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Modelling of community service projects for rural technology implementation

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ABSTRACT

In rural areas, science and technology are important factors; they are associated with development because they have an old record of bringing about lifestyle development, health conditions, the generation of income and improved productivity in people's lives (Kapur, 2019). The key components of solutions to rural people's most serious problems are the science and technology; they are poverty alleviation and economic challenges. The higher education institutions have also joined forces in this initiative at the same time. This research is the result of an effort made to foster scientific and technical advances through community service projects of graduate engineering students for sustainable rural villages of Tamil Nadu.

Selection and peer-review under responsibility of the scientific committee of the International Conference on Newer Trends and Innovation in Mechanical Engineering: Materials Science.

1. Introduction

The cultural, social and environmental viability of countries depends on sustainable rural development. Since global poverty is largely rural it is important for poverty eradication. Poverty representation goes beyond the urban–rural divide, and has subnational and regional dimensions [7]. Therefore, it is crucial and there is great value to be gained by organizing, as necessary, rural development initiatives that contribute to sustainable livelihoods through global, international, national, and local efforts. Rural development strategies should take into account the remoteness and potential of rural areas and offer targeted differentiated approaches.(*Ibid*). In every field of health care, medical, education, transportation, tourism, the industry, the business, management, administration, banking, or rural development, technology is becoming imperative today. It has various meanings, including machinery, equipment, tools, abilities, expertise and knowledge.

The use of technologies has been made at a wide level for the development of rural areas and the successful use of the technology has led to expansions and growth in agriculture [5,6]. Poverty, analphabetism and unemployment are the major problems facing the rural communities. The rural masses will learn and create job opportunities for themselves with the advancement of technology in rural areas. There have been small industries developed in rural areas, and usually in these industries machines and technical equipment have been trained to provide rural workers with employment so that machinery and other technological facilities used in the manufacture or produce can be operated efficiently when they find employment. The advancement of technology has improved rural housing, roads and other facilities; people have learned how to handle water effectively and use clean drinking water. In rural areas, medical centers and other health facilities have been established, which use specialized resources that support rural people in large part. The use and advancement of technology in rural areas can therefore be described as improving the living standards of the rural masses and contributing to progress in this country.

The present investigation trued to inhibit the role of community service project for the rural development. Community service project basically meant to implement in the educational curriculum of the engineering graduates students. The aim to establish a community consciousness and service orientation among the engineering professionals by implementing the innovative needed technology for the socio- economic and cultural sustainable development of the rural poor villages.

2. Review of literature

In India, science and technology have contributed to the greatest amount of development; technical considerations, in particular

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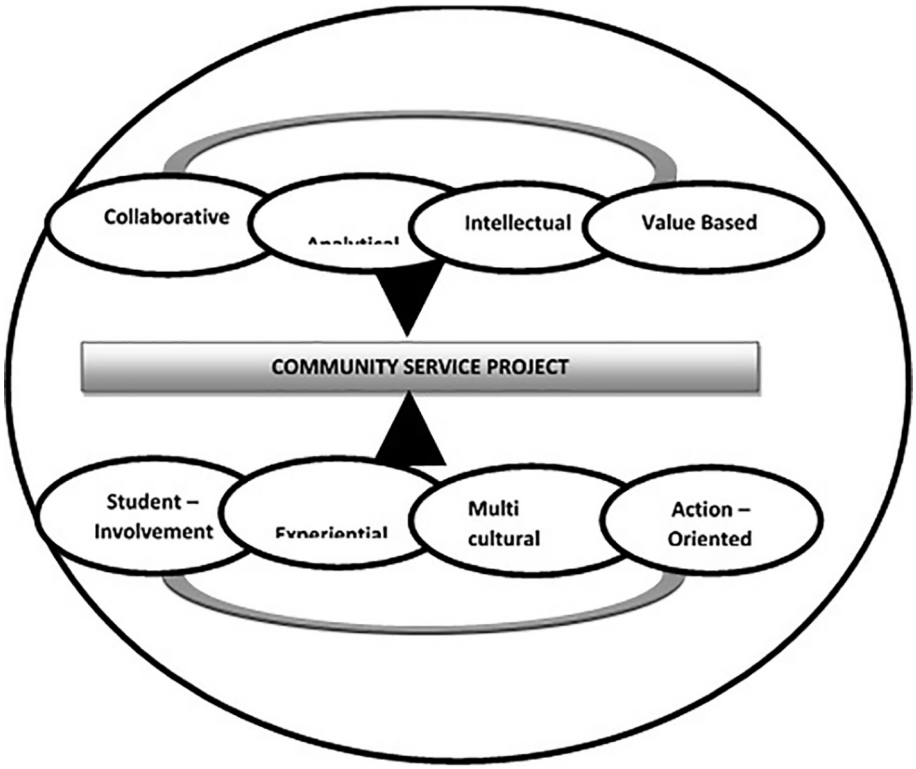

