

Outcomes of a collaborative contextualised learning approach to teacher professional development in Papua, Indonesia

Ann Robertson

University of the Sunshine Coast, Australia: arobert1@usc.edu.au

Peter Mark Curtis

Catholic Education Office, Brisbane, Australia: pcurtis@bne.catholic.edu.au

Chris Dann

University of Southern Queensland, Australia: christopher.dann@usq.edu.au

The paper reports on a teacher professional development program conducted over two years in five different regions within the province of Papua, Indonesia. The goal of the program was to assist Papuan teachers to become more aware of and skilled in the use of interactive classroom pedagogies using local resources. The paper reviews the research around successful professional development programs in developing countries, and outlines the specific cultural, pedagogical, linguistic and resourcing issues encountered in this program. An effective response within the unique context of teacher professional development in Papua necessitated a process of ongoing collaborative inquiry between Australian academics, Papuan academic advisors, local Papuan master coaches and local classroom teacher participants. The paper evaluates the perceptions of participating classroom teachers on what was of importance in the program, gathered through the use of open-ended questions, researcher field notes and participant reflective responses.

Keywords: Papua, professional development, teacher education, collaborative inquiry

INTRODUCTION

This paper reports on a teacher professional development program conducted over two years in five different regions within the province of Papua, Indonesia. The program was funded by the Australian Government's Government Partnerships for Development (GPDF) program with smaller co-contributions by the Papuan Provincial Government Department of Education and Culture and University of the Sunshine Coast (USC). The program was designed to align with the Australian Government's stated commitment to "invest in better education outcomes for all children and youth across the Indo-Pacific region, to contribute to reduced poverty, sustainable economic growth, and enhanced stability" (DFAT, 2015, p. 3). One of the four strategic priorities which Department of Foreign Affairs and Trade (DFAT) has identified is "improving learning outcomes and improving the quality of education" (DFAT, 2015, p. 10). Many international reviews have demonstrated that the quality of teachers and the effectiveness of their practices are highly significant predictors of improved learning outcomes (Chang et al., 2013; Naylor & Sayed, 2014; OECD, 2013; Vegas et al., 2012). Programs aimed at teacher professional

development continue to attract aid funding since in many developing countries pre-service and in-service teacher education is absent or inadequate (ACDP, 2014; Bett, 2016; Chang et al., 2013). However, the content and method of implementation of such programs have attracted increasing debate around issues relating to the cultural responsiveness and appropriateness of the training model, the curriculum content and pedagogical approach, and the resources used and generated.

Systematic reviews of teacher professional development programs show that an essential element of a successful program is direct relevance to the context of the participating teachers and their day-to-day experiences and aspirations for pupils (Timperley, Wilson, Barrar, & Fung, 2008). Programs that are developed independently of the participating teachers' practice contexts have less impact on student outcomes than approaches that are context-specific (Timperley et al., 2008). In contrast, context-specific approaches that assist teachers in creating practical applications of pedagogical principles to their own particular teaching situations empower teachers to solve identified issues affecting their students' outcomes (Timperley et al., 2008). Improved outcomes are also produced when the training approach recognizes differences between individual teachers and their starting points and provides opportunities for them to surface their beliefs and engage in peer learning and support in a positive, professional learning environment (Cordingley et al., 2015). One way to achieve this surfacing of belief is through collaborative inquiry. Collaborative inquiry is defined as "working with at least one other professional on a sustained basis" (Cordingley et al., 2015, p. 1). A collaborative inquiry approach assists teachers in reconstructing their knowledge in ways that are more likely to lead to transformative change (Fraser, Kennedy, Reid, & Mckinney, 2007). In keeping with this approach, successful teacher professional development programs will then be those in which the external facilitators act as collaborative coaches and/or mentors, treating teachers as peers and envisaging themselves as co-learners (Cordingley et al., 2015).

Successful programs also resist the urge to impose Western pedagogies on other cultures. While the knowledge and skills of Western pedagogies may be effective in Western contexts, they may be neither understood nor culturally appropriate in other contexts (Guthrie, 2011; McLaughlin, 2011). Notwithstanding such concerns, a focus in many teacher professional development programs in developing countries is to move teachers away from rote learning and transmission models towards more constructivist approaches, even as the details of how such an approach should be framed and constituted are debated (Di Biase, 2015; McLaughlin, 2011; Schweisfurth, 2011). In facilitating teachers to transition towards constructivist approaches, it seems logical that the professional development program must put into practice the message that it is seeking to convey (Schweisfurth, 2011). As Cordingley et al. (2015) conclude in their review of multiple examples of teacher professional development courses, "didactic models, in which facilitators simply tell teachers what to do, or give them materials without giving them opportunities to develop skills and inquire into their impact on student learning, are not effective" (Cordingley et al., 2015, p .8).

