

## REVIEW ARTICLE

# Factors affecting learning and teaching for medicines supply management training in Pacific Island Countries - a realist review

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*Submitted: 20 August 2012; Revised: 27 February 2013; Accepted: 1 March 2013; Published: 6 June 2013*

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*Rural and Remote Health 13: 2327. (Online) 2013*

Available: <http://www.rrh.org.au>

## ABSTRACT

**Introduction:** Limited human resources are a major impediment to achieving the UN health-related Millennium Development Goals in a number of Pacific Island Countries (PICs). Lack of education capacity to support competency development in medicine supply management is one of the main issues affecting workforce development in this region, which is characterised by disparate service delivery due to the range of environments in which supply occurs (ie urban, rural and remote), geographical challenges and cultural practices associated with teaching and learning. The supply of medicines, and an adequate pharmacy workforce with appropriate competencies is crucial to ensuring a well-functioning pharmaceutical system. In this region approximately 80% of patients access healthcare in rural areas without a pharmacist, thus local health personnel must be competent in pharmaceutical management relevant to the local context and culture. A new approach involves a partnership between the UN Population Fund Suva Sub-Regional Office, University of Canberra, Ministry of Health officials and the health personnel within identified PICs, starting with the need to understand local culture and its impact on learning and teaching, and the mapping of competency requirements and an understanding of currently available information and materials. This information will be used to develop and trial new pedagogical approaches to training health personnel involved in essential medicines supply management, to improve medicines availability for patients in their own environment. The focus of this review was to determine what cultural and learning factors need to be considered when developing a curriculum for South Pacific pharmaceutical health personnel who work across a range of practice environments.



**Methods:** A 'realist methodology' consisting of a systematic investigation of the published literature and a targeted review of the 'grey' literature was used. All relevant literature was retrieved and coded manually using broad thematic analysis.

**Results:** The combined bibliographic and 'grey' literature search strategy resulted in the inclusion of 17 full text articles, 44 documents and 10 books. The five themes identified as key to optimising the cultural and learning approaches for the study population included recognition of: (1) past regional experiences of health related training; (2) the impact of South Pacific culture on learning styles; (3) the impact of external influences on curriculum; (4) the challenges of open and distance education in the Pacific; and (5) a distinct South Pacific student learning approach.

**Conclusions:** The results of this 'realist methodology' review provide insights into learning approaches and cultural influences on student learning within PICs. The themes generated will be used to develop a set of principles to inform educators and health personnel involved in pharmaceutical training within PICs.

**Key words:** culture, education, learning approaches, medicines supply management, Pacific Island countries, pharmacy, realist methodology.

## Introduction

The Pacific Islands consist of 22 independent island countries scattered over 30 million km<sup>2</sup> of the Pacific Ocean, consisting of more than 7500 islands. The Pacific Islands encompass a wide variety of ethnic, cultural and linguistic groupings that can be broadly divided into Melanesia, Micronesia and Polynesia<sup>1</sup>. The region has a population of approximately 9.6 million distributed among a number of small island states with populations varying from 1170 in Tokelau, to more than 6 000 000 in Papua New Guinea<sup>1</sup>.

Limited human resources are a major impediment to achieving the United Nations health-related Millennium Development Goals (MDGs) in this region<sup>2</sup>. In 2000 the United Nations assembly adopted the MDGs in a resolution designed to focus the world's attention on the targets required to begin bridging the gap between the developed and developing world by 2015. Of the eight MDGs, four explicitly involve medicines or medical sundries and their availability at the primary care or service delivery point level. The International Pharmaceutical Federation acknowledges that healthcare facilities cannot operate without medicines<sup>3</sup>. The availability of both medicines and a pharmacy workforce in adequate numbers with appropriate competencies is crucial

to ensuring a well-functioning pharmaceutical system<sup>3</sup>. This International Pharmaceutical Federation observation is supported by the Australian Agency for International Development, United Nations Population Fund and the World Health Organisation, who report continued problems in maintaining the supply of essential medicines through to the clinics and aid posts of Pacific Island Countries (PICs)<sup>2,4-8</sup>. This problem is even more pronounced in the rural and remote areas of PICs. The workforce responsible for maintaining the medicines supply system in PICs is made up of nurses, midwives, health extension officers, nurse aids and other health personnel at the primary healthcare level (Level 1), pharmacy supply health personnel at the provincial level (Level 2) and pharmacists and stores managers at the national level (Level 3)<sup>9,10</sup>.

The Fiji National University and the University of Papua New Guinea are the only universities in the region providing diploma and degree level pharmacy education, with most graduates finding employment in the private sector<sup>9</sup>. No formal certificate training is available for mid-level cadres involved in essential medicines supply management (EMSM), apart from semi-structured localised training in the Solomon Islands and Tonga. Fiji National University and the University of Papua New Guinea initially ran pharmacy assistant courses before transitioning to their current program<sup>11</sup>. Nursing



schools throughout the region provide local training for various cadres of health personnel (nurses, nurse aids, midwives). Medicines specific training is often missing from their pre-service curriculum, while skills in appropriate medication supply are often assumed and not overtly articulated<sup>9</sup>. As a result, many health personnel lack the skills they require for this essential part of their day-to-day work<sup>9</sup>.

