transparency in Cambodian projects sponsored by Chinese aid may allow Cambodian political elites and business owners to seize rent-seeking opportunities. Pheakdey (2012) concurred, adding that China had emphasized the "no strings attached policy", a practice that differed from traditional donors and pointed to China having a hidden agenda.

China is a member of BRICS,² and a vital contributor to development cooperation among this group of developing countries with emerging markets. China operates within the framework of South-South Cooperation by focusing on building partnerships rather than a donor-recipient relationship (de Siqueira, 2019). Aid from OECD-Development Assistance Committee shrank from 90% in 2000 to 77% in 2014 and rebounded to 83% in 2017. Meanwhile, BRICS has increased its share of Chinese aid from 2% to 8% during the same period (Zhao & Ouyang, 2020). Overall, following the establishment of BRICS, the level of economic development mechanisms of many countries increased significant, and China's role in aiding international development became more prominent as a result of economic and political strength (Guo et al., 2020).

METHODOLOGY

This qualitative research employed a descriptive mixed-method strategy of statistical data analysis and document analysis. Data were derived from: (1) the Cambodia ODA Database published by the CDC in the years 2010 to 2019 and accessed in January-February 2020, and (2) peer-reviewed and grey literature. Peer-reviewed articles mainly

² An acronym for Brazil, Russia, India, China and South Africa

dealt with discussion and supported the results, while grey literature was used for detailed explanations of situations from statistical data occurring in the 2010s.

The criteria included literature published in English because it is easier to retrieve and contains extensive and varied information. The peer-reviewed articles are based in accuracy and are reproducible as the standard most employed by official organisations and researchers (Mbah et al., 2021). This study also utilised online search engines from the Web of Science and Scopus databases, as well as from Google for relevant reports and working papers linked to international agency websites, such as the World Bank, UN, Asian Development Bank (ADB), and UNESCO, to ensure credibility and authenticity. Prior to the search, the key themes focused on China's foreign aid in principle and practice to countries as well as China's aid to Cambodia, particularly in the education sector with corresponding research objectives and scope of study. The selection of grey literature was based on its origin: the national plan and strategies of both China and Cambodia; official Chinese documents, including the China White Paper on Foreign Aid and other updating sources, such as *China Daily*, *Xinhua*, *Global Times*, and *hanban.org*; Cambodian official documents included the Education Strategic Plan, Rectangular Strategy, National Strategic Development Plan, and reports from CDC and Cambodia Development Resource Institute (CDRI), a national think-tank.

For data analysis, the study was divided into two parts. Statistical data were compiled and used to generate descriptive statistics, such as percentage to provide clarity with respect to illustrations and trends. It was followed by presentation of the results in the form of comparative tables. For documents, the study made use of the content analysis technique by considering manifest content from documents adhering to the conceptual framework. The analysis focused on examining evidence for coherence, essence, and trends to explain conditions in the 10-year research period. The outcomes are presented in the form of descriptive analysis and statistics.

RESULTS AND DISCUSSION

Chinese policy through foreign aid

In the 2010s, China provided the most aid among the top five donors (Japan, South Korea, US, Canada and China). Aid funds peaked at the beginning of the 2010s (Table 1). However, Chinese aid differed from aid provided by other donors because only about 8% was in the form of grants and the rest in the form of loans. By comparison, South Korean grant aid accounted for 63%, almost all Japanese and French aid was in the form of grants and other donors provided 100% in grants. Under its loans scheme, China supported the second highest number of projects (22.95%), the highest being the ADB (35.96%). China mainly supported infrastructure development, including road and bridges construction, electricity, irrigation, dams, and buildings.

There were only 14 Chinese grant programs (21.54% of total projects from China), most provided in late 2018 and 2019, supporting projects such as the construction of nursing buildings, schools and educational facilities; establishing training centres and vocational education centres; the construction of an indoor stadium, ancient site renovations in Siem Reap, bomb disposal, preparation of the domestic transport system master plan and improving public transport systems, census, agriculture and bio-fertilizer, and assistance with Cambodia's elections, including procuring ballot boxes and setting up polling booths.

Table 1: Number of China's projects and aid budget for Cambodia

Year	Total projects	Emerging projects	Budget (US\$)	Remarks
2010	13	5	1,239,099,365	1. Some projects in 2010 are brought over from previous years, and there are ongoing aid programs that will be carried out until 2023. 2. For ongoing projects, the consideration is the total budget included in the first year that has been allocated. 3. Projects after 2019 are listed in the category of total projects since they continued from the previous years. 4. There are 14 projects with unspecified operating years, which are classified under the Pipeline category and excluded from this list.
2011	21	12	673,193,648	
2012	26	8	756,578,402	
2013	31	1	400,000	
2014	32	5	132,586,979	
2015	32	6	377,370,749	
2016	28	5	384,402,991	
2017	31	9	657,283,574	
2018	26	8	480,921,272	
2019	23	6	502,050,888	
2020	17	-	-	
2021	11	-	-	
2022	6	-	-	
2023	2	-	-	
Total	299	65	5,203,887,868	

Source: Compiled and calculated by the author from the Cambodia ODA Database

*For CNY, the exchange rate is 1 USD = 6.88 CNY (<https://www.xe.com/currencyconverter/> 16 Jan 2020).

This data revealed that after 2010, China expanded its role in Cambodia through a large number of foreign aid policies. This finding is in line with those of Reilly (2015), which indicated that, since 2004, China has been a major annual financial contributor to Cambodia. Particularly during 2010-2012, provision of funds increased at a much higher rate than in previous years. Most of the aid was for infrastructure construction and economic development, with only minor assistance for social development. Ciorciari (2013) found that in 2011 China invested ten times as much as the US, bringing Cambodia's GDP to US\$13 billion. Increased aid to Cambodia by China since 2004 is in line with increased Chinese aid in other jurisdictions (Yang & Mam, 2015).

As noted above, although Chinese aid has brought benefits to the recipient countries (Sullivan, 2011; Yang & Ma, 2015; Zhang, 2018), most aid was in the form of loans for economic development (Griffiths, 2011; Pheakdey, 2012; Sun, 2014). There has been debate about whether China's aid has had negative social impacts on the recipient countries. That is, although China's "no strings attached policy" was accepted by the elites of the recipient countries, many of China's investment projects have caused dissatisfaction or harmful effects on local people (Chan & Chung, 2015; Weston et al., 2011). Specifically in Cambodia, although Chinese aid has been well received by political and business leaders, the terms and management of aid remained questionable, particularly regarding transparency and accountability, as well as the increasing doubts of China's hidden agenda (Pheakdey, 2012; Sullivan, 2011). In effect, foreign aid had two impacts: the positive impact can be measured and included, for example, in the higher rate of completing basic education (though subject to certain conditions); the negative impact is that the funds acquired had no significant effects on the domestic growth of recipient countries (Chan & Chung, 2015).

Proportion of China's aid for education

There were eight categories of expenditure for education during 2010–2019, as shown in Table 2. Most of the funds were spent on basic educational development. In the 2010s, 25 international development partners provided educational aid, with the total aid budget increasing steadily every year. The top five contributors together accounted for 63.81% of the aid. Aid from China accounted for only 1.15% of the total aid budget but increased to 2% in the period 2010-2022. China ranks eighth among 16 countries providing bilateral aid to Cambodia, as shown in Table 3.

Table 2: Education aid budget to Cambodia classified by type during 2010-2019

Project type	No. of projects	Budget (US\$ 000)	%
1. Basic Education	20	269,210.91	24.34
2. Schools and Facilities	19	130,061.64	11.76
3. Secondary Education	13	84,997.41	7.68
4. Sector Policy	11	42,853.62	3.87
5. Teacher Training	11	44,607.45	4.03
6. Tertiary, Vocational and Higher	60	251,007.74	22.69
7. Sector Wide Approach Program (SWAP)*	6	203,639.39	18.41
8. Others such as NGO collaboration, volunteer programs, research cooperation, etc.	13	79,752.42	7.21
Total	153	1,106,130.58	100

Source: Compiled and calculated by the author from the Cambodia ODA Database

*SWAP or Sector budget support is the unit service and mechanism of MoEYS budget allocation for effective international education aid management

Table 3: Aid financing of international education partners in the 2010s

All education aid providers			Bilateral aid		
Aid Provider	Budget (US\$ 000)	%	Country	Budget (US\$ 000)	%
1.EU	187,985.02	17.27	1.Japan	127,099.90	25.06
2.ADB	147,867.95	13.59	2.Sweden	91,527.46	18.05
3.World Bank	139,866.20	12.85	3.Australia	80,673.40	15.91
4.Japan	127,099.90	11.68	4.South Korea	75,351.09	14.86
5.Sweden	91,527.46	8.41	5.US	54,684.55	10.78
Total of top 5	694,346.53	63.81	Total of top 5	429,336.40	84.66
Total remaining providers	393,870.22	36.19	Total remaining countries	77,772.84	15.34
Total of 25 providers	1,088,216.75	100	Total of 16 countries	507,109.24	100
*China	12,568.14	1.15	*China	12,568.14	2.48

Source: Compiled and calculated by the author from the Cambodia ODA Database

Most of China's education aid (99.71%) was focused on the Schools and Facilities sector including a technical vocational education and a training centre in Sihanouk province, which operated between 2015 and 2017 and was coordinated and supervised by the Ministry of Labor and Vocational Training. Such sponsorship may be because Sihanoukville, under BRI cooperation, has become a destination for Chinese investments in Cambodian economic zones comprising factories, housing, hotels, and restaurants and casinos. In addition, China invested 4.2 billion US\$ in power plants and offshore oil enterprises as well as helping in the construction of a four-lane highway, worth two \$US2 billion, connecting Sihanoukville and Phnom Penh (Chheng, 2017). Another scheme, operating between 2019 and 2022, is the Project for School Facility Improvement in Cambodia, which is being directed by the Ministry of Economy and Finance in collaboration with MoEYS. This project included funds to build 26 secondary school buildings and three teacher-training centres in Phnom Penh, Kampong Cham province, and Kandal province. The projects funded by China were approved by the Ministry of Economy and Finance, possibly because that Ministry was responsible for managing the development and implementation of foreign financing policies. China's practice, as noted by the Shanghai Institutes for International Studies (2015), was to focus on collaborating directly with the responsible government agency rather than at the local level. Cheng (2015) found that China usually deals directly with the Ministry of Economy and Finance.

In essence, although China is the main contributor to the aid budget overall, it offers little help for improving education as a proportion of its aid budget compared to other providers (King, 2010). Reilly (2015) also who found that China's educational aid was the second lowest amount of all of China's foreign aid to Cambodia—the lowest being for environmental conservation. Up to 2004, China had funded only one project for education by building an electronic library at the Royal Academy of Cambodia. Most multilateral education aid has been provided in partnership with ADB and the World Bank. An interesting observation is that most Chinese aid concentrated on building schools, donating equipment and teaching materials, exporting Chinese teachers, sponsoring teacher training and internships, and providing scholarships for students from developing countries to study in China (Niu, 2014; Yang & Ma 2015). The majority of China's aid was equipment based, while enhanced skills assistance, such as teacher training, was minimal (Yang & Ma, 2015).

China's educational aid to developing countries in general has been fiercely criticized. China's aid assistance grew rapidly and steadily in the period studied but it was provided at the government level rather than at the local level. The Shanghai Institutes for International Studies (2015) noted that China was more concerned with facilitating its investors than helping to develop soft resources such as education, management and good governance. Likewise, Yang and Ma (2015) believe that Chinese aid had several shortcomings as it focused on higher and vocational education, the results of which were clearly visible and more beneficial to China. In the view of Nordtveit (2011), China was incapable of providing professional education aid because it has no agency to coordinate the provision of overseas aid and is incapable of addressing the needs of recipients. Countries, such as those in Africa, benefited the least (only 1%) from education assistance, even though this aid was required by the majority of recipient countries. China's aid focus was also inconsistent with Cambodia's policy of accelerating people's access to basic education in accordance with the global community EFA policy. The Cambodian government has recognised the need, as seen by its Education Strategic Plans since 2010 (MoEYS, 2010; MoEYS, 2014; MoEYS,

2019). As Sato et al. (2011) noted, many existing aid providers to Cambodia aimed to achieve new development goals in the education and health sectors, China was focused on improving the transportation system.

Yang & Ma (2015) found that China had been widely criticised by Western observers, who viewed Chinese foreign aid as a means to access the recipient country's natural resources. Some observers even claimed that Chinese foreign aid disrupted the economic development of recipient countries and destabilised social development. In the case of Africa, which received the most educational aid from China, it was found that China gained indirect economic benefits from the aid. For example, Africans, who studied Chinese at Confucius Institutes, worked as interpreters for Chinese companies operating in Africa.

China's unique approach to managing educational aid

Reilly (2015) found that the value of China's educational aid to Cambodia had been underestimated because China neither reported to the Cambodia ODA Database regarding the provision of some educational aid, such as scholarships, nor formally reported any projects on training and volunteer recruitment. Therefore, compared with aid from Japan and South Korea, the top education donors to Cambodia, there was not much difference in value. Similarly, Cheng (2015) affirmed that China, instead of cooperating with the CDC as an agency of Cambodia ODA management, conveyed most of its aid directly through the Ministry of Economy and Finance and other line organisations, maintaining that this method would be more efficient and effective. However, this direct interaction by China challenged the Cambodia ODA management. Sato et al. (2011) reported that emerging donors, such as China, were providing aid in an ad hoc manner since there was no central coordinating aid organisation in China. Rather disparate Chinese organisation provided aid and focused on issues that aligned with their interests. Yoshimatsu (2015) observed that China was restructuring economic and political order through its ways of operating. China's educational aid data were reported by the Chinese authorities responsible for each activity. Chinese overseas offices carried out the responsibilities.

A significant increase in aid to ASEAN countries occurred with the introduction of BRI, which is based on cooperation on a multilateral basis, laying the foundation for equal international relations, adhering to the principles of creation and sharing, and fostering mutual benefits to pave the way for the borderless economy. BRI supports large-scale infrastructure development, facilitated cross-border trade and investment, integrated financial processes, and promoted cultural exchange (Kohli, 2018). The assistance, in BRI form offered attractive programs and scholarships to students from all over the world to study in Chinese universities. In addition, Confucius Institutes were established, of which there are now as many as 500 branches located in 120 countries. The intention of these institutes was to familiarise foreigners with Chinese practices and culture (Su & Flew, 2021). However, Yagci (2018) questioned whether BRI has resulted in win-win cooperation and common development for all, since China has benefited greatly from BRI from the provision of loans to develop infrastructure, encouraging Chinese private companies to invest abroad, and seeking export markets for products and technology. In addition, China has used Soft Power to expertly provide education assistance to expand its influence around the world. Sparks (2018) was of the view that China may not be able to use Soft Power quite so effectively in countries that

have restricted freedom of the press as people had difficulty accessing public information and were unable to express their opinions freely. Moreover, the use of Soft Power against intellectuals, tribal groups, ethnic minorities, and ethnic groups with strict cultural, language, and religious beliefs can be challenging because these groups have been considered obstacles to policy implementation.

China has a unique approach and agencies to implement educational aid, with top-down decision making by the central government authorizing relevant agencies. To strengthen coordination, a liaison mechanism was developed in 2008 to serve as a central operation among the Ministry of Commerce, Ministry of Foreign Affairs, Ministry of Finance, and Export-Import Bank of China. The liaison mechanism was subsequently upgraded to a Foreign Aid Inter-Agency Coordination Mechanism in 2011 (Yang & Ma, 2015). China designed a structure of more than ten agencies responsible for education aid, as shown in Figure 1. A key agency responsible for managing inclusive international aid policies is the Ministry of Commerce, which coordinates and works with other departments (Yang & Ma, 2015; White paper, 2011). In the area of education, Reilly (2015) observed that China has provided aid in the following ways: 1) scholarships to international students, including building alliances with various universities; 2) technical and vocational education training (TVET) and teacher training; 3) teaching Chinese in developing countries, with support from various agencies through volunteer teachers; 4) school construction and educational materials; and 5) working with multilateral organisations. The Ministry of Education normally worked on scholarship programs through CSC and participated in aid policymaking through DICE. The ministry also supported TVET and teacher training. Hanban (see Figure 1) also played a vital role in promoting Chinese language teaching through Confucius Institutes around the world.

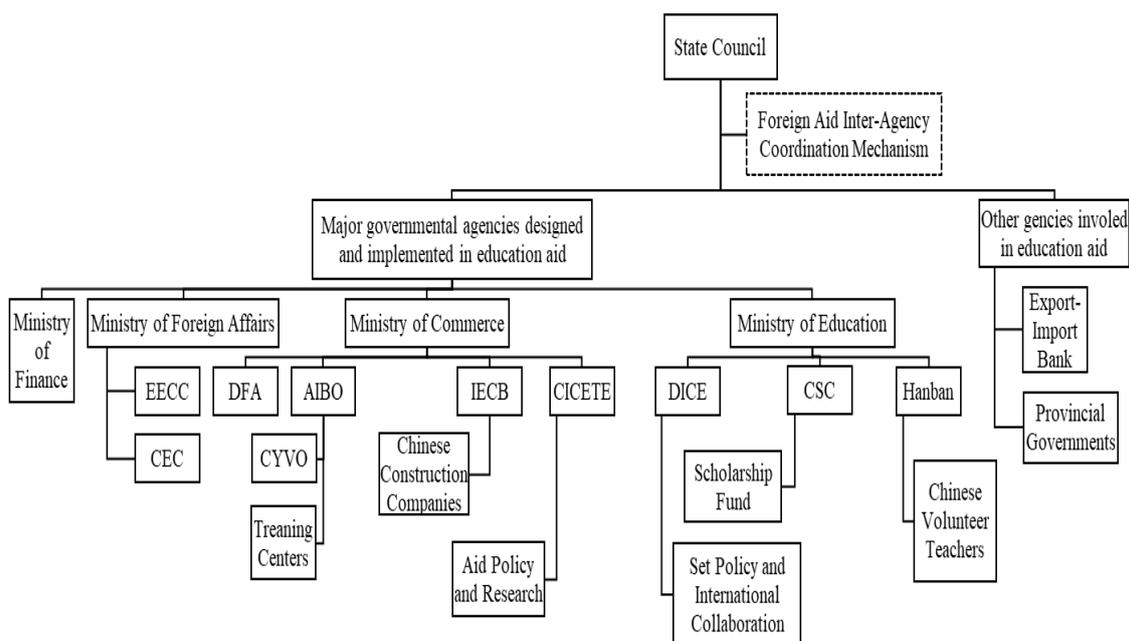


Figure 1: Agencies involved in China's education aid

Source: Adapted from Reilly (2015), Yang and Ma (2015), China Daily (2011)

EECC = Embassy's Economic and Commercial Counsellor; CEC = Culture and Education Counsellor; DFA = Department of Foreign Aid; AIBO = Academy for International Business Officials; CYVO = Chinese Youth Volunteers Overseas; IECB = International Economic Cooperation Bureau; CICETE =

China International Center for Economic and Technical Exchange; DICE = Department of International Cooperation and Exchanges; CSC = Chinese Scholarships Council; Hanban = Office of Chinese Language Council International.

In addition, Chinese provincial governments have expanded their roles in international education aids. The Guangxi Zhuang Autonomous Region, for example, developed cooperation in education exchange programs with foreign countries, scholarship support, attracting students from ASEAN, and training for the recipient countries. Since 2011, the Guangxi government has sent 935 volunteer Chinese teachers to countries such as Thailand, the Philippines, Indonesia, Cambodia, and Laos (“Guangxi invite ASEAN”, 2016). Since 2010, the Guangxi government has provided scholarships to Cambodian students and research grants for cooperation and knowledge exchange for fostering a good relationship between China and Cambodia (Study in China Admission System, 2019). Over the past 20 years, more than 2,000 Cambodians have graduated from Chinese higher education institutions, and China has continued to increase scholarships for Cambodians through the Confucius Institutes and Chinese universities (Xia, 2017).

China approach to foreign aid and BRI

Compared to other OECD-DAC donors, China provides foreign aid differently to BRICS countries in terms of value and extent (Bräutigam, 2011). As Isaksson and Kotsadam (2020) pointed out; 1) China adhered to the principle of non-interference in the recipient country's internal affairs, 2) China tended to syndicate trade interests with accommodative financial assistance on the win-win principle, 3) Chinese ODA process was driven by demand, and 4) China was likely to maintain control over projects. Tjonneland (2020) also argued that Chinese ODA operated differently from Western donor countries: 1) attached great importance to bilateral projects, 2) mainly related to Chinese goods and services, 3) most assistances cannot be classified as OECD-DAC aid, 4) implemented by many agencies and organisations, and 5) no transparency in budget allocation and no clear classification of public aid distribution to countries. Oh (2019) revealed that about 24% of Chinese ODA distributed to the health and education sectors is considered controversial and questionable. While de Medeiros Cavalho (2015) found that, although China had allocated an ever-increasing amount of social assistance, it still prioritised the development of economic infrastructure at a higher degree than Japan, reflecting China's development support model promoted through economic growth.

China's aid to Cambodia has had both positive and negative effects. Miller (2017) showed that Cambodian reliance on Chinese investments has led to the expansion of Chinese communities in Cambodia. Cambodia needed money to develop the country and China is considered a friend that comes with money. Sato et al. (2011) showed that Cambodians were more satisfied with the format of assistance given by a new provider like China than those of existing providers because the assistance received was consistent with the needs of development in Cambodia. An advantage was also the flexibility in how money is spent, which reflected a good understanding of Cambodia's context. Salem (2020) found that the “no strings attached policy” made Chinese ODA highly desirable in Pacific countries while Yang and Ma (2015) found that China played the most unique role in Africa. Conversely, Ky et al. (2012) argued that China appeared to have reshaped Cambodia's ODA by granting loans with relief terms specifically

aimed at infrastructure only. Yang and Ma (2015) concluded that, although overall China's education aid had a positive effect on developing countries, particularly Africa, the recipient countries tended to receive Chinese ODA unequally, depending on the level of international relations. Thus, China's declaration of impartial education aid without political implications may not be entirely true.

China has expanded its aid because of the BRI. Chen (2018) revealed that during the implementation of the BRI, Cambodia received opportunities from China for economic and social development. Chheang and Pheakdey (2019) found that from 2004 to 2017, China awarded scholarships to more than 1,000 Cambodian students to study in China and provided more than 700 short-term scholarships for training. Other aid included the establishment of a development research centre and a Silk Road policy for the benefit of Cambodians. Cheng (2015) also revealed that the Cambodian government encouraged international providers to exert influence in education more than in other sectors. As a result, there is a lot of aid fragmentation in education.

Prime Minister Hun Sen called China “Cambodia’s most trusted friend” and openly praised Chinese aid as an unconditional offer, unlike Western countries that often came with demands for restructuring or national reform (Pheakdey, 2012). China thus has been very successful in building government-to-government relations with Cambodia (Ciorciari, 2013). The country’s think-tank, CDRI, received financial support from the Chinese Embassy in Cambodia to set up a Chinese Studies Centre to promote and support education and research on the relationship between Cambodia and China (Leng & Chhem, 2018). CDRI also received cooperation from many Chinese agencies, such as the Chinese Academy of Social Sciences (CASS) and Chinese universities. Chinese students came for internships at the institute, and some institutional staff were funded by the Chinese government to study for master and doctoral degrees in China, while some academics from CASS were appointed to the CDRI board of directors 2018-2019 (CDRI, 2019).

Chinese-style partnerships and Chinese language are welcomed

The World Bank (2008) reported that Non-DAC/Emerging Donors such as China, India, and South Korea, were becoming more important and there was a rapidly increasing rate of aid. China clearly expressed the importance of mutual benefits as the priority and viewed itself as an equal partner rather than an ordinary donor (Brautigam, 2011). China stated mutual benefit as actual conditions (Yang & Ma, 2015). China’s use of strategies to participate in human development, to offer assistance for education with which it had cordial relations had greatly improved China's image (Yang, 2015). China’s increasing educational aid recognised that Cambodians had the greatest trust in school and hospital institutions (Leang et al., 2018). Cambodians viewed education as the key factor in building peace, creating political stability, economic growth, and sustainable development (Vuthy, 2008; Vann, 2015).

However, China’s aid practice has not been successful in all countries and has been criticized in some. In Vietnam, although China has been the longest provider of aid and has provided the largest amount, its efforts have not been appreciated by the Vietnamese government because Chinese aid was used by China as a coercive bargaining tool in the Sino-Soviet conflict (Yang & Ma, 2015). As of 2015, the Confucius Institute has been working with colleges and universities in 133 countries. It has been criticised for being a proactive agent of the Chinese government in providing a

“correct” political viewpoint about China, promoting economic expansion, developing a blameless image, and spreading the influence of China. Importantly, there was the threat that the academic freedom to criticize China would be compromised in exchange for the required resources or grants (Yuan et al., 2016). In the end, although educational institutions were established by China and the first group of students had graduated, in some (unofficial) situations, China’s executives viewed China’s efforts to boost the country’s image as failures. Chinese officers in Ethiopia were unable to maintain relations in the way that they had expected (Niu, 2014).

Historically, Cambodia has been influenced by traditional donors, such as the French Schooling Model during the Sihanouk regime, and the involvement by UNICEF and the International Red Cross during the reconstruction of education during the post-Khmer Rouge era. Later, in the 1990s, UNESCO took the leading role in reforming Cambodia's education system. Since the 1990 World Conference on EFA, access to basic education was expanded, and illiteracy was virtually eliminated. UN agencies, International Organizations and NGOs all took part in driving and promoting Cambodia to achieve EFA (Dy & Ninomiya, 2003). Since 2000, The World Bank has led the fundraising program called EFA-Fast Track Initiative, to ensure the achievement of the EFA in developing countries, promotion of the right of children to access basic education through the coordination of various donor countries. Therefore, Western notions of education remain current in Cambodia's mainstream practices, including in development, which promotes decentralisation and capacity building. The World Bank initially embarked upon the EFA to reach marginalised people. Japan was enthusiastic about cultivating basic education in rural areas of Cambodia in close collaboration with NGOs. Sweden paid attention to children’s rights, vulnerable children, democracy, gender equality, inclusive education, and child-centered learning (Kaewkumkong, 2020).

Another significant trend in the 2010s was the expanding influence of the Chinese language, which seems to bring Cambodia closer to China. Pheakdey (2012) noted that the popularity of the Chinese language in Cambodia was greater than in other countries in Southeast Asia. Bruthiaux (2008) agreed that the language that played a vital role for most people in the Mekong sub-region was Chinese. The Cambodian market required people with a command of the Chinese language. As China has invested in more businesses, more Cambodians have applied for Mandarin Chinese classes (“Chinese language”, 2011). Many students from Cambodia were expected to and applied for a scholarship to learn Chinese as part of their studies (Reilly, 2015). Cambodia is officially supported by the Confucius Institute for the teaching and learning of Mandarin, with many language teachers sent to work in Cambodia. The Institute also works with the Royal Academy of Cambodia, organising training for state personnel to learn Mandarin and recruiting Cambodian students to receive scholarships to study in China every year. Thus, the Chinese language is still essential to aid development in Cambodia and became a means of communication and understanding of the projects that China is supporting. Essentially, the Chinese language helps to smooth the implementation of Chinese projects in the country (Shanghai Institutes for International Studies, 2015). China has also established research institutes and study centres to promote academic and cultural exchange and has responded to the growing interest in learning Chinese. In Cambodia, Mandarin is the most popular foreign language second only to English (“Who knew learning”, 2016).