This aim of moving teachers towards more contextualized, constructivist approaches can also be frustrated by a lack of teaching and learning resources, particularly those appropriate to the local context (Agyei & Voogt, 2011; Di Biase, 2015; Guthrie, 2011; Schweisfurth, 2011). One reason that teachers may revert to "chalk and talk" teaching post-program is because schools lack the physical resources that would promote active engagement of learners (Chandra, Polzin, Medland, & O'Farrell, 2016; Gathumbi, Mungai, & Hintze., 2013). Unless the teacher professional development program takes

into account the resourcing aspect of participating teachers' contexts, the concepts successfully taught and applied during the training may fail when teachers return to their schools because the facilities and equipment provided in the training no longer exist (Bett, 2016). Teachers will then find difficulties in linking their training to their own contexts and applying new approaches in their classrooms (Kennedy, 2005). Appropriate resourcing also raises language and cultural issues. Materials and resources brought in and passed on uncritically by those who are outside the social and cultural context of the classroom are problematic in that they fail to help students connect their existing linguistic and cultural knowledge with the new knowledge being explored. Such resources position students as knowledge consumers, who will then struggle to understand and actively apply what is taught in schools to their own lives (Kalolo, 2015). By contrast, Moll and González (2004) argue for raising teacher awareness of the resources and opportunities for teaching and learning that are available through the "funds of knowledge" (FoK) of students and their families. For example, a FoK approach to teaching mathematics might demonstrate how everyday family or community activities, such as gardening, sewing, cooking, and playing, can be used to support mathematics learning (Aguirre & del Rosario Zavala, 2013).

By focussing on the issues of the cultural responsiveness and appropriateness of the training model, the curriculum content and pedagogical approach, and the resources used and generated, this article examines a two-year DFAT-funded program of teacher professional development conducted in five different regions in Papua Province, Indonesia. One of the main aims of the program was to improve teacher competency and effectiveness by empowering them to adapt constructivist pedagogical approaches to their specific teaching contexts, including the creation and use of contextualized learning materials and resources which support Papuan-centred pedagogies. This research investigates whether these aims were reflected in the participants' perceptions of the program.

PAPUA INDONESIA – THE CONTEXT

This study was set within the province of Papua, the easternmost of the 34 provinces of the Republic of Indonesia and one of the most geographically isolated. According to the Human Development Index (HDI) (a tool developed by the UN to measure and rank countries' levels of social and economic development), in 2012, Papua ranked 29th out of the 30 provinces in Indonesia in terms of three human development indicators: life expectancy, standard of living, and educational attainment (ACDP, 2014). Papua also has the highest rate of illiteracy (ACDP, 2014).

The province is divided into 29 political subdivisions: 28 regencies (kabupaten) and one autonomous city (kota), and responsibility for education is shared, sometimes uneasily, between the national government, the province, and the regions. This unease was apparent in the organizational difficulties encountered by the program's logistical team who often found regions did not send participants due to some difference between the province and the region.

The population comprises Indigenous Papuans, who either live close to their origin or who have moved in or come back from other regions in Papua, and "incomers", who have moved to Papua for entrepreneurship purposes or for government or private sector employment (Reality Check Approach, 2015). The official language is Indonesian but Papua Province has 271 distinct local languages, only half of which remain heavily used.

The ethnic and linguistic background of the program participants was, therefore, diverse: most—though not all participants—could read and write standardized Indonesian proficiently but many utilized a Papuan dialect of Indonesian for speaking and writing. While most Indigenous Papuan teachers are familiar with at least one local language at varying degrees of proficiency, incomer teachers from Java and other islands typically are not. Therefore, the many teachers teaching at schools away from their place of origin are faced with students’ “mother tongue” and cultural background that differ from the teacher’s own. Such linguistic and cultural differences not only disadvantage students from the outset, but may also frustrate teachers who have not been trained in how to create an inclusive learning environment for these students. Consequently, the program of teacher professional development at the focus of this research needed to address the challenges associated with the complexity of the sociocultural and linguistic contexts in Papua.