The International Pharmaceutical Federation-Pharmacy Education Taskforce 'needs-based' approach to pharmacy education and a participatory action research methodology are used to form the framework for this project (Fig1)<sup>12</sup>. This framework is inclusive of local cultural norms, and has the effect of meeting the expectations of donor organisations and local Ministries of Health by providing immediate tangible benefits in the workplace. The starting point of the framework is the need to understand local culture and its impact on learning and teaching; the mapping of competency requirements and an understanding of currently available information and materials<sup>13</sup>. Subsequently this information will be used to form specific principles to develop and trial new pedagogical approaches to the training of health personnel involved in EMSM, while supporting the existing systems in PICs<sup>13</sup>.

## Objective

The objective of this review was to determine what cultural and learning factors need to be considered when developing curriculum for South Pacific pharmaceutical health personnel.

## Methods

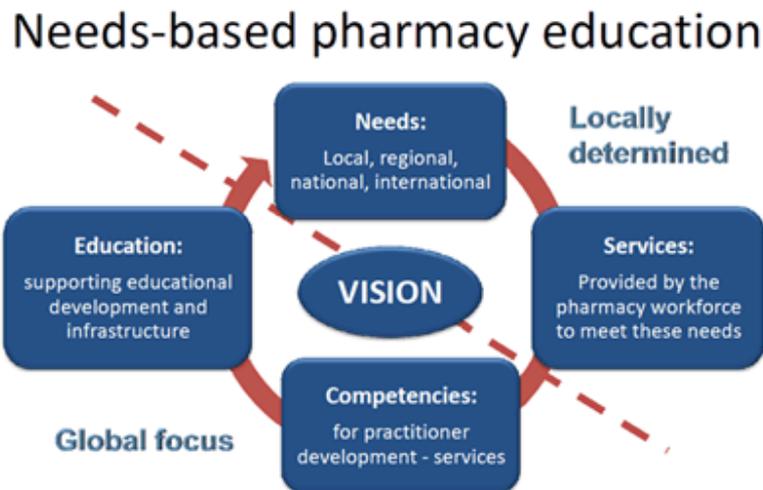
Within a review process, randomized controlled trials are seen as providing the strongest level of evidence. Such evidence is often unavailable for medical education research (especially in PICs) and for many areas of health policy related research. Consequently, the use of realist methods which focus on the 'how' and 'why' of research, often using

the 'grey' literature, are becoming of increasing interest to the international research community<sup>14-19</sup>. A realist review is defined as 'an interpretive theory-driven narrative summary which applies realist philosophy to the synthesis of findings from primary studies that have a bearing on a single research question'<sup>20</sup>. Such a review 'provides an explanatory analysis aimed at discerning what works for whom, in what circumstances, in what respects and how'<sup>18</sup>. 'Grey' literature is defined as 'publicly available, open source information that is usually available only through special channels and may not enter normal channels or systems of publication, distribution, bibliographic control, or acquisition by book sellers or subscription agents'<sup>21</sup>.

With the knowledge that there is limited research-based evidence around our research question, and with the belief that context is important to implementing future education interventions in this project, a 'realist methodology' was adopted. The 'realist methodology' formulated by the authors included a systematic investigation of the published literature through traditional bibliographic databases, and a targeted review of the 'grey' literature most relevant to the research question.

## Bibliographic search strategy

The following bibliographic databases were searched from January 1990 to December 2011: MEDLINE, EMBASE, PubMed, Google Scholar, Academic Search Premier, Cinahl, Clinical Reference Systems, Communication and Mass Media complete, Education Research Complete, Professional Development collection, PsycARTICLES, Psychology and Behavioural Science collection, Psycinfo, Teacher Reference Center, Humanities and Social Sciences collection, Web of Science, Informit and Web of knowledge. A broad systematic search strategy using the following search terms was implemented: (culture or customs or learning approaches) and (Pacific or South Pacific) and (training or teaching or education) and (healthcare worker or students or health). Seventeen relevant full text articles were retrieved using the bibliographic search strategy.



**Figure 1: International Pharmaceutical Federation Pharmacy Education Taskforce, needs-services-competencies-education cycle (reproduced with the permission of The International Pharmaceutical Federation).**

### *Realist methodology search strategy*

The realist methodology involved the review and analysis of United Nations Population Fund provided reports, World Health Organisation – Western Pacific Regional Office provided papers, and consultancy reports. Additionally there was direct electronic communication with 26 major international government donors and non-government organisations active in the region, and a review of their websites. Direct electronic communication with 11 tertiary education centres active in health education in the region was undertaken, requesting relevant available documents. Forty-four documents and 10 books were included in the review using this overall strategy.

### *Thematic analysis*

Bibliographic references and reports were broadly reviewed via title and abstract or executive summary, assessing perceived relevance to the research topic. All relevant articles and reports were retrieved in full and coded manually using a broad manual framework of thematic analysis. The reference

lists of the retrieved documents were reviewed for relevant material. Coded articles were then reviewed by a second researcher, with discrepancies adjudicated by a third researcher.

Each of the identified organisations was contacted for any relevant information and a detailed review of their website conducted, with any relevant reports and articles retrieved and screened as above.

English language literature and reports that described or evaluated Western or South Pacific learning or teaching theory of students; literature describing cultural aspects pertaining to students' learning; literature addressing education issues in the South Pacific; and health education literature which included aspects of cultural adaptation were included. When considering culture, we looked more at descriptive accounts of student approaches to learning with reference to common, general cultural aspects in the Pacific Region. Descriptive data was compiled with no effect measures calculated.