CONCLUSION

China's development aid was initially focused on economic benefits and security; however, it subsequently began to expand to cover other sectors, including education. In the 2010s, China was one of five countries with the highest number of development projects in Cambodia. Importantly, China contributed the largest amount of aid funds compared to other countries but provided the least proportion aid funds as grants. China gave more grants in the late 2010s for school construction and school facilities, creating study training and vocational education centres. Nevertheless, China provided little aid to education in Cambodia compared to its overall aid budget and compared to other education aid providers. But China's aid to education is increasing and it should be noted that China has provided assistance in educational activities that were not recorded in the Cambodia ODA Database, such as training and providing Chinese volunteers and scholarships. The budget for these activities was as high as the aid from Japan and South Korea, which are the top donors of education aid.

China provided educational aid through multilateral cooperation which focused on helping the CLMV countries as well as BRI project. China's foreign aid to Cambodia, therefore, is seen in a more positive than negative light. The Cambodian government had good diplomatic relationships with the Chinese government. There are, however, several concerning issues regarding the provision of Chinese aid, notably how China has not yet been able to manage providing education aid in a coordinated way and the believe that Chinese aid is provided to garner political influence rather than as an aid to further develop Cambodia.

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Tracing the trajectory of mathematics teaching across two contrasting educational jurisdictions: A comparison of historical and contemporary influences

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This paper seeks to identify significant trends in mathematics curricula and teaching approaches in two education systems: the United States (a highly decentralised education system) and England (a highly centralised education system), with focus on 16-to-19-year-olds. The paper adopts a two-fold perspective: an historical overview, and comparison of the areas of convergence and divergence across both education systems. The trajectory of mathematical development is expressed through timelines of core concepts and ideas which chronicle the sequence of events and philosophies that have shaped the development of mathematics teaching and learning. By tracing the trajectory of mathematics through history, the paper provides a greater awareness of how different factors influence how mathematics is taught across two disparate educational jurisdictions. The paper affords opportunities to reflect on and draw conclusions about what constitutes meaningful mathematics teaching and curriculum approaches for 21st century learner.

Keywords: England; United States; curriculum; teaching, centralised; decentralised; mathematics education

PREFACE

I am sure that no subject loses more than mathematics by any attempt to dissociate it from its history (Glaisher, 1890, p. 466).

This statement—appearing as part of the presidential opening address to the British Association for the Advancement of Science—remains as true today as it did in the 19th century. To understand the current state of anything, including mathematics education, it is important to acknowledge how history and other social factors have influenced the current state of the subject. Therefore, study of mathematics education in England and

the United States (US) should include key events of historical, social, and scientific significance, as well as growth, change, and recurring underpinnings of disputes in mathematics education. Such issues represent a core set of concepts and ideas that characterise the evolution of mathematics teaching, learning, and assessment across the two jurisdictions.

Many of the issues the US faces today are not new but, rather, “cyclical and seemingly intractable” (Philips, 2015, p. 20). Theoretical debates, mandates, initiatives, reform movements, and standards in recent history still have a strangely familiar ring to them because many have been introduced previously in a slightly altered form and then retracted again (reverberating Glaisher’s comment). Illustrating Philips’ sentiments, Larson and Kanold (2016) describe the history of US mathematics education as “a two-hundred-year pendulum swing between an overemphasis on the rote practice of isolated skills and procedures, and an overemphasis on conceptual understanding, with their respective overreliance on either teacher directed or student-directed instruction” (p. 41).

The history of mathematics education in England has been characterised by some as a loss of freedom. McCourt (2017) describes it as “the story of a country moving from a largely laissez-faire position to a dictatorial one” (para. 1). How could that be? And what might we learn from tracing the paths of mathematics teaching across the two very different educational jurisdictions? These are the kinds of questions that prompted us to write this paper. The comparative account that follows is our attempt to describe and explain how conceptions of teaching and learning have evolved within the field of mathematics education in the US and in England. The central theme of this paper, therefore, is a focus on factors that influence current mathematics teaching in the two jurisdictions, including the teaching of procedural and/or conceptual skills; current instructional approaches to mathematics; best practice for teaching mathematics; influences upon the mathematics curriculum; the influence of textbooks; and, the use of technology in support of mathematics learning.

Note that for the purposes of this article, *current* describes schooling until spring 2020. From that date onwards, the global pandemic affected schooling and caused schools in the US and England to close to some or all students and move to remote schooling for significant periods of time. It is not yet known whether this will have any long-term effects on the way that mathematics is taught in schools.

CURRENT MATHEMATICS TEACHING IN THE US

The way education is organised in US high schools is somewhat different from the way it is organised in other countries (see Richards, 2020). The US has a highly decentralised education system (US Department of Education, 2008) with no national school system. Decentralisation in public education is a term used when administrative and financial decision-making powers are transferred from central Ministries of Education to local governments, communities, and schools (Winkler, 2013). Consequently, schools are able to make their own decisions about many aspects of policy and practice. Ultimately, power to create and administer education policy resides within the individual states (each with its own Department of Education), providing

such policy does not violate the provisions of the US Constitution or federal law. It means that there are no national laws prescribing a curriculum for the establishment and recognition of institutions, the governance of institutions, or the recognition of degrees or professions (California State PTA, 2020; Richards, 2020). Significant decisions can also be taken at school district and school board level, although the nature of these may vary depending upon state rules. The recently enacted *Every Student Succeed Act (ESSA, 2015)* affords states and school districts the flexibility to develop their own curriculum, instruction, and assessments, which they can shape to better reflect the mathematics students will use. The extent to which states versus districts decide on textbook adoption, for example, is probably an important indicator or driver of how and to what extent state standards are realised locally.

The US has elementary, middle, and high schools. Typically, in elementary schools (kindergarten to grade 5 or 6, ages 5 to 10 or 11 years), students stay in one classroom with one teacher who is certified to teach all the subjects that elementary students learn, including mathematics. The mathematics curriculum is integrated in middle schools (usually grades 6 to 8, ages 12 to 14 years). However, in high schools (grades 9 to 12, ages 14 to 18 years) the curriculum is traditionally separated by topic, each usually lasting for the whole school year. There are four high school courses: pre-algebra; Algebra I; Geometry; and Algebra II. Although Algebra I is a high school course, some middle schools offer it in the 8th grade. In many states, all these courses are mandatory for high school graduation as well as for entry to university and other tertiary-level institutions. However, in some places, such as most districts in California, Algebra 2 is not required for high school graduation (Daro & Asturias, 2019).

Although a curriculum is not set at a national level in the US, many states have adopted the Common Core State Standards (CCSS) or have based their own standards upon the CCSS. The CCSS are an educational initiative implemented in 2010 and are sponsored by the National Governor's Association and Council of Chief State School Officers (NGA & CCSO). They comprise a set of academic standards that specify what school students are expected to know and learn in each grade level in mathematics. The CCSS divide the mathematical standards into two sections: the Mathematical Practices that apply to all age groups and the Standards for Mathematical Content that describe what should be taught in each grade.

There are increasing proposals for the phasing out of the “algebra-geometry” pathway in favour of integrated mathematics for all students throughout US high schools (see Jeffrey & Jimenez, 2019). Incentives for more teaching of data science, computer programming, computer-based mathematics are being postulated. Some districts in California, for example, are designing courses that include more ‘real-world’ mathematics and topics such as financial algebra and mathematical modelling (Johnson, 2021). School classes tend to focus on formulas and procedures despite an emergent chorus of mathematics experts proposing to advance the US mathematics curriculum to ensure it mirrors more closely what learners in higher-performing countries are taught (Larson & Kanold, 2016).

MATHEMATICS TEACHING IN ENGLAND

England has a highly centralised education system (Creese & Isaacs, 2016). Government departments are responsible for many aspects of education, including

setting the national curriculum (lists of the content that should be taught in state schools, i.e., non-fee-charging schools, between the reception year at primary school and the end of compulsory schooling in year 11), regulating examinations, and inspecting state schools. Academy schools (non-fee charging schools which receive government funding (DfE, n.d., para 1)) have slightly more freedom than other state schools as they are allowed to set their own curriculum and dates for the school term (Department for Education [DfE], n.d.); however, many academies still follow the national curriculum because national examinations are based on it.

The two main examinations are General Certificate of Secondary Education (GCSEs) taken at age 16 and Advanced (A) levels at age 18. The DfE sets the content and the assessment objectives for these examinations, but individual awarding bodies, such as AQA (formerly the Assessment and Qualifications Alliance) and OCR (Oxford, Cambridge, and RSA Examinations), develop and mark the test papers. There is an accountability culture which depends upon the results from these high-stake tests to judge schools and to evaluate whether educational policies have worked (Creese & Isaacs, 2016). However, in reality, it is difficult to clearly and directly link if results are an outcome of educational policies. Many factors can affect educational outcomes that cannot be controlled for, for example, homework completion and access to additional opportunities.

Although the government sets the national curriculum (the intended curriculum), they do not tell schools how to enact it, or how to organise other aspects of teaching. This means that teachers and schools in England are free to determine what happens within their classrooms. As a result, practice varies by school and teacher.

Kelly, Pratt, Dorf, and Hohmann (2013) and Kelly and Kotthoff (2017) characterised schooling in England as emphasising utility and systems, suggesting that it should be thought of as functionalist. They drew upon evidence from an EACEA/Eurydice study (2011, cited in Kelly et al., 2013) to suggest that placing students into teaching groups according to ability (setting) was widespread in mathematics classrooms, with decisions about placement into sets often being made on the basis of national test results. Their own observations of classrooms in England, reported in the 2013 and 2017 studies, showed that lower sets' teachers coached their students, breaking down knowledge into smaller steps and taking responsibility for what students learnt, giving highly individualised teaching. Higher sets' teachers acted as facilitators and gave students responsibility for their own learning. Students in higher sets were expected to think through things for themselves and make decisions about the mathematics that they used.

In their 2013 study, Kelly et al. described a typical mathematics lesson in England as starting with objectives being set for the lesson. Then content was "taught in small graded steps with differentiated tasks" (p. 561). Lower achievers' tasks had the same structure as the tasks that were demonstrated to the whole class; middle achievers' tasks had slightly less straight-forward solutions and higher achievers were required to draw on previous knowledge to solve their tasks. Teachers assumed that progression in mathematics was a linear process that moved from learning to application, where "application" referred to the application of topics observed in exam questions rather than the relevance to students' lives outside the classroom. Topics were usually taught for a week before the teacher moved on to a new content area, meaning that the

emphasis was on mastering the processes required to solve questions and problems rather than developing an understanding of the topic.

HISTORY OF MATHEMATICS TEACHING IN THE US

Broadly speaking, the education wars of the past century are best understood as a protracted struggle between content and pedagogy. (Klein, 2003, p. 177)

If it seems we fight the same battles over and over again . . . it is only because we do. (Larson, 2016, p. 8)

The content, tenor, and direction of school mathematics education in the US has been fashioned by decisive episodes, statutory mandates, political initiatives, and rising societal expectations. Significant events since the mid-1950s have included: the inauguration of the “New Mathematics” era, three waves of school reforms (the desegregation movement in 1950s and 1960s; the schools standards movement which started in the 1980s and was reinvigorated in 2002 with the introduction of the *No Child Left Behind (NCLB)* law; and the school choice movement), the recurrent rise and fall of the “Back to Basics” agenda, the advent of minimal standards competency movement, advancement of the need to emphasise problem-solving (NCTM, 1980), launching of K–12 curriculum standards by the National Council of Teachers of Mathematics (NCTM) (1989 & 2000), the CCSS Initiative resulting in the CCSS for Language Arts and Mathematics for Grades K to 12 (2010), and the recent re-authorisation of the 50-year-old *Elementary and Secondary Education Act (ESEA)* leading to the *ESSA 2015*.

The first half century following the founding of the US embodied the emergence of ‘the great school mathematics debate’ highlighting a pedagogic dilemma around procedural versus conceptual learning: should teachers offer students rules and facts to memorise (procedural) or should teachers give students material to reason about so they can discover and develop understanding of underlying mathematical principles (conceptual)? (Larson & Kanold, 2016). The close of the 19th century witnessed an alignment between progressivism—a movement promoting child-centred education—and the idea that students should be encouraged to be independent and creative thinkers. While progressivism gained traction in the early 20th century, the tension between the teaching of procedural versus conceptual mathematics continued to rumble. For example, the “Crisis-Reform-Reaction” (Fey & Graeber, 2003, p. 521) was characterised by several movements:

- *Excellence in Education*: The movement coincided with the increasing influence of educational psychology; a proliferation of working groups including the School Mathematics Study Group; and public acknowledgement of the inherent value of mathematics for the common good.
- *New Math*: A reflection of the progressive age, with hundreds of new textbooks generated to facilitate quick and radical curriculum changes, though teachers and parents struggled to understand the new-style mathematics.
- *Back to Basics*: Developed in opposition to progressivism, this movement signalled direct instruction and skills practice. Most US states created minimum competency tests in basic skills in the mid-1970s. These were a high school graduation requirement in many states.

Public concerns continued in the 1980s and 1990s over perceptions that students still did not appear to be learning sufficient mathematics (Ravitch, 2000). The cumulative influence of sets of standards (e.g., Curriculum and Evaluation Standards for School Mathematics) and the re-emphasised meaning and role of conceptual understanding engendered the Standards-Based Education Reform initiative. This called for clear, measurable standards for all school students. However, supporters of traditional education considered it unreasonable to expect all students to perform at the same level. By the late 1990s, criticism of the 1988 NCTM Standards began to emerge. These standards did not appear to adequately emphasise procedural skills or place enough emphasis on direct teaching or sufficiently emphasise practice/memorisation (McLeod, 2003). Throughout the 1990s and 2000s, conceptual understanding and sense-making battled procedures, rules, and memorisation for pedagogical primacy. The *NCLB Act* (2001) attempted to provide an equilibrium course for mathematics education. The *NCLB Act* was controversial because it punished schools that did not demonstrate improvement and was subsequently replaced by the *Every Student Succeeds Act (ESSA)*, 2015-2016). The incoherence of 50 different sets of standards, tests, and passing scores provoked by *NCLB Act* together with exaggerations of student learning on state tests compared to NAEP results (Achieve, 2015) created fertile ground for the concept of the “Common Core” to gain a foothold. The state-led effort to develop the CCSS was launched in 2009. The new mantra was resoundingly clear: “Understanding and procedural skill are equally important” (NGA Center & CCSSO, 2010, p. 4).

Additionally, since the second half of the 20th century, in particular, there has been an unprecedented development and accessibility of progressively sophisticated technology to investigate and deliver mathematics as well as greater accountability for learning via student assessment and teacher evaluation (Reys & Reys, 2014, p. vii).

For nearly two centuries the US educational landscape has been punctuated by recurrent debates over mathematical approaches to teaching and curriculum, which have focused on two key areas:

- What should be the nature of mathematics that students learn: facts, skills, and procedures or concepts and understanding?
- How should students learn mathematics: teacher directed with a focus on memorisation, or student-centred through reasoning and discovery? (Jones & Coxford, 1970, as cited in Larson, 2016, p. 3).

Figure 1 illustrates the prevailing disputations. Commentators may differ over the precise timings of certain episodes, their duration, and what should be included; however, the timelines depicted here show a central set of concepts and philosophies that represent general evolution of thinking.

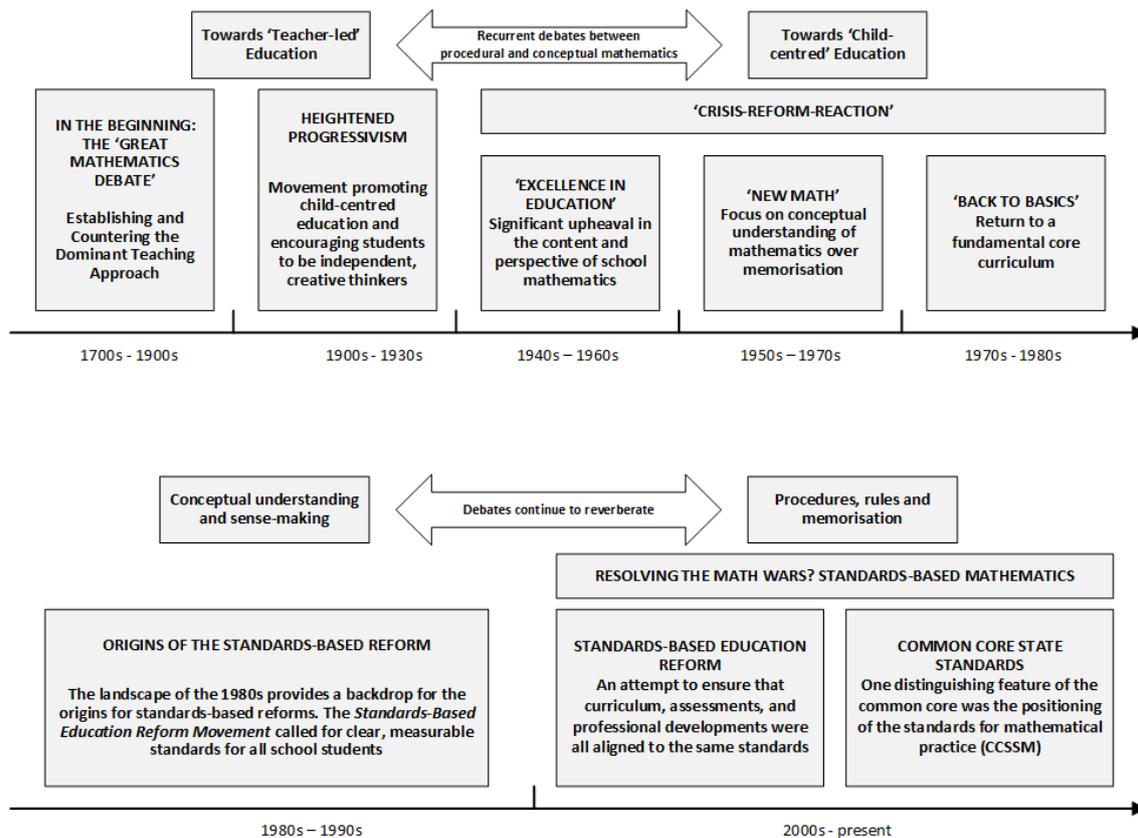


Figure 1: US mathematics timeline

HISTORY OF MATHEMATICS TEACHING IN ENGLAND

The story of the history of mathematics education in England is . . . the story of a country moving from a largely laissez-faire position to a dictatorial one. (McCourt, 2017, para. 1)

The education system in England has been through a similar amount of change over the same period, although the drivers for reform have been rather different than those in the US. During this time, there has been a shift away from a largely laissez-faire perspective to a more autocratic position. It has moved from a relatively progressive system of teaching which esteemed autonomy and agency in teachers and their students (which remained ostensibly unopposed for a century) to an emphasis on more public education governed by constricted regulation by a select group comprising central government. Some of the significant events since the 1950s include the introduction of O Levels (1951), A Levels (1951), CSE (1965) and GCSE (1988); the new mathematics courses developed from projects in the 1960s, the emergence of the national curriculum in the 1980s and national tests in the 1990s and subsequent amendments to them, and the use of the national numeracy strategy from 1999 to 2009.

In the 1950s, O levels and A levels examinations were introduced for 16-year-olds and 18-year-olds respectively. Manipulatives (“objects that can be handled and moved, and are used to develop understanding of a mathematical situation” (Griffiths et al., 2017, p. 3) were increasingly used in teaching and learning and The Association for Teaching Aids in Mathematics (ATAM) was established to produce manipulatives and share good practice in using them.

Tracing the trajectory of mathematics teaching across two contrasting educational jurisdictions

The 1960s marked a move towards a child-centred view of education (Burghes et al., 2012), culminating in the *Plowden report* (CACE, 1967). Several major mathematics education projects developed innovative curricula, including new topics such as co-ordinate geometry, probability, and statistics. The CSE examination was introduced as an alternative to O level for lower achieving students, leading to recommendations to combine CSE and O level.

In the 1970s and 1980s there was increased government involvement in education and calls for a common curriculum. The government-commissioned *Cockcroft report* (1982) identified six types of mathematics teaching that should be used and made many recommendations about content to be taught. The national curriculum was first published in 1988, listing maths content to be taught by key stage. From 1988, a single examination, GCSEs, replaced O level and CSE.

The 1990s saw yet more government involvement in education. National tests were introduced to monitor students' progress in mathematics at age 7, 11 and 14. The results were used for accountability. There were many changes to the national curriculum and to GCSE examinations. In 1996, the National Numeracy project was launched in primary schools to increase basic skills and raise standards using a prescribed programme of curriculum content for each year group (Brown, 2010). It was used as the basis for the National Numeracy Strategy (Brown, 2010), which was taught in primary schools from 1999.

In the 2000s the numeracy strategy was extended into the first three years of secondary education. At primary school, the numeracy strategy led to mathematics teaching becoming highly standardised. All the numeracy strategies were ended in 2009. There were also many changes to examinations, including the introduction of a non-calculator paper at GCSE and the end of national tests for 14-year-olds.

The 2010s saw further changes to mathematics. Guidance on teaching maths was delivered through new Maths Hubs – a programme which allows mathematics teachers and education professionals to collaborate, with each hub being led locally by an outstanding school or college to support excellent maths practice (NCETM, n.d.c). From 2012, the Maths Mastery approach was emphasised in many UK schools (Boylan et al., 2018). The national curriculum was revised in 2014, but it became optional for some state schools. Several new examinations and tests were launched. A multiplication check was introduced for 9-year-old students. The mathematics National Reference Test assessed changes in performance standards over time. The Core Mathematics qualification allowed students to be examined in and to achieve a qualification in mathematics beyond GCSE but at a lower level than A level. There were also reforms to GCSE content and grading, and A level content.

Unlike the US, almost all these changes have been driven by political agendas and philosophies and, in particular, governmental conceptualisation of what mathematics education should be. The largest changes in mathematics education have often occurred after elections.

Other drivers for reform have included mathematics associations, influential groups of teachers and schools, England's position in the PISA league tables, and improving test

results (on national tests, such as GCSEs and A Levels). The last may seem contradictory, but this has occurred when the rise in results is seen as a result of standards having fallen (e.g., Gove, 2012, column 653-655) instead of improvement in the teaching and, therefore, in students’ understanding of the subject.

As with the US, mathematics teaching is not identical in all schools, or even across classes within the same school. The balance between active and passive learners varies by schools and the age and ability of students. Higher ability students are given more responsibility for their learning and the teacher is more likely to take on the role of a facilitator, whereas lower ability students are more likely to experience coaching, with the teacher breaking down knowledge into small steps.

There has been an increase in the use of technology in classrooms during this time, particularly for the delivery of mathematics instruction, although students’ use of technology remains limited and often only involves calculators (Mullis et al., 2020).

Figure 2 shows the timeline for the evolution of mathematics education in England.

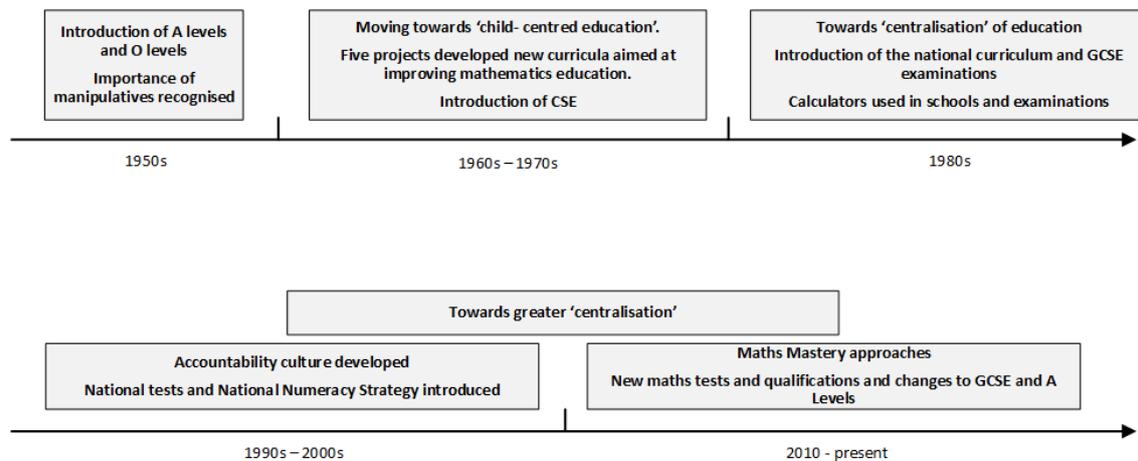


Figure 2: England mathematics education timeline

FACTORS INFLUENCING TEACHING IN THE US AND IN ENGLAND

By contrasting the history of mathematics education in the US and England, we can gain an awareness/understanding of where mathematics education is now and how various factors have influenced how it is taught in both countries. What follows is an attempt to identify and describe some of the salient factors emerging from the comparisons. Nine factors have been identified as worthy of further discussion, though these are by no means the only factors to surface nor are they given in any specific order.

The structure of the mathematics curriculum

There are different ways in which curricula can be structured. Spiral curricula have “an iterative revisiting of topics, subjects or themes throughout the course” (Harden & Stamper, 1999, p. 141). The key features of a spiral curriculum are that *topics are revisited*, they are in *increasing levels of difficulty*, *future learning is connected to earlier*

learning and students' competence increases with each visit of the topic (Harden & Stamper, 1999). It could be argued that the English national curriculum follows this structure, as topics are re-visited in more detail over time, with the intention of enhancing students' knowledge and understanding of topics. This is different to the US curriculum, as most schools may offer separate topics in each year, and topics may not be re-visited in the same way they are in the English national curriculum. For instance, fractions are taught within grades 3 to 5, but each area within fractions (e.g., recognising fractions relative to a whole or generating equivalent fractions) is only included in the content for a single grade.

The debate between procedural and conceptual skills

The skills-based and concept-based instruction dichotomy has been more influential in the US than England. It does not appear to be as instrumental in driving educational reform in England, although the balance between the two may change because of reforms.

In England, the curriculum content is constructed around content areas and age groups (see DfE, 2013a & b) and emphasises procedural skills rather than conceptual understanding. However, the mastery approach to teaching mathematics helps to redress the balance because it seeks to develop the two alongside each other (NCETM, n.d.a). In the US, mathematical understanding and procedural skills are increasingly considered to be equally important (NGA Center & CCSSO, 2010).

Current instructional approaches to mathematics

There is no one way in which mathematics is taught in English or in US secondary schools because teachers in both countries are free to determine what happens within their classrooms. Therefore, practice varies between them.

Both countries emphasise memory and calculation skills, with an emphasis on *procedural fluency*—the “skill in carrying out procedures flexibly, accurately, efficiently, and appropriately” (NGA Center & CCSSO, 2010, p. 6). An example of its importance in England can be seen in the national curriculum's early emphasis on number facts (e.g., number bonds and multiplication tables) and in its requirement for fluency in written and mental calculations in key stage one and two (5 to 11 years).