Another cultural factor impacting on the program was the expectations of the participants with regard to the professional development program. It became clear through conversations with participants that they entered the program with an expectation that program delivery would be transmissive and directive in nature, in keeping with their previous experiences of professional development programs led by national and sub-national institutions tasked to “deliver” messages from the central government or the province. This meant that participants tended to enter this program believing that the Australian academics possessed knowledge which was to be transferred and implemented without questioning. For the many reasons outlined previously, this belief had to be explicitly and implicitly countered in order for the program to be effective.

Teacher education and primary schooling

Teachers in Papua may have received their pre-service training in Papua or be an incomer, educated elsewhere. Pre-service primary school teachers in Papua typically receive their training through a Teacher Education College or Kolese Pendidikan Guru (KPG), an institution that is unique to Papua, established in 2002 by the Provincial Government of Papua to address the lack of training and education provision for teachers in a region which is socially, culturally, demographically, and geographically unique (ACDP, 2014). The KPG is an integrated senior secondary school in which a three-year SMA (upper secondary) program is integrated into a two-year teachers’ college preparation program. Primary school teachers trained outside of Papua typically have a four-year Bachelor qualification from a university. Teachers in Papua are public servants who are remunerated regardless of their attendance at school, and this contributes to teacher absenteeism as an ongoing factor in educational disadvantage in Papua, especially in the remote regions, with the overall rate of teacher absenteeism in Papua assessed as 33.5% in 2012 (UNCEN et al., 2012). Teacher absences also impact on in-service teacher training, so for this program teachers were paid a small stipend to attend and attendance was monitored daily.

Education resources

Resourcing of education in Papua is delivered by a complex mix of national, provincial and regional bodies. A lack of alignment between these bodies can frustrate efficient change enactment. Furthermore, there is evidence that a lack of community ownership of education resourcing, especially in the rural and remote areas, has led to underuse of the infrastructure and education resources supplied by authorities (ACDP, 2014). Existing

resources and curricula in the KPGs lack reference to Papuan language or cultural traditions, and KPG-trained teachers are not trained in how to connect their lessons to local needs or culture or in making teaching materials using local resources (ACDP, 2014). Unpacking the definition of what is meant by teaching “resources” became central to the program. Participants initially understood only “learning and teaching resources” as “media” in Bahasa Indonesia, which refers to items such as computers, projectors, and textbooks. Teachers reported that these “media” could be difficult to access since they were often kept by the principal in locked cupboards for security. One of the features of the program was to focus on the role of “bahan bahan” (ingredients/materials) as central to the idea of educational resources. This incorporated not only the use of cardboard, string and pens, and other relatively low-cost materials typically used for student activities in Western classrooms, but also no-cost “found” materials in the local environment, such as stones, plants, and plastic bottles. This was important since the cost of even relatively cheap and common materials, such as paper and pens, is typically borne by the classroom teacher and may be difficult to acquire in remote areas.

DETAILS OF THE PROGRAM

Funding for the professional development program was obtained from the Australian Federal Government Partnerships for Development (GFPD) program by the University of the Sunshine Coast, in partnership with the Papuan Provincial Government’s Department of Education and Culture. While the program addressed the needs of three separate groups of education professionals—primary school teachers, principals and pre-service teacher educators—the research reported here relates to the primary school teacher workshop program, conducted between November 2014 and September 2016.

The study was conducted at the conclusion of the two-year program. Participants in the program included:

- USC academics: education and subject area specialists from Australia, many of whom had been involved in previous professional development programs for Papuan teachers since 2009.
- USC alumni: seven Papuan classroom teachers who had also completed a Master of Education at USC prior to commencement of the program.
- Master coaches: 16 Papuan classroom teachers selected from the regencies of Jayapura, Mimika, Wamena, Merauke, and Nabire, where the workshops were held.
- Primary school teacher participants: classroom teachers selected by the regencies to attend one of the workshops. In total, these participants numbered 1,262 across eight workshops.

The program was designed to make use of the USC alumni’s bilingual and bicultural skills and their knowledge of both Papuan and Australian pedagogical approaches. They were involved in the design and delivery of the program and provided invaluable ongoing feedback to the USC academics throughout the program from their observations.