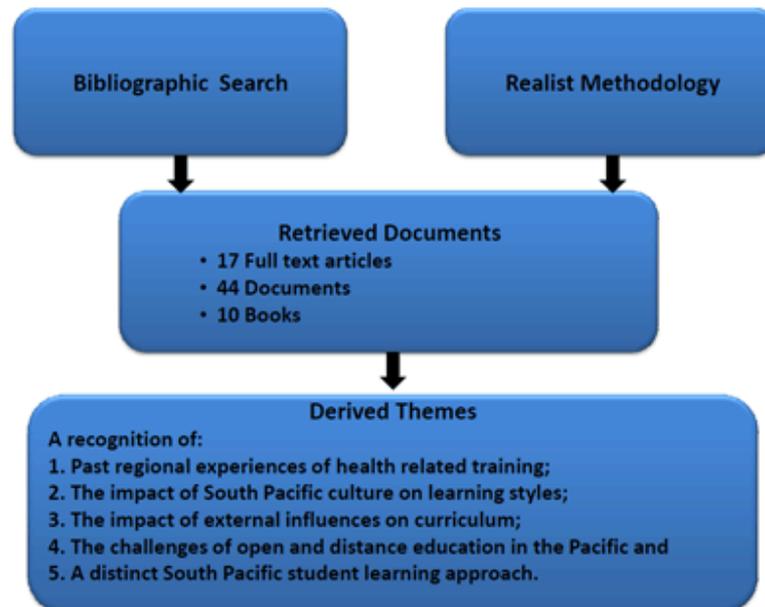


Figure 2: Realist methodology flow chart.

## Results

The combined bibliographic search and realist methodology resulted in the inclusion of 17 full text articles, 44 documents and 10 books being included in the review (Fig2). Five themes were identified that were key to optimising the cultural and learning approaches for the study population. These themes include recognition of:

1. Regional experiences of health related training.
2. The impact of South Pacific culture on learning styles.
3. The impact of external influences on curriculum.
4. The challenges of open and distance education in the Pacific.
5. A distinct South Pacific student learning approach.

### *Theme one – Regional experiences of health related training*

With a scarcity of information directly pertaining to pharmaceutical health personnel, published experiences of

training in PICs for other health professions provides a useful insight into the experience of health based education in PICs. Thirty-seven reports from the 'grey' literature and 13 articles from bibliographic databases are grouped under this theme (Table 1). Data extracted from these papers and reports were grouped under four sub-themes: (i) a clear need for training; (ii) the desire for an individual country approach; (iii) the need for any training approach to have specific design and delivery features (eg competency based, appropriate English, flexible in delivery); (iv) and a call for a collaborative approach to training development and delivery.

### *Theme two – The impact of South Pacific cultures on learning styles*

In order to appreciate the influence of culture on South Pacific students, it is necessary to understand the cultural practices which have surrounded and modelled their upbringing from birth.



Table 1: Theme one – Regional experiences of health related training in Pacific Island countries<sup>7,22-35</sup>

Retrieved articles				
Year	Health Care Personnel Targeted	Country or Region	Relevant insight to training	Reference [ref.no.]
1998	Public health healthcare personnel	Asia Pacific Region	Emphasize needs based development of staff	Zulkifli, Yun-Low et al. 1998 [22]
1999	Oral health personnel	Fiji	Teaching staff as facilitators rather than didactic lecturers Seminars and demonstrations preferred Lack of access to learning resources	Tuisuva, von Doussa et al. 1999 [23]
2000	Rural healthcare workers	Fiji	Lack of recurrent funds Insufficient training of local trainers Unavailability of staff relief for training to occur	AusAID 2000 [24]
2000	Nurses	Solomon Islands	Isolated working situations with difficult and limited communication Use more participatory methods in teaching Context of working environment important Produce local materials rather than importing courses from abroad English must be easy to read Materials must relate to local examples and staff experiences	Kenyon, Chevalier et al. 2000 [25]
2000	Nurses	Micronesia	Difficult for students to study and meet family and work obligations Students have a fear of failing because of poor writing skills	Fochtman 2000 [26]
2003	Nurses	Tonga	Easy to follow course layout required	Ryan 2003 [27]
2004	Variety of health personnel	Pacific Region	Local centres train participants in culturally appropriate methods	Withy 2004 [28]
2005	Variety of health personnel	Palau	Competing requirements of work, education and family needs a challenge for participants	Dever, Finau et al. 2005 [29]
2005	Variety of health personnel	Palau	In country training makes a difference High attrition rates related to student difficulties in English, Maths and study skills Nurture a health careers pipeline	Dever 2005 [30]
2006	Primary healthcare workers	Marshall Islands	Detailed understanding of work based expectations established before developing the course Practical work based experiences important English and Maths skills poor Curriculum and teaching methods designed to meet local needs A holistic approach to competency development should be taken including administration	Keni 2006 [31]
2007	Radiographers	Pacific Region	Develop training to suit local needs Provide adequate time for student reflection Practical 'hands on' tuition preferred	Cowan, Smith et al. 2007 [32]
2008	Variety of health personnel	Papua New Guinea	Multidisciplinary team approach important Training should be provided on site	Matari, Peel et al. 2008 [33]
2009	Eye health professionals	Pacific Region	Learning outcomes developed to reflect locally required competencies A holistic approach to competency development should be taken including quality care, health team integration, professionalism Political instability, cultural factors and lack of motivation were barriers to student learning Curriculum delivery designed to be interactive, with opportunities for application to the Pacific context Teaching and assessment are context rich	Du Toit, Brian et al. 2009 [34]
1990-2000	Variety of health personnel	Cook Islands, Fiji, Federated States of Micronesia, Kiribati, Marshal Islands, Niue, Northern Mariana Islands, Palau, Samoa and Tonga	Hands on training required Flexibility to start and stop training based on workforce requirements. Preference for training to occur in country Strengthening of in country teaching ability from part time as well as full time professionals Comprehensive human resources development programs required Little evidence of addressing less skilled staff training needs External support and training should be consistent with health workforce plans. Suggestion that in-service training could be provided by local colleges with support	World Health Organisation workforce plans**