Teaching in the US focuses on low-level tasks, emphasising procedures and memorisation, which is similar to the English emphasis on computation skills and quick recall of facts in the key stage 1 curriculum (see DfE, 2013a). In the US, instruction is teacher-led (learners rarely engage in the more challenging tasks), with modest attention to reasoning, problem-solving and the development of meaning (National Research Council, 2012). The widespread mastery approaches now used in England are likely to demonstrate aspects of concepts-based instruction because they emphasise multiple representations of concepts, development of conceptual understanding, and importance of communication and discussion when learning mathematics (NCETM, n.d.a & b, 2018).

Best practice for mathematics teaching

In the US and England, most of the best practices in teaching mathematics listed in the literature (e.g., The Education Alliance, 2006, p. 17) are present in mathematics teaching, although the extent to which they are used will depend on individual schools' approaches and philosophies. Some, such as building new knowledge upon prior knowledge and experience, are likely widespread. Others, such as differentiation, may be used differently in England, where students are set according to ability (Kelly et al., 2013; Kelly & Kotthoff, 2017).

In England, there is a focus on looking to jurisdictions such as Shanghai and Singapore for best practice. The mastery approach to mathematics is currently seen as a way to raise attainment in mathematics (Vignoles et al., 2015). Key to this is its focus upon identifying how mathematics is to be taught, including key and difficult points, breaking it down into small steps, and ensuring that it is taught in a careful sequence (NCETM, 2018) so that students move from being introduced to concepts to having a deep understanding of them (NCETM, n.d.b). There does not appear to be a great deal of overlap between England's mastery approach and the US's National Centre for Educational Achievement's list of mathematics strategies (see NCEA, 2009), as the mastery teaching approach appears to be teacher-led, with opportunities for demonstration, explanation and discussion (NCETM, 2018) whereas the NCEA inquiry-based instruction is led more by students (NCEA, 2009).

Influences on the mathematics curriculum

One of the biggest influences on teaching in the US is the CCSS. All currently available US basal textbook offerings are based upon the CCSS regardless of state standards. Publishers produce a wide range of textbooks, curriculum materials, and resources that local school districts can adopt and that influence the curriculum. However, the contexts in which schools decide upon which curriculum materials are most appropriate varies significantly from place to place (Hudson, et al., 2010).

The introduction of the national curriculum in 1989 had a similar influence on teaching and learning in England. Like the CCSS, it was developed by mathematics educationalists and mathematics academics (Ernest, 1992, as cited in Cooper, 1994). All state schools in England had to follow the national curriculum when it was introduced. Even in today's landscape, when academies are not required to adhere to it, approximately 80% did so in 2014 (DfE, 2014). As with the US, the mathematics curriculum in England is so packed that many teachers do not have the time or space to teach additional topics outside of qualifications, particularly at A Level (Suto et al., 2012).

Comparisons of mathematical practices

The Common Core Standards for Mathematics (CCSSM) enumerates what K to 12 students throughout the US should know in mathematics at the conclusion of each school grade. In England, the national curriculum documents are equivalent for key stages 1 to 3 (approximately ages 5 to 14), and for older students the equivalents are the subject content and assessment objectives issued by the DfE that form the basis for the GCSE and A level specifications.

The CCSS contains eight Mathematical Practices that are common to all grades (NGA Center & CCSSO, 2010, pp. 6–8). There is no equivalent section in the national curriculum or the GCSE content, although some of the content contained within the Practices can be found in these documents (N. Rushton, personal communication, March 30, 2021).

The enacted mathematics curriculum

Decisions as to what makes an appropriate mathematics curriculum will be dependent upon an array of factors, which include beliefs about the nature and purpose of school education (based on experience and data), the respective roles and responsibilities of teachers, and the students themselves (Bernard, 2017). For decades, there has been a movement to “integrate” the US high school curriculum, which has aimed to eliminate courses called “algebra” and “geometry” and advocated teaching some elements from each area in every grade (Will, 2014). Mathematics content is not differentiated in this way in England. Algebra and geometry are two content areas within the curriculum, and content from both areas is taught in all applicable years (algebra from the end of key stage 2, geometry from key stage 1).

The issue of integrated or traditional mathematics courses in the US is closely linked to tracking, where students are separated by academic ability into groups for all subjects or certain subjects within a school. Tracking is one of the predominant organising practices of US public schools. Recently, there has been a strong move against the practice, as it has led to some students taking algebra in 8th grade while others take the same course in 9th or 10th grade. This can limit their options for study in the future (Barrington, 2020).

“Tracking” is not a term that is used in England; instead, students may be *set* (put into subject-specific ability groupings) or, less commonly, *streamed* (put into the same ability group for all subjects) (Education Endowment Foundation, n.d.). A student’s set would influence the “tier” that they were entered into for GCSE, which would have similar effects to the tracking used in the US. The higher tier covers additional content, gives access to the top grades, and is usually considered necessary to study mathematics beyond GCSE. However, England differs from the US in that students will be aware of the tier that they are taking and may be aware that the tier affects the pathways that are open to them after GCSE.

The influence of textbooks

Teaching in the US is predominantly structured around textbooks and other commercial schemes (Reys et al., 2004). In most states and districts, the requirements for adopting a curriculum specify the content that must be included. Such adoption requirements apply to elementary and secondary grades through advanced algebra in year 3 of high school. Adoption requirements and criteria are determined by each state regardless of Common Core status. Many use variations of the EdReports (<https://edreports.org>), criteria which are based on the Common Core. (P. Daro, personal communication, October 5, 2021). The decision as to which curriculum is best for the school is often contingent upon which textbooks best implement the principles, beliefs and values enforced by the state (and which textbooks are available) (Hudson et al., 2010).

This philosophy contrasts somewhat with England, where the national curriculum is influential, and teachers' use of textbooks is so low that Oates (2014) describes an "anti-textbook ethos" (p. 8) within schools. In England, textbooks do not generally set the taught curriculum but comprise one of a range of resources used in the classroom in addition to online materials and self-made resources. Most teachers need to be familiar with the content of the curriculum because the national tests are aligned to it. The structure of the national curriculum also helps teachers to use it, as it sets out what students need to be able to do by a particular school year or key stage.

Supporting mathematics learning through the use of technology

The impact of instructional technology on both students' achievement in mathematics and their attitudes toward mathematics has been known for some time (e.g., Beeland, 2002; Weaver, 2000). However, any beneficial effects are mediated by how technology is integrated into the teaching and learning process.

Many US mathematics classrooms do not use calculators at all while others use them in judicious ways (Usiskin, 2012). In England, calculator usage is also contentious, and has been for many years. There is a concern that students will not be proficient in using mental and written methods if they have access to calculators (e.g., DfE & Gibb, 2011). For this reason, the national curriculum states that calculators should not be introduced until the end of key stage 2 (7 to 11-year-olds) when students' mental and written arithmetic should be secure. However, teachers are instructed to use their judgement, and some may allow younger students to use calculators in lessons for specific tasks.

Nowadays, of course, the basic, limited-function technology of the early calculator has been replaced by increasingly more complex, affordable, and readily available calculators, dynamic tools and computer algebra systems. Many have argued that technology should not be intended for use in isolation away from other aspects of mathematics teaching, but rather as a mechanism for supporting mathematical practice and the kinds of problems encountered within a CCSSM environment (Larson & Kanold, 2016, p. 83).

The benefits of using technology are the same for both countries, but in England the opportunities for this type of integration would appear to be more limited than in the US. Graphical calculators and interactive whiteboards are used widely, but computers are not available in many classrooms (Mullis et al., 2020). Computers tend to be used occasionally rather than regularly and may only be demonstrated rather than being available to students (Mullis et al., 2020). This limits students' access to the benefits of technology. Possibly for this reason, in England, the term *digital divide* tends to refer to differences in students' access to technology in the home rather than the classroom (see Coleman, 2021). The lack of availability of technology within mathematics classrooms needs to be addressed and once it is, teachers would need to be trained in how to make effective use of it in their teaching (Gamage & Tanwar, 2017; INNOVA, 2016).

CONCLUDING THOUGHTS

By mapping out the course of mathematics education throughout history in the US and England, we have shown how different factors have influenced the current landscape of mathematics education in both countries, for example, the role of government in

England and research-based reform movements in the US. Our comparison also reveals several features that separate mathematics education in the US and England:

- By differentiating students by mathematical ability: “tracking” in the US and putting into sets in England. While on the face of it, this may appear to be a similarity, the key difference is that compulsory GCSE mathematics exams are “tiered”, meaning that students in England are often aware of the implications of setting (e.g., limitations of future or higher-level study), whereas the lack of compulsory mathematics exams in the US means that students may not be as aware of the implications of tracking.
- By the reliance on textbooks which is significant in the US and minimal in England.
- By calculator and computer usage, which yields a “mixed” picture, but perhaps there is a greater reliance on computers in the US.

The trajectory of school mathematics education in the highly decentralised US has been fashioned by pivotal events, statutory mandates, political initiatives and rising societal expectations. The highly centralised education system in England has been through a similar amount of change over the same period, although the drivers for reform have been rather different than those in the US. The history of mathematics education in England is a story of influential reports, teacher-led initiatives and, for the last 40 years, government-led interventions.

The recurrent tension between conceptual understanding and sense making on the one hand, and procedures, skills, rules, facts, and memorisation on the other, continues to reverberate in the US. Though there is a developing consensus that values traditional mathematical learning goals while broadening the definition of mathematical literacy to meet the needs of 21st century learners, perhaps the most favourable position for the “pendulum” to assume is halfway between the two mathematical concepts (Larson & Kanold, 2016). Indeed, this is now the preferred stance of NGA and CCSSO (2010) who contend that “mathematical understanding and procedural skill are equally important” (p. 4). In England, the national curriculum content emphasises procedural skills rather than conceptual understanding. However, the mastery approach to teaching mathematics helps to redress the balance, as it seeks to develop the two alongside each other. In addition, the countries’ curricular structures may be another key difference, with England employing more of a spiral curriculum and the US employing a system where topics are taught for a year without being re-visited in the future, as discussed above.

Across both jurisdictions, two dominant trends seem to be wending their way through mathematics classrooms: more applications and more active (as opposed to passive) learning. Both trends seem to be continuing despite the pandemic's disruption of in-class teaching throughout the two countries.

Two questions continue to pepper the mathematical landscape of each education system:

1. What should be the “essence” of mathematics taught? (Ginsburg, 1996)

2. How should students be taught and how should they learn mathematics?

What this comparison demonstrates is that there is a requirement to emphasise that the current objective is not altogether different from that of the past: know *how* (procedural skill), know *why* (conceptual understanding), and know *when* (application) (Larson, 2016). This has become increasingly the case where 21st century mathematical competences demand deeper learning if they are to be transferable, that is, if learners are to apply what has been learnt in one context to another, less familiar context (see, e.g., National Research Council, 2012).

Declaration and conflict of interest

The authors declare no known competing financial interest or personal relationships that would influence the work within this paper. The research and article have passed through an internal review and have been approved for external submission.

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Representations and uses of digital technology in primary school teaching: A comparative study between two French overseas collectives in the South Pacific

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The aim of this descriptive, qualitative study was to collect the representations and feelings concerning the use of digital technology in the education of teachers and educational consultants in two French overseas territories, French Polynesia and New Caledonia. As this is an exploratory study, we did not formulate hypotheses, but rather sought information regarding expectations regarding differences and trends in perceptions and practices according to (1) the territory, (2) the status and (3) the gender of the individuals interviewed.

The results indicated that (1) social representations associated with digital technology are almost identical in the two territories, a similarity most likely linked to the influence of French educational directives on local policies regarding digital technology in schools; (2) the duties carried out by the interviewees seem to influence the representations and discourses: the teachers are concerned by the use of digital technology in the classroom, versus the educational consultants by training issues; (3) the discourse appears to be gendered: the men's discourse is centred on digital tools, the women's discourse is centred on the pupil and the contribution of digital technology (difficulties and advantages).

Keywords: comparative education; social representations; primary school teachers; digital technology

INTRODUCTION

Digital technology is a major issue in education. The main focus of educational policies on digital technology is to prepare pupils to be informed and critical enough to be able to navigate a digital society, but it is the teachers who are the agents through which pupils will develop their skills and knowledge (Huda et al., 2017; Van der Vlies, 2020; Vincent-Lancrin et al., 2019). Digital technology is an interdisciplinary and multidimensional field of investigation, which is as concerned with the actors (pupils, teachers, parents, educational policy makers) and tools (computer, internet, tablets, interactive whiteboards, digital workspace, etc.) as with the skills of the different actors with each of the available tools and interactions between teachers-students-technology.

As several researchers have pointed out (Almekhlafi & Almeqdadi, 2010; Amadiou & Tricot, 2014), technologies should be considered as supports for the development of new practices to facilitate learning. However, it would seem that the major obstacles to policy implementation are the diffusion of digital practices and their adoption in the professional field. These two aspects are curtailed by teachers' negative perceptions of digital technology in their more or less well-founded professional practice (Balanskat & Blamire, 2007; Carugati & Tomasetto, 2002; Harrison et al., 2002; Machin et al., 2006).

This article presents a comparative qualitative study between two former French Pacific Island colonies: French Polynesia and New Caledonia. Since 2004, French Polynesia has been an "Overseas Collectivity", benefitting from administrative but not political, autonomy. This means that certain domains are still under the aegis of the French State, while others are under the jurisdiction of Polynesia. New Caledonia has been included in the list of overseas collectivities since 2003 but has had political autonomy and a transfer of jurisdiction since 1998. Therefore, these two territories enjoy a certain autonomy in terms of educational policies while following the prerogatives and school curricula of France. Indeed, these two territories have kept the "baccalauréat", which is under the jurisdiction of the French State, as a formal qualification.

In this educational context, we wished to question the actors most involved in primary education, namely teachers and educational consultants,¹ to ascertain their social representations and practices regarding the use of digital technology in education. Such research recognises the many studies that find the behaviour of teachers is more influenced by their social representations of digital technology than by their own skills in technology use (Pajares, 1992; Prestridge, 2012). Considered as a more or less conscious mental phenomenon, social representations are transformed in the interaction with objects, contexts, subjects etc.

As this was an exploratory exercise, with the aim to give a voice to the actors and of gaining a deeper understanding of their positions, we did not attempt to form or find support for any hypotheses. We refer here to the "grounded theory" (Strauss & Corbin, 1998) associated with a qualitative and inductive research approach. The postulate is to collect information in the field with as few hypotheses as possible in order to overcome possible bias and collect empirical social experience as close as possible to reality (Glaser, 1978) via meanings, perceptions, emotions, attitudes and beliefs of the respondents (Ailincal & Gabillon, 2018; Charmaz & Belgrave, 2012). However, in the light of the scientific literature and the contextual variables, we expected to identify significant differences and distinguish key trends in perceptions and practices according to the territory, status and gender of the individuals we questioned. As trainers in initial and continuing training for teachers and educational consultants, the aim of this study is, thus, to understand and support practices in the field within the framework of initial and continuing teacher training from a discovery and innovation perspective.

¹ The educational consultant is a primary school teacher whose educational expertise in all areas of primary school education is recognized and validated by a certification. After obtaining such a certificate, such teachers are relieved of hours of teaching, becoming consultants whose mission in primary education is to advise in three ways: educational support for teachers and school teams; initial and continuing training of teachers; and the implementation of educational policy.

Political and territorial features of French Polynesia and New Caledonia and their impacts on education

As we have already noted, these two territories have several characteristics in common, not only geographically and culturally but also on an administrative and institutional level in terms of educational policy. They are both situated in the South Pacific, with Papeete and Noumea 15,714 km and 16,742 km from Paris respectively.² In terms of population, the two islands are roughly similar: 270,500 inhabitants for French Polynesia and 268,767 for New Caledonia. On an administrative level, they are both overseas collectivities, the first governed by Article 74 of the French Constitution, while the second has what is known as “special status” and is governed by Title XIII of the French Constitution (articles 76 and 77). Institutionally, the two collectivities, therefore, benefit from a fairly broad skill (power) set transferred within the framework of the general principles fixed by the Constitution.

Thus, the particularity of these two territories derives from the transfer of educational skills, which results in a number of responsibilities, notably concerning the adaptation of school curricula. However, as the higher secondary school qualification is delivered by the French State, France retains a *droit de regard*, or the right of inspection and, despite the contextual curricular changes to the educational systems, lessons are still closely modelled on the reforms and content of the French school curricula (Ailincai & Delcroix, 2018; Touitou et al., 2020).

In terms of school enrolment, a second common characteristic lies in the islands’ geographies and the distributions of populations, which are concentrated in the towns of Papeete and Noumea and their surrounding areas;³ this means that there is a low population density, as well as a remoteness in the archipelagos and in the northern and island provinces of New Caledonia (see Figures 1 and 2).

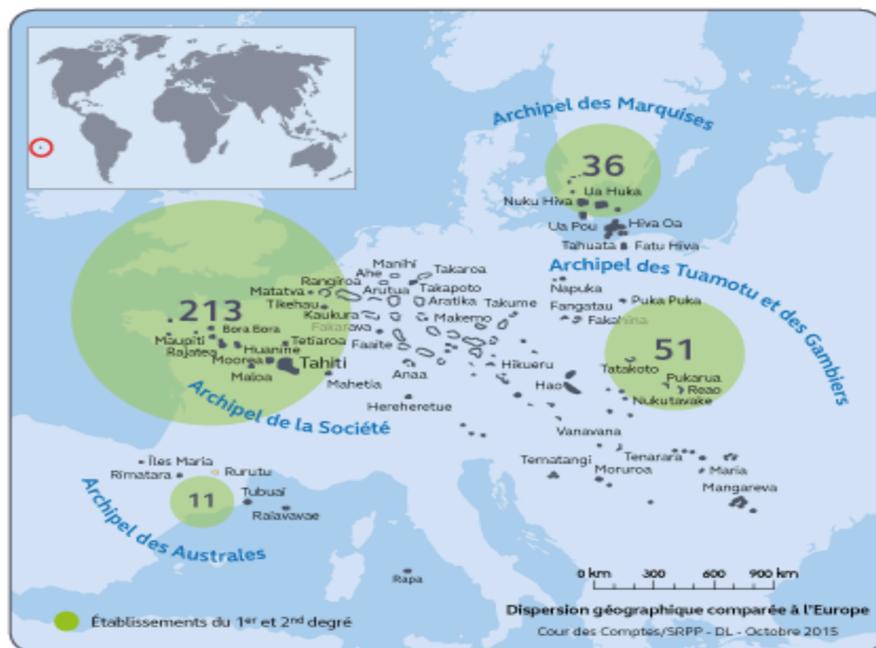


Figure 1: Distribution of pupils and classes in French Polynesia (Cour des comptes, 2016)

² Papeete is the capital of French Polynesia and Noumea the capital of New Caledonia.

³ Noumea has approximately 2,000 inhabitants/km² and Papeete 1,500 inhabitants/km².

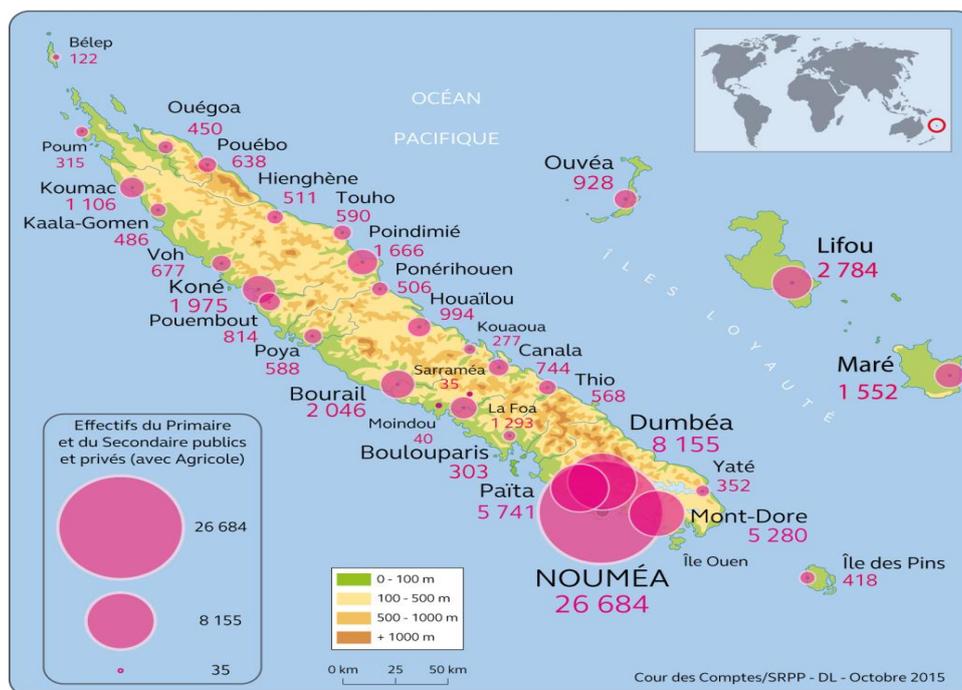


Figure 2: Distribution of pupils and classes in New Caledonia (Cour de comptes, 2016)

In French Polynesia, a third of primary schools record fewer than five classes per school. A significant number of schools also have only one multilevel class: 13% in French Polynesia and 10% in New Caledonia. The remoteness of these schools from the provincial capitals of these territories (Papeete and Noumea) is compounded by other particularities, such as the difficulties of providing ongoing teacher training; difficulties with providing class teaching materials, especially in terms of digital equipment; and the lack of information and project coordination. Regarding other variations, gathering of statistics regarding the ethnicities of members of the population has been prohibited in France since 1978. French Polynesia has adopted this law, which does not allow the collection of personal information according to community affiliation. In New Caledonia, statistics on membership of ethnic groups are authorised for population censuses but, since 1993, are not authorised for educational purposes.

One of the consequences of the demographic and the organisation of schools leads to serious inequalities in pupils' educational outcomes: 54% of pupils in French Polynesia and 55% in New Caledonia obtained their baccalauréat compared to 83% for those on the French mainland. This, despite an improvement in educational outcomes over the last few years (Cour de comptes, 2016) between pupils educated in Tahiti and those on other islands of French Polynesia, and of the schools of Noumea and its surroundings compared to the northern and island provinces. As we have underlined, direct measurements are not authorised. But, in New Caledonia, if one crosses the declared community memberships and the level of education, or by territories and results of the national evaluations, the inequalities between the Kanak (native people) and the non-Kanak appear in primary education (Hadj et al., 2012). Another measure relating to illiteracy and innumeracy among all adults shows that 18% of the population is

illiterate, and it is in the Province of Islands⁴ that this is most frequently the case (Information et Vie Quotidienne, 2013).

Even if their history and colonial past may differ (Salaün, 2013; Saura, 2015), French Polynesia and New Caledonia are characterised by considerable cultural and linguistic diversity. On a linguistic level, French is the official language and also the language of instruction. As the Court of Auditors (Cour des comptes, 2016) states:

Many regions have a low population density (e.g., provinces of the Islands and north in New Caledonia), some being sometimes very distant archipelagos (for example Tuamotu, Gambier, Austral and Marquises in French Polynesia). These less populated regions are also often poorer and feature a diversity which is marked by the use, in some parts of French Polynesia, of a local language, in addition to French. In French Polynesia, the number of speakers of one of the four main Polynesian languages (Tahitian, Paumotu, Mangareva and Marquesan) is around 167,000 (62% of the total population), slightly less than for French. In New Caledonia, over 70,000 people (26% of the total population) have been recorded as speaking one of the 28 Kanak languages.” (pp. 290–291)

There is no exact and systematic measure of the use of vernacular languages in the classroom.

Concerning digital technology in New Caledonia, according to the “Digital Barometer” (2011), the study made it possible to identify a typology of user profiles. Twenty two percent of the population is identified as being “deprived” due to a lack of equipment and means (income and networks). The profile is made up of people under 40 (average age is 29 years), in the northern province and the islands and Melanesian people. In French Polynesia, the “Digital Barometer” (DGEN, 2013) also points to a digital divide: 21% of households in the Windward Islands do not have internet and 17% do not have a computer. These percentages rise to 84% (no internet) and 40% (no computer) respectively in the remote archipelagos. In summary, these surveys reveal a geographic (in terms of networks and equipment), economic (with repercussions on equipment), cultural and generational (age, family practices) divide.

The various elements paint a contextual picture of these two island territories. Regarding digital technology in education, the two territories are impacted by these issues with regard to their educational policy. In French Polynesia, the country’s law *n°2017-15 of July 13, 2017*, relating to the education Charter aims to “train students to master digital tools and prepare future citizens to live in a society whose technological environment is constantly evolving” (p. 13), as well as to fight against the digital divide:

The digital divide, particularly significant in the archipelagos, must be reduced by drawing up a plan to equip establishments with equipment and digital resources and by putting in place a digital pedagogy (p. 13).

Concerning New Caledonia, the Caledonian educational project, by the *Application Charter of Deliberation n°106 of January 15, 2016*, relating to the future of the Caledonian school, is based on four axes. The fourth axis is to “open the Caledonian school to the Oceania region and to the world to meet the challenges of the 21st century” (p. 5), in particular by promoting the development of digital technology in

⁴ Province of Islands (Ouvéa, Lifou, Maré, see figure 2) is made up of 94% of Kanak people (ISEE, 2019).

schools. In addition, article 13 of this Charter states that “New Caledonia promotes the permanent adaptation of the School to meet the challenges imposed by globalization and technological developments” (p. 5).

The common factors (political and territorial features), in terms of difficulties and particularities regarding mainland France through the adaptation of educational policies, justify the use of a comparative approach. Generally, the development of a digital school passes, above all, through the observation and knowledge of teaching practices, themselves dependent on representations and skills, as prerequisites for appropriation.

Social representation and professional teaching practices regarding the educational use of digital tools

A number of studies show that, in the context of digital technology in education, the behaviour of teachers is influenced more by their own social representations than by their understanding of digital technology (Ertmer, 2005; Pajares, 1992; Prestridge, 2012).

The theory of social representations emerged in France during the 1960s at the initiative of Serge Moscovici (1961, 2008), one of the founders of European social psychology. The theory has gradually been accepted by an emerging interdisciplinary field (Jodelet, 2008, 2016) which transcends the frontiers of social psychology and is in dialogue with sociology, anthropology, communication and the media. There are many research projects and disciplines currently engaging with this approach, which is applied in the various fields of health, environmental protection, sciences, politics, economics and education (De Rosa et al., 2018; Jodelet, 2011; Rateau et al., 2012). The classic definition proposed by Jodelet (1989) enables us to take account of the heuristic dimensions of this approach. Social representations are “a form of socially formulated and shared knowledge, which has a practical application and contributes to the construction of a reality common to a social group” (Jodelet, 1989, p. 36). To complete this definition, we agree with the assertion of Abric (1994) that social representations produce practices and vice versa.

The decades of successive hopes and inconclusive experiments regarding educational digital technology led Cuban (1986) to qualify the entry of new technologies into schools as a “fickle romance” (p. 4). He identifies four recurrent phases: predictions of expected changes, promising pilot schemes, the emergence of problems when these schemes are put into practice, and then the decline in the use of these new technologies. These repeated experiments may explain some of the obstacles and resistance factors on the part of teachers regarding the use of digital technology in their professional practices. The latter emphasises more recently that these “cyclical patterns” are still relevant, as Cuban has been able to show with tablets and MOOCS in higher education, (for e.g., see Cuban & Jandric, 2015). Indeed, these interactional and cumulative obstacles and negative social representations may lead to a tendency to reject new technologies following repeated negative experiences (Cuban, 1986; Karsenti & Lira-Gonzales, 2011).

