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Understanding Learning and Teaching in Papua New Guinea: Elementary Teacher Trainers Engaged in Cultural Authorship in the Context of National Educational Reforms

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Abstract: Over the last decade, Papua New Guinea (PNG) has pursued educational reform in elementary teacher education. Because elementary teachers and teacher education are central to the reform agenda, there is a need to gain empirical evidence about how PNG teacher trainers' understandings about learning and teaching impact on their practice. The study uses cultural-authorship as a theoretical framework to investigate the nature of changes in understanding about learning and teaching for 18 teacher trainers as they progressed through a two-year Bachelor of Early Childhood upgrade course. It addresses the research question: What do elementary teacher trainers in PNG understand about learning and teaching and how has this changed during their course? The focus on such understandings provides valuable insights into their professional identities at a critical time in PNG's education reform agenda. Analysis of journal entries at the beginning and end of the course showed that, over time, teacher trainers described increasingly more complex ways of understanding learning and teaching. By the end of the degree program, teacher trainers referred to the critical role of communities and families in educational processes and the notion of the teacher as a change agent. This watershed finding demonstrates notable shifts in teacher trainers' professional identities from trainers to community leaders in elementary education.

Introduction

This paper focuses on teacher trainers in an innovative early childhood teacher education program in Papua New Guinea (PNG), with a particular focus on their perceptions of learning and teaching as leaders in the implementation of the elementary teacher training reform. Over the past decade PNG has been engaged in educational reform towards educational equity, access and relevance. A key component is the restructuring of basic education, comprising elementary education (Prep-Grade 2) and primary education (Grades 3-8). The reform agenda is undergirded by two inter-related notions: "education for equality", focusing on equality of participation in building a strong PNG economy, and "education for life" which reflects strong community values of learning for living (Hopkins, Ogle, Kaleveld, Maurice, Keria, Loudon & Rohl, 2005, p. 79). A decade of educational restructuring in elementary education has brought commensurate reform in elementary teacher education involving the training of some 16000 elementary teachers (Ikupu & Glover, 2002), an immense task undertaken initially through on-the-job training. In 1997, this evolved into a three-year program of Teacher Directed Training whereby teachers were trained on-the-job by

elementary trainers who visited teachers in the field, supervised their self-study, and facilitated yearly residential workshops – with elementary teachers awarded a *Certificate of Elementary Training*. The *PNG Education Institute Elementary Unit Report* suggests that the training of teachers needs to include a broad array of values such as professionalism, independence and creativity in culturally-diverse, yet caring, classrooms, while fostering inquiry learning, open-mindedness and respect for differing viewpoints and traditional knowledge, and promoting tolerance, patience, fairness, respect and empathy (Nakin, 2007).

While the reform agenda has achieved the goal of training large numbers of teachers, there is a current concern about quality in elementary education, which is an issue of social and economic significance worldwide (cf. OECD, 2006). A strategic way to promote quality in early childhood education is through improving teacher education. Hence, PNG's reforms have recently turned attention to the education of teacher trainers, requiring elementary trainers to be retrained and better qualified. Initially, trainers in the current study completed the *Certificate of Elementary Teacher Training*. This qualification built on prior primary education qualifications and comprised a 20-week residential program at the Papua New Guinea Institute of Education (PNGIE) in Port Moresby followed by 16 weeks of on-the-job training. This program highlighted the changing roles as teacher trainers within the reform process, with a specific focus on promoting culturally-sensitive pedagogy and curriculum through community participation (Ikupu & Glover, 2002). However, a new initiative in the reform agenda for higher quality elementary teacher education in PNG is the innovative *Bachelor of Education (Early Childhood Teacher Education)*. Funded by AusAID as a capacity-building professional development initiative from 2008, the two-year course enrolled teacher trainers from provinces across PNG. The course enabled trainers to upgrade their qualifications to degree status, to improve the quality of their practice, and to embed their practice in early childhood theory.

The quality in teacher education can be promoted by helping teachers become reflective about their teaching and to collaborate with one another, with the community, with teacher education institutions, and with policy makers (Avalos, 2000). In particular, teacher trainers need to reflect on their learning and teaching beliefs because there is clear evidence that ways of understanding learning and teaching mediate teaching practices (see e.g., Brownlee, Berthelsen, Dunbar, & Boulton-Lewis, & McGahey, 2008). However, explicit reflection on beliefs about learning and teaching is often not the focus of teacher education courses and has not been investigated in the context of PNG teacher education to date. This paper examines what teacher trainers in the degree program thought about children's learning and about teaching, and how their understanding changed as they progressed through their two-year course. A key tenet of the program was its regard for culturally-specific ways of learning and knowing.

