

A case study of students' skill development through the project carried out for sustainable development of rural area for transformation to urbanization

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Abstract— Vishwakarma Yojana is one of the Gujarat government's initiative designated as a pilot project to facilitate rural people with required infrastructure as good as urban people. The world is growing rapidly nowadays, accordingly the living standards of the society are improving which leads to the development of multidisciplinary sectors. This case study is carried out at village Ambardi located in Jasdan tehsil in Rajkot district of Gujarat state, India. It is located approximately 80km towards east from district headquarters Rajkot city.

The detailed development plan has been proposed for the village by providing different facilities in unlike categories such as physical infrastructure (Water tank, Roads and other), Social Infrastructure (Health, Community Hall and other) and Sustainable Infrastructure (Biogas plant, solar street and other) which leads the urban people get attracted with the rural people. Generally, the people living in the villages are working as a farmer in major, so their living standards are not leveled to the rural progress. Providing such amenities in the village, retention ratio can be improved and eventually control the migration. It also helps in increasing the livelihood and lifestyle of the people living in the village, which is the ultimate aim of this study. Through such Project, industries can also be developed nearby rural area, which will increase the jobs of the villagers itself and the surrounding area, and this is the successful way to increase the prosperity of Village and ultimately increase GDP of the country. Significant improvement in students' interpersonal skills and employability is observed after taking feedback from students after completing task.

Keywords— Rurbanization, Vishwakarma Yojana, Village Development, problem identification, Skill Development

I. INTRODUCTION

One of the key challenge for the developing countries in 21st century is sustaining rural and urban population. We are witnessing urbanization where people of rural area is transferring themselves in urban area. Specifically, this situation is very obvious in developing countries. There is now a growing realization that rural-urban relations are far more complex. There is now a growing realization that rural-urban relations are far more complex and Vishwakarma Yojana is one of the approach for rural urban interaction from the government of Gujarat. India is one of the fastest developing country. In past decades, India is observing that people of rural area are

leaving agriculture and shifting to Urban area. Data from International Labor Organization and World Bank shows that there is significant drop in employment from agriculture sector. In 2004, 250 million jobs were in agricultural sector and it dropped to 215 million in 2016.

Our father of Nation, Mahatma Gandhi said that India lives in village and this statement is still significant as India's 70% population lives in rural area in 2011. Urban population is rapidly increase from 17.97% in 1961 to 31.16% in 2011. (Indian government Census website, 2022) and (Sabyasachi Tripathi, 2022)

According to (Niloofar Hashemi, 2017), two substantial methods can be used to evaluate sustainability.

1. Universal definition for the complex concept of sustainability.
2. Propose a local definition in regards to the different attitudes and the different development needs.

Migration from village towards urban area and structural changes in employment is affecting in many ways like local economics, livelihoods, well-being of people and social organization. (Chetan, Jan, & Nijman, 2021)

In the year of 2012-13 Gujarat technological university was allotted project named Vishwakarma Yojana (VY) Phase-I by the Government of Gujarat through the Commissionerate of technical education. For the development of rural area of Gujarat state under VY, various villages of different district of Gujarat state were allotted to the final year civil and Electrical engineering students of selected affiliated Engineering institutes of Gujarat technological university (Bhatt, 2022). This Project is extended every year up to Phase IX till 2022.

Main aim of VY is to reduce migration towards the cities and improve the health and wealth of the village providing proper required amenities for their better livelihood. A larger research project aimed at a more comprehensive understanding of India's rural-urban transition (see Van Duijne, 2019; Van Duijne & Nijman, 2019; Choithani, 2020). The migration to big cities is not the only way; transformation is taking shape locally

too (Duijne and Nijman, 2019) Under this project, Final year Civil engineering and Electrical Engineering Students who have been allotted VY project, visited and worked at Ambardi Village. The different skill enhancement of these students by working at ground level was the learning outcomes. Survey carried out after completion of the project with specific questionnaires in order to identify the improvement in skill level of all participating students. Different types of technical structure design would be proposed according to the requirement of villagers. Various types of socio economic survey is carried out and by doing Gap analysis, various designs for required amenities were proposed for the improvement of the condition of village. Infrastructure facilities are the general requirements for rural development and Vishwakarma Yojana provide a design in various aspects like Social infrastructure facilities, Physical infrastructure facilities, Socio-cultural infrastructure facilities, Sustainable infrastructure facilities.

