

Refereed Article

Abstract: This article describes the rationale, development, and outcomes of two place-based, dual-language picture books with agricultural messages for women farmers and their families in Papua New Guinea. The purpose of the books was to disseminate better agricultural and livelihood practices to women farmers with low literacy. The books were designed and illustrated in collaboration with women farmers from two provinces. Evaluation data were collected through focus groups with local peer educators (village community educators [VCEs]). The VCEs reported changes in family practices related to marketing, budgeting, and saving that reflected messages in the books. The books helped the VCEs who had received livelihood and agricultural training to recall and implement the training in addition to sharing their knowledge. Farmers with low literacy were able to access the messages through the illustrations. Such place-based picture books are a powerful medium for low literacy women farmers and their families to learn about and reinforce positive livelihood and agricultural practices.

Keywords: agricultural learning, farmer learning, picture books, place-based learning, low literacy women farmers

For hundreds of years, women farmers in Papua New Guinea (PNG) spent their days working to produce food to feed their families. With coltrations. S

subsistence farmers in PNG. This article describes the development of place-based, culturally relevant picture books that featured a number of the key business and agricultural messages from the project. Two findings from the baseline study informed this innovation: (a) Many women aspired to be able to read and write and (b) an even larger number wanted to support their children's education. We hoped that simple place-based books would help mothers interact with their children and with the books as well as recall and learn good practices in marketing, budgeting, and saving.

PNG is the largest of the Pacific island nations and has an estimated population of seven million. It is one of the most rugged and bio diverse countries in the world with vast natural resources. The population is dispersed widely across the country with approximately 87% of the population living in villages or rural communities (Department of National Planning and Monitoring, 2010). The majority of these people are subsistence farmers without access to basic services of health, education, clean drinking water, and adequate sanitation. There are more than 860 local languages, accounting for 14% of the world's languages (Papua New Guinea National Commission for UNESCO, 2008). Tok Pisin, Motu, and English are the official languages; however, less than 2% of the population is fully literate in English (Rena, 2011).

PNG has recently moved to free primary education, but girls are expected to work on farm plots and/or help with housework rather than attend school. The latest available figures show literacy rates at 56%, with female literacy rates significantly lower than males (Department of Education, 2011). However, in studies that do not rely on self-reports as the census does, literacy rates of women are reported as much lower, as low as 12.9% in Chimbu province and 2.5% in Gulf province (Asia South Pacific Association for Basic and Adult Education Project, 2012).

The Rationale for Picture Books for Farming Families

Four theoretical perspectives informed the rationale for the development of picture books to support the learning of farming families.

Arts-Based Ways of Learning

In PNG, oral and arts-based traditions are embedded in daily life. Thus, the Tok Pisin language has a specific

word "Tok Bokis" for a story told for its deeper meaning, or as a parable (Bartell, 2016). Storying is an essential form of narrative thinking, which Bruner (1985/2006) has argued contrasts to the other basic mode of thinking such as the paradigmatic logical-scientific. The narrative mode draws on the human process of meaning making through storying. This makes visible the dialectic interplay between a culturally and place-based story, the teller, and the reader.

Images communicate knowledge, meaning, experiences, and ideas in ways that cannot be done by using written or spoken words alone (Pink, 2007). Callow (2012) argues that pictures can have an immediate emotional effect on the viewer and can evoke a whole range of responses and information. Furthermore, memory systems favor visual storage (Dowse, 2004).

Carney and Levin's (2002) review of the literature on the role of pictures in text concluded that well-constructed pictures reliably improve the reading-to-learn process. However, for learners with low literacy or no literacy, pictures may actually be more important than the text. In the agricultural extension context, the use of visual aids to enhance training is widely recognized (Food and Agricultural Organisation, 1985). Images have been found to foster engagement, facilitate communication and the expression of tacit

(Hadaway & Young, 2014). Children's picture books have long been used in first language acquisition and more recently been used effectively in teaching English as a second or other language to both adults and children (Chen, 2014). Appropriate children's literature gives these readers exposure to new illustrated vocabulary, provides repetition of key words and phrases, and allows for a sense of mastery in completing a whole book (Brown, 2004).

Culturally Relevant Literature

According to schema theory, text in itself does not hold meaning, rather the text gives directions for readers to retrieve or construct meaning from their own previously acquired knowledge or background knowledge (Carrell & Eisterhold, 1983). Text comprehension is an interactive process between the text and the reader's background knowledge. Therefore, culturally relevant books improve reading comprehension (Ebe, 2010; Freeman, Freeman, & Freeman, 2003). Culturally relevant books validate the readers' identities, cultures, and languages (Rodriguez, 2014). Texts that are both culturally and personally relevant are even more powerful. According to Larrotta and Gainer (2008), "powerful texts" or "texts that matter" are ones that genuinely resonate with the participants. During their family reading project, these researchers noted greater participation when the text was considered "relevant and essential to their wellbeing" (Larrotta & Gainer, 2008, p. 47).