Initially, sixteen master coaches were trained by a USC academic and a USC alumnus for two weeks in Bali, Indonesia, in November 2014. This training introduced the goal and aims of the course, modelled and discussed interactive teaching strategies, and produced

contextualized support material such as “big books” for later use. In March 2015, the 16 master coaches and a larger team of USC academics and alumni met again in Jayapura, Papua, for an additional two weeks of preparatory meetings, discussions, and training.

The next stage of the program, the eight two-week workshops, each for a new group of primary school teachers, began in April 2015 and concluded in September 2016. A typical workshop day ran from 8 am to 3 pm, with a half-hour morning tea break and a one-hour lunch break. Teacher participants were divided into four classes of approximately 25 people per class, with each classroom staffed by a team of three Master Coaches, one USC alumni and one USC academic. The workshops were held approximately three months apart, moving between the locations of Jayapura, Wamena, Merauke, Mimika and Nabire, with the first three locations hosting two iterations of the program.

One critical feature of this program was the long-term nature of the relationships that preceded and were built upon over the duration of this program. This allowed the USC academics to build trust with the teaching team, participants, and government officials, which also enhanced their professional understanding of the participants’ context and pedagogical approaches.

THE RESEARCH STUDY

Methodology

This study took a constructivist approach which has been associated with qualitative methods (Punch, 2009) and was interpretivist in nature. The researchers sought to understand the meanings brought to the professional development by the participants. In this way, the researchers sought to understand the way they see the world (O’Donoghue, 2007). The methods chosen include a single-question survey, supplemented by documentation analysis (Scott, 1990). The simplicity of the survey design aimed to reduce the impact of language barriers and reduce interpretation anomalies so that the responses reflected the views of participants.

Methods

Data gathering was achieved through three methods: an open-ended, end-of-program survey question; reflective worksheets and journals completed by teacher participants during the workshops; and field notes made by the USC academics during the workshops reflecting on insights and lessons learned. Under the terms of the ethics approval provided by USC, it was communicated to participants in Bahasa Indonesia at the beginning and end of the program that if they chose to share such information to inform research it would be de-identified.

The first form of data collection focused on the qualitative method of open-ended questioning. Open-ended questions allow for an explorative and open means of response, in a manner that encourages participants to offer a full expression of an opinion rather than simply selecting an answer from a prearranged set of response classes (Popping, 2015). This promotes a response that is inherently more objective and less leading than closed-ended questions (Nesbitt & Cliff, 2008). Open-ended questioning was judged to be well-matched as a methodological tool in this investigation as it allowed investigators access to the respondents’ true opinion on what they believed were the focus and key messages of the program.

The open-ended question response was obtained from participants on the final morning of the final Jayapura program, by asking them to respond in writing to a single question, in Indonesian: “What is the most important thing you have learned in this program that you will use when you go back to your school?” Respondents were asked to work independently of their peers and to provide their feedback anonymously. The responses provided in Indonesian were subsequently translated by a USC alumnus.

The second source of data used to supplement understanding of participants’ responses to the end-of-program question was teacher participant feedback collected periodically throughout the workshops through reflective activities. These were introduced during the workshops for their learning value to participants, but also yielded interesting insights into participants’ thoughts and feelings about both their usual teaching context and practice, and the professional development program. These responses, also in Indonesian, were translated into English by an Indonesian educator.

The final data set was field notes made by the researchers, who were also academics teaching in the programs. These field notes capture the development of the researchers’ growing understanding of the Papuan context over the iterations of the program and their resulting adjustments to the program.

Analysis

The open-ended question responses were analysed using conventional content analysis (Hsieh & Shannon, 2005), which is regularly used for studies employing open-ended questions in situations where researchers allow the categories to emerge from the data in an inductive manner (Mayring, 2000). In analysing the responses to the open-ended questions, the texts were translated by a USC alumnus into English and then reread a number of times by two researchers to achieve immersion and understanding as a whole (Hsieh & Shannon, 2005). The two researchers worked in conjunction with the Papuan alumnus in a process of reflection on the key concepts emerging from the data. The researchers made independent written records of their initial impressions and the emergent categories that appeared within the data. From these reflections, initial codes were developed, following a process of cross checking with the Indonesian native speaker. To improve reliability, another pair of colleagues with an education background, one Indonesian and the other an Australian researcher familiar with the project, independently read the participants’ responses to replicate the process.

