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Participatory Monitoring of Natural Resources in Shivamogga District of Karnataka, India: The Shinduvadi Experience

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Abstract With a growing human and livestock population, there is tremendous pressure on the natural resources and they are being continuous exploited. Gaining an understanding of the status of resources and the drivers of change would aid in better planning and management, particularly at the village level. Given the vast resources, multitude of issues and a dearth of funds, a centralized monitoring system is difficult to put in place. Therefore, promoting participatory natural resource management is the key to creating awareness and also generation of basic information on the status of natural resources and factors contributing to changes in those resources. This paper highlights one such case study of participatory research of natural resources involving scientists, undergraduate students and the community of Shinduvadi village in the Western Ghats region of Karnataka India. This endeavor was aimed at demonstrating the feasibility of monitoring village ecosystems by local institutions by adopting an indicator-based method and guidelines developed by the Centre for Sustainable Technologies, Indian Institute of Science, Bangalore. The Shinduvadi study has identified key environmental issues and also suggested management options for the same. In the process of this participatory monitoring exercise, students have not only gained understanding of the natural resources, the pressures on them, the inter-linkages but also gained as individuals as the experience helped integrate academic content with community service. The Shinduvadi experience is a milestone in participatory research in India and is an example for educational institutions across the country and elsewhere to take up pro-societal research initiatives.
Keywords *Natural Resources; Participatory Monitoring; Students; Monitoring*

1. Introduction

Natural resources are being continuously exploited and suffer degradation due to high human and livestock population density as well as poor management. This has adverse implications for stable food production, supply of fresh water, fish production, fodder, fuelwood, timber supply. The status of natural resources is critical in determining the environment, economy and livelihoods of rural communities. Planning, management and developmental activities happen at the village level and this

requires understanding of the status of resources and their inter-linkages. The first step in promoting participatory natural resource management is therefore creation of awareness and generation of basic information on the status of natural resources and factors contributing to changes in those resources. Participatory research is a dynamic process that involves individuals and institutions from a variety of backgrounds, with varying sets of values. It is sometimes referred to as community-based participatory research as it refers to a method that involves participants as full partners in the research process (Metzler et al., 2003). Maguire (1993) defines participatory research as a process of collective, community-based investigation, education, and action while the *Commission d'étude sur les universités au Québec* defines participatory research as research undertaken by scholars who, coupling theory with intervention, work with groups outside of their institution, analyze with them the problems faced by communities and help them perceive these problems more clearly and formulate strategies to take charge of the sectors that influence their collective life (Alery et al., 1990). These definitions encapsulate the key elements of participatory research. i.e., research through collaboration, education and action (Boutilier, 1997; Yeich, 1992).

In participatory research the research process is as important as the outcome (Cornwall, 1995). It is therefore a process of education, a continuous enhancement of knowledge, skills and resources for all partners with the thrust being on shared decision making, power, responsibility and benefits. The aim of participatory research is therefore not only data collection and analysis to solve problems and generate knowledge, but to increase research capacity, and empower participants in other aspects of their lives. Conducting participatory research is considered transformative for participants (Morford et al., 2003) and is deemed successful if all parties are satisfied with the utility of the process and the outcomes. This paper highlights one such case study of participatory research of natural resources involving scientists, undergraduate students and the community of Shinduvadi village.

2. Location and Methods

Shinduvadi is a small village in the Western Ghats region of Karnataka, India, which is one of the biodiversity hotspots of the world. It is spread over 503 ha and the village is part of Mandagadde panchayat of Thirthahalli taluk of Shivamogga district, about 4 km from river Tunga. The village is characterized by moist semi evergreen—dry deciduous forest type and is primarily an agricultural village. Paddy and areca are the major crops. Shinduvadi is surrounded by four villages: Haalaga to the north, Halasawala to the east, Hemmakki to the south and Ubbur to the west. Settlements are scattered but mostly confined to the central part of the village. Shinduvadi is 650 m above the sea level and is about 4 km from river Tunga. However, agriculture is primarily rainfed.

The Village Natural Resource Monitoring Cell at the Centre for Sustainable Technologies, Indian Institute of Science enlisted selected students of Sahyadri Science College, Shivamogga, in the exercise. Enlisting was based on a test conducted for the students to elucidate their awareness of natural resources and their interest. These students from varied streams put in their efforts and valuable time to understand the problems and issues related to natural resources and communities depending on them by interacting with the people of Shinduvadi.