By virtue of this activity, students various 21st century skills are improved. Identification of real life societal problems is increasing critical thinking and problem solving skills. Proposing solutions for village is increasing students' design thinking. Implementation of solutions is increasing their employability skill. (Vaibhav Gandhi, 2021)

II. Need of the Study

Ideal village is a concept developed from Mahatma Gandhi's vision of Adarsh Gram and adopted by India's national, state, and local governments as a focus on comprehensive rural development (ideal village). By providing required facilities in villages itself, we can expect reverse migration (Asma Khan, H. Arokkiaraj, 2021) but It's regrettable that villages with so much to offer are still so behind the times. Poverty, a lack of education. To provide easier, faster and cheaper access to urban markets for agricultural produce or other marketable commodities produced in such villages to provide a sustainable development, Feasibility parameters, and environmental condition to the villages. Contribute towards social empowerment by engaging engineering students in the task of village development may not only fulfil the requirement of rural people, but also inculcate the inherent skill to the students and made them industry ready and provide satisfaction level to all the stake.

III. Aim and Objectives

Aim: Aim of the Vishvkarma Yojana is to provide urban amenities in rural areas and maintaining the rural soul by engaging engineering students for village development. This will help in developing villages in sustainable manner, reduce migration from villages and prevent the cities from the urban Pressure. Also it will inculcate undergraduate students with various skills and positive attitude towards national development.

Objectives:

- Improvement of Basic Physical Infrastructure like Water supply, solid waste management, transportation sewerage at rural area.
- Study of Basic social infrastructure like health and

educational facilities and proper delivery of these facilities to villagers.

- Integrated development of villages such that villagers can have quality housing, better connectivity to other places, employment opportunities at village and supporting other physical and social infrastructure.
- Energy efficient and ecofriendly electricity connections like street light.
- Basic services and sufficient economic activities at rural area to reduce migration from rural to urban area.
- Identification of improvement in sanitation facilities like sewerage and drainage lines for household connections, solid waste collection from door to door and dumping facilities.
- Refurbishing of village lakes, water tanks and wells, construction of rain water harvesting structures for sustainable Development.

IV. Scope of Study

Rural development is an ongoing process including a variety of infrastructural improvements. Rural development is a dynamic process that focuses mostly on rural regions.

Agricultural development, the construction of economic and social infrastructure, fair salaries, housing and housing sites for the landless, village planning, public health, education and functional literacy, and communication are some of these.

The research will focus on the village's development trend and intensity of growth, as well as difficulties connected to the area's socio-cultural or physical development, social infrastructure services, and administrative systems. Project proposals and sustainability issues are not taken into account on a micro level; they are merely used to guide the way.

- To reduce urban city pressure and lower the migration rate.
- Due to providing urban facilities development of village will be possible.
- To improve health and livelihood of people.
- To improve education facility.
- Provide basic amenities in the rural area which are not existing with rural soul remain intact and to increase the livelihood of people.