On the contrary, positive social representations lead teachers to develop professional practices which are rooted in digital technology (Archambault, 2011; Berney & Pochon, 2000; Chenu et al., 2003; Lillard, 1985; Loyd & Gressard, 1986; Rinaudo, 2002). Viewed in terms of change, Sauv e, Wright and Saint-Pierre (2004) identify four

categories of resistance to change, or obstacles: the teaching economy (too much work, lack of training), changes in teaching style (pedagogical constraints, risk of failure, pupils' reactions), the integration of Information and Communications Technology (ICT) into the organisation (insufficient technical support, inadequate equipment) and the integration of ICT into professional practices (inadequate access to technology, lack of training, resistance to technological change).

Consequently, the exchange of effective, experiential knowledge produces social representations concerning appropriation or resistance according to the proximity of the object. In other words, between the old and the new, an issue which Assude, Bessières, Combrouze and Loisy (2010) summarise in a dialectic of "changes/resistances". In the words of Sarrica (2010, referring to Farr and Moscovici, 1984), digital technology bears the characteristics which underlie and enable the development of social representations: it is a multi-faceted topic which leads to debate and controversy; it lies within a sociocultural and historical context; and the use of digital technology in everyday life leads to a discussion and interpretation of its uses. As a consequence, we need to understand the social representations associated with digital technology if we are to inform and support teachers' practices.

Aims

This study is guided by our opening question relating to the effect of territorial context when applied to teachers' and educational consultants' social representations of digital technology in primary education. Will we find important advantages and disadvantages in the studies on this subject, not only in social representational terms but also in professional practices? If so, what are they and how can one draw upon these social representations when considering how to support teachers?

METHODOLOGY

Surveyed population

The participants in this study comprise 31 teachers and consultants in primary education, all of whom have been in their posts for at least 10 years. The sample was selected in accordance with the theoretical sampling method in the light of Grounded Theory (Glaser, 1978; Glaser & Strauss, 1967) for half the corpus in order to collect social representations associated with digital technology, a particularly commonplace subject among the teaching profession and in society as a whole. The use of the inductive method is a means of developing theories in a "grounded approach" (Corbin & Strauss, 1990). This type of approach leads to building a sample that is based on the principle of similarity by selecting subjects that are representative of the phenomenon to be observed. The objective is to achieve saturation, that is to say that the data collected is no longer new, while maximising the variation (age, sex, status etc.) (Ailincai & Gabillon, 2018). As a first step, the Tahitian corpus enabled us to hold 16 semi-directed interviews using this methodological approach (Ailincai et al, 2018). The next stage was to carry out a similar study in New Caledonia. We were thus able to collect a sample which reflected the regional territorial variations: French Polynesia (N=16) versus New Caledonia (N=15); professional activity: teachers (N=16) versus educational consultants (N=15); and gender: male (N=15) versus female (N=16).

With the aim of discovering the social representations of teachers associated with digital technology in their professional and cultural context (Pajares, 1992), we chose to hold semi-directed interviews, a method of data collection prescribed within the context of inductive research, as well as in the gathering of social representations thanks to their discursive dimension (Abric, 1994). This type of interview enables the collection of qualitative information by asking open questions on a series of predetermined themes. In our case, six themes linked to digital technology in education guided and fuelled the interviews related to actual practices (1), their representations and beliefs (2, 3, 4 and 6) and their level of expertise:

1. participants' last usage of digital technology
2. participants' views of the practices and use of digital technology in a school context
3. possible influence of the use of digital technology on participants' interactions
4. participants' appreciation of the use of digital technology
5. participation in training in the use of digital technology by participants
6. participants' perceived necessity for skills in digital technologies⁵

In each case, a sole researcher took responsibility for the interviews, so as to limit the variations linked to the investigator. They then adapted their interventions according to the interviewees' discourse. For example, if the person broached a theme outside of the six defined to guide the exchange, we would engage with them to develop their thinking in accordance with "grounded theory", which aims to bring out themes. Contextually, in French Polynesia, the interviews were held at the university (for most of the teachers and consultants) or outside in a friendly setting (for only four teachers); in New Caledonia, four interviews were held at the university and the rest at the teachers' and educational consultants' workplaces (classroom, break room or office). The average duration of an interview was 54 minutes (the shortest was 35 minutes and the longest 71 minutes). The interviews, conducted in French,⁶ ended once the six themes had been covered and the interviewees did not bring up new information or think they could contribute any more. In addition, for material reasons (travel to more isolated places and time), this exploratory study involves a limited number of teachers, themselves only drawn from the urban areas of French Polynesia (the island of Tahiti) and New Caledonia (Noumea).

Data analysis tools

Following the semi-directed interviews held by means of the set of questions previously presented, we performed a discourse analysis through lexicometrics using the ALCESTE method, developed by Reinert (2007). As a result, the corpus was sliced iteratively and according to the variables denoted by the researcher. In the case of our

⁵ The questions were: When did you last use digital technology? What do you think of your practices regarding the use of digital technology in class? Do you think that the use of digital technology could influence classroom practices/interactions? If yes, how? Do you like using digital technology in your practices? Did you take part in an in-service training program/event about digital technology? (If yes) How did you feel about it? (What do you think about it?) Do you think that the acquisition of digital skills is necessary (for teachers and students)? The aim was to initiate reflection without induction, in order to gather their own representations.

⁶ The official language and of schooling in French Polynesia and New Caledonia is French, the interviews were therefore entirely carried out in French.

research, the stated variables are territory (French Polynesia versus New Caledonia), the status (teacher versus educational consultant) and gender (women versus men). This slicing allowed us to identify the distribution of vocabulary, highlighting similarities and contrasts, through an Ascending Hierarchical Classification (AHC).⁷ This classification logic through similarities and dissimilarities can be compared to a map of the “common assumptions” in a discourse, which the software calls “classes” (Reinert, 1999). This global approach to the corpus makes it possible to identify statistically independent classes (or clusters) of words by iteration. The AHC facilitates a general exploratory approach to the corpus by bringing to light the differentiated positions taken by the subjects because the analysis is carried out according to the active variables (in this case territory, profession and gender). Once the speech mapping is stabilised, the researcher makes inferences and interprets the data, as in any qualitative approach, according to the particularities of the areas identified through similarities and dissimilarities. The advantages of this approach are that it allows the researcher to identify trends and enables them to capture the common representations as well as the divergences above and beyond the “linear” discourse which may be produced in an interview.

It is also an appropriate method in the context of social representations because it allows us to highlight the knowledge formulated and shared socially in order to go beyond only individual perspectives

RESULTS

The textual analysis carried out with the aid of the free Iramuteq software⁸ highlights three sites of traditional, stable speech (called a “class”), characterised by the stated variables. Table 1 illustrates the relationships between the “classes” or sites of discourse. The corpus was first divided into two subgroups, with “class 3” in opposition to the rest of the corpus, meaning that it differs considerably in terms of occurrences and co-occurrences. Then the sub-group opposite “class 3” was divided into two other classes. Each of these classes is characterised by the categories of variable associated with them and which, thus, constitute the profile of each class.

Results of the software analysis showed that the territories themselves had no effect on the discourse; in other words, whether the subject was a teacher or educational consultant in French Polynesia or in New Caledonia, it had no effect on digital practices and representations. However, depending on whether the subject was a teacher or an educational consultant, it modified the discourse, which is logical as they do not have the same professional functions. Moreover, depending on whether the subject was male or female, it also modified the discourse, which corroborates the research on digital

⁷ More precisely, the AHC are iterative analyses and are based on a division of the corpus according to “context units”. We distinguish the initial context units which are the indicated variables (territory, status and gender), from elementary context units, which are the discourse fragments to which the research for co-occurrences relates. The fact that the analysis is iterative means that each step of the processing leads to separating the whole corpus into two halves, each presenting a coherence in terms of lexical co-occurrences (the latter being supposed to refer to the same field of use, to close points of view). The AHCs are formed according to the distance of the “signed association χ^2 ”.

⁸ <http://iramuteq.org>

technology and gender stereotypes (Cphoon & Aspray, 2008; Ferrière et al., 2013; Ferrière & Collet, 2016).

Table 1: Three lexical classes identified (with lexemes classed according to the chi2 test of association with the class and the significant variables)

Variables	Teachers		Educational consultants
	Female	Male	
% of the discourse	Class 1: 43.8	Class 2: 25.9	Class 3: 30.4
Theme	Added-value pupils	Applications and tools used in class group	Formative and organisational dimensions
	child	example	training
	question	text	school
	pupil	[to] write	year
	tool	video	advisor
	response	exercise	educational
	find	internet	path
	put	reading	era
	interaction	image	[to] train
	give	history	colleague
	error	research	district
	see	group	cycle
	task	photo	teaching
	master	lesson	last
	moment	work	equip
	respond	film	information technology
	wish	type	post
	bring	document	room
	feel	[to] work	initial
	difficulty	[to] film	director
	go	visual	inspector
	side	treatment	provide
	give (back)	documentary	equipment
	really	book	first
	help	oral	teacher
	attention	application	town hall
	lose	show/expose	[to] support
	motivation	[to] project	island

Formative and organisational dimensions

Class 3 represents 30.4% of the discourse analysed and this was mainly produced by the educational consultants. The associated forms allow us to distinguish the associations,

which can be summarised according to their role and the *training* conditions⁹ (*advise, teaching, train, support*), as well as a description of the training conditions via the institutional *context* (*school, district, cycle, director, inspector, town hall, island*) and the temporality (*year, career, period*). It is also a question of the equipment (*equip, information technology, post, room, provide, equipment*)

The most significant discourses¹⁰ allow us to explain the relationships between the discourses:

Well, the first thing I have to do in my work is to begin with a school project, with the director, we discuss their needs in terms of teacher training. (male educational consultant in French Polynesia)

For me, this is how I work, it all begins with the school project because if my colleagues are having difficulties, we start by speaking with the director about the school's needs in terms of training. (male educational consultant in New Caledonia)

Digital technology is mainly considered by education consultants in connection with projects within the schools, while considering their hierarchy, so as to be able to provide support; this is often in the form of training, which should respond as closely as possible to local needs. Digital technology is thus associated with the formative dimension and its deployment on the ground, which confirms the importance of “on the job” training and, more broadly, the issue of training on request.

Application and tools used in the class

Class 1, which represents 25.9% of the discourse, is mostly produced by male teachers from all the territories in question. This class highlights the dimension of the *examples* and the class situations and sheds light on the main usages connected to written and spoken language (*text, write, reading, history, oral*), via specific tools (*video, internet, photo, film, type, [to] film, [to] project*). We also identify a semantic field which is more relevant to the teaching dimensions permitted by digital technology (*research, group, work, [to] show*).

[So], when we do research on the internet, or example, we worked on—er—on endangered animals—er—so we needed to look for information on the animals. (male teacher, New Caledonia)

[O]f group work, for example, and that's how you have to do it. I show you my slides you listen, right—you listen—for me it doesn't work like that anymore. (male teacher in French Polynesia)

That's a great help for me—working in pairs for example. Yes that gives me an opportunity to have interesting interactions, for example, for a dictation when there's someone else there to dictate a text and then his friend who starts to type the text. (male teacher in French Polynesia)

It's more rewarding than writing on a flipchart and sticking up pictures you've photocopied or drawn—er—you take—you take the work—you put it on a USB drive. (male teacher in New Caledonia)

⁹ The significant lexemes are in italics.

¹⁰ The software lists the most significant words in the AHC, as well as the most significant (or representative) text segments. It is these corpus snippets that we use to illustrate.

The discourses have a somewhat practical bias and are produced by teachers who seem to have mastered the tools well enough to consider the links between the pedagogical aspects within the learning processes in new ways. This technical attitude is seen more often in men who, even if they do not have advanced skills, consider themselves to be more competent (Ferrière & Collet, 2016).

Added value for the pupils

Class 2, the most intense of the discourses (43.8%), is focused on the pupils, with women being the significant variable. The most significant lexeme is *child*, followed by *question* and *pupil*. The discourses are directed more towards a questioning of the positive and/or negative points in the use of digital technology. The discourse concerns not so much the technique as the pupil's experience (*response, find, put, error*, but also *feel, difficulty, help, attention, lose, motivation*). As the following significant extracts illustrate, the use and advantages of digital technology are more nuanced:

And so, the children had to respond to the questions above and when we looked at them, we realised that we needed to take note of the information we found there and that we shouldn't just take them at face value. (female teacher in French Polynesia)

To a pupil who's going to stumble on one, well, he's going to find some information in the—I ask him to answer a set of questions—he's going to find it difficult to read the answer on the screen—the answer—to find the answer. (female teacher in French Polynesia)

The children need to like it. It's something I've asked myself to be sure, but what are they going to learn. (female teacher in French Polynesia)

Even if they use the overhead projector, but anyway—er—I've wondered about being in front of a screen all day, all year round—yeah—I have small children—er—who are little. (female teacher New Caledonia)

But you have to stay alert and you need to have a smart practice, right. Ask yourself whether you know, at any given moment, whether it's the digital technology which is a plus. (female teacher New Caledonia)

The discourses which are more mixed and seen in the context of effective learning using digital tools are more concerned with the pupils than the mastering of the tools. The slower and more measured appropriation of digital technology by women has already been observed elsewhere (Jouët, 2003), and this impacts their self-representations in terms of skills, even though they may be expert users. These reservations are most often expressed in our research in connection with overexposure to screens and thus more generally the role of the school in the digital context.

DISCUSSION

This exploratory study on social representations associated with digital technology among teachers and educational consultants in primary education in two territories confirms the results of other studies on the advantages and limitations of digital technology. Firstly, while we might have expected the context of the territory to have an effect, in that both territories share characteristics in terms of geography, equipment, and particularly in educational policies, we did not observe differences in the

discourses. In theory, the historic context and sociocultural antecedents should be significant (Sarrica, 2010), and this is interesting because one might also imagine that the directives in terms of the use of digital technology are almost identical. Indeed, as we have already observed, even if these two territories benefit from a relative autonomy in the choice of teaching materials compared to mainland France (adaptation of teaching), this is not supported in the details of the teachers' and educational consultants' discourses. However, if one examines this in more detail through a close content analysis, it becomes clear that there are contingent uses and projects which would benefit from being developed. In an island context characterised by isolation and remoteness, particularly when considered in the context of their personal representations (such as using new technologies to stay in contact with their children who are studying in France), there are some interesting examples. For example, using digital technology to allow the class to visit virtual museums, get to know their own island and discover the world beyond it. Another example presented by an educational advisor in New Caledonia describes the importance of being able to store, conserve and disseminate local knowledge, notably through the recording of vernacular languages in danger of being lost.

The variation effects in the discourses are associated with the employment status and gender of the interviewees. The differences between the discourses of educational consultants and teachers are quite logical. The educational consultants' involvement in classes is intended to analyse the teaching situations and, as a result, to offer support as required, either by the teachers or, in the case of school projects, by the leadership teams. In this sense, the question of training for educational consultants is central, especially when it comes to on-site support. On-site training is not only a necessity but also a means of supporting new and innovative practices, as mentioned by Assude et al. (2010) in the context of material preoccupations. In addition to the discourses produced by advisors, we observe that the discourses associated with teachers, and in particular the male teachers, are in line with the somewhat technical practices in class. This implies that further thought should be given to those approaches which may seem superficial, even if one observes a semantic field in the discourse linked with the possible interactive aspects, and which thus invites a more pedagogical reflection.

Our findings indicate that the social representations associated with digital technology in education differentiate along gender lines. In summary, the discourses of the participants in this research focus either on "action" or "observation", an antinomy which reflects ingrained gendered social representations. This male/female difference operates not only in terms of social representations but also in terms of attitudes to integration. Our analysis suggests that the added value of the digital tool to teaching was seen by men as technical, at the risk of being rather superficial, while the women remained more restrained and pupil centred. The fact that we find male-female variations in the discourses and practices may bolster and legitimise the social representations associating digital tools/information technology/technique/sciences with the masculine world. The links between national stereotypes vis-à-vis science and the place of women in these disciplines are still significant, as, for example, the international study by Miller, Eagly and Linn (2015) in 66 countries was able to highlight. In other words, adults still associate science with the masculine world (Smyth & Nosek, 2015).

CONCLUSION

In the context of policies favouring a digital school in two French overseas territories, French Polynesia and New Caledonia, this study has interrogated the social representations and feelings of teachers concerning the use and integration of ICT in their everyday practices. Essentially, the successful implementation of these policies relies on the actors' perception of the digital tools and of their impact on their own professional practice (Assude et al., 2010; Carugati & Tomasetto, 2002; Ertmer, 2005; Pajares, 1992; Prestridge, 2012).

This exploratory study involves a limited number of teachers, themselves only drawn from the urban areas, and, as such, its internal validity is yet to be confirmed and its results should be interpreted with caution. Nevertheless, some compelling ideas have emerged. Firstly, the social representations and discourses are almost identical in the two territories, a resemblance most likely related to the influence of the French educational directives on the local policies on "digital technology in schools". Secondly, the social representations and discourses appear to be affected by the functions performed by the interviewees (schoolteachers versus educational consultants). The educational consultants afford more importance to the issue of training while the schoolteachers are committed to using digital technology in class. Furthermore, their expectations seem to diverge on certain training points, particularly for the schoolteachers, with a misalignment between the training content and the tools available to them, and between the training and its practical application. For the educational consultants, the main difficulties are the application of the training and the motivation of the participants. Thirdly, the discourse appears to be gendered, with the male teachers presenting a discourse focused on pedagogical action with digital tools, while the female teachers are more concerned with the experiences of the pupils and the contribution made by digital technology (difficulties and advantages).

We consider that these issues should be the subject of a deeper study, extended into regions without internet, or in which internet access is intermittent and/or the relationship with digital technology is limited to the use of equipment (video projector, recording device, camera, computer) and educational software preinstalled on the devices (computers, tablets). A survey of representations as genesis and construction which will have a later impact on behaviours and usages could be beneficial in the design of initial training programmes and continuing professional development on the theme of digital technology in French overseas departments and territories, and beyond.

Although the aim of these interviews was not to examine the contextualised practices, the fact that these specific points emerged from the discourses has led us to think more deeply about this. This is now even truer than before, as the unprecedented global situation provoked by Covid-19 has, in no uncertain terms, highlighted social and digital inequalities, as much for the pupils as for the teachers, in terms of equipment and digital practices during periods of lockdown.

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Representations and uses of digital technology in primary school teaching

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From observation of pupils' literacy-based practices towards the mentoring and professional development of teachers

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This article reports on research on adapting the Pacific Literacy and School Leadership Program in New Caledonia. The starting point of this study is the fact that many adults in New Caledonia have difficulties mastering the French language. In order to test the tools developed in the PLSLP program and to contextualise them in schools of New Caledonia, we first carried out a series of observations during a year with three schools. Following this phase of adaptation, the observed population was composed of six teachers in three schools, comprising one man and five women over three years. The deployment of the program throughout New Caledonia would benefit pupils encountering difficulties in learning, particularly in schools of the North Province and of the Island Province. This would enable us to measure the efficiency of the program on the scaffolding of literacy-based skills alongside the professional support of teachers, while also progressing the research on comparisons with the countries of Oceania involved in the PLSLP.

Keywords: primary school; professional development; PLSLP

INTRODUCTION

The motivation for this study was the finding that many adults in New Caledonia have difficulties mastering the French language. In its 2013 report on the literacy problems in the territory, the Institut de la statistique et des études économiques de la Nouvelle-Calédonie (ISEE) [Institute of Statistics and Economic Studies in New Caledonia] stated that one in four adults aged between 16 and 65 reported having difficulty writing and 18% of adults are believed to be functionally illiterate. In addition, tests for evaluating basic French language skills conceived by the Direction de l'évaluation, de la prospective et de la performance (DEPP) [Evaluation, Forecasting and Performance Department] of the Ministry of National Education are offered to 16-year-olds during Journée d'appel de préparation à la défense (JAPD) [Defence Preparation Day]. In 2018, 31.5% of young people encountered difficulties in reading and 17.7% of these same young people were functionally illiterate.

In francophone countries, a person is considered functionally illiterate when they have been to school but have not achieved a high enough level in reading, writing or arithmetic to be autonomous in everyday situations. The alarming situation regarding the percentage of

illiteracy in New Caledonia raises questions about the schooling of these young people and their learning processes and, especially, about school language teaching in New Caledonia's multilingual context.

New Caledonia is a former French colony which has been autonomous (named 'special status') since 1998. French is the official language for administration, education and the media; however, it is not the mother tongue of all New Caledonians. Indeed, the Cour des comptes [Court of Auditors] estimates that 28 Kanak languages currently exist alongside each other in New Caledonia. In this small territory, these languages sit alongside Polynesian languages such as Tahitian, Fijian and Wallisian, Indonesian and Asiatic languages (particularly Javanese, Vietnamese and Mandarin) as well as creoles (Pauleau, 2016; Razafimandimananana, 2021; Roche, 2015).

Of those pupils entering secondary education at 11 or 12 years old in 2019, the percentage with mastery of the French language was 76.8% over all New Caledonia, but there are considerable geographical disparities because the level of mastery is 82.8% in urban Greater Noumea and 58.5% in the Island Province.

As researchers and practitioners in the field of education and training of future primary school teachers, we intervene in the initial and continuous training of teachers. Our observations in the field as well as factual consequences have led us to reflect on support solutions for professionals in the field, with the objective of long-term development of students' literacy skills.

This article reports on a four-year study carried out in New Caledonia to adapt the British Oceanic Implementation Plan for the Pacific Literacy and School Leadership Program (PLSLP).

We will first outline the specificities of the New Caledonian education system and describe issues relating to the francophone concept of literacy and the PLSLP program as a means of observing teachers' practices in terms of their linguistic, cognitive and social interactions. Second, we describe the work of adapting our observations over a three-year period and our modifications from an initial focus of observing pupils to mentoring teachers to engage in reflective practices.

CONTEXT OF THE RESEARCH

Specificities of the New Caledonian education system

New Caledonia is defined as an overseas collectivity with special status. The New Caledonian education system is inspired by the organisation and demands of mainland France: children start school at the age of five, the school curriculum responds to national requirements, and the qualifications it provides are French. However, since 2016 the Congress of New Caledonia has adopted its own educational policy, legislated through 36 articles comprising the educational plans of New Caledonia (PENC, *Deliberation n°106 of 15 January 2016*).¹ These texts, which regulate primary teaching (organisation of schooling and school curricula), are contextualised and voted on by the Congress of New Caledonia. This educational plan provides the roadmap for a New Caledonian school curriculum, whose

¹ A "deliberation" is an act relating to the law, which in New Caledonia applies, among other things, to the field of education.

identity is created by adapting the French school syllabuses. The history syllabus thus integrates the history of New Caledonia, allowing pupils to draw parallels between New Caledonian, European and world history. The teaching of the basic elements of Kanak culture is a separate discipline throughout primary school and partially separate during secondary school. The teaching of Kanak languages is being developed with bilingual teaching in certain regions. From infant school onwards, the English language is an important subject on this francophone Pacific territory, surrounded as it is by neighbouring anglophone territories. English is not only a subject to be taught within a classic curriculum but also provides a medium of instruction in a bilingual educational program.

Another feature of the New Caledonian curriculum is drawn from the context of finding work and is linked with the very different lifestyles experienced by those living in the conglomeration of Greater Noumea (Noumea being the capital where two thirds of the population of the archipelago live), in rural areas or in tribal communes. The division of New Caledonia into provinces (Northern, Southern and Island provinces) has created disparities in the aims of the various provincial directorates of education. These contexts thus mobilise different skills among teachers.

In addition to these specificities, there are also particularities in terms of initial teacher training and continuing professional development. Two initial primary teacher training systems co-exist; that is, potential teachers are recruited either as high school graduates or following their bachelor's degree. This creates a teaching profession with different skill sets and professional practices within schools. It should also be noted that almost 25% of teachers have not received basic teacher training and are recruited according to local needs, whether on a temporary or permanent basis. Another factor, which is not specific to the Caledonian context, comes from the developmental approach in the teaching profession, with stages, (such as child development) (Huberman, 1989). This may create skills differences to consider when supporting professional development.

Primary school teachers in New Caledonia benefit from in-service training, which is also uneven, depending variously on the aims of the New Caledonian education directorate and the directors of education within the different provinces. In-service training for primary school teachers in New Caledonia is limited; for example, in 2018, 151 periods of in-service training were offered in five areas of professional development, however more than 90% of these training programs focused particularly on two areas: the diversity of the target audiences with a focus on educational programs and the teaching of French and mathematics; and the governance of the system whose principal aim is the professionalisation of teachers, including preparation for the various professional assessments and competitive examinations. On an organisational level, the in-service training is carried out in a way which is detached from the individual teaching context of the professional. The teachers who come from different professional contexts, recruited to schools in villages, tribes, small or large towns etc., are gathered in the same space and with the same content. While there are sometimes periods of observation of class practice, these only allow the teachers to take their inspiration from existing practices without making connections with their own practices enabling useful reflective analysis.

Francophone literacy for an ecosystemic approach in the context of functional illiteracy

The 2018 report of the Observatoire de la Réussite Éducative [Centre for Educational Success] on the situational analysis of illiteracy and reading difficulties among young New Caledonians of 16 to 25 years old highlights the vast differences between the three provinces,

concerning the percentage of young people who had major problems with reading, calculated from tests taken within the framework of the Defence Preparation Day program (JAPD).² In 2017, in the Island Province, 53.7% of young people had significant problems with reading; in the Northern Province the figure was 45.6%; and in the Southern Province 25.6% (ORE, 2018). The youngsters' performance reflects the regional inequalities in terms of teaching and training. This issue is, therefore, of great concern for New Caledonia.

The aim of this study, therefore, is to respond to goals proposed within the framework of *Deliberation n°106 of 15 January 2016*. First on the topic of issues in teacher training, and second, on the development of language and the mastering of basic skills in reading and writing.

In this regard, the concept of literacy in a francophone context allows us to measure the interactions which go beyond the simple formal mastering of a language. While the translation of the concept from English into French has rendered the term complex and polysemous (Lebrun, 2007), the literature review of about a hundred francophone articles realised by Hébert and Lépine (2013) brings to light 10 additional values³ which foreground the multidimensional and interdisciplinary aspects of the concept, as illustrated in Figure 1.