Fig. 1. Principles of community service.

in rural development, play a major role. There are different industries in rural areas such as agriculture, small-scale industries, housing, housing, buildings, healthcare, education, offices, etc. [9]. Uma Deviet al. (2009) [3] realized, the Government has taken initiatives to popularized industry to encourage its involvement in its adoption by a common man in the mix between science and technology research growth and its application for social welfare. Chiranjib Kumar Basu and Shyamal Majumdar (2009) [1] revealed that in developing countries, information and communication technology (ICTs) and technical and training (TVET) can be extremely relevant in the field of rural development and poverty alleviation. Ozgen et al. (2007) [8] states that policies and services to alleviate poverty are established with a primary emphasis on rural areas. Promoting rural entrepreneurship as an effective strategy of poverty alleviation and focusing specifically on the recognition of opportunities as a key element of the business process, and introducing a model that stresses intellectual, human, environmental and social-cultural resources and a mediating impact of national conditions.

3. Methodology

The present investigation tried to develop a community service implementation model for the sustainability of rural villages, which is basically for the implementing community service projects of engineering graduates students. The community service model was developed with the support of the academicians, village leaders, engineering graduate students, social workers and practitioners of Non-Governmental organizations. In- depth interview is conducted and model was developed. The implementation training were given to the engineering graduates students of Kalasalingam Academy of Research and Education, Kirishankoil, Tamil Nadu. The detailed description of the implementation model is being discussed in this paper.

4. Community service impliemntation model

Community service is an activity not for the benefit of the public or its institutions, which is carried out by someone or by a group of persons. This is a way to engage students in service activities that meet community needs, while learning curriculum and/or content relevant to the service and reflecting on the service experience. Anyone serving may remove something from the experience and use new knowledge or interpersonal discoveries to improve their future service and their surroundings. To maximize the benefits of community service, a learning element that is balanced with the service aspect should be developed. By learning and helping others concurrently, you can develop your culture and your society and learn about life and create character so that they can impact the world in the future.

Service was part of the community service project: students spend time helping the public to meet their needs; learning: students try or are taught knowledge they want to incorporate into their programs. Learning is frequently interpersonal as well as academic and reflection: it links service and learning. In reflecting the term “service learning” sometimes the hyphen indicates that it plays a major role in learning through service. Reflection is simply a scheduled account of one’s own thoughts and experiences. This can be in many forms, including magazines, forums and discussions. In community service projects, students were developed professionally by the Community Service, created the community ’s feelings between the students, initiated community development using students ’ academic expertise and empowered students to work with other students to provide technical solutions for community services projects. The aim was to develop community service projects. The accomplishment of the project will expect some out comes like ensure authentic learning; enhance self-esteem; become socially responsible persons; improve academic learning; develop communication skills; encourage collaborative efficiency;