RESULTS

Table 1 Teachers’ responses to the open-ended question

Participant identified most significant learning	Number of responses
Making learning resources	25
Contextualised learning	13
Learning and teaching strategies	12
Student-centred learning/active learning	9
Use of mother tongue	8
Innovative and creative approaches	5

As indicated in Table 1, the teachers perceived that the most important transferable aspects of the workshop to their context were the making of learning resources, the

contextualization of learning, and new learning and teaching strategies. Active learning and the incorporation of mother tongue also ranked highly. Further discussion regarding how and why participants considered these aspects important has been provided using participant voice from the open response question data and the workshop activities data (aliases have been used), as well as reflections from researchers' field notes.

DISCUSSION

Making learning resources

From the outset, the GPFD program was designed to expose teachers to how low-cost learning and teaching resources could be made and used in the learning and teaching process. Over the course of the program, with the growing awareness of how even low-cost materials common in the West could still be difficult for teachers to procure, there was an increased focus on making best use of materials freely and readily available in the local environment. For example, mathematics sessions used rocks and sticks for hands-on demonstrations and whole class, group, and pair-work learning activities. This use of local, concrete materials helped teachers to move away from their usual practice of focussing only on symbolic mathematical meaning in their teaching towards a contemporary pedagogical practice that integrates representational, linguistic, and symbolic meanings for improved conceptual understanding by students (Rathmell, 1978). To provide a further example, local fruit was used to develop an understanding of comparative concepts such as "heavy", "light", "long", and "short" both in Indonesian and the local "mother tongue" languages that teachers might encounter in their classrooms. Similarly, in literacy sessions, teachers worked in small groups using paper and pens to create "big books" with text and illustrations relevant to their contexts, so as to encourage children's participation in emergent literacy activities (Holdaway, 1979).

While teachers from Papua report a lack of learning and teaching resources, as well as lack of familiarity with how to use resources in the learning and teaching process (Werang et al., 2014), comments from the participants' reflection journals indicated that the workshop activities led to a growing awareness of the potential for local materials to be used as learning tools. One participant noted that the workshop activities "Provid(ed) stimulus for teachers to become more creative to use the materials around us" (Lambertus). Some of the comments linked the use of environmental materials to specific learning areas, such as mathematics: "Teaching by using tools/media that can be found around us such as stones, bottle caps, grass" (Marthen); "(We learned) how to use teaching resources from recycled materials, which is suitable for the context in Papua e.g. in Maths, counting by using shells" (Septiana).

Contextualized learning

The teaching team were conscious of the need to encourage and empower teachers to adapt learning strategies and resources to their local contexts. The concepts of "adopt, adapt, reject" were introduced to participants at the beginning of the program and practised throughout to undermine the perception that the strategies learned in the workshop should be applied uncritically in teachers' classrooms. The academic field notes of Academic 1 record that participants' responses in activities and discussions on how resources and activities could be adapted to their different teaching contexts generated many ideas beyond those imagined by the USC academics.

Academic field notes from two researchers (Academic 1 and 2) indicated an interesting phenomenon in the literacy section of the program when workshop participants favourably compared their own hand-created “big books” to books that had been produced in other parts of Indonesia and distributed as resources to teachers through aid agencies. Although the production values of the agency-produced “big books” were superior, the teachers indicated that they were confident that their students would prefer these self-created local, contextualized big books because of their use of local content and language. Some participants commented that an agency-produced, early years’ factual text on the topic of vegetables growing in the garden displayed only two out of 12 vegetables familiar to their students. These observations indicate that context and language, both critical to the emergent reader, were perceived by the teachers as better served through the production of locally based texts.

Learning and teaching strategies

Over the course of the GPDF program, field notes indicate that the teaching team adjusted the content and focus of each progressive iteration of the program to build the pedagogy/resource link. For example, with regards to the “big books”, the master coaches, alumni and USC academics modelled some strategies and activities for participants so that they could conceptualize how the “big books” could be used before construction of their own “big books” began. However, the initial time allocation for this activity resulted in hastily completed books and little time to practise these strategies. After one participant commented that she now understood how her students felt when they had insufficient time to do their work, the approach was changed so that the construction of the “big books” was begun in class but completed at home and brought back the next day. A longer period of time was then allocated to the modelling and roleplaying by participants of “big book” use in a classroom setting. This resulted not only in “big books” of higher quality, which the teachers were proud to share, but also increased opportunities to experience and practise a greater range of learning and teaching strategies associated with their use.