Culturally-specific Ways of Understanding Learning and Knowing in PNG

Culturally-specific ways of understanding learning and teaching form part of a cultural epistemology. This reflects the "how" (ways of knowing and learning) rather than the "what" (knowledge outcomes). In many non-Western epistemologies (or ways of knowing), knowledge is often conceived as both holistic and practical (Aikenhead & Jegede, 1999 in Najike, McRobbie & Lucas, 2002). In PNG, holistic ways of knowing include "human and animal, the seen and unseen, the living and the dead" (Pauka, Treagust, & Waldrip, 2005, p. 5) which are not necessarily evident in Western ways of knowing. Pauka et al. argue that PNG traditional ways of knowing remain largely unchanged because of "strong ties to the land and the environment for survival" (p.5), with many people in PNG (more than 85%) continuing to live subsistence lifestyles.

Traditional ways of learning and knowing in PNG are characterised by the passing of knowledge from elders to younger community members. Kukari's (2004) study of preservice secondary teachers in PNG revealed that traditional knowledge is often conceived as "a body of facts, which comprises skills, values and the know-how" (2004, p. 106) with story-telling, using an oral tradition to transmit ideas and knowledge, often used to teach cultural knowledge (Pauka et al., 2005). Children are then expected to acquire and recall such information. Kukari suggests that traditional learning takes place in a three-stage process:

1. An elder provides information situated in a dream or perhaps a spiritual experience. The child passively receives this knowledge, learning through observation and memorisation.
2. Children practise this new knowledge, often with the support of the elder.
3. Children independently demonstrate the new knowledge without external support.

Kukari's (2004) account of traditional learning in PNG reflects a sociocultural theory of knowing and learning, used widely in investigations of comparable societies (cf. Rogoff, 2003). From this theoretical perspective, children become learners through social interactions with more knowledgeable community members, developing ways of knowing and learning that are specific to their particular culture (Vygotsky, 1986). Through social interaction, knowledge is transferred from elder to child, as in Kukari's Step 1. Adults play a vital role in helping children to understand their cultural practices (Kukari's Step 2). It then becomes possible for knowledge and skills to be transferred to other learning contexts (similar to Kukari's Step 2). Children are then able to participate independently in traditional routines and events (Kukari's Step 3). At first glance, these ways of learning and teaching reflect an aggregation of information without questioning or making connections to prior experiences sometimes referred to as 'quantitative' conceptions of learning and described by Marton, Dall'Alba and Beatty (1993) as: *Increasing one's knowledge, Memorising and reproducing, and Applying*.

It would be inappropriate and problematic to label PNG traditional ways of learning as purely quantitative in nature because, clearly, traditional learning involves a significant level of sense-making through participation in culturally-specific activities. Studies of children's participation in culturally-specific routines and events, from a cross-cultural research perspective, focus on routines and events that are meaningful to a particular cultural group (see Rogoff, Moore, Najati, Dexter, Correa-Chavez & Solis, 2007). Such research suggests that, when children actively participate in culturally-specific routines and events (such as sibling care or gardening), these activities can become meaningful learning experiences - what Rogoff (2003) theorises as apprenticeship in community life, with elders scaffolding children in their participation in cultural activities. Therefore, such learning cannot simply be described as falling within a quantitative conception devoid of meaning-making, as Marton et al. (1993) indicate.

Understanding PNG's traditional ways of learning and knowing has implications for teaching in elementary education in PNG. Kukari (2004) argues that there is a need to investigate how teachers' understand learning and knowing and the impact on teaching, with a suggestion that such beliefs need to be explicitly addressed in teacher education courses.

Cultural-authorship

While there is little doubt that ways of knowing and learning are critical considerations in discussions of quality teaching - reflecting, to some extent, the teacher thinking research (see e.g., Borg, 2003) - promoting quality in teacher education needs to involve more than a focus on the cognitive aspects of learning and teaching. Teacher identity and interpersonal relationships with other educational stakeholders are also significant considerations in any discussion of teacher quality. Teacher characteristics, that is, their ways of knowing and learning, teacher identity and their interpersonal relationships, can be holistically considered using a construct known as self-authorship. Self-authorship is a theory that describes the relationships between critical reflection (evidenced-based evaluations of information) and personal beliefs (Creamer & Laughlin, 2005). As Meszaros (2007) comments, this involves an integrated view of the learner that includes an epistemological dimension (beliefs about the nature of knowledge and knowing), an interpersonal dimension (social relationships) and an intrapersonal dimension (personal values and identity). This framework was used to inform the development of the Award course designed for this PNG cohort of teacher trainers (Bekken & Marie, 2007).