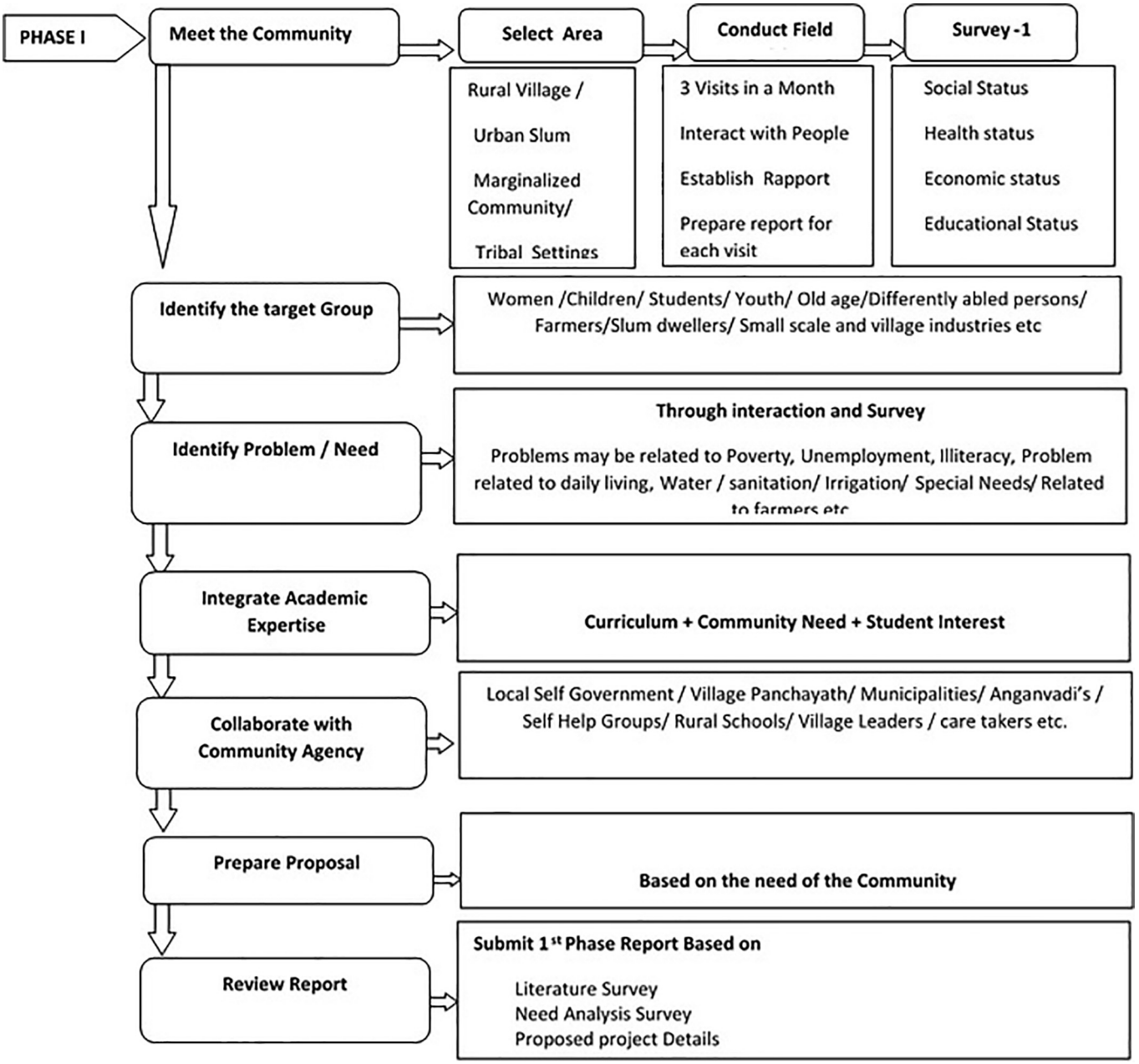

Fig. 2. Community service implementation phase 1.

motivated for the experienced Learning and future civic participation. The major principles of community service project is depicted in Fig. 1.

5. Implementation phases in community service project model

Implementation model particularly for the engineering graduate students for supporting their community service projects. The motto of community service project was to develop community consciousness among the engineering students by linking their academic expertise and specific need of the rural community. The projects will be on the basis of respective academic discipline of the students. It has been two different phase and duration in one year.