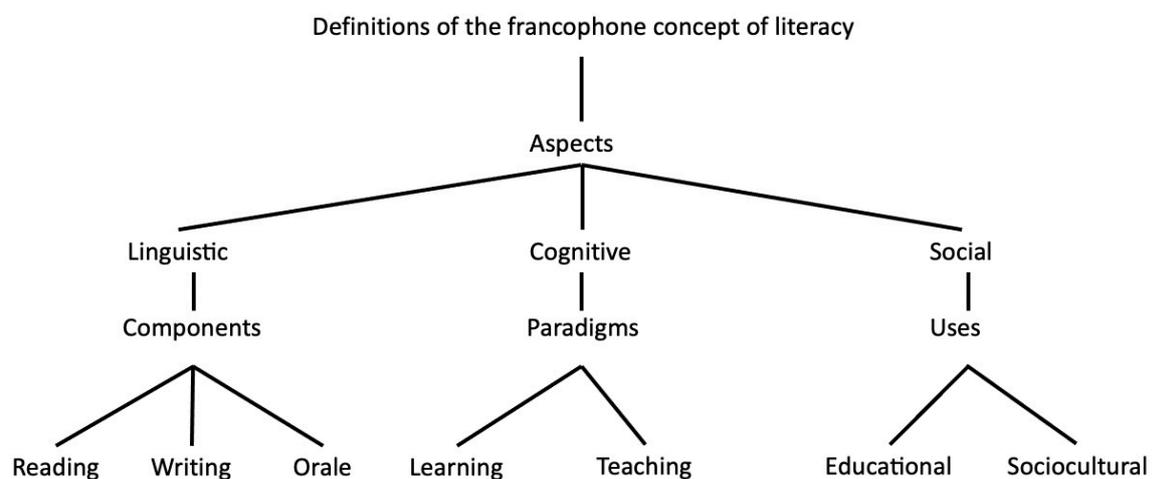


Figure 1: Adaptation of Moreau, Hébert & Ruel's (2013) schema reclaiming the analytical aspects of the definitions of the francophone concept of literacy

This interdisciplinary approach allows us to assess the classical linguistic aspect comprising reading, writing and oral skills. A cognitive dimension has been identified and this widens the reflection to include teachers, namely in the ways in which they teach and facilitate learning, in an interaction with the pupils' reception. The last aspect to be identified is the social dimension, which applies as much to educational as to sociocultural uses. The concept

² Since 1998, this compulsory day for all young people has replaced national army service in France. During the course of the day, the attendees have presentations on defence missions, peacekeeping, and French and European citizenship, and learn about warning systems and first aid, as well as taking French language assessment tests.

³ The 10 values are: multiple aims; all the attitudes, knowledge and skills needed for the appropriation of written culture; range of texts, genres and resources; dynamic, variable and situated aspects; individual/societal relations; authentic real-life tasks, both within and outside the school environment; positive concept and continuity; written-oral interdependence and interference; environmental influence; emancipating purpose.

of literacy is defined by the UNESCO declaration, the *United Nations Literacy Decade, 2003-2012*:

Literacy is about more than reading and writing—it is about how we communicate in society. It is about social practices and relationships, about knowledge, language and culture. Literacy finds its place in our lives alongside other ways of communicating. Indeed, literacy itself takes many forms: on paper, on the computer screens, on TV, on posters and signs (Ontario Ministry of Education, 2004, p. 9).

This standpoint is enshrined in an ecosystemic vision (Bronfenbrenner, 1992), which considers the processes of teaching and learning and the interactions between teachers and pupils from the point of view of the actors and is viewed contextually. We have, therefore, relied on this theoretical framework in order to approach the notion of literacy through the program described below.

The PLSLP

The Education Department of the University of Auckland and the University of the South Pacific have worked on a literacy implementation plan in the Pacific and on the PLSLP to support field-based teacher development. This program has been developed in Oceania in the schools in Tonga, the Cook Islands and the Solomon Islands (Jesson & Spratt, 2017).

The program is based on the Bronfenbrenner's ecosystemic vision (Jesson & Spratt, 2017) by using the Design-Based Research (DBR) approach defined as a "systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually, sensitive design principles and theories" (Wang & Hannafin, 2005, p. 6). This DBR approach is rooted in the theoretical perspectives of teaching design, action research and collaborative research (Sanchez & Monod-Ansaldi, 2015). The program is implemented in a 'real-life' setting (classes, pupils and teachers) in a research-based format, with a second stage in which solutions can be created, developed and suggested in context.

The observation of literacy-based practices in class is made using an iterative system of observations focused on the teacher and then on the pupils in order to distinguish between the respective main activities. The teacher is then offered about ten minutes to reflect "in the moment" and an initial "profiling" phase allows them, through repeated observations, to distinguish the literacy-based aspects within the class. Following this collection of information, the data are presented to the teacher in order to identify the priorities and the expected results with regard to the observations on their positioning in the class and the pupils' behaviour.

This program is part of an initiative that aims to improve literacy-dependent results by producing field data through the analysis of the actions of the professionals and develop methods and practices while also offering an analysis of conditions and issues on the ground in an institutional situation. The program also facilitates support for teachers in an ecological context within a systemic and interactive perspective for:

- The researchers, who support the teachers through their perceptions as they analyse the practices by using all the tools available to them (observation grids, post-observation interviews, pupil evaluations) and who are instrumental in opening up the field of possibilities so as to develop literacy-based practices in class.

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- The teacher, who benefits from observation of pupils as they learn from someone who is outside the classroom context so they can adjust their professional and reflective stance.
- The educational community, through innovative practices arising from this in-house training in the schools, which, under the impetus of this program, creates a synergy that promotes the implementation of actions to produce tangible, long-term improvements in teachers' practices which, in turn, allow their pupils to succeed.
- The pupils, who, ultimately, are able to put their literacy-based skills on a firm footing, particularly in terms of the mastery of language in a multilingual context.

To sum up, this program, which is based on Bronfenbrenner's ecosystemic vision (Jesson & Spratt, 2017), takes into consideration both pupil and teacher in a "bottom-up" perspective (Clerc, 2011; Jodelet, 2011) while also considering teamwork and management. It thus leads to the development of a collaborative mechanism for a professional collective culture which feeds into a more general reflection towards the institutional aspects summarised in Figure 2.

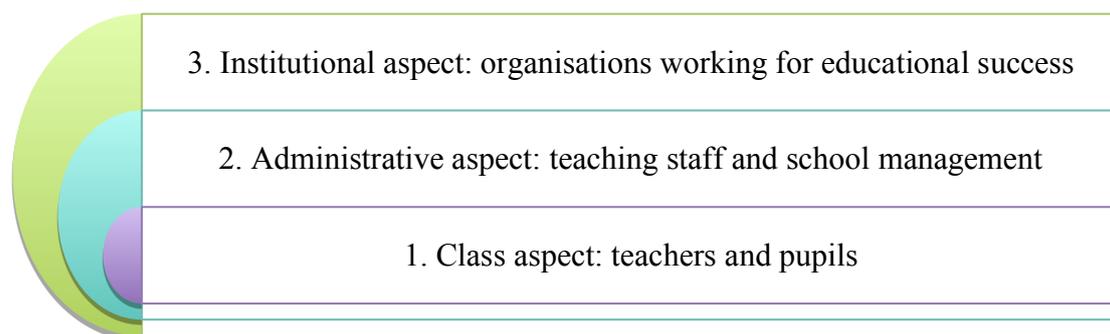


Figure 2: Overview of the aspects brought into play by the program

In order to help all the pupils to succeed, it is necessary to consider the child's environment within the contemporary ecological and systemic perspectives (Jesson & Spratt, 2017). However, by analysing teachers' professional practice in context by observation, allows us to support them in their professional practice, whatever their initial training and experience, thanks to the methodological approach of "research-design" (Anderson & Shattuck, 2012; Dupin de Saint-André et al., 2010) and a regular analysis of practices (following the reflective feedback immediately following the teaching event). The subsequent development of an observational positioning of "what the pupils do" within the framework of the presentation of class profiles allows us to be in a position of mediation concerning professional practices. Indeed, this modifies the angle of approach to a class, which allows us to go further than an observation which would be limited only to teaching practices or to a critique centred exclusively on teaching practice. In this sense, this method allows for a triangulation of the collected data around the teacher-pupil behaviours envisaged in their interactions by focusing on contextualisation and valorisation of the experiential dimensions. All the possible modifications of these practices as well as the beliefs about the pupils' activities are for the benefit of the pupils' learning (Jesson & Spratt, 2017).

ADAPTATION OF THE PLSLP OBSERVATION GRID

Testing the data collection tools in context

In order to test the tools developed in the PLSLP and to contextualise them in New Caledonia, we first carried out a series of observations throughout 2017. For this, we chose three schools: two on the outskirts of Noumea and one in the heart of the industrial zone.

We targeted three CE1 classes⁴ in which the pupils were between 7 and 8 years old to ensure they had minimal literacy-based linguistic and social skills. The three schools were selected within a context in which a serious need to develop pupils' literacy-based and linguistic skills had been identified based on school testing results on a regional scale; a multicultural and multilingual school population; and a teacher who was strongly motivated to develop their professional practices.

This initial phase concerned three volunteer teachers and 65 pupils. The observations were carried out by three researchers to enable us to combine the observational data collected. We used the PLSLP tools by applying the procedure described by the PLSLP designers. We carried out the observations and the interviews over a school term (six or seven weeks) and collected the data relating to the teachers' practices to the learning processes and to the class tools. The observations were realised at different times of the day so as to identify all the literacy-based practices used during the course of the day and without favouring any particular discipline.

The aim of this phase was to adjust the observation grid (Appendix 1). The variables considered were: the establishment (3 schools); the teachers (3 people); the observation times (the start of the morning versus the end of the morning versus the beginning of the afternoon (J3)). The interest in those particular schools is that the Oceanian population of pupils implies specific teaching processes and, by using the DBR approach as described by Jesson & Spratt (2017), would allow the teacher to learn from the class (pupils attitudes and learning processes) in order to optimise teaching attitudes and, therefore, participate in teacher development within the class and, through the class, bringing to light Brofenbrenner's (1992) ecosystemic vision of human development.

Before beginning the observation, we used questionnaires to ask the pupils about their language practices. Out of a total of 65 pupils, 5% stated that they had never spoken French at home while 15% said that when their family and friends spoke in a particular language they would respond in that language. Throughout the observations realised in a school context, not one pupil spoke in a language other than French, whether with the teacher or with their peers. However, these observations, made in the Southern Province, might not necessarily apply to the Northern or Island Provinces.

Adjustments following the initial series of observations

We adapted the observation grid and added more points to observe (see Appendix 2 for the modifications given in green and in bold). Following 18 periods of observations of around one hour each of the general class contexts, the teachers and their pupils, we noted a major difference in the classroom space arising from the wall displays and literacy-based materials (type of literary materials, puzzles etc.), which we linked to the cultural practices of the class (Dufour, 2016). Over the three classes, the first had 81 wall documents, the second had 57

⁴ Year 2 in primary school education in Australia.

and the third had 138. These displays, understood to be artefacts, are defined as teaching aids (Goigoux, 2007) but, above all, as literacy-based media at the teacher/pupil interface. We took this aspect into account in the class observation grid by adding an item which was specific to pupils' consultation of the displays. By considering the scaffolding and materials for class activities as an aspect of mediation (Bruner, 2006; Vygotsky, 1992), we included in the grid an item relating to materials by distinguishing between manuals, displays, interactive white board or blackboard, worksheets and manipulatives. The aim was also to introduce a reflection among teachers on the usage of these materials and to realise a classification of disciplines and a systematic analysis of the content of displays.⁵ The referencing of literacy-based media objects in class can also lead to the referencing of the children's books made available to the pupils, for example, what types of books.

The overall results of these periods of observation show that the teachers speak for a significant amount of time, which is reflected by equally significant levels of active listening on the part of the pupils. Dominance of teacher's speech is followed by non-literacy-based activities (such as handiwork and putting things away). Likewise, we were able to observe that, for the most part, the pupils work alone. These observations led us to adjust the items relating to teachers' attitudes to make the "oral" item even clearer in targeting pupils' activities as well as the organisation of pupils for the learning activity.

In a similar manner, we preserved the items relating to "teacher feedback" and "teacher approach". Some modifications were realised under the heading "focus on the teacher", emphasising a teacher's approach associated with a learning experience which included a strong reflective element. The item "talk/reflect on the pupils' written work" was also reformulated as "reflection on reading strategies". Similarly, the item "orality" was transformed into "reflection on strategies in oral work".

In the observation grid relating to the pupils, we developed in more detail the "oral" item in line with the activities and expectations of the New Caledonian school curriculum. We kept the terms "speak", "listen", "read out loud", "spell out words", "draw, decorate, represent" and "other literacy-based activities". The modifications concern "reading work" and "written work", two activities for which we proposed distinguishing between: "reading isolated words", "reading one or more phrases" and "reading one or more texts", as well as "writing isolated words", "writing one or more phrases" and "writing one or more texts". Similarly, for the item "reading letters/syllables (associating sounds and written letters)" we added "numbers" because we chose to observe the school periods (morning or afternoon) without having any control over the teaching content. We also modified "meaning of words (vocabulary)" to "reflections on the meaning of words". Finally, we added the item "copy". Concerning the pupils' working conditions, we specified the item "the pupil works alone/as a class/with other pupils", which became the item: "the pupil works alone/in pairs/in a group/as a class".

To summarise, we began with a study designed to adapt the curriculum, which then led to marginal changes to some of the headings. On a contextual level, we specified the observation criteria, particularly in terms of classroom displays and the class scaffolding

⁵ We created a table for referencing all the wall displays in order to distinguish between the various materials (paper/boxes, blackboard, interactive and non-interactive whiteboards), disciplines and their associated fields (literacy, mathematics, history, geography, visual arts, sciences, civic and moral education, modern languages and music), the administrative aspect, and the concept of living together.

materials. Finally, we chose to maintain the observation of all the disciplines so as to bring out the literacy-based aspects in an interdisciplinary way and over the different time periods during the day, which also allowed us to collect the most general data possible on life in the classroom.

FROM OBSERVATION OF PUPILS' LANGUAGE PRACTICE TO REFLECTIVE PRACTICES OF TEACHERS

Description of the three years of the study

Following this initial phase, the deployment of the collaborative research continued from July 2018 to July 2020, with seven teachers in three schools, one man and five women. The average age was 43 and the average length of professional experience was 15 years. While they had had different trajectories in initial teacher training, they all shared a wish to modify their professional practices.

Based on the methodological approach of DBR, three female researchers were involved in the project from the initial phase. The underlying mechanism is based on a principle of iteration of observations, based on different types of data collection in the light of a mixed approach by combining quantitative statistical data and qualitative interviews. It will be recalled that the tools and the structure used articulated in a three-stage process:

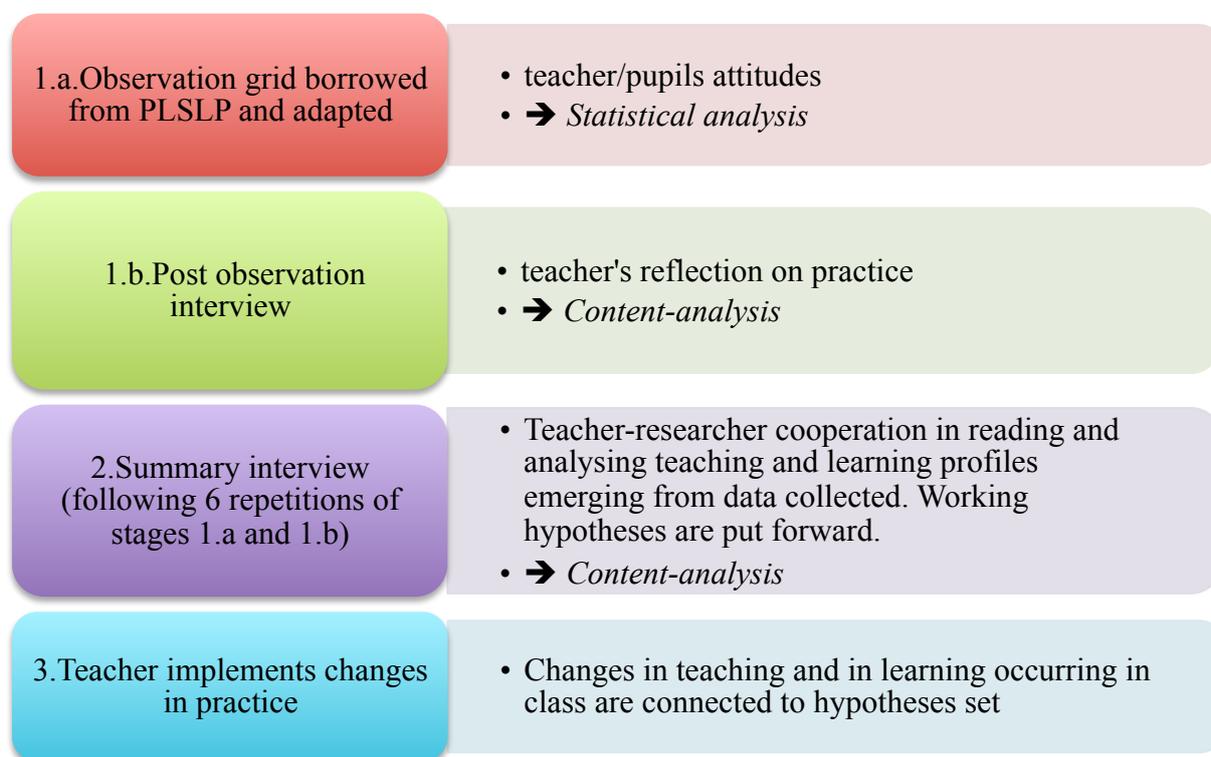


Figure 3: Diagram of the design stages of the collaborative research

Stage 1.a: The observation grid borrowed from PLSLP and adapted enabled us to draw out patterns of teaching attitudes as well as learning attitudes from statistical analysis (Appendix 2).

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Stage 1.b: A five to ten minute post-observation interview at the end of every observation period was offered in order to identify the reflective attitudes. Content analysis allowed us to discern the perception of the evolution of the reflections for each teacher.

Stage 2: The summary interview. Six periods of observation (stages 1a. and 1b reiterated six times) per class allowed us to discern patterns for each class so we could develop an understanding of the teaching and learning profiles through exchanges between the teacher and the researcher who had realised the observations. The aim was to coordinate the teacher's actions, the theorisation of the learning processes and the purposes in terms of pupil learning, so as to lead to the development of hypotheses specifying the ways in which the evolution of practices results in the achievement of the intended aims for the pupil.

Stage 3: Once the hypotheses were set, changes observed over time in class, concerning learning activities offered to pupils as well as pupils' attitudes, may be indicators of changes occurring in teacher practice. The relaunching of periods of observation in class brought to light new teaching and new learning attitudes. It also enabled further mentoring in order to deepen teacher practice or to implement new professional practices through new sets of hypotheses.

The design-based methodology was deployed according to the schedule illustrated in Figure 4.

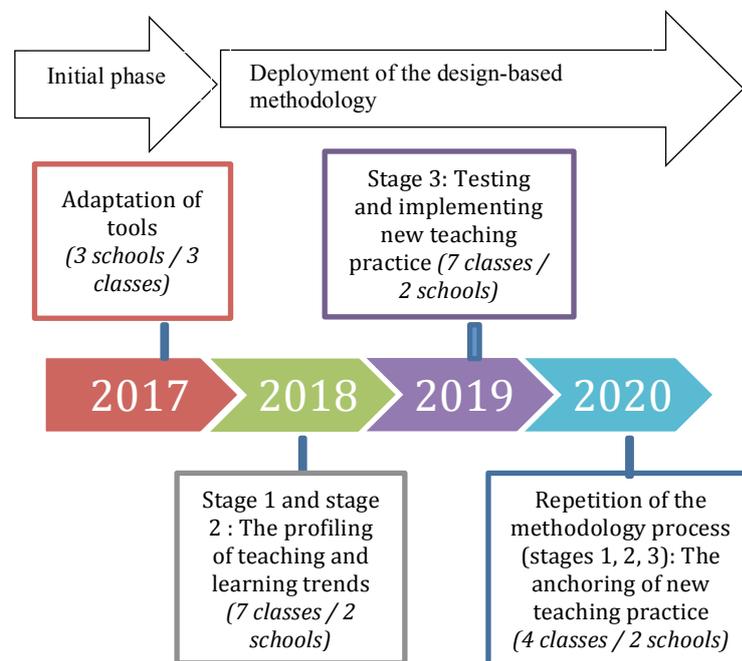


Figure 4: Diagram of the chronology of the research program

A period of trial and error concerning the individual practices of the six teachers involved in the research program occurred in 2019. In fact, because of the organisation of the educational system, it was not possible to follow a cohort of pupils, so we made the decision to follow the teachers. During this year, two periods of observations took place. In other words, 12 observations per teacher. The end-of-year summary allowed us to judge the mutual understanding of what could be prolonged and what could operate without the support of an

external contact person (consolidation of new professional practices). When new teaching and learning profiles emerged for a class, new hypotheses were defined for the following year.

The study of the data collected led to further new adjustments of the observation grid (see the items in blue in Appendix 2) with the addition of the following items: in the section on resources, we added an item “pupil’s notebook”, under the heading of focus on the teacher; and the item “literacy at the service of other disciplines”. In the section on teacher approach, the items “facilitating inter-pupil interactions”, “valorising/advising pupils” and “inviting pupils to build on their work” were added. For the pupil observation grid, we included the “scaffolding” (classroom displays, rule book, book, IT tools, no resources)” and “activity resources (book, interactive or non-interactive whiteboard, paper, pupil workbook, manipulative, rule book, no resources)”.

In 2020 there was a further adaptation of the program. Indeed, two teachers chose to leave the program, one teacher had to go back to France even though she did not wish to leave the collaborative work engaged, another teacher changed school and did not pursue the collaborative research. As a consequence, the program continued with four teachers. Considering the international and regional health situation in 2020, it proved impossible to respect the provisional observation schedule. However, the period of lockdown and the gradual return to school life presented a situation which has proved propitious to the effective observation of the consolidation of practices for the teacher. The period of collecting observational data has thus been postponed and we intend to summarise the three years of the experimental program on the development of professional skills among teachers and school managers, and the collaborative research surrounding the results with a view to activating the reflective postures for an implementation of literacy-based practices in the classroom in the absence of a contact person from the program.

Indicators of reflective practices development and teacher attitudes

For a school period of 13 months (from July 2018 to August 2019), we were able to discern in the discourse a professional teaching dimension (the teacher in their class), a second professional teaching dimension (reflection removed from the expectations of a reflection on their professional practices), a consideration of the pupil, and team concerns (about the issue of collaboration). The developments were brought to light through an analysis of the career trajectory of each teacher in the study.

The discourses of Teacher A dwelt on professional practices and attitudes, their self-esteem as a practician, the pupil’s attitude and their acquisition of transversal skills. This led them to plan their professional development by posing the following hypothesis: promoting pupil communication by leaving more time for interactions between peers and letting them speak more will reduce the teacher’s speaking time.

Teacher B was also focused on the professional practices and attitudes, self-esteem as a practician and pupil attitude. They saw their professional development in terms of the following hypothesis: promoting pair work or small group work will develop the quality of the interactions between pupils and their speaking while also developing the pupils’ capacity for cooperation.

Teacher C’s major preoccupation was their self-esteem as a practician. This led them to envisage their professional development by posing the following hypothesis: promoting small

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group work will develop the quality of the interactions and communication between pupils while also developing the pupils' capacity for cooperation.

The discourses of Teacher D were mainly orientated towards professional practices and attitudes and on pupil learning outcomes. The hypothesis in terms of professional development concerned learning in small groups to allow pupils to develop their cooperation and their autonomy.

For Teacher E, most of the exchanges concerned professional practices and attitudes and their self-esteem as a practitioner. The hypotheses were to work on differentiating teaching attitudes in learning scaffolding in order to optimise pupil learning outcomes and on a learning system based on repetition through practice so as to develop the pupils' literacy-based skills.

When it came to Teacher F, the main part of the discourse was orientated towards professional and personal practices and towards other off-topic exchanges. As a consequence, the teacher's request was mainly orientated towards a methodological framework through mastery learning.

Finally, Teacher G spent a lot of the time allotted to reflective practice to evoke other off-topic points and personal projections which were unconnected with the observations. All the same, they did express the need to know how to teach history.

With the exception of teachers F and G, the five other teachers made good use of these periods of reflection to hone their views and, during the summaries, this produced an in-depth understanding of the models discussed. Each of them was able to quantify the extent to which literacy encompasses not only linguistic and cognitive but also social dimensions. In this respect, the hypotheses converged, in a nutshell, on the improvement of the group aspects with a view to developing the cooperative practices of the pupils.

PROSPECTS FOR LARGER-SCALE DISTRIBUTION IN NEW CALEDONIA

Benefits of the program in the short, medium and long-term

The implementation of this program produces short-term results directly in the class with a reflection on professional practices and attitudes. In fact, after two years of this study, some points regarding the teacher profiles emerged which led researchers to put into perspective the multiple streams at mid-career that may occur in the teacher career cycle that Huberman (1989) puts forward through a model for possible career scenarios. Indeed, concerning the seven teachers who started the collaborative research work in 2018, teachers A, B, C, D and the teacher who had to leave for France would recognise themselves to be in a phase of experimentation or diversification; they did seem keen to experiment with different materials, different pupil groupings, different teaching and learning approaches.

The iterative nature of the research processes through the design-based methodology provided a strong mirror effect of pupils' attitudes on teacher practice. The outstanding examples to illustrate the bottom-up professional development (Clerc, 2011; Jodelet, 2011) were the developing awareness of the time of speaking for the pupils and the organisation offered to pupils for learning.

The evolution of the teachers should be seen on a case-by-case basis because, among them, they have produced original and evolutive working hypotheses centred on their own practices, which is a necessary starting stage for a flexible, high-quality study. Even

considering that the consolidation of the changes in practice for 2020 has yet to be assessed, the development in the teachers' discourses reflects a primary preoccupation with the practices and attitudes which, through reflective practice, open the way to a preoccupation with the pupil's attitudes.

It is precisely on this point that the program adapted in New Caledonia appears particularly efficient. Indeed, the PLSP program was concerned with the development of literacy-based skills for pupils in the countries in the Pacific where there is a lack of initial teacher training, but this is not the case in New Caledonia, where there is not only initial teacher training but also in-service training. However, as we have emphasised, the system of double initial training formation, the focus on in-service training in education programs, the lack of consideration of the teaching contexts and specificities during the assemblies of teachers gives little or no support to practices and, if one sets aside the work of educational consultants, even less so on the ground.

What this program has shown in the medium term is, first, the necessity to provide educational support and scaffolding for teachers whose profiles show them to be fragile for various reasons (lack of self-confidence, lack of motivation, loss of a sense of vocation etc.), all phenomena which emerge during various stages of teaching careers (Huberman, 1989). There also appears to be a lack of more intensive support for those teachers who, while not doubting their profession or vocation, seem to be hampered in the development of a reflective stance on their practices even within an underlying dynamic of modification of professional attitudes. In this type of configuration, we find ourselves within the context of the work of Schön (1983), with a view to developing practitioners who are reflective, and above all, autonomous.

Here we are touching on the long-term prospects of this program. In fact, the factors involved in teachers' professional development have already been well defined and involve processes of cooperation, collaboration and a shared culture (Hargreaves & Fullan, 1992). We also know that a progressive support of practices, which is made possible through collaboration, leads to greater professional autonomy (Clement & Vandenberghe, 2000).

These notions are embedded in a broader educational paradigm which emerges from the ecosystemic approach of Bronfenbrenner (1992) in which the individual is at the centre with a holistic vision of development, whether it is the child/pupil or the adult/teacher. Within this paradigm, the interactions in one's environment are considered to be situated in an upward dynamic; that is to say that the subject, which in this case is the teacher, acts on their environment. The methodological approach of the DBR, which provides a triangulation of the data (based on the envisaged interactive teacher/pupil behaviours), emphasises the importance of contextualising and valorising the experiential aspects, while reducing the evaluative pressure and the professional judgement from which teachers may suffer during institutional evaluation committees.