Table 1: cont'd

Year	Health Care Personnel Targeted	Country or region	Relevant insight to training	Reference [ref.no.]
2003-2009	Pharmacy workforce	Pacific Region	Education, career development, adequate salaries, recognition of qualifications required to retain staff In service training should include training in drug supply Regional institutions need to revise curriculum to ensure essential medicines are covered Develop a collaborative regional workforce Need to address long term and short term solutions for pharmacy training Such curricula should include statements on, role of the pharmacist, access to essential medicines, training in the practical application of rational drug use, supply management and other skills development to enhance access to essential medicines.	WHO, Annual Pacific regional pharmaceutical workshop reports**
2006-2009	Pharmacy workforce	Cook Islands, Fiji, Kiribati, Nauru, Niue, Papua New Guinea, Samoa, Tonga, Tuvalu, Vanuatu	Training on good dispensing practices should be developed and offered to pharmacy technicians and nurses To keep pharmacy staff motivated and updated suitable attachment training or training courses should be identified and offered A lack of formal basic training is affecting Pharmacy & Medical Stores Service Performance. Revised curriculum and training manual should be used for training more prescribers and dispensers from health facilities Local capacity development in pharmacy competencies is required	WHO, 9 in country pharmaceutical services reviews of individual PICs**
2008	Variety of health personnel	Cook Islands, Federated States of Micronesia, Fiji, Kiribati Papua New Guinea, Solomon Islands, Vanuatu	Systematic training is required Training should focus on work based competencies Training materials should reflect local practice	UNFPA 2008 [7]
2009	Variety of health personnel	Pacific Region	PICs have expressed a needs based approach to training according to the requirements of their country based on appropriate health workforce plans Applied to the local environment Involve local senior staff where possible Be competency/skill based (On the job) Consider cultural aspects of learning and teaching	UNFPA, Brown A. 2009 [35]**

\*\* Material unavailable in the public domain.

Within the Pacific there are hundreds of cultures and many hundreds of languages<sup>36-38</sup>. Within this theme the aim is to present a range of cultural considerations revealed by the review, while maintaining an understanding that the data presented cannot comprehensively represent every culture in the Pacific Islands. Three books, four articles from bibliographic databases, one thesis and one conference lecture were used to form this theme (Table 2).

*Pasin bilong Pasifika* ('The Pacific Way') is a term coined by Ratu Sir Kamiseva Mara in 1970. It carries a core of basic ideas and a range of meanings according to context, and forms the theme of a personal account of South Pacific Culture by Crocombe, and confirmed again by Lawson in 2010<sup>39-41</sup>. The Pacific Way is identified as encompassing an

assumption that all islanders are brothers. Other key features of this concept include talking things over, preparedness to negotiate, flexibility, adaptation and compromise.

The Pacific Way is oral or verbal, rather than written. The outward expression of deep emotions is freer and there is much more body contact (double handshaking, hand-holding, embracing). Generosity of time, labour and property are the norm, and there is considerable flexibility and less emphasis on clock-time in the region<sup>40,41</sup>. Song, dance, art/craft and Christianity are also very much a part of The Pacific Way, and religious and philosophical beliefs play an integral role in daily life<sup>40,41</sup>.



**Table 2: Theme two – The impact of South Pacific cultures on learning styles<sup>39-47</sup>**

Retrieved documents		
Document type	Reference country or region	Reference [ref.no.]
Book	Pacific region	Croccombe R. <i>The Pacific Way. An Emerging Identity</i> : Lotu Pasifika Productions, Suva, Fiji; 1976 [40]
Thesis	Solomon Islands	Ninnes PM. <i>Culture and Learning in Western Province</i> , Solomon Islands. Adelaide, South Australia: Flinders University of South Australia; 1991. [45]
Book	Pacific region	Cheng LRL, Clark LW. <i>Profile of Asian and Pacific Island Students</i> , 1993 [43]
Book	Pacific region	Croccombe R, Crocombe M. <i>Post Secondary Education in the South Pacific 1994</i> . [46]
Article	Pacific region	Clark M. <i>Cross-Cultural Issues with Students from the South Pacific</i> : <i>Australian Mathematics Teacher</i> 57: 1 2001. [44]
Article	Pacific region	Ratuva S. <i>Mara's 'Pacific Way' Legacy - remembering the Pacific's dominant leader</i> . <i>Pacific Magazine</i> . 2004 June [39]
Article	Pacific region	Kukari AJ. <i>Cultural and religious experiences: do they define teaching and learning for pre-service teachers prior to teacher education?</i> <i>Asia-Pacific Journal of Teacher Education</i> . 2004 July; 32(2):95-110. [42]
Conference paper	Pacific region	Puamau P. <i>Rethinking educational reform: A Pacific perspective</i> . In: <i>Redesigning Pedagogy: Research, Policy &amp; Practice</i> <sup>39</sup> 30 May–1 June 2005; National Institute of Education, Nanyang Technological University, Singapore. 2005. [47]
Article	Pacific region	Lawson S. <i>'The Pacific Way' a postcolonial discourse</i> . <i>Journal of Pacific History</i> . 2010;45(3):297-314. [41]

Children are taught from an early age the importance of hierarchy and respect for elders. Further, they learn to sit quietly and listen attentively in a group and to show due respect by not questioning or contesting what is being said. Kukari and Cheng and Clarke explore these aspects<sup>42,43</sup>. Kukari also identifies disrespect, disobedience and non-compliance as being culturally unacceptable traits that are punishable by customary laws<sup>42</sup>.