The first phase of the project need assessment. It is explained in the Fig. 2 The students has to visit the nearby rural villages and identify the specific need of the community by conducting survey, interview and interaction with village leaders, local self-government and common peoples. The identified Problems may be related to Poverty, Unemployment, Illiteracy, Problem related to daily living, Water and sanitation, Irrigation and need Related to farmers and specific need of marginalization and downtrodden communities. Integration with academic expertise will be next step of the project. It has to link with community needs, curriculum and student interest. The first phase of the implementation model will end by preparing project proposal based on the assessed need of the community. Review report of the first phase will be the evaluation criteria of the community service project.

Community service project implementation process will start in the second phase (Fig. 3). The based on the prepared proposal, students will develop proto type and they will make a review with community by making demonstration. The collected reviews of the target group and community agencies will incorporate and

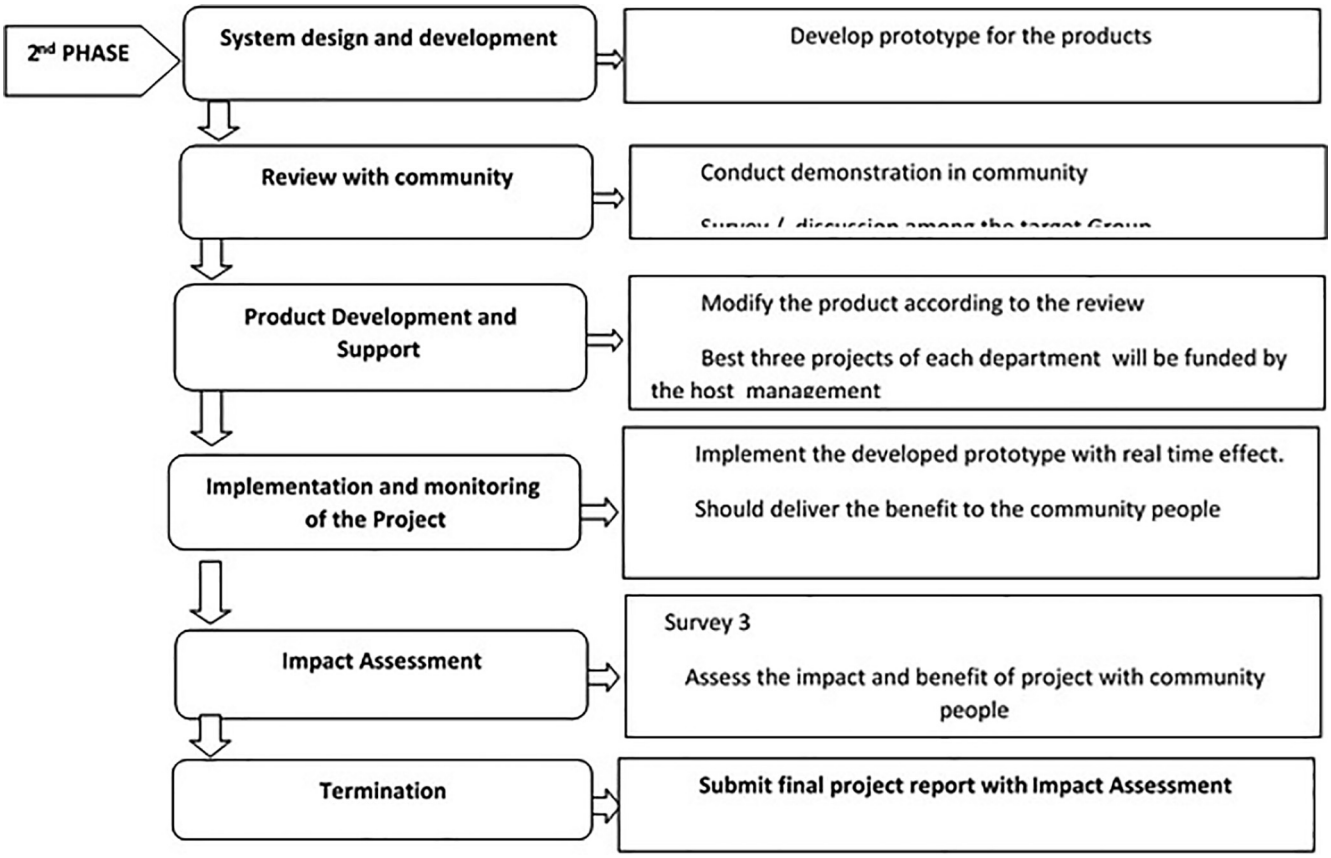

Fig. 3. Community service implementation phase 2.