CONCLUSION

The initial wish to adapt the British PLSLP was based on the aim of supporting teachers in New Caledonia in the development of practices responding to the needs of a group of pupils characterised by their diversity of cultural and linguistic backgrounds. The main obstacle, which required great flexibility throughout the program, arose from human resources. In fact, we were able to observe that, above and beyond the atypical motivational profiles which led to people leaving the program, the fact that the same contact person followed the teacher over several years is an important point in terms of trust. This level of trust is expressed in by the

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individual to “agree to be observed” but also during the periods of exchange on oneself and one's practices. This point is all the more crucial in the New Caledonian context in which the teachers change pupils every year, which prevents them from following up the pupils, as was the case in the original program. This effect becomes even more accentuated by the changes in level in the organisation in cycles and even in schools.

The original aim of this program was to focus on the development of literacy-based skills for pupils in the countries of the Pacific where there is a blatant lack of initial teacher training; this is not the case in New Caledonia. As a consequence, by basing our study on the DBR approach and on a toolkit developed in collaboration, we have been able to simultaneously develop the toolkit and more broadly the program.

This adaptability has allowed us to direct the support towards deeper auto-reflection. The concern shown by the teachers for developing collaboration between colleagues also appears in the evolution of the discourses. The commitment for a large majority of the teachers in quite a demanding program and the support of the management teams and the informal demands of the teachers are strong indicators that this program responds to a need and is a valid means of supporting professional development on the ground.

This mirrors the case of the teachers who did not want to continue and shows the importance of considering in-service training in different conditions in order to support more closely teachers' needs, which differ particularly in the New Caledonian context, through multiple initial training schemes and thus variations in the shared culture among teachers. As we have pointed out, this form of equipped support over time involves a paradigm shift towards a holistic educational approach of “awareness”, within a “bottom-up” perspective, which involves changes on an institutional level.

In these conditions, we could envisage, for example, the university researchers working in partnership with the educational advisers who would be trained in data collection and support according to the conditions described in the program. This would allow us to respond to a request for professional support on a long-term basis. Indeed, the raising of awareness of practices leading to reflexivity and, specifically, the modification of professional practices and postures to the benefit of the professional development of teachers and the success of their pupils can only be carried out over a long period.

Thus, the development operates from pupil to teacher by observation and entails a rediscovery of oneself and one's practices. Within the ecosystemic perspective, the collaborative process at school level leads to the development of a collective professional culture, a point which may be lacking in New Caledonia as a result of the initial training structures as well as a shared culture among those who train adults, involving a broader movement within the institutions to the benefit of educational success.

In conclusion, it would be beneficial to develop this program throughout New Caledonia, because the pupils in difficulty are situated particularly in the Northern and Island provinces. This would also allow us to measure the efficacy of the program on the scaffolding of literacy-based skills alongside the professional support of teachers, while also progressing the research on comparisons with the countries of Oceania which are involved in this project.

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Appendix 2: Modified table

Enseignant : _____ Heure : _____ Discipline observée : _____ Observation sur 3 minutes. L'enseignant est en train de travailler avec élèves (nombre d'élèves).		Observation sur 3 minutes, 1 minute par élève. Entourer l'activité principale dans laquelle l'élève est engagé pour la majeure partie de la minute d'observation.			
Ressources Langue utilisée : _____ Français/ Kanak / autre _____ Support utilisé (à visée de l'élève, un seul item) : <input type="checkbox"/> Manuel <input type="checkbox"/> Affichage <input type="checkbox"/> TBI / tableau <input type="checkbox"/> Feuille <input type="checkbox"/> Support de manipulation <input type="checkbox"/> Cahier de l'élève <input type="checkbox"/> Autre (décrire) : _____ Feed-back de l'enseignant (cocher un seul item) : <input type="checkbox"/> Reconnaiss les réponses correctes ou incorrectes <input type="checkbox"/> Donne la bonne réponse <input type="checkbox"/> Sollicite l'élève pour davantage de réflexion <input type="checkbox"/> Conseille <input type="checkbox"/> Autre (décrire) : _____ <input type="checkbox"/> Aucun	Focus sur l'enseignant (qu'est-ce qu'il est en train d'enseigner ?) Identifier l'activité (un seul item, point de focalisation de la majeure partie de l'observation) <input type="checkbox"/> Lecture de lettres <input type="checkbox"/> Lecture de syllabes <input type="checkbox"/> Lecture de mots seuls <input type="checkbox"/> Lecture de phrases <input type="checkbox"/> Lecture de texte <input type="checkbox"/> Copie <input type="checkbox"/> Écriture de lettres <input type="checkbox"/> Écriture de syllabes <input type="checkbox"/> Écriture de mots seuls <input type="checkbox"/> Écriture de phrases <input type="checkbox"/> Écriture de texte <input type="checkbox"/> Langage oral <input type="checkbox"/> Réflexion sur les stratégies de lecture <input type="checkbox"/> Réflexion sur les stratégies d'écriture <input type="checkbox"/> Réflexion sur les stratégies de langage oral <input type="checkbox"/> Littératie au service des autres disciplines	Approche de l'enseignant (comment l'enseigne-t-il ?) Entourer la stratégie principale observée (sur la majeure partie du temps) En montrant/ en le disant/ en l'expliquant (l'enseignant parle et les élèves écoutent) En répétant/ en faisant répéter/ apprentissages par exercices répétés (l'enseignant parle et les élèves répètent) En posant des questions/ en invitant les élèves à répondre aux questions (l'enseignant parle et les élèves répondent) En facilitant les interactions entre les élèves (les élèves parlent, échantent entre eux) En surveillant les comportements / les aspects organisationnels de la classe (l'enseignant circule dans la classe et surveille les comportements) En circulant et en aidant (l'enseignant se déplace dans la classe/ parmi les groupes d'élèves/ d'élève à élève pour étayer et maintenir l'attention) En valorisant/en conseillant les élèves En invitant les élèves à développer leurs propos	Élève 1 / Garçon – 1 minute Parle Écoute Lit des lettres/ syllabes/ chiffres (association phonie-graphie) Lit des mots isolés Lit des phrases Lit un texte Lit à haute voix Écrit des lettres/ syllabes/ chiffres (association phonique) Écrit des mots isolés Écrit des phrases Écrit un texte Copie Épelle des mots Réfléchit au sens des mots Comprend Dessine/ décore/ représente Autre (littératie) : _____ Activités non littératiqes (bricolage, hors tâche, rangement) Est-ce que l'élève travaille : Seul ; en binôme ; en groupe ; en groupe classe En employant principalement : Français/ Kanak/ autre En utilisant (étayage) : Affichage/ cahier de règles/ ouvrage/ outil informatique/ aucun support En utilisant (support de l'activité) : Ouvrage/ TBI-tableau/ feuille/ support de manipulation/ cahier de règles/ aucun support Notes du chercheur	Élève 2 / Fille – 1 minute Parle Écoute Lit des lettres/ syllabes/ chiffres (association phonie-graphie) Lit des mots isolés Lit des phrases Lit un texte Lit à haute voix Écrit des lettres/ syllabes/ chiffres (association phonique) Écrit des mots isolés Écrit des phrases Écrit un texte Copie Épelle des mots Réfléchit au sens des mots Comprend Dessine/ décore/ représente Autre (littératie) : _____ Activités non littératiqes (bricolage, hors tâche, rangement) Est-ce que l'élève travaille : Seul ; en binôme ; en groupe ; en groupe classe En employant principalement : Français/ Kanak/ autre En utilisant (étayage) : Affichage/ cahier de règles/ ouvrage/ outil informatique/ aucun support En utilisant (support de l'activité) : Ouvrage/ TBI-tableau/ feuille/ support de manipulation/ cahier de règles/ aucun support Notes du chercheur	Élève 3 / Garçon ou fille – 1 minute Parle Écoute Lit des lettres/ syllabes/ chiffres (association phonie-graphie) Lit des mots isolés Lit des phrases Lit un texte Lit à haute voix Écrit des lettres/ syllabes/ chiffres (association phonique) Écrit des mots isolés Écrit des phrases Écrit un texte Copie Épelle des mots Réfléchit au sens des mots Comprend Dessine/ décore/ représente Autre (littératie) : _____ Activités non littératiqes (bricolage, hors tâche, rangement) Est-ce que l'élève travaille : Seul ; en binôme ; en groupe ; en groupe classe En employant principalement : Français/ Kanak/ autre En utilisant (étayage) : Affichage/ cahier de règles/ ouvrage/ outil informatique/ aucun support En utilisant (support de l'activité) : Ouvrage/ TBI-tableau/ feuille/ support de manipulation/ cahier de règles/ aucun support Notes du chercheur

Parental involvement in ECE in Samoa: What is the impact on educational achievement?

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The establishment of Early Childhood Education (ECE) in Samoa has been a significant educational development for the first stage of children's school life. In this research, a mixed methodology approach using quantitative and qualitative approaches was employed whereby quantitative data was collected and qualitative data provided further explanation. Findings from quantitative data indicated parents' contributions to preschool education whereas qualitative data focused on parents' and ECE principals' views on parental involvement. The findings revealed that the majority of teachers believed parents' support should take place outside the classroom. Some tensions were evident between parents' and teachers' perceptions and this paper concluded that there needed to be more consultation between parents, ECE principal, and teachers to establish mutual understanding acceptable to all in supporting children's early years of education.

Keywords: Early Childhood Education (ECE); Talanoa and Nofo; Samoa; MESC; NCECES; parental involvement

INTRODUCTION

This article reports on a study to investigate whether parents' involvement in ECE development in Samoa contributes to children's educational achievement. Specifically, the study aimed to understand whether parents' willingness to assist children's movement from the home to school ensures a smooth transition and provides the best educational results for the child.

ECE in Samoa is operated by a non-government agency with assistance from the Ministry of Education, Sports and Culture (MESC), which includes resources and training workshops. However, teachers' salaries and facilities are the responsibility of ECE centres. The operational budget for ECE centres is minimal.

The MESC *Education Statistical Digest* (2019) stated "that in all literacies, students are performing well below expected competencies" (p. 31). Children that are supported in the home and school during ECE years demonstrate better achievement at the upper level (Chohan & Khan, 2010; Rade, 2020). Research shows that children are successful when parents continue to support them and have a positive influence on learning and

literacy (Maka, 2018) by assisting school activities, attending Parents' Day, and collaborating with teachers. Internationally, ECE is the beginning of formal education for children in society, nurturing children's enjoyment of learning (Amoah et al., 2013; Fagbeminiyi, 2011). In ECE, teachers draw on the basic tenets of child development theories about learning. Although the home is a child's first classroom, they are introduced to the world of school and science in formal classrooms where exposure and engagement is extended in the preschool by experienced teachers (Dere, 2019; Faamatuainu, 2016). In fact, children who start ECE at an early age find it hard to adjust to their new environment (Peterson & Elam, 2020). ECE centres need parents' assistance to be with the child for the first day or the first week of school (Mahmood, 2013, Viliamu & Esera, 2019). The teacher's role is to work together with parents to ensure that the child is assimilated into the new environment. Fagbeminiyi (2011) argued that this is crucial as "the more parents are involved with their children, the more positive learning and general life outcomes occur" (p. 46). Viliamu and Esera (2019) note that children achieve better academic results when parents provide ongoing support in the home and at school. Therefore, parental involvement in ECE is vital and is highly recommended for primary and secondary education as well. Indisputably, parental involvement provides positive outcomes and is "an effective strategy to enhance student success" and contributes tremendously to "academic performance in students" (Bower & Griffin, 2011, p. 2).

This ECE study conducted in Samoa was assisted by the MESC, the National Council of Early Childhood Education in Samoa (NCECES) and the Faculty of Education (FOE) of the National University of Samoa (NUS).

CONTEXT

ECE was privately established in Samoa in 1968 by two mission organisations, the Protestant Church and Malua Theological College (NCECES, 1996). In 1969, the Protestant Church and its New Zealand counterpart assisted in the training of ECE, in which trainees graduated after two years (NCECES, 1996). Samoa's educational system did not recognise ECE until the mid-1970s; its focus from 1962 to 1976 being on educational developments in primary and secondary education. In 1970, the Samoa government's educational vision encompassed ECE "as a private undertaking, and community initiative" (EFA, 2016, p. 19). ECE was officially accepted in Samoa with Cabinet approval in 1976. While ECE was recognised as part of Samoa's education system (MESC, 2016, p. 19), its daily operations continued to be managed by the NCECES, a non-profit organisation.

In 1962, Samoa, as a newly independent state, continued to mimic the New Zealand educational system in its educational structure, coordination and administration. According to Tuia (2013), "the western educational system continues to influence the educational organisation of Samoa" (p. 37). The attempts by Samoan educators to transform Western teaching and learning into the Samoan context has changed the landscape of education developments, including ECE.

The Education Sector Plan (ESP) in Samoa (2019) stated that, "parents [should] comply with the Education Amendment Act 2019, which makes attendance at school compulsory from four years old" (p. 31). This ensured parents prioritised their children's education by placing them in ECE centres. While MESC's *Education Statistical Digest* (2019) recorded an increase in the number of ECE centres in Samoa, it

also documented that educational awareness was needed to target “parents and the community to promote the importance of early childhood development and education” (p. 18), recognising parental involvement is vital for promoting ECE for children to advance in the educational system and to eventually assist the country’s further development. This is explored through a brief review of the relevant international literature and Samoan research (Bugeja, 1998; Kurtulmus, 2016; Viliamu & Esera, 2019).

LITERATURE

In order for the education system in Samoa to achieve its goal of quality education for all, stakeholders such as the MESC, NCECES, and FOE NUS should collaborate to provide appropriate educational support to enhance children’s learning (MESC, 2019). The study reported in this article, however, focuses on parents’ roles as educational stakeholders once children enter school. Children’s education is extremely important and parents play a large part in ensuring educational success, especially in the home where they monitor and assist children’s learning. Compton, Jack and McDowell (2018) argued “that parents who display higher levels of involvement will have children who perform better academically” (p. 1). Involvement of parents in children’s education increases their capacity to learn, self-motivation, self-confidence and interest. Research pointed to parental involvement as correlating with “parental aspirations for their children’s academic achievement, parents’ communication with their children about education and school matters, parents’ participation in school activities, parents’ communication with teachers about their children, and parental supervision at home” (Fan, 2011, p. 29).

Children’s education and their relationship with parents at ECE are vital in many ways. Parents assist with teaching and modelling appropriate learning strategies for children before entering ECE centres. MESC indicated that parents are encouraged to place their children in ECE schools for exposure and interaction with children their age, participation and active engagement with teachers and other pre-schoolers.

Significantly, as indicated in previous research, “parents’ involvement during parents’ day, meetings, and excursions are crucial for all partners in the learning process” (Faamatuainu, 2016, p. 47). Such practices, Faamatuainu (2016) espoused, are popular in Samoa, where parents display great interest in children’s education. According to Viliamu & Esera (2019), “parents share the responsibility of helping children learn” (p. 110) not only in the home but also in school. In addition, “principal and teachers discussed the importance of parental and community involvement” (p. 110) as an opportunity for parents to hear and share children’s educational progress with teachers and the principal. Kurtulmus (2016) notes that parents’ roles in children’s education included “participating in extended class visits and helping class activities” (p. 1150). Parents’ involvement at home and school help children’s “positive engagement with peers, adults, and learning” (Kurtulmus, 2016, p. 1150). Subsequently, parental support provides a constructive outlook for literacy and numeracy, because Samoans continue to struggle with literacy and numeracy at all levels.

Although ECE teaching and learning is new to some children, parents’ involvement in assisting teachers ensure children’s smooth transition from the home to school. Viliamu and Esera (2019) reiterated that teachers and principals need to discuss the importance

of parents' involvement in children's education. Parental involvement sustains children's learning in school and consolidates relationships with teachers and parents in sharing responsibility for children's learning.

ETHICAL CONSIDERATIONS

The research was conducted within the context of Samoan culture, which guides social, cultural and educational values. In conducting research in Samoa, permission was first sought from work superiors at the NUS, MESC and NCECES.

An ethical process requesting participants involvement had to be satisfied. This was conducted by the University Research Ethical Committee (UREC) NUS as well as NCECES. Although NUS is the sole owner of the research, seeking NCECES approval for focus group sessions with ECE principals and parents was essential. Data collection started soon after ethical approval was granted by NUS and NCECES.

METHODOLOGY

The research utilised an explanatory and interpretivist methodological approach that incorporated quantitative and qualitative methods of data collection and analyses (Creswell & Tashakkori, 2007; Tashakkori & Teddie, 2009). These approaches focused on active and interactive experiences that contributed to the enhancement of practice and communication. The explanatory approach explained, clarified and interpreted information after gathering "quantitative data and then collecting qualitative data to help explain or elaborate on the quantitative results" (Subedi, 2011, p. 572). According to Denzin and Lincoln (2011), "interpretivists draw on a range of methods, tools and techniques to secure an in-depth understanding of the phenomenon under investigation" (Denzin & Lincoln, 2011, p. 3). As such, investigation focused on gathering quantitative and qualitative data pertaining to parental involvement in ECE developments in Samoa. In fact, for the findings to be concise and meaningful, pragmatism provided "a more . . . practical solutions" (Rahman & Zakaria, 2008, p.111).

The research question was: What is the nature and scope of parental involvement in ECE in Samoa?

Statistical data using a survey questionnaire was collected from preschool teachers and concerned their observations of parental involvement in children's education. The teachers were consulted on how to collect the information in relation to the research aim. Qualitative data in the form of interview transcripts were gathered from preschool principals, parents and MESC officers using focus group sessions to assess the relationship between parents and school principals as well as the support and resources of stakeholders.

Graff (2017) explained that "descriptive statistics summarised data to allow researchers to better understand the data trend" (p. 62). The researchers acquired quantitative results before utilising qualitative data to fully describe the meaning and significance of the final results of data analysis. This approach also supported pragmatism which centred on addressing problems logically and practically rather than using theory or abstract principles. Morgan (2007) contended that pragmatism provided researchers with the freedom to choose what is "right and wrong" (p. 9) based on what best represented

individuals' social, cultural, educational and political interests and values. This is consistent with Kaushik and Walsh's (2019) explanation that "pragmatism is based on the proposition that researchers should use the philosophical and/or methodological approach that works best from the analysis of the research problem being investigated" (p. 2). Therefore, pragmatism is a coherent mixture of data collection and analysis because of its flexibility and connectivity to the different research approaches (Creswell & Clark, 2011). Kaushik and Walsh (2019) further explained that "pragmatism is a paradigm that claims to bridge the gap between the scientific method and structuralist orientation of older approaches and the naturalistic methods and freewheeling orientation of newer approaches" (p. 2). This latter point led to the adaptation of the *talanoa* and *nofo* research methodology.

The *talanoa* and *nofo* are indigenous qualitative research methodologies that represent the social, cultural, educational and political values and interests of the researchers and participants. Due to the nature of the research that took place in a dominant cultural environment where researchers and participants were involved, the Samoan cultural principles of *talanoa* and *nofo* were employed as suitable for the context. In order to carry out *talanoa* and *nofo* in the Samoan culture, both parties must display respect (*faaloalo*), sacred relationship (*va tapuia*), mutual respect (*va fealoai*), behaviour accorded to others (*ava fatafata*) and reciprocity (*feavatai/fetausiai*) (Tuia, 2013, p. 7). The essence of these cultural principles or values in the Samoan culture makes *talanoa* and *nofo* culturally appropriate in the Samoan setting. In light of this, high chiefs and significant adults' interactions with individuals without chiefly titles and others is different. It is important for untitled young men and women as well as children to be seated when conversing with chiefs and significant adults in adherence to the cultural principles of *talanoa* and *nofo*.

Methods of data collection

Quantitative data collection utilised a survey questionnaire (Young, 2016) to seek ECE teacher participants' views about parents' contributions to children's education and areas teachers believed parents should assist with. It included community involvement, supervised excursion, fundraising, monitoring children's activities during interval, making/cooking meals, and providing transport (see Table 1). Teachers had to select from the choices of response as to which was the most popular for community support. Similarly, with parental assistance in the classroom, teachers chose from areas such as: talk and explain to children; tell stories and discuss; read to children; and monitor new words/phrases/ideas.

Table 1: Questions on community involvement and parental assistance

Community Involvement
Questions
Do you involve the community in your school?
How do parents get involved?
Parental Involvement
Question
How can parents assist young children?

The qualitative method of data collection used the *talanoa* and *nofo* (Tuia, 2013) involving parents and preschool principals. The *talanoa* described by Vaioleti (2006) is a conversation or talk between two individuals or more that share opinions or thoughts in formal or informal setting. *Nofo* offered by Tuia (2013) is known as sitting, a cultural protocol and part of the Samoan culture to sit and talk. Whether on formal or informal settings in Samoa, untitled men, women, children, and teens do not *talanoa* and *nofo* with matais, church pastors and significant adults in the village. Individuals must show respect in the way *talanoa* is conducted by using appropriate, respectful dialogue when conversing with dignitaries in the village. The utilisation of *talanoa* and *nofo* in focus group discussions provided in-depth information pertaining to parents' responsibilities of children's educational situations.

There were 25 parents and 25 preschool principals in the focus groups. The total number of 50 parents and preschool principals were divided into five groups of 10 each. This was done to ensure that the *talanoa* and *nofo* sessions were viable options to gather in specific locations as participants were quite dispersed and lived in locations far from one another. This was similar to soliciting views of parents by preschool teachers in Vanuatu (Ministry of Education Vanuatu, 2014; Tuia et al., 2021). Rankin and Then (2015) noted that "focus groups are generally used to gather in-depth knowledge about attitudes, perceptions, beliefs and opinions of individuals regarding a specific topic" (p. 16). As such, focus group discussion provided information to clarify conflicting issues pertinent to the topic. During focus groups of *talanoa* and *nofo*, parents and ECE principals offered their perceptions of how parents should assist with children's education. This information was recorded, written and later analysed.

Data analysis

The quantitative analysis was based on the Excel Microsoft application of SPSS to sort data into pie graphs and provide calculation of the percentages of parents' involvement in ECE activities at ECE centres. To achieve quality, SPSS created, developed and articulated statistical descriptions that best represented the research question. In SPSS analysis, the survey questionnaire was first coded and a number given to represent each question that participants had responded to. Churchill, Denny and Patman (2013) stated "quantitative data are usually coded to take the form of numbers rather than text" (p. 1) to ensure the data is clearly set out and the SPSS device can be read, sorted and analysed. The completion of the coded exercise was followed by entering data into SPSS which sorted, analysed and transformed the data into descriptive statistics and, thereafter, the researchers decided on the type of graphs to display.

Qualitative data analysis was conducted through the cyclic and typology analysis methods advocated by Sarantakos (2005) and Neuman (2014). The information from participants were tracked through patterns deduced in the data, which identified consistent behaviours, events or information. After pattern classification, these were explicated by "moving from description of empirical data to interpretation" (Sarantakos, 2013, p. 314). The cyclical process of analysis in conjunction with typology was related to qualitative research of *talanoa* and *nofo*. Therefore, Neuman's (2014) typology method of analytic comparison was employed to support, identify and corroborate various views from participants. The analytic comparison accompanied participants' newly found similarities in meanings and opinions on parental involvement. After going through the cyclical process, the raw data was then sorted into recurring themes which guided the findings and the discussion that followed.

The merging of quantitative and qualitative data into one form of description utilised Creswell & Tashakkori's (2007) method of explanatory, interpretivist and pragmatic methodologies. In this way, the qualitative data helped to explore, clarify and articulate quantitative data to better understand research results.

DISCUSSION OF FINDINGS

The findings provided a comprehensive account of participants' responses to the questions pertaining to parental involvement of ECE developments in Samoa. The discussion of findings begins with those from the quantitative data then qualitative data.

Key findings from the survey

The graph below indicated participants' observation of parents' contribution towards community activities in ECE centres that participated. As shown in Figure 1, parents in preschools were predominantly involved in supervising excursions, then fund raising activities and then monitoring children's activities during interval. Others pointed to parents' support in cooking and providing transportation for children. The least popular activity was recording time children entered and left school.

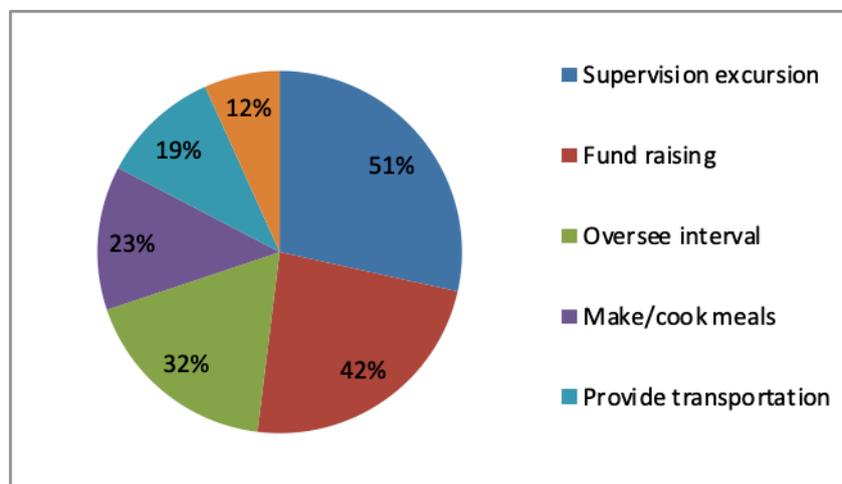


Figure 1: Community activities

Participants were also surveyed on how they perceived parents' involvement with children's educational activities. Figure 2 shows that parents were mostly involved with talking and explaining things to children. The second highest category was telling and discussing stories with children. This followed reading to children and monitoring new words/phrases and ideas.

The quantitative findings on community activities and parental assistance showed activities of interest and assistance that were popular with parents. As indicated in the community activities data, teachers responded that parents contributed greatly to supervising excursion. Second was fund raising to assist ECE developments for children's programmes. The third popular one was to oversee or monitor children's activities during interval. Other community activities, such as cooking, providing

transportation and noting children entering and leaving preschool, were measures to support children's health and safety. Teacher participants' responses to parental assistance in the classroom emphasized talk and explaining to children as the most popular while telling stories and discussion was considered of second importance.