Of significant importance is the South Pacific indirect style of communication, which includes reading of the eyes, silence as a sign of respect, and little or no eye contact<sup>43</sup>. Clark acknowledges these cultural traits as an explanation for the characteristic behaviours noted in her South Pacific students. Such behaviours as reluctance to speak in class, tendency to sit near the back, reluctance to make eye contact, and hesitancy to approach or ask questions of the teachers<sup>44</sup>. Her study also identifies cultural traits demonstrating emphasis of the group over the individual and fostering cooperative methods of problem-solving rather than individual effort<sup>44</sup>.

Studies of Solomon Islands culture by Ninnes describes three traditional learning strategies<sup>45</sup>. These include: (i) observation

and imitation (eg dancing, weaving, learning to swim, baiting hooks); (ii) participation (eg fishing, food distribution, gardening, canoe handling and rituals), and (iii) listening (eg conversations, stories and songs for which remembering what is said is deemed a key learning strategy)<sup>45</sup>.

Ninnes describes other key cultural values experiences in the Solomon Islands including village living, where children growing up in the continual presence of their relatives learn the values of respect, generosity, sharing, cooperation and loyalty. Failure to comply with societal values often results in 'shame', which provides a powerful incentive to conform to expectations of proper behaviour<sup>45</sup>.

The health beliefs of Pacific Islanders, as stated by Cheng and Clarke, often encompass a pluralistic system of health care in which Western and indigenous medicines are used simultaneously (eg consultation with a traditional healer in conjunction with Western medicines)<sup>43</sup>.

Puamau points out that 'learning to know' and 'learning to do' are adequately covered in Pacific Schools, while 'learning to be' and 'learning to live together' are aspects of current



education that have fallen behind and reflects the lack of an holistic approach to education<sup>48</sup>. Puamau identifies several issues that need to be addressed in an attempt to develop a holistic approach to education. She recommends a curriculum that is culturally inclusive and includes a spiritual element<sup>48</sup>. She argues that balanced and holistic ways of 'knowing', 'doing', 'being and 'living together' need to be reflected in curricula with a better balance in academic, technical, vocational, life skills and lifelong learning<sup>48</sup>. This PRIDE approach (discussed later in this article) contends that this can be done through the successful blending of global and local ways of thinking on a foundation prepared by educators of the South Pacific<sup>46,48</sup>.

### ***Theme three – The impact of external influences on curriculum***

Three books, two articles from bibliographic databases, two conference documents and one web site were used to form this theme (Table 3). The three main texts identified in our review summarise the main issues confronting education in the South Pacific<sup>46,49,50</sup>.

Thaman outlines the issues confronting curriculum development and student learning from a Tongan perspective<sup>51</sup>. Thaman's concerns are also echoed by Prissilla Puamau from the University of the South Pacific in her 2005 paper 'Rethinking education reform, a Pacific perspective', where she summarised the main issues affecting and influencing education in the South Pacific<sup>47</sup>. The following sub-topics explore these perspectives.

The effect of colonial history: Over the last 300 years, various western countries have colonised all of the countries of the South Pacific, with the exception of Tonga. Written history (in the form of text books), education and language are the tools that formed the educational systems under colonial rule. Colonial approaches, values, and ideologies permeated local cultures and became part of the post colonial landscape. Current approaches to education predominantly follow these historical approaches with little consideration given to their appropriateness to any given South Pacific

culture<sup>48</sup>. Negin notes that more recently with the increasing mobility of Pacific populations that Australian and New Zealand have contributed to the brain drain of health personnel from the Pacific<sup>52</sup>.

Educational aid: Educational aid has continued in a significant way since independence was granted to the countries of the South Pacific. Historically, this aid has been initiated by the donor country, with emphasis on using systems and processes of the donor country. Over the last 30 years, educational reforms have focused on teacher education, infrastructure development, curriculum development and assessment. Perceived benefits are attributed to the donor country, but in reality there has been limited improvement in the educational systems of the Pacific. Pene suggests that 'The ineffectiveness of Pacific education can be attributed to the increasing incongruence between the values promoted by formal western schooling, the modern media, economic systems and globalisation on the one hand and those held by Pacific communities on the other'<sup>49</sup>. In more recent years both Australia and New Zealand have become signatories to the 2005 Paris Declaration on Aid effectiveness. Their current Pacific development strategies reflect this significant change of focus<sup>6,55-57</sup>.

A Pacific vision for education: Professor Konai Thaman, Dr 'Ana Taufe'ulungaki and Dr Kabini Sanga are three Pacific educators who started the 'Rethinking Pacific Education Initiative' in 2000<sup>53</sup>. New Zealand Overseas Aid in collaboration with Rethinking Pacific Education Initiative and other donor countries have developed a new strategy in educational development in the South Pacific<sup>48</sup>. This new approach has seen the development of the PRIDE Project managed by the Pacific Islands Forum Secretariat and implemented by the University of the South Pacific Institute of Education in Fiji<sup>54</sup>. The main objective of this project is 'to expand opportunities for children and youth to acquire the values, knowledge and skills that will enable them to actively participate in the social, spiritual, economic and cultural development of their communities and to contribute positively to creating sustainable futures'<sup>54</sup>.