V. Scope of Study

Ambardi village is situated at Jasdan Tehsil in Rajkot District of Gujarat State, India. Ambardi village is situated on 22°01'35.4" N latitude and 71°23'01.6" E longitudes. Nearest town from Ambardi village is Jasdan and it is 24 km away from Ambardi. The current sarpanch of Ambardi is Gauriben Jikubhai Zala. The village follows the Panchayat raj system. The surrounding nearby villages from Ambardi are Navagam, Bhadli, Kaslolia, Gadhala and Vadod etc. Indian village code of Ambardi is 360050. Total land area of Ambardi is around 2294.28 hectares .Which consist of a total household of around 809. The total population of Ambardi is around 14240 according to the data from census 2011. In this, male population is around 2156 and female population comprises of 2089. There

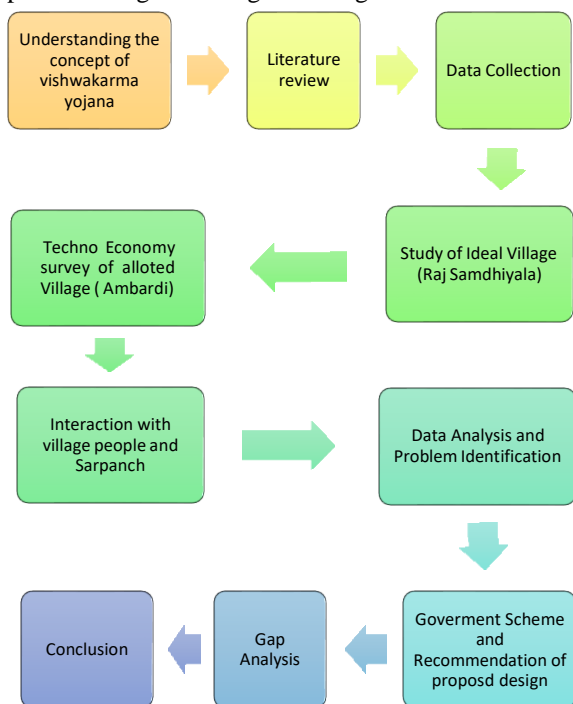
are mainly three types of major occupation Agriculture, diamond workers and labors. Major crop grown in this villages are ground nut, cotton and chickpeas.



Figure 1. Village map of Ambardi village

VI. Methodology Steps

The methodology and schedule for the entire project is explained using following flow diagram.



Problems Faced by Villagers

- Getting health care can be a problem when you live in a remote area. You might not be able to get to a hospital quickly in an emergency. You also might not want to travel long distances to get routine checkups and screenings.
- There was no proper Solid waste management system available
- Road embankment maintenance not done properly
- Some important infrastructures such as public toilet, public garden, community hall and library, sanitary system was not available.
- Lack of awareness of knowledge and education
Local transport facility not available for moving towards another places.
- There was not such a provision of Water harvesting system

Village Problems Summary with Feasible / Smart Solutions.

- The village has inadequate water supply in summer season
- There's no waste collection system in the village
- Primary Boy's school requires repairing
- In the village there's no public toilet, community hall, post office building, village gate, public garden, public library.
- These days Village is facing many criminal actives such as robbery and theft. So, village is lacking security and surveillances.

Methods for Data Collection

Data Collection of the village is first and most important step of this project. The Data of this village is collected from the records kept by The Sarpanch, Talati Mantri, Anganwadi worker, etc. Also, the information is obtained by communicating with villagers.

Available facilities are listed as below:

- Demographical details
- Geographical details
- Occupational details
- Physical Infrastructure facilities like sources of water, road network, transportation facility, sanitation facility, housing condition, etc.
- Social Infrastructure facilities like Primary health center, primary and secondary school.

Primary Details of Survey

Ambardi village is in Jasdan tehsil in Rajkot district of Gujarat state. The total geographical area of the village is 2294.28 hectares. Geo – tagging of House Around the village all house Average seen to be of 600 Sq. feet. Ambardi village is at 141M above sea level. Time zone is IST (UTC+5:30) there are 809 household in the village and average no. of human in family is 5 to 6.

Village people uses stone, concrete, reinforcement, bricks, clay are used for construction and wooden also available for furniture works. Material outsource by villagers is Aggregate, sand and steel main source out by the villagers. Throughout the year, treated tap water is provided, as well as in the summer. Other sources of drinking water include uncovered wells, hand pumps, and tube wells/boreholes. There are Kutchha and Pucca houses intermingled throughout the area. Around 85% of the dwellings in the hamlet were Pucca houses in decent condition, with the other 15% being Kutchha houses and some damaged ancient buildings in bad shape. The village has public buildings such as village gram panchayat, banks, bus stop, etc. and some of the existing buildings are in poor condition. Which need to be retrofitted or rebuild.