Dual-Language Learning

Given that PNG has two major languages, English and Tok Pisin, dual-language books were key to this project. Dual-language books are written in two languages and are intended to be read simultaneously in both languages. They help readers become literate in second or third language (Kenner, Gregory, Ruby, & Al-Azami, 2008) by allowing readers to use higher order vocabulary skills from their first language (Naqvi, McKeough, Thorne, & Pfitscher, 2013). Readers can extend their first language literacy and link it to second language literacy (Taylor, Bernhard, Garg, & Cummins, 2008) and transfer conceptual knowledge and skills across languages (Kenner et al., 2008). Translation, paraphrasing, and code mixing, which are using units from two languages intersententially and

intrasententially, facilitate English language learning (Shah-Wundenberg, Wyse, & Chaplain, 2012). Importantly, dual-language books can form a bridge between home and school where both the home language and official language are valued (Sneddon, 2008).

Development of the "Maria Books"

Building from these principles, we designed picture books with agricultural messages to be used by both adults and children. The first step was to consider the central characters of the books. The concept of a "family team" in which farm and family work and decisions were shared between men and women was a core feature of our project. Therefore, the "family team" in the series is a mother, father, grandmother, two primary school-aged children, and a baby. Maria, the young girl, was chosen as the central character to present an active role for women and girls. We decided to develop narrow reading books based on the same family. Narrow reading is reading in only one genre, one subject matter, or the work of one author, and can help second language learners (Hansen & Collins, 2015). Narrow reading assists beginning readers by providing a familiar context, that is, they do not need to learn new characters and settings, hence making reading more comprehensible (Cho, Ahn, & Krashen, 2005). Narrow reading also allows for repeated exposure to the same vocabulary, easing the lexical burden on readers (Hwang & Nation, 1989). Our books would allow readers to become familiar with the family characters in addition to repeated exposure to the concepts and vocabulary related to earning money, saving money, and budgeting.

The key messages of the books were data driven. The project had found that major barriers for women included gender inequality in the distribution of farm and family labor, lack of postharvest and market skills, low financial literacy (planning, budgeting, saving, banking), and lack of control and decision making over assets. Hence, the two Maria books were *Maria's Family Goes to Market* (messages: sharing farm roles, planned harvesting, planned marketing, preparation of produce, cleanliness of seller and produce, pricing, generating savings from profit) and *Maria's Family Saves Their Kina* (messages: all family members contribute to income generation, family plans a budget

together ensuring money for daily living, church, school and medical costs, agriculture costs, extended family needs, and saving for a family goal). The books followed the guidelines and best practices for developing print material for low literacy farmers (Cheng, 2013).

Community Design Workshops

Two regions were chosen for the pilot: the Baiyer Valley of the Western Highlands (WH) and the Gazelle



The VCEs particularly valued the cultural relevance of the books supporting our belief that the most effective books for our PNG readers would be those that drew on their context and culture, that is, books that readers “can connect with” (Freeman et al., 2003, p. 7) and “draw on their background knowledge and experiences to make meaning” (Ebe, 2010, p. 194). The VCEs frequently spoke of how the books matched village and subsistence life. The VCEs appreciated the local backdrop of the stories and could relate to both the characters and story line. Our findings align with other studies that have shown reading culturally relevant books results in greater engagement in reading and in learning (Feger, 2006; Rodriguez, 2014). Furthermore, the VCEs were proud that the books were based on their local village and of their contributions to the books designs. As one VCE said, “When we get old or die the books will remain. Our children and grandchildren will know this was our book. The Maria books are our ideas from the Baiyer Valley” (Female, WH).

The VCEs were proud of the Maria books and expressed the wish for more books. In particular, they wanted books that related to the other training they had received. “We have had training about weeding; insects but we didn’t get a book. We need to see a book” (Male, WH). They recommended that the books form the basis for further agricultural education topics (Maria, the pest detective; Maria’s family grows crops; Maria’s family raises chickens; Maria’s family raises pigs). The gender message was also apparent with the suggestion that Maria goes on to high school and even university.

Implications for Practice

A participatory learning and development design process is essential in the development of culturally relevant learning tools. This process ensures relevance and resonance of the text for the targeted audience. The place-based impact deepened as the local participants critiqued the stories and pictures. While pictures typically aid recall, place-based picture books have the potential to further empower the learner with low literacy as they can immediately interact and interrogate the pictures of “their place and their lives.” This becomes an important nonthreatening first step into literacy development and agricultural learning.

This study suggests that culturally relevant, place-based children’s picture books containing narratives with agricultural and business messages can bring about positive changes to smallholder livelihoods. The Maria books clearly had an impact on family practices especially marketing, budgeting, and saving. Culturally relevant and place-based literature enhances comprehension, whereas illustrations serve as visual aids. Stories or narratives are more easily remembered than abstract facts and information. More research is needed to ascertain whether these types of books can be a substitute for traditional training delivery and/or to what extent they add another important layer to the training. In either case, this study suggests that place-based books are a valuable and exciting adult learning tool.

Conflict of Interest

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