**Table 3: Theme three – The impact of external influences on curriculum**<sup>46,47,49-54</sup>

Retrieved documents		
Document type	Reference country or region	Reference [ref.no.]
Article	Tonga	Thaman, K.H., Culture and the Curriculum in the South Pacific. <i>Comparative Education</i> , 1993. 29(3). [51]
Book	Pacific Region	Crocombe, R. and M. Crocombe, Post Secondary Education in the South Pacific. 1994, London: Commonwealth Secretariate. [46]
Book	Pacific Region	Pene, F., et al., Tree of Opportunity: Rethinking Pacific Education. 2002, Suva: University of the South Pacific. [49]
Conference proceedings	Pacific Region	Sanga, K. and T. Nally, Rethinking development practice, in The Third Biennial Conference of the Aotearoa New Zealand International Development Studies Network. 2002: Massey University New Zealand. [53]
Book	Vanuatu	Sanga, K., et al., Re-Thinking Vanuatu Education Together, ed. J.N. Kabini Sanga, Kalmele Matai, Linda Crowl. 2004, Port Vila and Institute of Pacific Studies, University of the South Pacific. [50]
Website	Pacific Region	Puamau, P., B. Teasdale, and Editors, Educational Planning in the Pacific: Principles & Guidelines. The PRIDE Project, Pacific Education Series No. 1. 2005. [54]
Conference paper	Pacific Region	Puamau, P., Rethinking educational reform: A Pacific perspective, in "Redesigning Pedagogy: Research, Policy & Practice". 2005: National Institute of Education, Nanyang Technological University, Singapore. [47]
Article	Pacific Region	Negin, J., Australia and New Zealand's contribution to Pacific Island health worker brain drain. <i>Australian And New Zealand Journal of Public Health</i> , 2008. 32(6): p. 507-511. [52]

The PRIDE project has developed a set of benchmarks to use when reviewing national education plans. The benchmarks most aligned with this review include pride in cultural and national identity, skills for life and work in a global world, a holistic approach to basic education and effective capacity building for all education personnel<sup>54</sup>.

### ***Theme four – The challenges of open and distant education in the Pacific***

Two books, five articles from bibliographic databases and one conference document were used to form this theme (Table 4). In 1997 'Shifting Borders – Globalisation, Localisation and Open and Distance Education' was published by Deakin University Press<sup>58</sup>. This text provides a theoretical and practical approach regarding distance education contexts in the South Pacific. The author explores tensions between the global and the local, the colonial and the indigenous, and the traditional and the modern. Of particular note in this text is the concern of applying Western approaches in open and distance learning to the South Pacific, warning that this may

conflict with general observations of local learning styles<sup>58</sup>. This point is discussed further in theme five.

In 2000 Guy et al published their discussion on 'Distance Education in the South Pacific: Nets and Voyages'<sup>59</sup>. They present the development of distance education in the South Pacific and consider, historical, geographical, political and technological contexts. They observe that although distance-education enrolments are high, funding is low, resulting in overworked staff, poor services to students, and high drop-out rates. A lack of communication and cooperation between policy-makers, educators and administrators has resulted in the under-utilisation of different distance education technologies<sup>59</sup>. Six trends in the development of distance education in the Pacific are identified: (i) opening access to higher education; (ii) course development via teams; (iii) promotion of life-long learning; (iv) flexible use of technology to support learning away from campus; (v) use of information technology for development and delivery of materials; and (vi) the narrowing of the differences between distance education and traditional forms of education<sup>59</sup>.



**Table 4: Theme four – The challenges of open and distant education in the Pacific<sup>58-65</sup>**

Retrieved documents		
Document type	Reference country or region	Reference [ref.no.]
Article	Pacific Region	Mugler, F. and R. Landbeck, Learning in the South Pacific and Phenomenography Across Cultures. <i>Higher Education Research &amp; Development</i> , 1997. 16(2): 227-238. [62]
Book	Pacific Region	Rowan, L., et al., Shifting Borders - Globalisation, Localisation and Open and Distance Education, ed. L.B.a.T.E. Leonie Rowan. 1997, Geelong, Victoria: Deakin University Press. [58]
Book	Pacific Region	Guy, R., et al., Distance Education in the South Pacific : Nets and Voyages, ed. T.K Richard Guy, Rieko Hayakawa. 2000: Institute of Pacific Studies, University of the South Pacific, Suva in association with Pacific Islands Nations Fund, Sasakawa Peace Foundation. [59]
Article	Pacific Region	Mugler, F. and R. Landbeck, Learning, memorisation and understanding among distance learners in the South Pacific. <i>Learning &amp; Instruction</i> , 2000. 10(2): 179-202. [63]
Conference paper	Pacific Region	Schofield, K., The Magic Umu? Open and distance learning in three Pacific Island Countries, in Conference of the Open and Distance Learning Association of Australia. 2005: Adelaide. [65]
Article	Vanuatu and Western Samoa	Marsh, C. and R. Hogan, Distance Education the Pacific Way. <i>International Journal of Learning</i> , 2005 / 2006. 12(5): 187-191. [60]
Article	Pacific Region	Rao, K. and C. Giuli, Reaching remote learners: Successes and challenges for students in an online graduate degree program in the Pacific Islands. <i>International Review of Research in Open &amp; Distance Learning</i> , 2010. 11(1): 141-160. [61]
Article	Pacific Region	Raturi, S., R. Hogan, and K.H. Thaman, Learners' access to tools and experience with technology at the University of the South Pacific: Readiness for e-learning. <i>Australasian Journal of Educational Technology</i> , 2011. 27(3): 411-427. [64]

Marsh and Hogan researched the use of video conferencing and internet based study groups as tools to engage 30 students from Vanuatu and Western Samoa in education studies<sup>60</sup>. A blended learning approach was used, supported by weekly face-to-face study groups held in-country. These researchers demonstrated that this type of online learning was appropriate for the learners when the design of the exercises supported communal interactions as a cultural norm. They noted that ‘acceptance’ rather than ‘critical thinking’ was the predominant group dynamic<sup>60</sup>.