As a construct, self-authorship may provide a theoretical framework for change in teacher education (Meszaros, 2007) that goes beyond the teacher thinking research tradition. By this we mean that teacher' epistemic beliefs in addition to identity and interpersonal dimensions are significant in teaching. Kukari (2004) suggests that efforts to promote critical thinking, construction of knowledge and problem solving in PNG teacher education are not being realized because of the traditional beliefs about learning and knowing that preservice teachers bring to their teacher education programs. He suggests that these beliefs involve a "one-way, uncritical process of learning and teaching " leading to the learner being "dependent on the teacher for information and for the teacher to think and solve problems for him or her, thus arresting any opportunity for the learner to construct his or her own knowledge" (p. 108). He stresses the needs for explicit reflection on learning and teaching beliefs to promote changes in learning and teaching processes in PNG.

We argue that self authorship has much to offer in terms of promoting quality teacher education in PNG. Apart from focusing on teacher beliefs, as called for by Kukari (2004), we also propose that teacher education needs to carefully consider teacher identity and interpersonal relationships holistically, using self-authorship theory. A concern remains, however, that self-authorship theory reflects a somewhat individualistic approach which does not necessarily foreground cultural contexts - few social or community affordances are evident. We believe a better way to describe this theory is by using the term *cultural-authorship* where the application of socio-cultural theory identifies the individual as co-existing with culture (Edwards, 2003). When applied to elementary teacher education in PNG, Figure 1 shows how cultural-authorship enables us to theorize how elementary teacher trainers think in complex ways. From this perspective, trainers need to be encouraged to evaluate multiple perspectives (based on their culturally-specific epistemic beliefs about knowing, learning and teaching) in the context of maintaining strong PNG-specific professional beliefs and values (intrapersonal) and healthy social relationships (interpersonal) based on tolerance, respect, and valuing of children, families and community perspectives. We are proposing an extension of the construct of self-authorship by considering these interrelated dimensions in a specific cultural context, in this case, PNG.

Beliefs about learning, knowing, teaching & knowledge:
complex reflection open to multiple perspectives

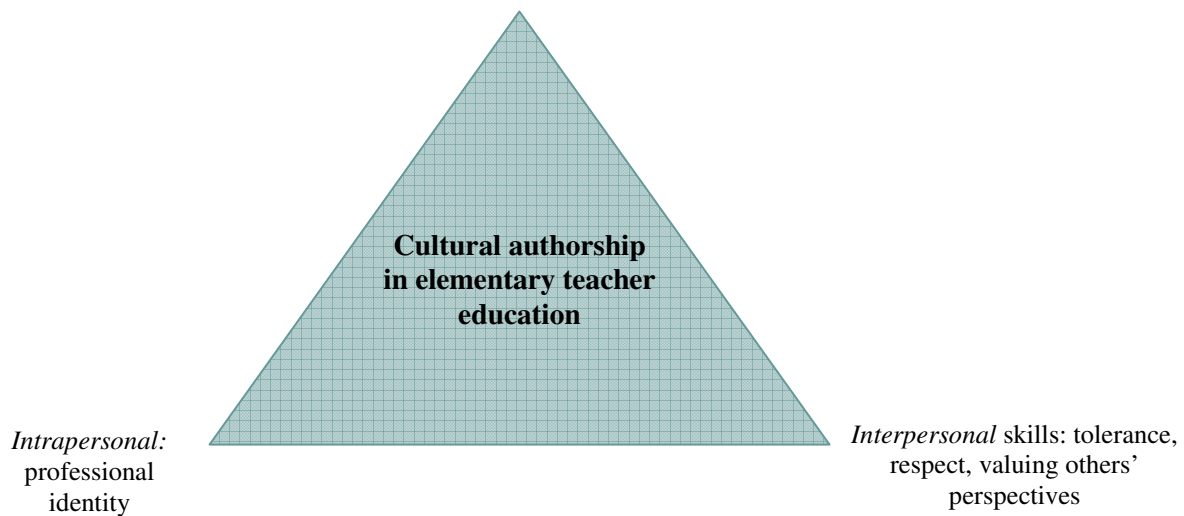


Figure 1: Cultural-authorship as a theoretical framework elementary teacher education (adapted from Baxter Magolda, 2003)

This paper reports on changes to teacher trainers' understandings about children's learning and teaching as they progressed through a new degree course, which used cultural-authorship as its guiding theoretical framework for the development of the course.