The selected students were trained in basic monitoring techniques that included: i) collection of information from secondary records or any published studies, ii) land survey to demarcate and map different land-use systems and cropping pattern as well as estimate the area under different land use, iii) field measurements for estimating biomass in different vegetation components, including agro-forestry, fuelwood and water consumption patterns, dung production of cattle and for assessment of fish resource and diversity, iv) laboratory measurements wherein water samples – both drinking and irrigated collected from field sites were analyzed for quality and soil samples collected from different use systems were analysed for soil organic carbon, physical properties, pH and micronutrients

v) household survey to obtain information of individual households with regard to population, gender distribution, land holding, cropping pattern, livestock holding, energy and sanitation status and use of the various resources within the village ecosystem, including changes in cropping pattern, and drivers of change, and vi) Participatory Rural Appraisal techniques to obtain information on communities perception of environmental issues, livelihood issues, trends and status of resources over the years.

3. Results and Discussion

The natural resource monitoring exercise helped integrate academic content with community service, bringing in a sense of connectedness between classroom learning and personal lives of students as well as the lives of others within the larger community (Stanton, Giles and Cruz, 1999), particularly the village community. Howard (1998) defines service-learning as a reciprocal relationship between community service and academic learning that transforms both processes. He states, “Academic service learning is a pedagogical model that intentionally integrates academic learning and relevant community services” (Howard, 1998) and that there is an intentional effort made in service-learning to utilize community-based learning on behalf of academic learning, and utilize academic learning to inform the community service. It also integrates two kinds of learning, experiential and academic – both working together to strengthen each other.

In the Shinduvadi case, the students of Sahyadri Science College got an opportunity to learn basic research methodologies involved in natural resource monitoring at a budding stage and the interactions with the communities especially during surveys and participatory discussions natural resource monitoring exercise sensitized the students to issues and problems of the farming community and the underlying causes. This endeavor by students is a unique exercise wherein collaboration between a research institute and a college has produced an output which could be used for policy-making at the grassroots' level. The researchers from the Indian Institute of Science were confronted with a learning process that was very different from typical classroom setting as the students were not only learning the fundamentals of participatory research but also its application at the grassroots’ level with all its nuances and particularities of context.

The students in the process of this exercise learned about themselves, the Shinduvadi community, and the process of participatory research. Working closely with the community and interacting with them, the students gained significant understanding of how local communities operate within their villages as well as specific issues facing resource use and management at the community level. Focus group discussions held with the community to understand trends in resource status and use over a period of time helped students to gain an understanding of the strengths and resiliency of the Shinduvadi community and their coping strategies in the face of resource degradation.

3.1. Students’ Learnings

Students had the following to say during reflections, on site discussions and critique of work that was carried out.

Relationship Building

Many students expressed their satisfaction and happiness in learning the art of relationship building and conceded that they were guests in the community and they could build good rapport with the community because of this realization as evidenced in the warmth with which they were received by the local households during subsequent visits.

Team Work

Students expressed their pleasure in working together as a team and the advantages of being in a team. They recognized that being in a team complimented the strengths of different members and that they could achieve tasks assigned to them faster and in a more efficient manner.

Personal Understanding

For many of the students' participatory research helped them gain personal understanding of the ways local communities operate and that they follow no step-by-step methodological outlines in addressing issues. They also learnt that political and personal dynamics operate within villages and these factors influence the work they conducted. In the process, a few students in the group reconsidered their intent of *'doing research on communities'* and realized that success was in working *'with the communities'*.

Personality Development

An overall development of their personality including patience, discipline, and compassion for each other was reported by many students. A few students expressed that at the time of initiation of the study, they were reservations and as they progressed, their view about the entire exercise changed and that they were happy to be part of the research. A few students who were reserved and less communicative in the classroom were outgoing and forthcoming in their views and efforts when in field, reflecting a new side of their personality to their team members and the faculty.

Knowledge

All students expressed that they had learned more about scientific methods as well as the reality of doing research by getting involved in this study than a traditional training course or regular curriculum.

3.2. Validity in Participatory Research

Some researchers, conditioned by the traditional science paradigm (Susman, 1978), are concerned that the participatory research approach implies less rigorous methodology which could lead to less valid results. But our experience shows that participatory research enhances the validity of data as contextual factors are taking into consideration and the base for data collection is broad. Validation is ensured by the depth and variety of data collected – for instance information on trends in resource use is obtained through household surveys as well as focus group discussions and can be validated then and there. Reliability is measured by triangulation of data from more than one source and the rigor with which analysis and interpretation are undertaken (Goodwin and Goodwin, 1984).