With the program’s focus on creating and using learning and teaching resources from the local environment, comments from participants indicated that they perceived a link between using local concrete materials in the classroom and more collaborative and active pedagogies. As one teacher noted, they had learned to “create fun games by using cards or recycled materials” (Agus). This could be contrasted to the usual ways of teaching which focuses on the use of text book exercises and symbolic presentation (Academic 2 field note). Further evidence of participants’ increased ability to use created resources in their teaching was demonstrated at what became a capstone event for later iterations of the program, an “expo” to which the school principal group and local primary school students were invited. For the expo, participating teachers worked in groups to create a learning and teaching resource from found materials with accompanying task card outlining the activity’s aims and procedures, which they then used with their visitors. It was interesting to witness that many of the resources and activities incorporated traditional local knowledges and skills, which supports the contention of Aguirre and Zavala (2013) that “Funds of Knowledge” not only describes local ways of knowing but also “raises teacher awareness of the resources and opportunities for teaching” (Aguirre & Zavala, 2013, p. 164).

Student-centred active learning

Participants responded overwhelmingly positively to their own experience of engagement through active learning strategies, as reflected by comments in their learning journals. “I learned about active learning, participating in social activities. School is the place where learning happens when given opportunities to express opinions (and) build cooperation in the team. This approach is fun” (Petrus). The fact that the workshop itself employed the use of these target pedagogies was noticed by participants, apparent through teachers’ comments that they themselves learned through an interactive approach: “I also learn a lot by playing games, singing, discussing, brainstorming, sharing our experiences, encouraging each other to learn” (Maria) and “The teaching in this workshop is very interesting because we learn how to teach using games and teaching resources” (Adriana). Specifically mentioned was the interactive nature of the activities and the opportunities to share and discuss; these were aspects that resounded with participants: “The teaching strategy that was used, such as working in a team, discussion, playing, singing, allow teachers/students to understand easily; it is not boring” (Jacobus).

The high profile given to active learning as an outcome of the workshop series indicates that the concept of students constructing knowledge through social interaction has been significant for participants. As Academic 1’s field notes reflect: “The Papuan teachers take to group work so easily, it’s sad and somewhat strange that it’s not typically a part of the conventional schooling system”.

Use of mother tongue

One of the aims of the program was to develop teachers’ respect for the rich cultural and linguistic environment of Papua and to raise awareness of how difficult and alienating it can be for children to learn in an environment in which their mother tongue and culture are not represented. Built into the program were opportunities for the local Papuan teachers to instruct others about their local language and culture, which appeared to boost the self-esteem and confidence of these teachers and their engagement in the program (Academic 1 field note).

Participants’ comments indicated a growing understanding of the significance of the role of mother tongue in learning: “I also understand now that teaching a mother language is important as the beginning step to teach Indonesian” (Mathilda); (I can see the importance of) . . . drawing and counting in our mother language” (Kornelius). Other comments indicate that teachers began to realize that creating “big books” with their students offered them the opportunity to develop “mother tongue” literacy resources for students, even when their own knowledge of the mother tongue was lacking, by allowing the students to “teach the teacher” (Academic 1 field notes).

IMPLICATIONS FOR PRACTICE

Three implications for practice have emerged from the data in this study. Firstly, participants found useful the challenge of creating and using learning and teaching resources that were appropriate to the cultural context of their students. Secondly, participants enjoyed “learning by doing”: learning about learning-centred pedagogies through active participation in those pedagogies. Thirdly, creating a program that promotes such engagement requires a program model that provides a number of

communication and feedback channels between all parties in the program and allows for negotiation of input.

Contextualized learning materials “beyond the textbook”

Participants gave top rankings to making learning resources and using contextualized learning as important learnings that they would take back to their schools. This is significant since, according to the findings of the meta-review by Westbrook et al. (2014) of research on pedagogical practices in developing countries, “frequent and relevant use of learning materials beyond the textbook” and “use of local languages and code switching” are two of six pedagogical practices which demonstrably and positively impact on student learning outcomes in developing countries.

The implication for teacher professional development programs is to avoid importing foreign learning materials into the program in favour of generating resources which reflect the language and culture of the local context. Lack of resources is often identified as a major contributor to ineffective teaching practices (Schweisfurth, 2011); so, in planning the resources for the training, the researchers became increasingly conscious of the need to use materials that participants could access in their own teaching contexts. However, it is not only a matter of possessing resources but also understanding their management and use (Di Biase, 2015). For this reason, there was also a focus on the use of active pedagogies using local resources.