In considering cultural and online learning Rao and Giuli indicate that instructional design for open and distance learning needs to consider both cultural circumstances and individual student preferences. They surveyed 19 students involved in Pacific Resources for Education Learning courses with the University of Hawaii and conclude that: opportunities should be provided for synchronous meetings

either in-person or virtually; support structures for students need to be created and maintained for the duration of a students’ course, and adult learners from indigenous communities have multiple obligations on their time and prioritize their work in different ways<sup>61</sup>.

In their studies of distance education students at the University of the South Pacific, Mugler and Landbeck found that the significant barriers to learning were: student isolation, reduced access to electricity, limited infrastructure, no private space to study, and little or no academic support from the institution<sup>62,63</sup>.

The geographical challenges of PICs pose a challenge in accessing the technology and telecommunications required by many online learning modes. In a survey of 92 University of the South Pacific students across the Pacific, Raturi et al



conclude that most students are keen to embrace electronic learning, but that access varies markedly across the Pacific<sup>64</sup>.

Schofield suggests that open and distance learning can improve the sustainability of the nations of the South Pacific, but only if certain local factors are understood and applied<sup>65</sup>. These factors include a deep understanding of the Pacific cultural context, a consideration of indigenous social structures; economic and political, and the need to focus education and training on capacity-development<sup>65</sup>.

### *Theme five – A distinct South Pacific learning approach*

Two main themes relevant to South Pacific learning approaches were revealed: 'Western learning style inventories' and 'Other research regarding learning approaches'. Nine articles from bibliographic databases, two books and one conference paper were used to form this theme.

Western learning style inventories: Various Learning Style Inventories and their adaptations have been used as tools to study South Pacific students' learning approaches. These include Biggs' Study Process Questionnaire, and Entwistle & Ramsdens' Approaches to Studying Inventory (ASI)<sup>66,67</sup>. Results have varied and a summary of the main studies is provided (Table 5).

More recently, a study by Phan and Deo encompasses the chronological development of student learning approaches in the South Pacific<sup>68</sup>. Phan and Deo state that South Pacific students are largely driven by motivational considerations (achievement motivation, intrinsic motivation, and passivity or a general lack of motivation), with a marked absence of the cognitive strategies of deep, surface or achieving approaches to learning<sup>68-70</sup>. This review also illustrates the link between academic performance and cognitive strategies, and suggests a cautious approach when using versions of the Approaches to Studying Inventory developed for Western cultures, as approaches to studying are context and culture specific<sup>68</sup>.

Richardson recommends teaching processes that attempt to engage students in a deep approach to learning. There should be an emphasis on critical reflection, and a variation of assessment requirements that encourage group investigations and seminar presentations<sup>71</sup>.

Other research regarding learning approaches: Mugler and Landbeck used a conception of learning frame-work to interview 40 University of the South Pacific students. They found that distance learners particularly exhibited a marked strategic approach to learning where they relied on memorization of material to prepare for exams, even though they knew that it did not lead to understanding. Students felt that adopting this strategy would guarantee that they 'knew' the material for the exam, and that memorizing was the safest way when English was their second language. These authors concur with previous researchers that the exam-driven, teacher-centred, de-contextualised South Pacific education system is a significant driver of student learning approaches by the time they reach university<sup>62</sup>.

A similar lack of critical skills can, however, be seen in beginning university students worldwide, and the authors suggest that the culture of University of the South Pacific students cannot be the sole determinant of whatever characteristics are deemed detrimental to successful learning<sup>62</sup>.

A study on learning approaches and reflective thinking by Phan on 241 psychology students face-to-face produced a practical message for educators. Phan noted that identifying, developing and nurturing students' beliefs in their academic capabilities was important, as these factors were powerful predictors of academic performance and motivational variables<sup>74</sup>. In a further publication in 2010 Phan makes the point that approaches to learning are embedded in the learner, and uses the Pacific as an example to demonstrate how socio-cultural issues and an individual's historical background shape and influence his or her approach to learning<sup>75</sup>.



**Table 5: Theme five – A distinct South Pacific learning approach (Western leaning style inventories)**<sup>68,72,73</sup>

Learning style inventory used	Student characteristics	Main findings	Author comments	Reference [ref.no.]
Modified Approaches to Studying inventory (ASI)	17 face-to-face linguistic students at the University of the South Pacific (USP)	High scores on the 'achieving and meaning' scale of the ASI correlating to deep learning	The authors attributed these results to the ASI measuring the student's preferred approach to study, not necessarily their actual practice. They contend that while most students were looking for meaning, they were forced by assessment practices into memorisation aligned with a surface approach.	Landbeck and Mugler, 1994 [72]
Modified version of Study Process Questionnaire (SPQ) and a revised version of SPQ respectively	200 maths and 332 psychology students at USP (mainly Indo-Fijian)	Results from both inventories confirmed more surface-based and less deep-based orientation	The authors attribute this to social, historical and cultural contexts within the South Pacific region. These factors included parental and societal pressure on young people to excel academically to enable economic and social mobility, and the South Pacific school system, which fosters and encourages the surface approach of memorization and rote learning.	Phan and Deo, 2006 [73]
SPQ modified and designed to suit social and cultural contexts	USP students involved in face-to-face professional education	Confirmed the existence of two major types of learning approaches within PICs, <b>reproducing and meaning</b>	The authors attributed the results to shaping by the current school curriculum and by the teaching and learning processes used.	Phan and Deo, 2008 [68]

## Discussion

### *Realist methods*

Traditionally, systematic reviews follow a methodology similar to the Nation Health Service – Health Development Agency Process and Quality Standards Manual for Evidence briefings from the United Kingdom, and more recently the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines<sup>76,77</sup>. Within such a review process, randomized controlled trials are seen as providing the strongest level of evidence for a given intervention or methodology. As such, evidence is often unavailable for medical education research, where a realist methodology provides an alternative approach that can enable assessment and evaluation of literature that falls outside the traditional mode of analysis.