4. Conclusion

Rhodes (1997) points to the significance of community service needing to be of mutual benefit between equals and that it is a hallmark of participatory research. Palmer (1993) stated that the most significant issue for education "…is whether we are educating students in ways that make them responsive to the claims of community upon their lives". Participatory research prompts students as well as researchers to engage in learning within the community and in reciprocal form benefits all involved.

In participatory research, learning takes place through mutual interaction and sharing between all partners involved and the collaboration is iterative and reflective as well as reciprocal in nature. Knowledge emerges through the process itself and is not imposed from external theory or expertise.

As Kolb (1984) said, if one interjects students into the participatory research collaboration, both the student and the community members are engaging in a process that involves direct, ongoing experience followed by reflection and conceptualization, that brings the participants into testing and acting on the developing ideas in the real world. Thus, participatory research brings together abstract concepts and research ideas with concrete experience, and through reflection and action, engages students in a cycle of learning and knowledge building.

Successful research should be of immediate use to the local community, through enhancing resources for community-based problem solving (Rolfe, 1996). The Shinduvadi experience is a clear example of this as the study has identified key environmental issues and also suggested management options for the same. The same has been published as a summary for policy for makers and circulated among local government bodies. As a result, there are discussions on carrying forward measures for addressing few of the issues identified, for example, the desilting of pond to improve water availability for irrigation. The Shinduvadi experience is definitely a milestone in participatory research in India and is an example for educational institutions across the country and elsewhere to take up pro-societal research initiatives.

References

Alery, J. et al., 1990 (editors): *Community Care & Participatory Research*. Montreal: Nu-age Editions.

Boutlier, M., Mason, R., and Rootman, I. *Community Action and Reflective Practice in Health Promotion Research.* Health Promotion International. 1997. 12; 69-78.

Cornwall, A., and Jewkes, R. *What is Participatory Research?* Social Science and Medicine. 1995. 41 (12) 1667-76.

Goodwin, L.D., and Goodwin, W.L. *Are Validity and Reliability "Relevant" in Qualitative Evaluation Research?* Evaluation and the Health Professions. 1984. 7 (4) 413-26.

Howard, J.P.F. *Academic Service Learning: A Counternormative Pedagogy.* New Directions for Teaching and Learning, No. 73, Spring 1998. 21-29.

Kolb, D.A., 1984: *Experiential Learning: Experience as a Source of the Learning and Development*. Englewood Cliffs, N.J.: Prentice-Hall.

Maguire, P., 1993: *Challenges, Contradictions and Celebrations: Attempting Participatory Research as a Doctoral Student.* In: Park, P., Brydon-Miller, M., Hall, B., Jackson, T. (editors). Voices of Change: Participatory Research in the United States and Canada. Toronto: OISE Press; 157-76.

Metzler, M.M., Higgins, D.L., Beeker, C.G., Freudenberg, N., Lantz, P.M., Senturia, K.D., Eisinger, A.A., Viruell-Fuentes, E.A., Gheisar, B., Palermo, A., and Softley, D. *Addressing Urban Health in Detroit, New York City, and Seattle through Community-Based Participatory Research Partnerships.* American Journal of Public Health. 2003. 93 (5) 803-811.

Morford, S., Robinson, D., Mazzoni, F., Corbett, C., and Schaiberger, H. *Participatory Research in Rural Communities in Transition: A Case Study of the Malaspina-Ucluelet Research Alliance.* BC Journal of Ecosystems and Management. 2004. 5 (2) 39-43.

Palmer, P.J., 1993: *To know as we are known: Education as a Spiritual Journey*. New York: Harper Collins.

Rhodes, R.A., 1997: *Community Service and Higher Learning: Explorations of the Caring Self*. New York: SUNY Press.

Rolfe, G. *Going to Extremes: Action Research, Grounded Practice and the Theory-Practice Gap in Nursing.* Journal of Advanced Nursing. 1996. 24; 1315-20.

Shiduvadi Village Ecosystem (2007): *State of Environment and Natural Resources*. Centre for Sustainable Technologies, Indian Institute of Science. http://ces.iisc.ernet.in/ravi/vnrm/SoENR.html

Stanton, T.K., Giles, D.E., and Cruz, N.I., 1999: *Service-Learning: A Movement's Pioneers reflect on its Origins, Practice, and Future*. San Francisco, CA: Jossey-Bass.

Susman, G.I., and Evered, R.D. *An Assessment of the Scientific Merits of Action Research.* Administrative Science Quarterly. 1978. 23; 582-603.

Yeich, S., and Levine, R. *Participatory Research's Contribution to a Conceptualization of Empowerment.* Journal of applied Social Psychology. 1992. 22 (24) 1894-1908.