Method

Our investigation asked the question: *What do elementary teacher trainers understand about children's learning and teaching in the context of elementary education leadership roles in PNG as they progress through the degree program?* To address this question, 18 elementary teacher trainers were asked to complete self-authored journal writing tasks at the beginning (Time 1) and end of their degree studies in PNG (Time 2).

Bachelor of Early Childhood (Teacher Education) in PNG

The Bachelor of Early Childhood (Teacher Education) was an Aus AID funded degree qualification designed to equip one group of PNG elementary teacher trainers with the knowledge, skills and values to train and prepare others to teach effectively in a variety of early childhood settings for children aged 4 to 8 years. The two-year course combined external delivery (through course materials), self-directed study, and on-site intensive teaching blocks of two weeks per semester, the latter delivered by early childhood academics from Australia. Three of the five early childhood academics participated in this research.

The teaching team also comprised five PNG mentors who were employed at the Papua New Guinea Education Institute (PNGIE) as lecturing staff. During the 2 week intensive teaching blocks, they were released from their normal lecturing duties to participate in the Bachelor of Early Childhood. The mentors' role was to work as tutors alongside the Australian early childhood academics and then to complete follow-up visits with students in their respective provinces. In the first three semesters, two visits were made to each of the students, while in the fourth and final semester only one visit was made. These visits were

focused on supporting students to complete assessment, including the journal writing tasks. Thus, the support for writing journal entries came from both a Western (the Australian lecturing staff) and PNG (PNGIE mentors) cultural perspective. Students were asked to submit the journal writing tasks as part of their assessment however at Time 2 this was done on a pass/fail basis for the final three semesters to encourage students to reflect authentically on their own personal and professional learning. It was expected this approach to assessment would encourage students to express their personal beliefs, rather aspiring to some sort of “ideal” response.

All course materials were prepared specifically for PNG and were submitted to PNGIE for input prior to commencement. The course design drew upon theoretical understandings of cultural-authorship by focusing the participants on ways of learning and knowing, identity, and interpersonal connections. The eight units of study were informed by a socio-cultural perspective, in which cultural and social practices are considered to be critical in promoting cultural-authorship in teacher trainers and drew on the work of Bekken and Marie (2007) to establish goals for the units. *Epistemic goals* included developing beliefs about learning and teaching for complex reflection by engaging the teacher trainers in information literacy and skills in research; using assumptions and arguments; selecting research methods; reading to learn; and intentional learning, reading and note-taking. The *interpersonal goals* involved developing dialogue and working in groups and/or teams. Finally, the *intrapersonal goals* involved developing cultural voice and cultural agency. Through this approach, we aimed to highlight the integration of culturally-specific beliefs and knowledge throughout the teacher education course.

Participants

The course involved 18 teacher trainers, between 35-45 years of age, 10 male and 8 female, from across PNG, targeted by the PNG National Department of Education because they were deemed to be exemplary teacher trainers. Thus, the degree program would provide a pool of expert elementary teacher trainers for the newly-established residential teachers' colleges. Applications for entry into the course were judged on the basis of qualifications, teacher training experience, and a 1000-word response about why they aspired to a qualification in early childhood education. All had considerable Diploma level studies in their previous education qualifications, a Certificate of Elementary Teacher Training and at least 5 years of lower primary teaching experience.

Collecting and Analyzing the Data

Ethical clearance for the investigation was granted by the University Human Research Ethics Committee (Ref No 0600000972). Participants were asked to make journal entries that formed part of the corpus of data for analysis. Data were collected at the beginning (Time 1) and end of their course (Time 2) using these self-authored journal entries. Questions were designed to encourage students to reflect on their understandings about children's learning and the process of teaching (epistemic dimension) in the context of their professional identity (intrapersonal dimension) and interpersonal skills (interpersonal dimension), capturing the three dimensions of cultural-authorship. Journal entries were based on questions and dimensions of cultural-authorship, including:

Time 1 journals (beginning of course)

- What are your goals for becoming a teacher trainer? What skills do you want to achieve? How will you know when you have achieved them? (intrapersonal dimension)

- During teaching /learning workshops, how did you use active listening? How do you recognise, affirm and manage diversity of cultural/personal opinions? (interpersonal dimension)
- Do children learn differently to adults? If so, what are the differences? If not, explain your views. What is good teaching and good learning? (epistemic dimension)
- What goals do you have for good teaching and learning? What skills do you want to achieve? Why is this important to you? (intrapersonal dimension)

Time 2 journals (completion of course)