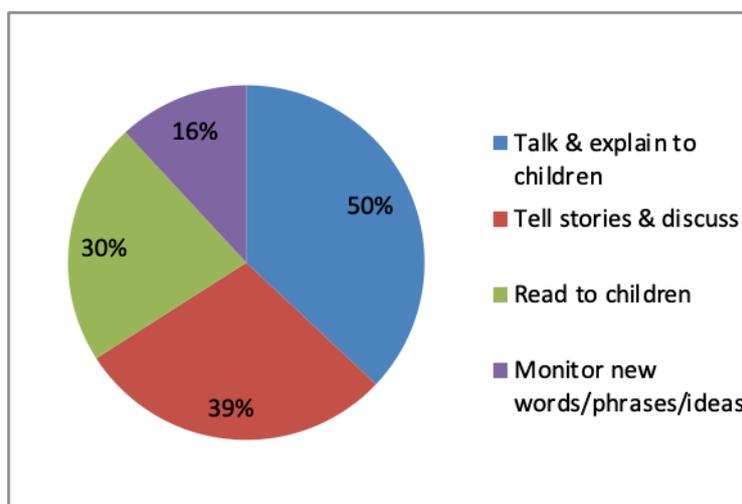


Figure 2. Parental assistance

Parents reading and monitoring children's work all contributed to children's learning progress at ECE. The data presented by the pie graph in Figure 2 provides results on parents' involvement in children's education in ECE centres. Parents eagerness to participate and contribute to ECE centres' activities demonstrated their strong support for teachers and children. Mainly, parents' involvement in children's early years of education supported Haggerty et al.'s (2006) findings that "parents contributed to the education programme as parent help, and were encouraged to document children's learning in the crèche and at home, thereby deepening understanding about children and their learning" (p. viii). Haggerty et al. (2006) advocated the idea of quality learning for children in ECE where "teachers and parents/*whānau* worked together to enhance children's learning and wellbeing" (p. vii). Passiatore et al. (2013) argued that children in ECE centres performed well when parents are involved in their educational activities, and that safeguards the "child's wellbeing, social orientation, emotionality and learning" (p. 145).

Key findings from focus groups

Parents' perspectives from focus groups

The qualitative focus group *talanoa* and *nofo* with ECE centre principals and parents indicated thought-provoking findings of parents' involvement in children's education. Parents saw their role as home teachers and helping with school activities, such as reading, field trips, cooking and assisting where needed.

ECE parents stated they felt useful because they contributed to the teachers' work as well as giving them encouragement. "Parents assist by offering advice and support to teachers facing problems whether it is supervision or assisting with children's learning activities in the ECE centre" (SAFParent/1). Through the teachers aim to do better and

do their job well, SAFParent/2 explained that “as parents, we can be very useful in preschool and we can help with what is needed”.

Similarly, SAFParent/3 reiterated that parents “need to be in the school because some children are afraid and want parents until they get used to the new school environment”. Once the child becomes familiar with the environment, they lose fear and feel a sense of trust and freedom in their newly found surroundings. In fact, what contributes more to a child’s freedom to think, speak and share is dependent on the teachers’ interactions with the children in and outside of the classroom. “Teachers must mingle with the children during class so that children are able to understand what they are learning from time to time” (FALParent/4). The teachers’ role in children’s lives and interactions in school create a feeling of welcome, the provision of appropriate teaching and learning materials and an affirmative environment contributes to a positive attitude that motivates children to attend and enjoy learning. “My child loves going to school because of the teacher and also the chance to mingle with other children” (SAFParent/5). Based on these parents’ observations of children, teachers play a pivotal role in children’s continuous interest to attend school, which is significant in the early stages of a child’s education. Furthermore, parents also indicated interesting responses of children’s school experience as attested to by SOGParent/7 and SAFparent/6:

My daughter talks a lot and enjoys writing, reading and speaking. These are the activities that they do at school, writing and reading, playing and drawing. (SOGPA/7)

My child likes going to school because of the trampoline. It is another incentive the school has invested in to motivate children to attend and engage in play. (SAFPA/6)

Children’s participation in different activities, as explained by parents, showed that different school resources and materials available for teaching and learning are motivational for children.

However, FALParent/8 suggested that it is not only about teachers, school resources and materials but “parents should also prepare the child before going to school. They shouldn’t hit the child if he/she is sleeping but ensure that they are treated with love, care and respect”. These caring methods prime the child for school and protect the child from harm. Parents know best about their children’s well-being, and participation in children’s education at ECE can bring positive educational influence to their educational development. Some ECE centre principals support parents’ involvement in children’s education inside and outside the classroom.

Parent participants’ responses indicated their enthusiasm to be part of children’s learning experience in ECE. For parents, there was a need to bridge the gap between the home and school to ensure children were supported and monitored physically, mentally and socially. Parents were interested in a more active role in children’s preschool life, and teachers must accept that parents genuinely wanted to be part of children’s growth and development.

The findings from this research based on parents support clearly showed significant developments in children’s education, social, physical and mental wellbeing. Research findings coincided with those of Rade (2020) and highlight that the parents’ roles in children’s ECE learning is crucial. In addition:

[A] good relationship with parents has many advantages, as it has a positive impact on teacher morale and school climate, the behaviour of children, as well as parental confidence and interest in the education of their children. (p. 2833)

This proposition is supported by Kocyigit (2014) who argued “parents, teachers, and other adults around a child have an important mission in the process of developing the child’s readiness for primary school” (p. 1872). Furthermore, the Ministry of Education Vanuatu (2014) emphasised the importance of the relationship between the teacher and parent: “parents are to give support to the teachers by reinforcing and spending quality time with their children to develop their literacy and numeracy skills” (p. 17). Studies conducted on the topic of parents’ involvement and teacher relationship with parents has proven to be an advantage for children in ECE centres. The child succeeds in education due to the provision of support from parents in the home and ECE centres. As Haggerty et al. (2006) explained, teachers and parents should work collaboratively to map out children’s education, social and mental interests which all contribute to children’s success in school. For instance, “teachers and parents discussed their aspirations and centre philosophy together, and teachers included parents in assessment, planning and curriculum discussion” (p. viii).

Principals’ perspectives from focus groups

Parents are children's first teachers in everyday interactions and their education depend on parents’ ongoing support throughout their lives. “Parents as children’s first teachers should be part of children’s learning inside and outside the classroom” (Participant FALPrincipal/2). The importance of parents’ involvement in children’s education oversees what goes on in the home and ECE centres.

Furthermore, FALPrincipal/1 explained, “parents should be part of children’s learning as they are children’s first teachers. When children finish school, parents assist with their schoolwork”. However, other principals insisted that parents are unwelcome into ECE centres because they interfered with teachers’ work.

According to SAOPrincipal/3, “parents are not allowed in our school compound. We let them stay in school for the first week of the term because the children are new”. Participants believed that parents’ involvement should be limited to the home as the ECE centre is the teacher’s prerogative. Another participant echoed similar sentiment and indicated that parents should have faith in the teachers and principal to look after their children. “I don’t want parents to come into the classroom and the school compound during school hours because we have schedules for the week and throughout the term” (Participant SAOPrincipal/5). The issue raised by these participants contradicted the value of parental involvement in both the home and school, insisting that parents’ roles were in the homes. One principal, FALPrincipal/43, mentioned a child that would “cry and want to be with the parent”, while participant SOGPrincipal/4 claimed that “some parents have no patience if they see or hear something unpleasant from the teacher”. These problems raised by participants could disrupt teachers and principals in their daily duties. It demonstrated that participants undermined parents’ involvement in the school due to their own personal and professional motives.

Not all ECE principals agreed with parents being allowed into the preschool compound during preschool hours. The main concern raised by principals was the disruption parents’ cause to children’s and teachers’ work. Concerns were raised when parents disagreed with teachers’ style of teaching, language use and voice pitch. However,

others felt that parents should be permitted into preschools, but their support be limited to outdoor activities. Most ECE principals strongly felt that parents' involvement with children's education is at home. In fact, some believed that was the only avenue to avoid unwanted confrontations between teachers and parents.

Summary of key themes

The themes that emerged from data analysis were parents' contributions, ECE developments, and differences between teachers and parents. Themes responded to the research question on "What is the nature and scope of parental involvement in ECEs in Samoa?" Themes helped to clarify the current situation as stated by the quantitative data regarding parents' assistance and community involvement in ECE developments. The qualitative findings indicated that many preschool activities relied on and sought assistance from parents. However, some principals were not convinced and were reluctant to entertain the idea of accepting parents into the ECE compound. They argued that parents could contribute to their children's education from home. Many ECE centres do not have a steady operational budget for day-to-day activities. The money received from MESOC only covered resources and not teachers' salaries. However, some ECE centres depended on their communities for financial assistance towards preschool facilities and playground. It is where many parents play a critical role in fundraising to support preschools. Therefore, it could be seen that parents' contribution to ECE developments benefited not just the children but the teachers and principals if their differences could be set aside to focus more on children's learning development.

DISCUSSION

The research question: What is the nature and scope of parental involvement in ECE in Samoa? was answered by revealing a number of interrelated aspects: parents' contribution; stakeholder responses to ECE developments; and resolving tensions between teachers and parents about the scope and level of parental involvement. Although various interrelated aspects responded to the research question, parents' responses reflected their willingness to be involved in their children's preschool experience. As Fagbeminiyi (2011) explained "a child's growth and development is nurtured by the overlapping support of parents, family, community, and child learning opportunities, as most effective for successful outcomes" (p. 46). Therefore, parents should be accepted and acknowledged in children's preschool years.

Parent's support, as represented by Figure 2, for children's education was viewed as a relevant component to effective learning. During parents' *talanoa* and *nofo* sessions, their aspirations for children included a wide range of learning experiences that would progress them to the next level of education. From the findings, parents showed a deep desire to be involved in the activities of the ECE centres and to provide their children with the needed support.

The data revealed the importance of parents' roles in children's education and should be supported by ECE. Chowdhury et al. (2019) reiterated "preprimary education becomes more effective when parents as well as community become involved with preschool activities" (p. 1). Parents' involvement in children's education in the early years of schooling is crucial worldwide. Tomlin (2008) espoused working collectively to raise a child. According to Maiai (1957), "a Samoan child's education was carried out in the

home through the help of parents and immediate family members, such as children's upbringing based on the ethos of the people" (p. 166). In Samoa, as the quantitative results showed (Figure 1), parents were involved with supervision of children.

This is reflected in the theme of ECE developments regarding resources, facilities and qualified teachers to sustain quality teaching and learning. For parents, their involvement in preschool contributed to the development of resources, facilities' maintenance and supported teachers to complete higher qualification. In this way parents felt useful to serve children's education, achieve their goals and the teachers' goals. Fagbeminiyi (2011) considered parents' roles as essential and their involvement in "school decision making" (p. 47) would promote a "more positive learning and general life outcomes" (p. 46). Furthermore, research by Faamatuainu (2016), Fagbeminiyi (2011) and Compton et al (2018) supported parental involvement in children's preschool education as beneficial and supported higher levels.

Parents engagement and assistance of children in preschools has contributed greatly to the development of ECE in Samoa. It has also helped ECE teachers and principals with workload in the classroom while parents take care of outside work. Driessen, Slegers and Smit (2005) argued that "greater parent involvement has a positive influence on the climate of the school and the school's orientation towards its immediate surroundings" (p. 6). Therefore, ECE parents working collaboratively with the community would contribute in terms of positive progress for preschools.

Nevertheless, in the school compound, there could be tensions between parents and preschool facilitators. Teachers' and parents' differences were a concern for principals as parents could hinder, distract or obstruct teachers' work during class activities. As a result, children would not focus or engage in planned activities and parents could take offence if teachers disciplined their children. The qualitative data from the *talanoa* and *nofo* indicated some principals felt parents' involvement in preschools should be limited to outside the classroom whereas others proffered parents to help children at home.

However, parents strongly believed that they could contribute positively to children's education with school activities. The quantitative data illustrated many school activities parents were involved in. Compton et al. (2018) interpreted this as "parental aspirations for their children's academic achievement, parents' communication with their children about education and school matters, parents' participation in school activities, parents communication with teachers about their children" (p. 5). A more interactive approach for parents and teachers would ensure that children are not perceived as a contentious issue but should be viewed as what would achieve the best learning results for children.

In addition, supportive parents offered children assistance at preschool and home if requested. Teachers could concentrate on assisting children to rapidly assimilate learning in their new environment if parents assisted in other areas and activities. Therefore, it is crucial for parents to be part of their child's educational life at home and in school and both parents and teachers should have mutual understanding as it would determine the best way forward for the child to succeed in education.

CONCLUSION

Despite the differences between some ECE principals and parents in Samoa, parents' inclination to support children remained constant. Moreover, preschool is a milestone for children as their first time away from home and, therefore, parental participation

seemed appropriate. Parents' contribution to children's preschool years provided greater succour to ECE developments with different preschool activities and learning opportunities. Principals in ECE centres indicated the importance of parents' involvement in preschool in relation to children's safety. However, most ECE centres in Samoa have very little physical and human resources and relied very much on local donors and financial assistance from MESCS as well as parents' assistance. Some ECE teachers received minimum wages and the survival of the school relied on the number of children enrolled each year. For some ECE centres, parents are always scouting for resources and support that are sustainable for children's preschool activities. ECE principals, however, encounter problems with parents in preschools. Nevertheless, other principals have welcomed parents' contribution. ECE principals concerned with parents' hindering teachers' work could hold constructive consultation. Parents and teachers should understand where to draw the line when it comes to their respective boundaries and set clear demarcations of roles. Therefore, having close collaboration and understanding amongst teachers and parents would eventually contribute greatly to children's education. Moreover, ECE developments can be successful if educational contributors including parents, MESCS, NUS, NCECES and donors all work together for the children's future.

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Implementing sustainable EdTech projects in small island developing states: Strategies, challenges and reflections

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This paper discusses issues involved in trying to make foreign aid-funded education technology (EdTech) projects sustainable in the context of Small Island Developing States. Using two EdTech projects, the paper shares the authors' experiences in working towards sustainability by involving local stakeholders through collaborative design and implementation processes and other strategies. The paper also highlights challenges faced and how they were overcome, such as changes in local ministry staff and restrictions on travel during the coronavirus pandemic. The strategies, lessons and recommendations shared in the paper are intended to assist other practitioners in the area and contribute to collaborative learning through sharing practitioner experiences. While designing a foreign aid-funded project that is sustainable is not easy, this paper concludes that by sharing experiences and working collaboratively with local stakeholders, project teams can develop successful strategies to enhance sustainability.

Keywords: EdTech; sustainability; eLearning; foreign aid; education development; Small Island Developing States (SIDS)

INTRODUCTION

Foreign aid-funded development projects contribute to the education technology (EdTech) sector of Small Island Developing States (SIDS) of the Pacific and South-East Asia region in significant ways. The objectives of these projects include, but are not limited to, the following: providing Information and Communications Technology (ICT) infrastructure; introducing new pedagogical knowledge and skills; providing capacity strengthening; and increasing access to education in remote and marginalised communities.

As foreign aid support in the EdTech area grows, so does the need for program sustainability. Sustainability is the ability of an activity or system to persist and is widely regarded as an important criterion of development projects (Dempster, 1998). That is, it is important to consider ways in which the main outcomes of the projects can be sustained past the date of a development partner's contractual agreement. However, implementing sustainability is quite a challenge in some EdTech projects, for example:

Initially, the Ministry of Education, Sports, and Culture (MESC) did not have strong project ownership . . . MESC perceived it as purely an ICT project. (Asian Development Bank [ADB], 2019)

The One Laptop Per Child (OLPC) initiative can improve its success rate by letting go of its Western ideals and adapting its laptops to the appropriate needs of the children who are using them in developing countries. (Shah, 2021)

Technology is important, but its use is dependent on, and not a substitute for, teachers using student-centred pedagogy. (ADB, 2018)

Findings like the above are important in that they make practitioners aware of what they need to account for when trying to make projects sustainable. These findings from earlier projects were important for us as designers and implementers of two EdTech projects in informing our efforts to make EdTech projects sustainable.

In this article, we share our experiences as “insider” practitioners working to implement sustainability in two EdTech projects, Eskola and Pacific eLearning Programme, currently being conducted in SIDS in South-East Asia and the Pacific regions. The Eskola project is being run in Timor-Leste while the Pacific eLearning Programme is being carried out in the Cook Islands, Samoa, Solomon Islands and Vanuatu.

Author 1 is from Fiji and has a background in education and stakeholder engagement. She has over a decade of experience working in the Pacific with local stakeholders. She is currently the Team Leader for the Pacific eLearning Programme. Author 2 is from Timor-Leste. She has a background in using technology for education and has been working closely with Timor-Leste’s Ministry of Education for the past six years. She is currently the Education Technology Manager for the Eskola Project.

This article will share our experiences and learning from implementing the projects. Using Eskola and Pacific eLearning Programmes as examples, this article discusses how sustainability was included in the design as well as in the implementation phase throughout the projects. It is hoped that the strategies, challenges and lessons learned as part of these programmes will help inform other EdTech projects.

Context and background of Eskola and Pacific eLearning Programme

Eskola is a tablet-based application, designed as a key component of the Professional Learning and Mentoring Programme also known as ALMA (*Apoi Lideransa liuhosi Mentoria no Aprendizajen*). ALMA is a foreign aid-funded education development programme in Timor-Leste, jointly funded by the Timor-Leste’s Ministry of Education, Youth and Sports and the Australian Government Department of Foreign Affairs and Trade (DFAT). Starting in 2016, Eskola has worked closely with school leaders and school inspectors to improve school leaders’ professional development and teachers’ pedagogical skills through training and mentoring, peer learning group activities and classroom observations, and to drive positive change in schools.

Designed to work in a low or no internet connectivity environment, the platform also provides access to education resources and performance data that helps regional and national education leaders provide targeted support to schools. A chat function allows users to connect with each other and engage in communities of practice. It is designed with an automated notification system, displays information in a dashboard with easy-to-read interactive graphs, and includes an issue tracking system that allows hardware

and software problems to be effectively addressed. To date, Eskola has resulted in collecting more than 46,000 classroom observations, 1,600 peer learning group activities, and has had high engagement with 1.3 million messages recorded as having been sent by principals.

The Pacific eLearning Programme is a foreign aid-funded education development programme running since 2020 in the Cook Islands, Samoa, Solomon Islands, and Vanuatu. It is funded by New Zealand's Ministry of Foreign Affairs and Trade (MFAT) and works in partnership with local Ministries of Education in the four respective countries. This programme designs contextualised science eLearning activities based on the local Ministry of Education's curriculum and provides job-embedded professional development for teachers to provide them access to anywhere, anytime learning. Using a mobile-first approach, the programme makes learning science interactive and accessible to teachers and students in remote locations with limited internet connectivity. At the time of writing this article, the project was in its initial stage of implementation.

Both Eskola and Pacific eLearning Programme aim to achieve sustainability through considering the complex, dynamic and interconnected system of Edtech, putting people at the centre of the process and thinking critically. This approach is guided by Human-Centred Design (HCD) methodology and seeks to engage stakeholders in both the design and implementation of programmes, so that they can sustain them in the future.

THE HUMAN-CENTRED DESIGN METHODOLOGY

The HCD methodology focuses on collaboration and designing with local stakeholders; not a top-down or isolated approach where outside "experts" design for the local people. HCD is a creative approach to problem-solving that involves the user from the very beginning and places them at the centre of the design process. Users are defined as the community of stakeholders who will be using whatever is designed, for example, teachers, school leaders and ministries. In our experience, involving stakeholders in the design process from the beginning gives a sense of ownership and helps create programmes and content that is contextualised and localised.

HCD, as IDEO's Tim Brown (2010) explains, is a repeatable, creative approach to problem-solving. It is a process that starts with the people you design with and ends with new solutions that are purpose-built to suit their needs. HCD is about cultivating deep empathy, generating ideas, building prototypes, sharing and putting innovative solutions out in the world. It brings together human desirable with technologically feasible and economically viable. The process for problem-solving itself consists of three phases: the inspiration phase, the ideation phase and the implementation phase (Brown & Wyatt, 2010; IDEO.org, 2015).

We have found that the HCD approach best fits the contexts we work in as these communities have very little experience with using EdTech either at the school or ministry level. In such contexts, it is not appropriate to use an "off the shelf" product or assume that what has worked in different contexts in other countries, such as Australia or US, will work in Timor-Leste and the Pacific. As project designers and implementers, we bring tools and some knowledge about ICTs and EdTech but rely on local stakeholders' knowledge and expertise as to what will work in their context.

Hence HCD is suitable because it puts the stakeholders at the core of the design process. Their ideas and contributions were taken on board and they are part of the process from design to implementation. We worked closely with stakeholders and designed with the community to understand their context and needs, learn with them and design relevant programme structures and learning content as well as procure appropriate ICT equipment.

STRATEGIES TO PROMOTE SUSTAINABILITY

Based on the HCD methods, we used the following strategies to help make our EdTech projects sustainable.

Co-design and engagement with stakeholders

The Pacific eLearning Programme and Eskola teams work with the core value of designing with people not for them. Consistent and committed engagements with local stakeholders throughout the programme involved teachers, school leaders and the Ministries of Education. Some ways in which such engagement occurs include one-to-one interviews, regularly scheduled meetings, workshops, *talanoa*, *tok stori* and discussion sessions, user-testing, feedback sessions, and being responsive. These different approaches kept the lines of communication open between the local stakeholders and the project team, and facilitated effective, informed and timely decisions as the project progresses.

Co-designing involved communities and helped us understand their needs and context. Co-designing during the coronavirus pandemic was challenging, but we managed to engage a community of local science experts and teachers through virtual activities. The group of local community science experts, who we call Pacific Science Fellows, worked together with our science content designers as a virtual regional group. Ranging from experienced science teachers to a Scientist to a Brewmaster, the group had a diverse range of experience and expertise from different countries. Together, they engaged in co-design by reviewing content, giving feedback and suggesting examples, case studies and approaches that were relevant and contextualised to the Pacific through comments in Google docs and monthly group virtual meetings. We sought to compliment the feedback from this group with the viewpoint of a wider range of science teachers in remote and rural contexts. Thus, “photo journals” were used to enhance the human-centred design process. Science teachers were sent a series of SMS prompts that encouraged them to take photos of their daily lives and teaching experiences. The photo journals gave us a window into the everyday lives of teachers and follow-up interviews allowed us to use the photos to ask deeper questions about what they were proud of, challenges they were facing in terms of access to materials and ICTs, and how they taught in the classroom. This gave us valuable insights into with whom we were designing even when travel prevented us from meeting them face-to-face.

Understand local contexts

Crossley (2010) highlights that greater attention should be paid to contextual factors in educational research and international development cooperation. Keeping Crossley’s insight in mind, we broaden the boundaries of our context to include physical, socio-

economic and, to some extent, the political environment. For example, we found out that the staff of some ministries of education would not be available during national elections and, therefore, we had to reschedule some meetings and adapt some of our plans to work with this.

Locals understand their context, challenges, and opportunities the best. To understand the context, we use the snowball technique when it comes to introductions and interviews. For example, while talking to the Ministry of Education staff from a department, we ask them to introduce us to the staff of other departments whom they think would be good for us to talk to. This snowball technique introduced us to personnel we might not have met otherwise and provided more information. Learning from earlier projects is also important, so some time was allocated to reading reports of EdTech projects that had been completed in project countries. We learned about the achievements of these projects, their objectives and the challenges they faced. We also asked the local stakeholders, such as Ministry personnel who were part of these earlier projects, to relate their experiences and perceptions. Their perspectives helped us understand what the do's and the don'ts were and what we needed to pay attention to.

Taking an open-minded approach and an empathy-based mindset by being adaptive in our approach to implementation helped us understand the reality on the ground and respond to it. Most of what we learned through this approach centred on the concern that projects were implemented without understanding the challenges and the unique context of the people it is being designed for, and with limited engagement from those who will be participating in the project. We are working towards changing that through co-designing and ongoing engagement.

Promote local ownership

In our experience, to encourage engagement in project activities, it is important that local stakeholders feel ownership of the project at all levels. For example, some of the local stakeholders we talked to during the inception phase of our projects expressed disappointment that some foreign aid-funded education development projects only hire expatriates and that decisions are made by project implementers and the donor. This leaves local stakeholders feeling like participants instead of partners. Promoting ownership allows local stakeholders, for example, Ministries of Education, to have a say in the project and contribute meaningfully as well as understand the inner workings of the project so they can be engaged in the long-term maintenance of the project.

In both the Eskola and Pacific eLearning Programme, local stakeholders are part of project staff and governance structures. In both projects, deliberate efforts are made to engage locally based staff in key project positions and draw on expertise within the countries where the projects are implemented. We have locally based staff in project leadership and management roles, such as ourselves, as well as in implementation roles embedded within our partner ministries (discussed further below) to contribute to strengthening capacity within countries/regions. At the governance level, ministries of education are part of steering committees that make all the key decisions about the project alongside donors and implementers.

Another key way that both Pacific eLearning Programme and Eskola promote ownership is by involving stakeholders in the design, testing and implementation processes. In the case of the Pacific eLearning Programme, our Pacific Science Fellows

helped co-design the initial science elearning content which will be shared with local teachers for feedback. Upon the completion of the project, the content will be an open education resource. Ministries will be able to adapt the content using the training provided by the project team.

In the case of Eskola, local stakeholders were involved in user experience testing of the Eskola platform—an online application. User experience emphasises that when we design products, we are impacting real people (i.e., users) who may or may not be happy with the result (Notess, 2001). User experience testing for Eskola was done using semi-scripted protocols with the ministry focal points, donors and users (i.e., school leaders and teachers) to test the product's ease of use and navigation and to provide suggestions for a better user experience.

These approaches to encourage local ownership can also lead to regional ownership between governments, for example, south-south collaboration in the Pacific. It will support the region to take greater ownership of the projects as well as develop a community of practice to share information. This will provide a more enabling environment for SIDS to grow in the area of EdTech.

Use cost-effective, scalable and robust software and infrastructure options

Cost-effective, scalable and robust systems ensure that the EdTech software and devices are long-lasting, durable and can be easily replaced if damaged.

When purchasing EdTech infrastructure, we have found it to be important to consider which items are available and can be procured locally. That way, repairs or spare parts can still be sourced locally after the end of the project, and broken equipment can be easily replaced. Buying locally also supports the local economy. This, however, might not always be possible and there is always a balancing act between procuring locally and ensuring the most appropriate equipment for the context.

For the software, both our EdTech projects developed online platforms using open-source software which can be adapted based on ministries' and users' requirements over time. Both platforms used for Pacific eLearning Programme and Eskola are simple and easy to use, with offline capability and general stability. It ensures data quality, system efficiency, effectiveness and data security. The data is stored on a cloud server with backup and the database has the capability to enable robust data analysis and reporting. These technologies are secure and scalable, hence easy to maintain and sustain. Implementing such systems will encourage the ministries to continue the project as the resources are accessible and affordable.

Strengthen capacity

Capacity strengthening can range from policy development to staff training to budgeting. Capacity strengthening enables the development of processes, skills and knowledge.

Our approach towards capacity strengthening is to help where help was needed (instead of a one-size-fits-all approach) and to provide support so Ministry personnel learn skills that are transferable to other projects. One approach taken by the Pacific eLearning Programme is to understand where ministries needed help was through locally

appropriate indigenous engagement methodologies such as *tok stori* and *talanoa*. *Tok stori* is a Melanesian expression of commitment to togetherness manifest through engagement in *stori*, a shared narrative that dialogically constructs reality (Sanga et al. 2019) while *talanoa* is a personal encounter where people story their issues, their realities and aspirations (Vaiioleti, 2013). The *tok stori* and *talanoa* sessions held with the staff from different sections of the Ministry, for example, the ICT Department, and Planning Section, were used to come up with a list of skills, workshops and training the ministries preferred to help them execute EdTech projects in their contexts.

In both our EdTech projects, we contributed to capacity strengthening by producing manuals, guidelines and video-based tutorials in close partnership and consultation with the Ministry to respond to the needs of our partners. We worked to avoid designing guidelines and manuals in isolation and simply handing them over to the ministries, which, in our experience, often results in them sitting on shelves and never being used. Instead, we take a collaborative approach where we involve the Ministry in creating the guidelines, engaging particularly the staff of the Planning Department and the ICT Department as well as other relevant departments in each context.