Fig. 4. Sitting bench with waste plastic bottles.

develop a structured product for the implementation. The students should make a collaboration with Local Self Government, Village Panchayath, Municipalities, Anganvadi's, Self Help Groups, Rural Schools, Village Leaders and care takers base on necessity of the project. After implementing, students should assess the impact and sustainability of the project and termination of the projects it essential to make the target group is self-relent and sustainable.

6. Sample community service projects by students

6.1. Reuse of plastic bottles as low cost construction material

The aim of our project is to construct a bench using low cost material. In this project we have planned to construct a bench for a primary school in sallipatti village using plastic bottles. The people in the village are not having sufficient fund for constructing bench using brick construction, since the cost of the brick is little higher. So we suggested and constructed a bench using plastic bottles which is available at low cost when compared to brick cost. The pictorial representation of project is depicted in Fig. 4.

6.2. Smart monitoring system for visually challenged person's

The main aim of this project is to assist the blind persons without the human need. It is well known that the blind people carry a

Fig. 5. Treatment mechanism for ground water.

hand stick with them whenever they need a support. Sometimes even when they use this stick, there is no guarantee that the blind persons are safe and secured in reaching their destinations. There may be an obstacle in their path but is not encountered by the person with the help of the stick. Thus, the people may be injured if the obstacles is big enough or dangerous. For this reason, a design has been developed to assist the blind and provide them a clear path by using Hat, a Hand Gloves and Shoe.

6.3. Innovative dustbin for clean India

Most of the people don't have sense of dropping the waste in dustbin's at public places. So as an initiative we must take responsibility in solving this problem. Something attractive must be added as catalyst to make people to use the dustbin. We have created this innovative smart dustbin which works on the waste disposed by the public. Whenever you drop a garbage of certain weight, you will be given □ 0.25 to your E-Wallet. This system thus makes our surroundings clean and motivates the people to use dustbin. As we aim for "Clean India" in future, this system helps us to achieve this well in advance.

6.4. Designing a flow tap for conventional use

Awareness has been motivated by the government agencies to the people regarding usage of water. Most of the people use to run water even after the vessels are filled with water. Also, these space is found to the in an annual manner and creates the people to avoid using that space due to the untidy environment. The factors such as: avoid the waste of drinking water, to create a clean environment, to have one hand asses and to produce a tap with low cost as taken has priority in our community service project. Based on the above factors a new design is planned and a prototype model is prepare and it is well examine before the public people.

6.5. Treatment of ground water in Kariapatti

Water is the basic need for the people. But nowadays drinking water becomes the ultimate need for the humans. The project desalinated the water which is obtained from ground water having the highest amount of the hardness from the kariapatti by using this solar distillation process for providing the drinking water for the people who lives there. The pictorial representation of project is depicted in Fig. 5

7. Conclusion

Technologies are currently being established under a paradigm structure that originates in the developed world, which is not appropriate for developing countries [4]. The development of a society, a system and a nation is regarded as an aspect that is essential to education. Education functions include social change, improving the individual social status and standard of living, stimulating rural and cultural involvement, growing rural peoples' vital capacity to identify their needs, ensuring their own rights and taking more charge of decisions that affect their lives, providing trained rural citizens, and linking rural and urban sectors. Education functions [2]. Community service projects tried to enhance community sentiments among the engineering graduate students and to produce new innovations for rural village development by linking the academic expertise of young budding minds. Suggested community service implementation model will help the student to incorporate the academic credentials and expertise to develop innovative ideas based of the specific need of the community.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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