- What is good teaching for young children? How have your beliefs changed over the course? (epistemic dimension)
- What is good learning for young children? How have your beliefs changed over the course? (epistemic dimension)
- What is the role of research in elementary education? (epistemic dimension)
- What have you read, discussed, and reflected on that you think you will use in your future roles as an elementary education leader? (intrapersonal dimension)
- How has your view of elementary education leadership changed over the course? Why has it changed? (epistemic dimension)
- How will work with others (including families and communities) to share ideas in your role as a trainer and educational leader? (interpersonal dimension)
- What do you stand for in early childhood education and care (What are your values)? (intrapersonal dimension)

The journal entries were explored inductively using thematic analysis. One researcher who was involved in gathering the data in PNG and a research assistant coded the data. The three-step analysis process outlined by Creswell (2005) involved, firstly, familiarizing ourselves with the data. This occurred through multiple readings of the journals by both researchers. Secondly, the journal responses were analyzed into themes paying particular attention to the responses that clearly related to views about learning and teaching in the context of elementary education leadership. This analytic strategy of looking for patterns and then coding is referred to as thematic analysis (cf. Denzin & Lincoln, 2005). Thematic analysis involves comparing responses with other responses in the journal; then comparing responses with emergent categories or themes; and then comparing categories or themes with other themes (Creswell, 2005). In the third step, *synthesis*, both the researcher and the research assistant investigated each of the themes to see if any could be combined with others that were of a similar nature. These were then presented to a broader research team to scrutinize the themes, the labels and the quotes that exemplified each of the themes. The co-construction of themes by the researcher and the research assistant, and the final check by the broader research team enabled credible research findings to be established. This is referred to as a dialogic reliability check in which agreement on coding is reached through discussion (Akerlind, 2005).

Findings

Journal entry analysis revealed two broad themes: *ways of understanding children's learning* and, *ways of understanding teaching*.

Ways of Understanding Children’s Learning

In their journal entries at Time 1 and Time 2, the teacher trainers described three main ways of understanding how young children learn - by *observation*, *being active*, and *actively constructing meaning*. As Table 1 shows, at Time 2, most teacher trainers considered that children learnt by being active ($n=7$) or by constructing meaning ($n=10$). These various understandings of children’s learning are now discussed in more detail.

Ways of understanding children’s learning:	Time 1	Time 2
Learn by observation	$N=3$	$N=0$
Learn by being active	$N=8$	$N=7$
Learn by actively constructing meaning	$N=2$	$N=10$
Not able to be coded	$N=5$	$N=1$
Total	$N=18$	$N=18$

Table 1: Ways of understanding children’s learning

Learning by Observation

In this first category of understanding children’s learning, trainers reflected on how children learnt by observing those around them. It seems, from the following quote, that the respondent sees that adults and children learn differently, with children simply acquiring knowledge, rather than engaging in any form of analysis of information:

In PNG context, adults will be interested to learn more knowledge about gardening, apart from what they already know. Here they will try to analyse the new knowledge to make sense with what they know about gardening, while children will just learn the information and don’t bother analysing, because they don’t have the background knowledge on gardening (TE 1 Time 1)

This comment epitomises the notion that children do not analyse culturally-specific knowledge; they simply observe and receive knowledge. In the next category, there is a realisation that children do not simply absorb knowledge but that they need to be active in their own learning.

Learning by Being Active

When trainers described *learning by being active*, there is a clear indication that the trainers understood that children actively participated in learning:

Children at the elementary level are always full of enthusiasm, curious and eager to learn any knowledge or information that suits their need and interest[s] them and make[s] the teaching lesson active and enjoyable. The starting point is for the elementary teacher to explain, demonstrate and show them the way to begin. Once this is done properly and clearly you know that you’ve started a running engine which will never stop during active learning. (TE 12 Time 2)

To bring to the understanding of how children learn differently from adults is by using concrete materials, imitating adults, asking many questions, experiencing things (e.g., hurtful fire). (TE 7 Time 1)

While children may be perceived as active learners, it seems that this still reflects a teacher-directed view of learning, initiated by the teacher but extended by the child. It was not clear if these trainers thought that children needed to build personal meaning, as was more evident in the next category of understanding children’s learning.

Learning by Actively Constructing Meaning

In this category, trainers indicated that children construct their own meaning and can put this learning into practice:

It is important that young children understand what they learn. For this to eventuate, teachers need to apply transformational learning strategies. Teachers need to plan learning activities where children will participate actively and be able to put into action what they learn. (TE 1 Time 2)

Here we get the sense that children not only need to be active in their learning but they also need be able to understand what they are learning. This differs from the previous category of *learning as being active* because there is more focus on what the child does in the learning process – the child needs to understand and make meaning from the learning experience.