In Timor-Leste, the Eskola project team provides ongoing training and mentoring to the Ministry focal points from selected Ministry units to ensure they can manage the entire technology system independently.

Another strategy we employ for strengthening capacity is to embed staff in the Ministry. These staff train the Ministry's staff, facilitate coordination between stakeholders and provide other technical assistance. In both the Eskola and Pacific eLearning Programme, we have ICT staff based at the Ministries of Education. The ICT specialists assist and provide capacity strengthening to the relevant department and users in addressing device and application issues. Capacity strengthening helps implement the project better, allows for sharing of knowledge and skills, and supports local ownership of the project.

CHALLENGES

Having discussed some of the strategies we use to contribute to the sustainability of EdTech projects, we now share reflections on some of the key challenges we met in our projects.

The coronavirus pandemic

Factors that are challenging under normal circumstances such as the difficult to navigate terrain, unpredictable and extreme weather, lack of resources and absence of robust ICT infrastructure, were magnified by the worldwide COVID-19 pandemic. Travelling is restricted, resources are stretched and Ministry of Education personnel are focused on finding solutions to continue the education of their students during school closure and, thus, have limited time to pay attention to EdTech projects. Under these circumstances, foreign aid-funded education development projects, such as the ones we are involved in, become even more challenging to implement as donor priorities and timelines don't necessarily align with the emerging needs of our partner ministries.

In the case of the Pacific eLearning Programme, the project has been carried out remotely since its inception date due to travel restrictions. It was difficult to coordinate with the ministries of education from four different countries without ever having met in person. It took time to build rapport and working relationships with partnerships. Despite the help of technologies, face-to-face meetings are culturally important for building strong relationships, having a more focused and productive partnership, and clearly communicating goals.

In the Eskola project in Timor-Leste, school leaders were unable to continue their daily learning activities and submit their reports due to the coronavirus pandemic. Schools were closed nationwide from March to June 2020. And from March to July 2021, the Timor-Leste Government announced another state of emergency and school closures in some areas. As a result, there was a disruption to the regular school visits by inspectors and mentors during this period and they could not observe or fully support school leaders.

Such situations result in delays in meeting project milestone deadlines. It also impacts the successful implementation of the project. To help overcome this challenge, we took the adaptive management approach—we changed and implemented new strategies where needed. For example, in the Pacific eLearning Programme, we conducted online workshops instead of in-country workshops, investing significant time in ensuring these workshops were engaging, interactive, and inclusive of everyone, even where technology was challenging. In Eskola, regular school contact was maintained with school leaders through phone calls and online meetings via Jitsi Meet or Zoom from the Dili-based project team, who were unable to travel domestically.

Changes in staff and loss of expertise

Another challenge faced by foreign aid-funded education development programs is changes in partner Ministry of Education staff and personnel, as well as the partner government in general. Cornell (2013) suggested that high turnover rates in the public administrations of aid-recipient countries present a challenge to the implementation of democratic governance aid.

In the case of Timor-Leste, the government in general and especially the Ministry of Education personnel have changed three times since the implementation of the Eskola programme in April 2016. The Ministry of Education has been restructured from the Ministry of Education to the Ministry of Education and Culture to the current Ministry of Education, Youth and Sport. These changes affected the implementation of the programme to a large extent, especially concerning the decisions taken to determine the sustainable future and continuation of the programme. For example, the new Minister and the Vice Minister needed to be persuaded to continue allocating budgets and supporting the implementation of the programme that was started by the previous Minister from a different political party.

Also, having only one contact person at a Ministry department can become a big challenge. The focal point can be replaced if there are changes to the organisational structure of this Ministry or if they pursue another job. The Pacific eLearning Programme, for example, saw a contact person resign from the Ministry to take up another role. In Eskola, one of the contact points at the Ministry was transferred to another department.

This poses a challenge for the project as more training needs to be done to ensure the new focal point is familiar with the technology systems and ways of working and can manage the tools and processes before the end of the programme. To overcome these challenges, we now ensure that more than one person is knowledgeable and has the skills needed to support the project at the ministries. This way, it will not be necessary to start all over again if someone leaves.

Constraints faced by ministries and Ministry staff

In our experience, ministries are often involved in more than one foreign aid-funded education development programme and face challenges accommodating additional project work on top of the current workload. Ministries are also sometimes short-staffed due to a range of human resource challenges, including lower than market-rate salaries and strict hiring rules. As a result, the assigned staff might not be able to commit as much time as needed for the successful implementation of the project. In both the Pacific eLearning Programme and Eskola, key personnel are sometimes not able to attend scheduled meetings because something urgent happens or they have a conflicting appointment or they are assigned other tasks as per the needs of the Ministry. This causes some delay in implementation, such as verifying information or discussing the next steps.

Also, as is with most departments, some documents and processes need to be endorsed by the senior management team of the ministry. Due to the large amount of work they have, some of these endorsements take a few weeks longer than expected. In some instances, these delays cause a domino effect, delaying other steps of the project.

To cope with these challenges and make the projects sustainable and productive, both Pacific eLearning Programme and Eskola build in extra time to account for delays. Also, tasks are organised so that other parts of work can continue while signatures are being gathered. Both projects have also aligned with ministry procedures, such as approval processes, co-created guidelines which provided the project as well as the ministry with a clear outline of procedures and held regular meetings at a co-decided time so that nothing was left for too long.

Users' digital literacy competency and perceptions

Digital literacies are an integral part of EdTech projects. Teachers in the Pacific eLearning Programme are expected to use projectors and smartphones while school leaders in Eskola are expected to use tablets. While all stakeholders were initially excited about the projects, we have discovered that some teachers and school leaders are not comfortable using these devices. Some individuals have never used a smart device before, some worry that they will damage expensive equipment and some think it is beyond their competency and are hesitant to use the device.

To help remedy this challenge Pacific eLearning Programme and Eskola teams run regular, highly interactive and practical training for teachers and school leaders. Both teams also create instructional videos and pamphlets for users on practical things, such as how to check how much internet data is left in their quota and how to use headphones. Teachers who are hesitant to use technology or who have low digital literacy are paired with a teacher who has good digital literacy skills so that they have

support. Since people can sometimes get more focused on the device, the project team members always share and emphasise the objectives and benefits of the programme for the teachers, school leaders and students. These steps help improve digital literacy and encourage the use of ICTs in education.

REFLECTIONS

While we are still implementing our projects and learning more every day, here are some recommendations based on our learning so far that we hope will be useful for others working in this field.

Have empathy

Most EdTech projects sit with the ministries of education of the project countries. Busy at the best of times, often these ministries have more than one foreign aid-funded education development project going on at the same time. As a practice, they assign some staff as contact points for the foreign aid projects. It's important to remember that some staff are given responsibility for being part of the project in addition to their regular workload. As such, they might not be able to respond to emails or complete required tasks on our schedule. Having empathy helps avoid setting unrealistic expectations and to be more understanding of the overall context local stakeholders are working in.

Share findings

Sharing and reporting on both positive and negative findings through meetings, conferences, journal publications, blogs and social media throughout the lifetime of the project contributes to the literature in the field and helps others who may embark on similar projects. Sharing findings gathered from monitoring and evaluation as well as the local community norms and practices will help other foreign aid-funded education development projects as they won't have to reinvent the proverbial wheel or start their research from scratch. They can, instead, build on the information provided, strengthen their projects and explore the shortcomings or lessons learned by an earlier project. In sharing the findings, the local community will also benefit from the knowledge in terms of identifying what they want future projects to focus on, to what extent existing projects help their community, and if they want to invest in sustaining the long-term benefits of the project. To make findings more accessible to locals, they should be written in local languages. While it is often tempting to report on successes, it is important to remember that there's a lot of learning from mistakes or challenges, albeit most of what we share in this article are the lessons we learned and the challenges we faced.

Connect with other foreign aid-funded education development projects

Partnerships are critical for foreign aid-funded education development projects, but time constraints, unforeseen challenges and the ever-impending deadlines make it tempting to complete projects and not get involved in "making things complicated" by liaising with other projects and potential partners. However, these partnerships and conversations are important. In our conversations with some other foreign aid-funded

education development projects, we discovered that some were not aware of similar projects being carried out in the region. For example, we extended our discussions to the Commonwealth of Learning, World Bank, UNICEF, CARE International, the Pacific Community, and the University of the South Pacific. These conversations made us aware of other EdTech projects being conducted in the Pacific and South-East Asia region as well as their approaches. It prevented us from duplicating efforts and in spaces where more than one project was run in a country, we discussed how we could all achieve the outcomes of our projects without duplicating efforts and without overburdening our partner ministries and schools. This helps in efficiency and streamlining our efforts.

Be adaptive

Projects often have a range of plans ranging from annual work plans to transition plans. However, things don't always go to plan. Sometimes things do not work out as planned due to unexpected social, cultural, political and economic factors, which may influence positive or negative changes. An adaptive management approach helps deal better with these changes.

One of the strategies we use as part of our adaptive management process is called the '*stop, start, continue*' activity. Filling in a simple form consisting of three columns labelled "stop", "start" and "continue" allows us to reflect on our activities, such as *stop* doing counterproductive activities and identify process gaps that reduce effectiveness; *start* generating new and creative solutions to solve problems; and *continue* doing what has been done right.

Adaptive management is a framework that can support a project's implementation, activities, and budget. The specific steps taken to be adaptive vary by project. Sometimes, the project needs to adapt as a result of a request by the donor or the Ministry of Education. Other times it's necessitated by the context or driven by political and leadership style. For example, there could be a change in government and the project might have to be presented to a new Minister of Education to convince them to continue supporting the project. In the case of the recent coronavirus pandemic, adaptive management meant extending deadlines and working on projects remotely. All these responses and adaptations are part of adaptive management which is about being aware of the changes happening around the project and responding to them appropriately so that the core objective of the project continues to be fulfilled.

CONCLUSION

EdTech projects are gaining momentum in the SIDS in the Pacific and South-East Asia regions. Hence, it has become even more important to ensure that educational technology projects implemented at present help set up pathways for SIDS to use as a steppingstone to expand their education systems.

Our work with the Pacific eLearning Programme and Eskola has always included both a component of transferring knowledge and skills to local stakeholders and learning from the knowledge of local stakeholders through our HCD approach. These acts of transferring knowledge and learning from and together contribute to the sustainability of the programme. Both projects are being implemented with the intention that the

respective countries, ministries, teachers, school leaders and school inspectors are equipped with the skills and knowledge to allow them to continue and expand the programme even after the international aid funding draws to an end.

In this paper, we've shared our experience with conducting EdTech projects in the Pacific and South-East Asia regions. We've shared our strategies of implementing sustainable projects as well as the challenges we face in doing so. In this journey, in addition to our strategies, we implemented some recommended best practices and lessons from other earlier foreign aid-funded education development. Along the way, we've learned some lessons which are presented as reflections. The strategies, lessons and reflections shared are by no means an exhaustive list. We hope that the information provided in this paper will help someone and we hope that other development aid project practitioners will be able to share their design methodologies, implement strategies and add to the list.

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BOOK REVIEW: Education and social justice in Japan

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BOOK REVIEW: Kaori H. Okano, *Education and social justice in Japan*, London: Routledge, 2021. ISBN 9780415832526. pp. 236

“Balance and nuance” are perhaps the main challenges and achievements of this book. Okano had to balance between the needs of undergraduate readers who likely know little about Japan’s complex schooling system and those of researchers who need to see something novel and masterful in the approach to Japanese education. She also had to balance between approaches to the subject matter of social justice and education: methodological differences (qualitative vs. quantitative approaches, macro vs. micro approaches), ideological differences (different views of social justice), differences in experiences of various relevant groups. Finally, while balancing all these issues, this book had to convey the topic of Japan, so tempting to essentialise or exoticise, with nuance—all its differing actors and their various interests and perspectives.

What does this book offer undergraduate readers? While this book does not seem to position itself as such, it could function as a good introduction to Japanese education from a social justice lens. An undergraduate with only an understanding of the barest sketches of Japan’s history and common cultural attitudes could read this book and gain a solid foundation for approaching education.

Chapter Two provides a relatively complete history of Japanese education in 22 pages—starting with the Sino-centric period and Prince Shotoku, to the rise of the samurai, the growth of education for common people (as in *terakoya* temple schools), the institutionalisation of modern education, wartime struggles, and ending with postwar reforms that continue today. *The Japanese Philosophy: A Sourcebook* (Heisig et al., 2011), begins and ends in the same places, but at 60 times the length. This chapter paints a vivid picture of a Japan deeply invested in education but constantly struggling to define the scope and direction of education. Okano’s book presents Japan not as a monolithic nation but one with internal plurality; totalitarian tendencies in various forms exist alongside forces resisting these, giving social justice discourse a long history within Japan.

Okano then slowly moves to the present, with a chapter describing recent educational reforms, highlighting how at least four players (neoliberals, neoconservatives, progressives, and social justice advocates) compete and occasionally align to shape educational policy. She then devotes two chapters to the various faces of difference and how they experience schooling—cultural and linguistic minoritised groups (indigenous peoples, ethnic Chinese, and Koreans, newcomers), poverty, gender, and regions. While showing how the Ministry of Education, Culture, Sports, Science and Technology

(MEXT) is at the center of these reforms, it is often a vacuous center, with education shaped from the ground up by decentralised forces. These combine to give an undergraduate a clear sense that Japan is not one exotic whole but something historically constructed and internally diverse. Finally, Okano details two phenomena, *shokuiku* (education about eating) and nonformal education, to illustrate how the diversity and diverse approaches to social justice function in the field of a student's direct experience.

The result for the undergraduate researcher is a solid foundation for understanding Japanese education, with a succinct picture of how it unfolds both temporally and through diverse strata of society. At around 230 pages, *Education and Social Justice in Japan* is concise enough to remember the overall picture it presents by the time one finishes reading it but with enough nuance to grasp that the overall picture is never one that can be essentialised, and that nothing is as simple as it seems. This care to convey nuance additionally functions to dispel potentially dangerous misunderstandings of Japan—that the Japanese are ethnically homogenous (I still hear this today from my Japanese students, a statement that riles many with mixed heritage or “invisible” ethnic differences), are all middle class (this too), that rural education in Japan is inferior to urban education (a misunderstanding I myself must admit to), and so forth.

While this book needs to respond to the needs of undergraduates, does it provide for the needs of Japanese specialists, postgraduates, and researchers? I think such a task is more challenging though possible, but some may feel this book sacrifices making pointed arguments in order to introduce Japanese education. However, what I find to be the most important contribution of this book is not the making of a pointed argument, but a careful use of methodology to demonstrate a nuanced, polyvocal discourse.

Reading the book, a particular pattern for how Okano weaves together different approaches becomes clear. This basso ostinato is consistent, but most explicit in the chapter on education about eating. Like all chapters, she begins with an epigraph from a broadcast during school lunch time, announcing which students grew the vegetables in the soup. These quotes serve to anchor each chapter in the *genba* (the field)—the actual here-and-now of where human life unfolds in everyday life. She then introduces the main features of *shokuiku*, its legal basis and its history. She then proceeds to place it in a global context of “food education,” and identifies the basic features of *shokuiku*—Japan is rather distinct in having a government-recognised system with compulsory lunches with aims far beyond providing awareness about nutrition to an education on manners, gratitude, self-sufficiency, local food appreciation, etc.

With this situated background, she closely describes what the compulsory school lunch program is like with a much more anthropological gaze. She describes students in a Grade 2 classroom preparing the lunches, what they wear, the kind of food they serve, the courtesy “*Itadakimasu!*” (I humbly receive [this food].) “*Gochisôsama deshita!*” (It was a treat!) She even includes a comic illustration of the school lunch (p. 137). This paints a vivid picture, grounding laws and histories into a single, living, corporeal collective act. Her masterful use of this reminds me of Okano's *Young Women in Japan* (2009; a narrative study across 12 years that goes deep into the lives of individual students).

Grounded in this situated and living experience, she then broadens sociological imagination to explore the various functions of this phenomenon—feeding hungry

children, enhancing student learning (with a good diet!), moral education in gratitude and class solidarity, economic concerns like eating local produce and rice stocks. The social phenomenon clearly functions for society, but there seem to be far more contradictory (or at least disparate) functions than a cohesive organic whole would imply.

Balancing functional and conflict theory approaches, Okano builds out from this disparity to delineate various positions that are often opposed to each other: neoliberals and the idea of food choice, neoconservatives and an essentialised view of shared Japanese food culture, progressives and social justice advocates helping marginalised people receive adequate sustenance. Here the ideological conflict comes to the fore, further highlighted by pointing out different kinds of justice: simple equality, responding to those with particular needs, and the focus on distributive justice (“Who gets to eat?”) at the expense of content (“How often do minoritised cultures get represented in school meals?”).

I read Okano’s method as a well-rounded approach that builds discursive analysis on the foundations of ethnographic observation. “Social justice” is not taken to be a given, an ideal pre-constructed exclusively by philosophers. While she engages with philosophical constructions of social justice (in particular, Michael Walzer and John Rawls), her actual use of “social justice” is heavily informed by an inductive approach. Her regular use of epigraphs, comic strips from *Tonari no Nono-chan*, and close analyses of concrete situations (from food education to Japanese as a Second Language classes in Kobe and Osaka) seem to function as an inductive grounding, to show that examinations of an abstract discourse like social justice must remain rooted in actual everyday experience. The interpretation and extension of these idiographic observations are made possible by connecting these to a historical (and often comparative) background and with the use of various nomothetic sources (like international statistics on obesity, or the number of foreign schools). From this overall picture combining idiographic and nomothetic sources, she then teases out various approaches seen in different groups—various minorities, teachers, parents, economic groups, government institutions—showing that there is a variation of approaches and interests, some of them mutually exclusive. She then shows how these different approaches construct the idea of social justice—interpreting and employing it in different ways.

In my reading, the key contribution to this book is thus methodological—how it builds on inductive observation and weaves it with broader historical and nomothetic data to show differing voices and how their speech acts construct social justice. The result of that methodology is an end view of social justice that is viscerally demonstrated to be nuanced, internally plural, and radically constructed. Instead of heeding the clarion call of some divined idea of social justice, deducing its myriad implications, and mounting a polemic on how this should resound throughout the realities of education, she turns this approach on its head. Japan, with its long history and its currently competing interest groups, possesses its own plurality of voices on social justice. Within the grime of finding ways to meet the needs of minoritised groups, of negotiating and sometimes forming unstable alliances with neoconservatives and their essentialised Japan and neoliberals and their desire for a certain image of “internalisation,” social justice emerges as a reality.

Okano's discourse of social justice is neither closed nor complete. As this construction reaches toward the future (now lensed through me, as the reader), I wonder: the present discourse of justice presented by Okano is clearly concerned with difference, and how difference is affected by distribution ("Who gets how much of schooling?" "How equitably are educational opportunities and rewards distributed?") and content ("Who gets represented in schooling?"). But from Okano's inductive observations, difference is not between closed identities, between a binary us versus them. Even with ethnic Chinese, we have those who have been in Japan before the war, those who came after, those who still speak Chinese and those who do not, those who are intermarried with ethnic Japanese. We have those who go to fulltime Chinese schools and those who go to other international schools and those who go to mainstream Japanese schools. Then we have non-ethnic Chinese who study in Chinese schools. This internal plurality upsets the "who" behind the questions of distribution and representation. If one says, "The Chinese are getting these advantages, and these representations," the question remains, "Which Chinese?"

Furthermore, Okano's history shows how different groups learned from each other to respond to the challenges of educating in Japan, with many drawing from *hisabetsu burakumin* ("discriminated people" generally referred to in English literature as "buraku people" who are descendants of outcaste population of the feudal periods) in their political organisation, or from Japan-born ethnic Koreans in their accreditation processes. Identities are both internally plural and relationally constituted. As a researcher in the field of philosophy (among others), I wonder: What might this inductive, constructed approach teach us about "educational justice" beyond the concept of closed units of identity, beyond the binary of sameness and difference? Might Okano be offering us an opportunity to reconstruct the very idea of justice, in a way that might reauthor the dialogue between social justice advocates, neoconservatives, and everything in between?

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BOOK REVIEW: Teaching global citizenship: A Canadian perspective

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BOOK REVIEW: Lloyd Kormelsen, Geraldine Balzer and Karen M. Magro (Eds.), *Teaching global citizenship: A Canadian perspective*. Canadian Scholars. ISBN: 978–1773381985. ISBN (ebook): 20200328441

Teaching global citizenship: A Canadian perspective is essential reading for all student teachers and for researchers interested in global citizenship education (GCE). The book comprises 13 chapters with several specific questions for readers to consider at the end of each chapter. The editors, Lloyd Kormelsen, Geraldine Balzer, and Karen M. Magro, present the chapters in a manner that helps to disentangle debates on highly contested theories of GCE by examining teachers' reflections. These reflections concern challenges of diversity inside and outside the classroom and form a loosely organised theme that centres on what teachers learnt from their practice in contemporary Canada (p. 207). The book's underlying theoretical basis is the idea of pedagogical engagement, meaning that teachers' personal experiences make a difference to the rigor and quality of education. Drawing on experimental teaching, personal reflections and first-hand life experiences, teachers share their own interpretations of what GCE teaching should be like and, more importantly, of how to deliver GCE effectively in challenging settings. The most significant contribution of the book is, thus, the authors' narratives of teaching experiences with GCE.

The editors link the chapters to UNESCO's four pillars of learning: learning to do and learning to know (Section I), learning to be (Section II), and learning to live together (Section III). Each section addresses specific questions:

- Section I, Knowing and doing: What is global citizenship, and how might we educate in this way?
- Section II, Being: As teachers of global citizenship, what are our responsibilities?
- Section III, Living together: What is the impact of Canada's colonial history on teachers, students, and schools?

Focusing on GCE pedagogies, all sections present teacher reflections that echo what has long been discussed theoretically but less explored in classroom teaching, including, for example, what triggers teachers' emotional and behavioural changes and what

empowers them to be a proactive educator of global citizenship. The book's empirical contributions are impressive.

Section I (knowing and doing) examines a range of perspectives on GCE and engages with moral judgement theories from the rationalist and intuitionist models through a critical lens (Haidt, 2001). In Chapter 1, Paul Orłowski and Ghada Sfeir demonstrate how class analysis can help when teaching about neoliberalism by focusing on difficult situations such as racism and populism at school. The chapter illustrates the power of combining critical perspectives and cosmopolitan universalism in solving conflicts, in enabling students to understand how the practices that previously harmed working-class students can now undermine middle-class students. In Chapter 2, Karen Magro expands on critical perspectives with an unconventional approach, including an intuitive dimension (emotional and social literacies) to understanding critical literacy. She refers to Noddings (2005) and Schattle (2008) to explain how a transformative vision of education can assist in building more inclusive communities. The remaining authors of the section primarily follow this intuitive path. In Chapter 3, Jennifer Chapman expands on the pedagogies of GCE beyond the purpose of enhancing inter-personal relations and developing students' connections with the past and the future. In this chapter, Arendt's (1954/2006, 1958/1998) conceptions of modernity, human condition, judgement and citizenship are the recurring themes to highlight the power of narration. Finally, Chapter 4 examines attempts to enhance Deweyan pedagogies by developing students' awareness of "the place of the local" (p. 64), often known as place-based education, and reveals what really constitutes students' experiential learning.

Section II (Being) shifts the focus to synthesising methods to re-evaluate what happens in the classroom and school. In Chapter 5, Larry Partkau outlines several specific pedagogies of GCE, including "modelling for inquiry", "collaborative research", "simulation games", "leaving the neighbourhood", and "reading the room: being open"; and identifies the type of teacher-student relationship that contributes to success. Chapter 6 takes readers through hidden conflicts at schools in order to illuminate students' vulnerability, by presenting an autobiography guided by Gadamar's *Ehrfahrung* (2004), which argues that disharmony is the key to initiate self-awareness of the limitations of the self's world. The author, Timothy Skuce, states that "our relations with otherness constitute the true locus of hermeneutics since otherness reveals possibilities that are not yet known to us" (p. 92). In Chapter 7, Lyle Hamm, John McLoughlin, and Matt Maston suggest ways to enhance teachers' literacy by drawing on their experience in teaching immigrant and refugee students GCE in rural Canada. For example, "there is no finish line with intercultural learning and leadership; there is only 'becoming'" (p. 109), and "confront and stamp out stereotyping, racism, and discrimination" (p. 111). In Chapter 8, Timothy Beyak explores "entanglement theory" in reference to his own teaching—how objective realities (such as learning space and course content) and students' and teachers' conceptual realities affect the multiplicity of the context of learning. In Chapter 9, Heidi Reimer reflects on her roles as a flight attendant and as a teacher who teaches GCE. The pedagogies presented in these chapters are highly innovative and experimental but most of them are also feasible and applicable and offer us the potential to deconstruct and transform classroom practices.

Section III (Living together) presents teachers' narratives about their life experiences, critical viewpoints and inclusive attitudes; and illuminates the importance of being aware of and welcoming the unexpected in their careers. These teachers (authors) bring

experiences of marginalised contexts, including Arctic communities, an at-risk youth group, an indigenous territory, and a high school with First Nations students, and contribute to existing postcolonial literature. For instance, in Chapter 10, Geraldine Balzer, highlighting the divide between hegemonic global cognitive justice and the indigenous knowledge system, explores how Nunavut students are affected by their travel to Europe and, in particular, their confidence being impacted by experience of cultural conflicts. She then discusses this phenomenon in relation to the epistemic limitations of GCE. Pamela Schoen (Chapter 11) uses her long-term participant observation of teaching and supporting at-risk youth to challenge the old saying that “ignorance is bliss” and identifies effective approaches to empower them. In Chapter 12, Jeannie Kerr, a member of an indigenous population, reveals the subtle systemic harm caused by meta-narratives prevalent in an education system framed by coloniality–modernity. Finally, in Chapter 13, Marc Kuly shares his experience of attempting to develop reconciliation with his students over many years.

The book encapsulates the concept of pedagogical engagement by presenting these teachers’ reflections about the practice of GCE. We learn that what was once regarded as a part of GCE has become questionable. For example, multiculturalism (once associated with GCE) is considered less applicable in marginalised settings. The understanding of humanity as being divided by coloniality-modernity is now being challenged. Delving into this book, readers are likely to experience a sense of transformation whereby their worldviews are challenged by these teachers’ lived experiences.

I would have appreciated more explicit discussion about the book’s original contributions to the theoretical debates on GCE. But this limitation does not dim its value. To benefit from reading this book, it would help if readers were familiar with the mainstream literature so they can be more analytical of specific insights in this book. It is also imperative that readers compare what they learn from the Canadian context with their own local CGE practices.

To conclude, *Teaching Global Citizenship* is an excellent reference for learning, teaching, professional training and researching. It is a pioneering work that responds to the persistent question: Which pedagogies for GCE work and why do they work? Although at first glance it seems to be “a ripple in the water” given that the title of the book emphasises its specific focus on Canadian education, after a careful read, readers will realise its value for understanding GCE in any context. Influenced by neoliberalism, along with other global crises, schools around the world seem to be suffering from what Byung-Chui Han (2019/2021) identifies as violence by homogeneity. Experiences in Canada are not, and will not be, the only experiences. This book paves the way to more diverse ways to conceptualise and practice GCE in schools.

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