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Environmental Education as a Fulcrum for Consilience in Conservation Efforts

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ABSTRACT

An investigation of the ethnobotanical knowledge gap and its impacts in Suriname suggests a need for mixed-method research and interdisciplinary efforts. Environmental education (EE) may provide the ideal fulcrum for the diverse approaches essential to understanding issues of environmental and cultural preservation. In the post-paradigm war era, mixed rationalistic and naturalistic methodologies have gained a greater level of acceptance; however, territoriality and proprietorship still exists between academic disciplines. Where the common end goal is preservation of environmental quality in areas that support indigenous cultures, research conducted within specialized disciplines may be insufficient to understand the complex and interrelated environmental and social issues.

INTRODUCTION

If the environmental education (EE) goal of environmental protection through citizenship action is to be achieved in developing nations, attention must be given to culturally-sensitive pedagogy that facilitates the valuation and preservation of indigenous plant knowledge. The loss of traditional ethnobotanical knowledge (TEK) remains a major concern in developing nations as it can be central to the conservation of sensitive lands and the welfare of the remaining indigenous cultures. The importance of TEK is widely recognized by the international conservation community; the 1992 Convention on Biological Diversity holds its contracting

parties to “respect, promote, and maintain traditional knowledge,” as well as to “promote wide application of traditional knowledge” (Cox 2000), a trend founded, perhaps, in the growing consensus that TEK can aid in the conservation of biodiversity (Berkes, Colding, and Folke 2000).

Science education researchers in indigenous cultures have stated the need for and effectiveness of “relevant” science, specifically “cultural examples, perspectives, and fieldwork” (McKinley 2005). Examples of collaborations with indigenous peoples to determine the content and method of science education are absent (McKinley 2005), with the exception of largely unsuccessful “shaman schools” (Jackson 1995). A study in the biologically and culturally diverse tropical nation of Suriname suggests that the development of effective education programs to preserve TEK and biodiversity requires joint efforts and open communication across disciplines. Cultural anthropologists, educators, biologists, environmental economists, and policy-makers working in isolation of each other are unlikely to achieve long-term environmental sustainability that is sensitive to indigenous needs. This study suggests, however, that EE may serve as fulcrum to balance interests in conservation efforts.

The widely used and successful IEEIA (Investigating and Evaluating Environmental Issues and Actions) model (Hungerford et al. 2003) was introduced to an eclectic group of educators in a workshop at the Anton de Kom University in Paramaribo, Suriname during the summer of 2006. Workshop participants were eager to implement the EE model in their instructional settings as a means for their students to explore relevant, local issues. Given that TEK preservation is a significant issue for the health of many residents and conservation of biodiversity, data on the following were desired to explore the opportunities for EE as a point of consilience in attempts to stem TEK loss: 1) the perceived importance or relevance of TEK, 2)

the variables associated with its loss, and 3) perceptions of the most efficacious means of maintaining this knowledge.

METHODS

The detailed methodology for this study can be found in Zalocusky and Short (2007). Seventy participants from three general locations across coastal Suriname were administered paper surveys. The sample population consisted primarily of educators, student-teachers, and parents but also included a diverse cross-section of the coastal region. Additionally, in-depth qualitative interviews were conducted with local shaman and village elders to provide a context for trends recognized in the quantitative analysis.

Degree of plant knowledge was estimated from the number of traditional plant treatments known for diarrhea, a pedestrian ailment in developing nations. Participants were considered to know a treatment only if they could identify the plant used and provide a description of its preparation and dosage. During the analysis of this data, it became apparent that collaboration botanists and reputable shaman was necessary. Simply accepting self-reported data, as is sometimes evident in the EE literature, provides little information about the actual, accurate TEK possessed by respondents. Working with botanists and shaman, we were able to verify treatments listed by respondents with established databases.

In addition to the TEK knowledge component, questions were asked to determine the degree to which participants believe TEK is being passed to the youngest generation, to what degree the preservation of TEK is important, and in what ways they believe TEK would best be maintained in their culture. Collaboration with professionals from diverse field helped provide the context for the answers recorded from surveys.

RESULTS

A significant positive correlation was found between age and plant knowledge ($p < .05$). The difference in knowledge between the younger and older populations remained consistent in interviews and surveys across geographic boundaries. Geographic differences in plant knowledge appear to be related primarily to lack of TEK among urban residents.

A strong sense of TEK loss was evident in all regions sampled with no significant differences across geographic boundaries. More than 82% indicated that little or no TEK was being transferred from the elders to the younger generations. Nevertheless, the vast majority of the participants (75%) indicated that the preservation of traditional plant knowledge was very important, and nearly all (91%) feel that efforts are needed to preserve plant knowledge for future generations. In interviews, both young and elderly participants stated that they prefer the traditional plant medicines and will use them if prescribed by a knowledgeable shaman; modern medical treatments were acknowledged, however, as being very important as well. A majority of participants (64%) indicated that they thought the future of healthcare in Suriname lies with a combination of modern medicine and traditional plant therapies.

Of those surveyed across geographic regions, 82% indicated that the national curriculum should include at least awareness of medicinal plants. The status of TEK in schools at the time of the surveys was perceived to be inadequate.

DISCUSSION

This study suggests that preservation of TEK is supported by the majority Suriname's residents. The school curriculum as a venue for transmission of TEK and for exploring issues surrounding TEK and resource conservation appears to have public support as well, and educators indicated interest in implementing the IEEIA issue investigation model. Suriname,

like many developing nations, has complex and diverse issues. Situations where citizens are wedged between tradition and modernization will require partnerships of educators with professionals from varied fields if students are to be guided in objective analyses of the issues, such as TEK, affecting their futures. The issue investigation EE model appears to offer an appropriate bridge between the often competing disciplines to move toward the common goals of cultural and environmental preservation inherent in maintaining TEK.

A merger of disciplines in concurrent mixed research designs is suggested to obtain the best information on both human and natural resources and offer local communities the best choices for issue solutions. The Tbilisi-based IEEIA model that was presented was well-received not only as a venue for students to objectively explore the issues surrounding TEK, preservation, and modernization but also as a mechanism by which professionals in disparate fields could intersect to qualitatively understand the socio-environmental picture in Suriname with the advantage of “specific” information gained through both holistic and reductionists approaches in each disciplinary paradigm.

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