In summary, of the seventeen responses able to be coded at Time 2, two students did not change their understanding about children’s learning over time, believing (at both times) that children learn by being active and observing others. Another five students did not describe children’s learning in their first journal entries so we were unable to say what changes took place over time. By Time 2, however, four students held views that children learn by constructing their own meaning. For the remaining 10 trainers, we were able to see two main ways in which their understanding about children’s learning changed from Time 1 to Time 2:

1. learning by observing (Time 1) changed to learning by actively constructing meaning (Time 2) ($n=6$); and
2. learning by observing (Time 1) changed to learning by being active (Time 2) ($n=4$).

The point of interest here is that, at Time 2, there is a clear indication that children need to be active in their learning ($n=7$), with some teacher trainers identifying that active learning also needs to involve construction of meaning ($n=10$).

Ways of Understanding Teaching

Analysis of the trainers’ journals revealed five distinct ways of understanding about elementary teaching: *transmission of information, actively involving children in learning, actively involving children in a broader community context, promoting meaning-making for better futures, and promoting change in society*. In some instances at Time 1, it was not always clear if the students were talking about teaching adults or teaching children, hence the Time 2 responses are of greater analytic interest because these all related specifically to views about teaching children. Table 2 is a summary of these data.

Ways of understanding teaching:	Time 2
Transmission of information	$N=1$
Actively involving children in learning	$N=1$
Actively involving children in broader community contexts	$N=10$
Promoting meaning making for better futures	$N=3$
Promoting change in society	$N=3$
Total	$N=18$

Table 2: Ways of understanding teaching

Teaching for Transmission

The focus here was on teachers passing on information to learners. Only one teacher at Time 2 held this view of teaching:

Good teaching is when a teacher gets him/herself prepared well [with] the prescribed knowledge and skills of the subject content and how these knowledge and skills are carefully planned and imparted to children. I personally believe that good teaching is not how much content we acquire, but how well we use this knowledge to deliver to learners with true dedication, commitment and a heart to serve children. (TE 6 Time 2)

Specifically, good teaching is described here as being about the teacher imparting knowledge.

Teaching for Active Learning

When the trainers described teaching for actively involving children in learning, they reflected a view of teaching as both modeling and encouraging active learning. Again, only one teacher trainer described only this view at Time 2:

Good teaching is when the teacher prepares himself/herself for the lesson, knowledgeable of the content and the skills; he/she has sufficient materials, and teach[es] the subject well using a child-centred approach...The starting point is for the elementary teacher to explain, demonstrate and show them the way to begin. Once this is done properly, clearly you know that you've started a running engine which will never stop during active learning. (TE 12 Time 2)

Teaching for active participation was clearly articulated in this response category. The remaining ways of understanding teaching also involve the view, at least implicitly, that teaching needs to promote active learning in children, even though the following sub-theme extends to a focus on broader community participation.

Teaching for Active Learning in the Community Context

At Time 2, it was clear that a large group of teacher trainers ($n=10$) thought that teaching involved more than a focus on active learning; they proposed that community stakeholders should also be considered in the teaching process. They also saw themselves as change agents in, and advocates for, elementary education in PNG – a focus of coursework in the final 2 units of the degree. For example:

Children [should be] able to address issues such as water problems, nutrition, violence and discrimination at their schools with the aims of improving and sustaining health and wellbeing at school. That is children telling people ... about what is clean water, and how they should look after water so that they have good, clean and healthy water. For example, boil well water before drinking...What children learn and practice in the classroom is also practised outside of school. Parents, teachers and children should be able to work together to promote health in schools and community settings. (TE 16 Time 2)

My view about elementary education changed when I learnt about my responsibilities about addressing issues in schools. That is my role as a trainer is to be an advocate, a leader and a change agent to my family and the community, including schools and other agencies within the community. ...I feel that elementary education belongs to the community therefore the whole community should take full responsibility over the management of the infrastructure, curriculum and the operation of the elementary

education system. The whole community should take ownership of schools, so that issues affecting schools are properly addressed. (TE 16 Time 2)

In this way of understanding, while we do not see specific evidence of teaching aimed at helping children construct personal meaning, it is obvious that children can be actively learning within the context of broader community learning. Teachers' identities as change agents emerge here as an important aspect of effective elementary teaching.