Active pedagogies through active participation

The recognition by participants that “new strategies” of active engagement were significant for their teaching practice aligns with the findings of Timperley et al. (2008), who note that the effectiveness of teacher professional development programs is enhanced when participants are immersed in the actual pedagogies that are the focus of their study.

Negotiation of input from all parties

The final finding relates to the notion of “flux”, or the ability to respond flexibly to the insights that emerge through the duration of a program. Within this particular program, such emerging responses included an evolving focus on linking resources to pedagogy and extending opportunities to incorporate mother tongue within program sessions. When lesson plans of workshop sessions are compared over various iterations of the program, it becomes clear that there were ongoing changes and adaptations. Underpinning all such changes to the program was the feedback received through multiple channels and then discussed thoroughly by the teaching team. The reactions and comments of the participant teachers were central, since teachers need to play an active role in recognizing and addressing common questions that arise from their context (Bett, 2016). However, the perspectives of the master coaches, alumni, and Australian academics were also thoroughly discussed in the daily debrief and planning meetings which all members of the teaching team attended. This points to program flexibility being dependent on effective communication and relationships of trust and respect among all parties to the program.

Directions for future research

A number of issues for future investigation emerge from this study. Further study is needed to investigate how successful program participants were in incorporating the

learning and teaching approaches they identified into their post-program teaching practice. The second issue relates to a deeper analysis of the model of teacher professional development used in the GPFD program.

The program appears to have encouraged many teachers to at least recognize the importance of moving from transmission models of teaching to more active and contextualized pedagogies. The model through which this was achieved required ongoing input and negotiation of approaches from academics, master coaches, alumni and participants. While detailing the nature of this collaboration is beyond the scope of this paper, it would be useful to further delineate this teacher professional development program model since it appears to demonstrate some capacity to respond to the unique cultural and social contexts of participants.

CONCLUSION

This research highlighted the critical and complementary roles of resource development and constructivist interactive pedagogies in contextualizing teacher professional development programs for participants. The role of local resources development is multifaceted: it allows for introduced pedagogical approaches to be embedded within the cultural and linguistic aspects of the local context; it facilitates opportunities for program participants to take ownership of these new learning and teaching strategies; and it appears to increase the likelihood that these strategies will be able to be used in participants' usual teaching contexts. This research indicates that a collaborative and contextualized approach to a teacher professional development program appears to have had some success in raising the awareness of participating teachers regarding the reasons and strategies for developing resources and pedagogies appropriate to their contexts.

REFERENCES

- Aguirre, J. M., & del Rosario Zavala, M. (2013). Making culturally responsive mathematics teaching explicit: A lesson analysis tool. *Pedagogies: An international journal*, 8(2), 163–190.
- Agyei, D. D., & Voogt, J. (2011). ICT use in the teaching of mathematics: Implications for professional development of pre-service teachers in Ghana. *Education and Information Technologies*, 16(4), 42–439.
- Bett, H. K. (2016). The cascade model of teachers' continuing professional development in Kenya: A time for change? *Cogent Education*, 3(1), 1139439.
- Chandra, V., Polzin, G., Medland, R., & O'Farrell, K. (2016). *The SEE Box: Creating new learning opportunities across STEM disciplines in developing countries*. STEM 2016, 26–27.
- Chang, M. C., Al-Samarrai, S., Ragatz, A. B., Shaeffer, S., De Ree, J., & Stevenson, R. (2013). *Teacher reform in Indonesia: The role of politics and evidence in policy making*. Washington, DC, USA: World Bank Publications.
- Commonwealth of Australia, Department of Foreign Affairs and Trade. (2015). *Strategy for Australia's aid investments in education 2015–2020*. Retrieved from <http://dfat.gov.au/about-us/publications/Documents/strategy-for-australias-aid-investments-in-education-2015-2020.pdf>.