Specifically, realist methodologies 'not only ask what methods are effective, but through which mechanisms an intervention produces outcomes, and which contextual factors appear to be of critical influence'<sup>78</sup>. Wong et al contend that the best way to derive a narrative summary is by applying a realist

philosophy to the synthesis of findings from primary sources that may have a bearing on a particular research question<sup>14</sup>. The adoption of this methodology has enabled this research to access important and current knowledge in the area that is not accessible through standard review search strategies.

### *Learning styles and culture*

Traditionally, South Pacific students have been 'tagged' with the label of surface learners who have perceived low motivation resulting in low academic achievement<sup>72</sup>. Research in this area has exposed the limitations of measurement tools which foster this 'tag' and provides a better understanding and appreciation of the cultural reasons behind this surface approach. We know that cultural-specificity in learning approaches exists, explaining the many, often strategic reasons for a motivation dependent surface approach taken by South Pacific students<sup>79</sup>. Students' learning approaches are also context specific, and these provide an opportunity for teachers to modify curriculum to encourage a deeper learning approach. A link between perceived academic capability and actual academic performance in South Pacific students highlighted the need to nurture self-



belief in order to improve motivation and actual academic results.

Cross-cultural studies of students' learning approaches have been researched by Kember and Gow, and Watkins and Regmi, who established that there are variations in approaches to learning between Western and non-Western students, as outlined in Phan and Deo<sup>80,81</sup>. Of significance here are the specific findings of Kember and Gow in their studies of Hong Kong students, who found that culture (limited understanding of English and the nature of their upbringing or school experiences) explained the surface approach to learning by these students<sup>81</sup>.

It is clear from this review that there are a number of factors that influence student behaviour and approaches to learning that stem from cultural influences from the Pacific. Add to this the regions colonial history and the effects of globalisation, and there arises a complex set of factors that need to be considered by educators involved in the health sector within PICs.

### ***Rural and remote challenges for medicines supply management training***

The geographical nature of the Pacific Islands – thousands of islands spread over millions of kilometres of ocean – epitomises a number of the issues faced by healthcare workers in the rural and remote environments of other land-based countries (eg Australia). With 80% of healthcare delivered in the rural and remote environments of individual PICs, they face an even greater challenge<sup>1</sup>. Distance, the difficulties of geography, and limited communication infrastructure are three of the most significant issues affecting medicines supply management training in PICs. This is further amplified by limited human and financial resources in the region.

Open and distance learning approaches are often portrayed as the education delivery mode that can overcome issues of distance and complex geography in an economical way. In the Pacific context, not only does the lack of infrastructure prevent the use of this delivery mode by a significant number

of healthcare workers, but open and distance learning may not meet local cultural expectations or their preferred learning styles<sup>64,82</sup>. As academics and health professionals grapple with the challenges of educating health professionals in specific rural and remote contexts we suggest that a closer consideration of culture and other factors concerning learning and teaching is warranted.

### ***The need for more research***

With the limited research currently available in the area of learning approaches and cultural influences in the field of education, we support Taufe'ulungaki's call for more research that aims to develop 'a unique Pacific world view that is underpinned by Pacific values, belief systems and ways of structuring knowledge'<sup>83</sup>.

Currently, there is no published research in the area of best-practice pedagogical methods for teaching EMSM competencies for mid-level cadres involved in medicines supply in PICs. It is our desire to use the results of our current research to develop and trial more culturally relevant training approaches for the development of EMSM competencies for various cadres of health personnel in PICs. Specifically, the results presented in this article will be used by the authors to develop a set of cultural learning and teaching principles to apply to this process. These principles will be developed through the use of a participatory action research approach, engaging health professionals, government officials and educators within PICs.

### ***Limitations***

A limitation to this review was the inability to access non-published articles from University of the South Pacific in Fiji, as material not published online was not readily accessible. Another aspect of University of the South Pacific-based research is that the Indo-Fijian culture is overrepresented, with only minor representation of other South Pacific cultures. In considering our realist review and grey literature methodology, we note that we did not include direct contact with national governments and their departments. This



decision was made by the research team to ensure that the review could not be influenced politically. In the next stage of our research process we have planned to validate our findings with healthcare workers and ministry of health officials from the Pacific.

## Conclusion

This review has drawn evidence from published material and the 'grey' literature using a realist methodology. Our results have provided insights into learning approaches and cultural influences on student learning within PICs. The themes generated by this review will be used to develop a practical set of principles to guide educators and health personnel involved developing and teaching curriculum for South Pacific pharmaceutical health personnel.

## Acknowledgements

The authors acknowledge the cooperation of United Nations Population Fund, Suva Sub-Regional Office, World Health Organisation – Western Pacific Regional Office, and Professor Nerida Smith in assisting in accessing information for this review.

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