Teaching for Promoting Meaning Making for Better Futures

Three teacher trainers at Time 2 talked about teaching to help children make meaning in the context of creating better futures through active citizenship. For example:

Good teaching for young children is about preparing children for the future, either in school or adult life; it is also preparing them to be useful citizens in their communities/society, enabling children to develop knowledge, skills and positive attitudes and to ensure a worthwhile life through application of these knowledge and skills ,by understanding their potential as a person. Children are whole beings, as a trainer I have a very significant role in shaping their future. (TE 17 Time 2)

This response clearly shows how children should be encouraged to build personal meaning, gain new knowledge and skills, apply these in their everyday life, and become active community builders now and for the future.

Teaching for Promoting Change in Society

The above comment also illustrates teacher identity as education leader and change agent. At Time 2, three trainers talked not so much about teaching in relation to teaching children but rather, they situated themselves as advocates and change agents for elementary education. They also talked about involving the community in the process of creating a better society, appearing to develop strong identities around these transformational roles. Overall, the responses indicated that teachers, often in conjunction with the broader community, should promote better future options and outcomes for PNG.

I have learned some very useful ideas and strategies about how children can learn positive behaviour and attitudes. These new beliefs are the strategies where families, communities and the school can [be] use[d] to promote children's positive behaviour in elementary education. ...Good learning for young children can be based on values such as respect for others, positive behaviour, social relationships, is responsible and has self-discipline. The belief that I have now is to educate children as good citizens for present and not just as good citizens for future only, to be responsible individuals in PNG. (TE 8 Time 2)

Policies and guidelines for sustainability on health, environment and social relationships need to be established in schools. Then, families, communities and the school can work together in achieving the outcomes. (TE 8 Time 2)

In summary, most trainers at Time 2 identified teaching as encompassing a broader range of stakeholders – the community or society at large - perhaps reflecting growth in the interpersonal dimension of their teaching. Teaching also took on broader dimensions in that their teacher identity included self-perceptions as advocates and change agents. With this focus on teacher identify came the need to reach out to community members, reflecting a shift in their interpersonal connections for teaching.

Discussion

Teacher trainers' views of children's learning and their teaching reflected a developing sense of learning and teaching as more complex over time. In regard to children's learning, trainers shifted from transmissive and active views of learning to understanding that learning and teaching involved children as active learners who construct new knowledge with teachers support. At Time 2, teacher trainers indicated that children either needed to be active in their learning ($n=7$) or that children were active constructors of meaning ($n=10$).

The focus on activity and meaning making in children's learning was also reflected in the trainers' understandings about teaching. At Time 2, these trainers thoughts about teaching focused on either active learning (actively involving children in learning $n=1$; actively involving children in broader community contexts $n=10$) or learning for meaning ($n=3$). However there was also a clearly articulated a shift in teacher identity towards teachers as advocates (i.e., actively involving children in the community $n=10$; promoting meaning making for better futures $n=3$) and change agents ($n=3$). These three teacher trainers who talked about their role as change agents did so without reference to children's learning. So, for most trainers, teaching became a process involving a broader range of stakeholders – the community or society at large - reflecting growth in the interpersonal dimension of their teaching. With this identity shift, came understanding of the need to reach out to their communities (interpersonal dimension).

Kukari (2004) suggests that traditional learning and teaching in PNG takes place in a three-stage process that involves children learning through: a process of observation and memorisation; followed by a practice phase, often with the support of the elder; and finally, an independent demonstration of the new knowledge. This traditional approach clearly involves an active view of learning and teaching, and was described so by many of the trainers in this study. Active learning and teaching encourages children to learn culturally-valued knowledge and skills through social interactions with more knowledgeable community members. The teacher trainers, however, were also advocating a view of active learning that clearly involved the broader community. Of interest is how many trainers also highlighted the importance of children building meaning in this process, beyond being active learners. Their role as teacher trainer clearly extended beyond the elementary classroom, to one of change agent in the process of elementary education reform. This suggests that traditional views of learning may have been adapted by these teacher trainers in the light of a growing professional identity about their roles as teachers. In summary, it would appear that the intrapersonal (identity as change agent) and interpersonal (reaching out to other stakeholder) dimensions of cultural-authorship have become evident over the course of study.

The epistemic goals of the course were designed to promote complex reflections in which the trainers accessed and evaluated a broad range of perspectives for making meaning. To reflect in complex ways as a teacher, one must be able to evaluate multiple perspectives (which relies on beliefs about learning and teaching as constructed rather than received) in the context of maintaining personal/professional beliefs and values (intrapersonal) and healthy social relationships (with stakeholders). Through developing information literacy and research skills, encouraging use of assumptions and arguments to aid understanding, reading to learn, and engaging in intentional learning, reading and note taking, the aim of this study program was to promote constructivist epistemic beliefs. It would appear that the degree program was success in this regard. After their engagement in the course, many of these teacher trainers described learning and teaching as active or focused on meaning making (epistemic dimension). They also viewed their professional identity in terms of being a change agent in the context of elementary education (intrapersonal dimension). Their increasing awareness of the need to engage the community at large in the teaching process speaks to an interpersonal focus in their roles as teacher trainers. What seems clear is that the three aspects of cultural-authorship are evident in their understanding about learning and teaching, suggesting that

cultural-authorship as a theory may provide a useful way to further explore quality in teacher education in PNG.