- Cordingley, P., Higgins, S., Greany, T., Buckler, N., Coles-Jordan, D., Crisp, B., Saunders, L., & Coe, R. (2015). *Developing great teaching: Lessons from the international reviews into effective professional development*. Durham, UK: Teacher Development Trust.
- Di Biase, R. (2015). Learning from a small state's experience: Acknowledging the importance of context in implementing learner-centred pedagogy. *International Education Journal: Comparative Perspectives*, 14(1), 1–20.
- Education Sector Analytical and Capacity Development Partnership (ACDP). (2014). *Rural and Remote Area Education Strategic Planning Study for Tanah Papua*. Jakarta, Indonesia: ACDP.
- Fraser, C., Kennedy, A., Reid, L., & Mckinney, S. (2007). Teachers' continuing professional development: Contested concepts, understandings and models. *Journal of in-service education*, 33(2), 153–169.
- Gathumbi, A. W., Mungai, N. J., & Hintze, D. L. (2013). Towards comprehensive professional development of teachers: The Case of Kenya. *International Journal of Process Education*, 5(1), 3–14.
- Guthrie, G. (2011). *The progressive education fallacy in developing countries: In favour of formalism*. Dordrecht, Germany: Springer Science & Business Media.
- Holdaway, D. (1979). *The foundations of literacy*, Sydney, Australia: Ashton Scholastic.
- Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative health research*, 15(9), 1277–1288.
- Kalolo, J. F. (2015). Towards contextual and cultural relevant science education in non-Western countries: The African experience. *Journal of Studies in Education*, 5(3), 38–56.
- Kennedy, A. (2005). Models of continuing professional development: A framework for analysis. *Journal of in-service education*, 31(2), 235–250.
- Mayring, P. (2000). Qualitative content analysis. *Forum: Qualitative Social Research Online Journal*. 1 (2). Retrieved from <http://www.qualitativeresearch.net/index.php/fqs/article/view/1089/2385>
- McLaughlin, J. M. (2011). Lost in translation: Partnerships for authentic education in Papua New Guinea. *International Education Journal: Comparative Perspectives*, 10(2), 86–98.
- Moll, L. C., & González, N. (2004). Engaging life: A funds of knowledge approach to multicultural education. In Banks, J. A., & Banks, C. A. M. G. *Handbook of research on multicultural education* (pp. 699–715). San Francisco, CA, USA: Jossey-Bass.
- Naylor, R., & Sayed, Y. (2014). *Teacher quality: Evidence review*. Office of Development Effectiveness: Canberra: Department of Foreign Affairs and Trade.
- Nesbitt, L. M., & Cliff, W. H. (2008). How the story unfolds: Exploring ways faculty develop open-ended and closed-ended case designs. *Advances in physiology education*, 32(4), 279–285.
- O'Donoghue, T. (2007). *Planning your qualitative research project: An introduction to interpretivist research in education*. London: Routledge.

- Organisation for Economic Co-operation and Development (OECD). (2013). *Strong performers and successful reformers in education: Lessons from PISA 2012 for the United States*. Paris, France: OECD.
- Popping, R. (2015). Analyzing open-ended questions by means of text analysis procedures. *Bulletin of Sociological Methodology/Bulletin de Méthodologie Sociologique*, 128(1), 23–39.
- Rathmell, E. C. (1978). Using thinking strategies to teach the basic facts. *NCTM Yearbook*, 13(38), 78.
- Reality Check Approach (2015). *Education study in Tanah Papua*. Jakarta: Effective Development Group.
- Schweisfurth, M. (2011). Learner-centred education in developing country contexts: From solution to problem? *International Journal of Educational Development*, 31(5), 425–432.
- Scott, J. (1990). *A matter of record: documentary sources in social research*. Cambridge: Polity Press.
- Timperley, H., Wilson, A., Barrar, H., & Fung, I. (2008). *Teacher professional learning and development*. Auckland, New Zealand: Ministry of Education.
- UNCEN, UNIPA, SMERU, BPS & UNICEF. (2012). “We like being taught” *A study on teacher absenteeism in Papua and West Papua*. Universitas Cendrawasih, Universitas Papua, SMERU Research Institute, Badan Pusat Statistik, dan United Nations Children Fund. Geneva, Switzerland: UNICEF.
- Vegas, E., Loeb, S., Romaguera, P., Paglayan, A., Goldstein, N., Ganimian, A., Jaimovich, A. (2012). *What matters most in teacher policies? A framework for building a more effective teaching profession*. Washington, DC, USA: The World Bank.
- Werang, B. R., Betaubun, M., & Radja Leba, S. (2014). Factors affecting the low quality of graduates in East Indonesia Border Area (Case Study at State Senior High Schools in Merauke Regency, Papua, Indonesia). *International Journal of Education and Research*, 2(4), 187–196.
- Westbrook, J., Durrani, N., Brown, R. S., Orr, D., Pryor, J., & Salvi, F. (2014). *Pedagogy, curriculum, teaching practices and teacher education in developing countries*. London, UK: Department for International Development,