All teacher trainers highlighted the critical role played by communities and families in educational processes and/or the teacher as a change agent and advocate for elementary education and this is important for two reasons. First, it contributes to the stated goals of the current PNG school reforms particularly in relation to “education for life”, that is, education that helps to progress the nation while maintaining local cultures through the provision of community-run elementary schools in each village (interpersonal dimension). Second, the study identifies shifts in these teacher trainers’ professional identities from trainers to education and community leaders (intrapersonal dimension). These findings offer insights into how developing countries might conceive of quality teacher education reforms. A cultural authorship framework focuses attention on teacher identity, interpersonal dimensions and epistemic beliefs which provides a culturally sensitive and holistic way to inform teacher education reforms beyond the PNG context.

Implications for Elementary Teacher Education In PNG

The broader question remains: How can teacher education in PNG best promote the necessary shifts in teacher trainers’ relationships with communities and also change their professional identities and epistemic beliefs? Current elementary teacher education reforms in PNG are focused on establishing residential-based teacher education, as opposed to on-the-job training. The new PNG curriculum requires elementary teachers to be agents of change who can draw on current early childhood research and practice (Nakin, 2007). This curriculum is underpinned by principles of professionalism, independence, creativity, caring classrooms, inquiry learning, open-mindedness, tolerance, patience, fairness and respect for differing viewpoints, while valuing traditional knowledge (Nakin, 2007). On closer examination, many of these principles reflect a cultural-authorship perspective. In particular the principles of open-mindedness, professionalism, and respect for alternative viewpoints, respectively, reflect the epistemic, intrapersonal and interpersonal dimensions. The new curriculum appears to be based, at least in part, on a cultural-authorship perspective, even if this was unknowingly designed. Cultural-authorship, as for self-authorship, can provide changes in understandings to promote quality in teacher education (Meszaros, 2007) in PNG. It is important, therefore, to think beyond curriculum content (the “what”) of the teacher education reforms to consider the learning processes (the “how”) of cultural-authorship.

As Kukari’s (2004) research indicates, current models of teacher education in PNG are not helping students develop critical reflection skills because preservice teachers hold beliefs about learning and teaching based on learning transmission that is teacher-centred and does not provide opportunities for learners to construct their own knowledge. He advocates for teacher education to pay particular attention to helping students explicitly reflect on their beliefs about learning and teaching in order to promote deep changes in such beliefs. This means teacher education may need to focus on helping preservice teachers reflect explicitly on their beliefs about learning and teaching as part of their learning to be teachers. While it is possible that, in some cases, such reflection may serve to reinforce existing beliefs and not serve as a catalyst for change, recent research shows that explicit reflection on personally-held beliefs about knowing and learning can bring about reconstruction of such beliefs (see for example Valanides & Angeli, 2005).

We would argue that this explicit reflection also applies to the Australian early childhood academics. While not the focus of this research, it was clear that the Australian academics also needed to reflect upon their own beliefs about learning and teaching. It was important for the academics to remain open to divergent ways of knowing, learning and teaching and to be respectful of alternative viewpoints with the PNGIE mentors acted as

'bridges', as necessary, to maximise learning, communication, and cultural sensitivity between the Australian academics and teacher trainers. These were the very qualities of cultural authorship that we were endeavouring to promote with the elementary teacher trainers.

The concept of cultural-authorship embedded into new teacher education programs can help to promote quality in elementary teacher education, which is a key aspect of the current reform agenda in PNG. Additionally, we propose that, as well as focusing on teacher beliefs as called for by Kukari (2004), teacher education needs to carefully consider teacher identity and interpersonal relationships, holistically, using cultural-authorship theory to promote complex thinking. It would seem that the shift from on-the-job training to a residential model of teacher education provides a sound platform for the use of cultural-authorship for teacher trainees as it offers opportunities for indepth discussion, engagement and learning about learning and teaching over extended time periods. It is anticipated that such changes will resonate throughout PNG education to enhance the quality of learning for students, the quality of teaching for teachers and teacher trainers, and contribute positively to PNG's educational futures.

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