Observation

There is no public garden available within village territory but there are 4 temples in a village as a recreational area. And village also have temples outside of village which have big opening area. The village has public buildings such as village gram panchayat, banks, bus stop, etc. and some of the existing buildings are in poor condition. Which need to be retrofitted or rebuild. Some of the village infrastructure such as Bus Stop, Primary Boys School and Main Road needs maintenance. There's no such tourism places in the village yet, but there's one big temple of lord Krishna's under construction which will be center of attraction for tourists.

Recommendations

The following are elements that should be included in a Smart community but are not present in Ambardi village like

Community Hall, Public Library, Community Toilet, Public latrine Blocks, Cinema Theater, Bio Gas Plants, Post office, Rain Water Harvesting System, Solar Street Lights, RO Plant, CCTV streets, Village Gate, Public Garden, Elevated Storage Reservoir, Godown. But the Important or Crucial item which is required to be constructed as soon as possible are: Entrance Gate of the Village, Community Hall, Smart Design (CCTV cameras and Speakers) Chabootaro, Elevated Storage Reservoir, Godown.

Sustainable Planning Proposal

In the Ambardi village there is no Community hall. So, we provide a design of community hall. Village hall is a charitable community facility that is available to the public in a particular area for community-related recreational activities. Village halls are charitable because they held on trust to be used for purposes set out by the Recreational Charities Act 1958.

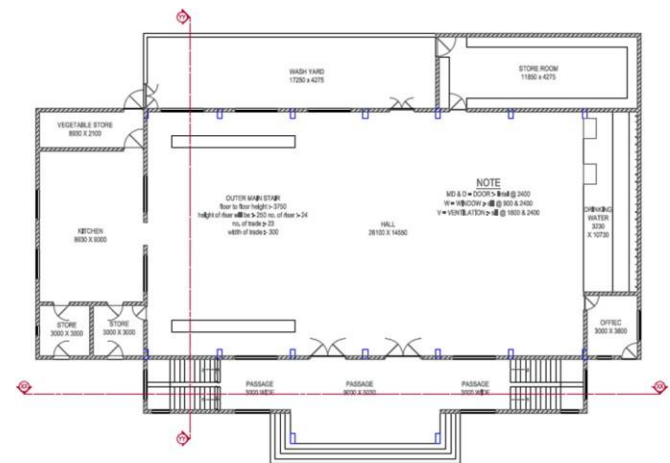


Figure. 2 Ground Floor Plan Community Hall

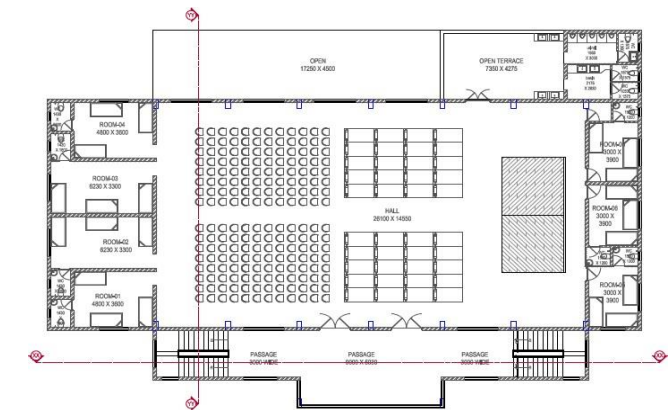


Figure.3 First Floor Plan Community Hall



Figure.4 Ambardi Village Community Hall

VII. Results and Discussion

Survey with different questionnaire regarding overall skill enhancement of participating students during different Phases of VY was carried out through virtual mode. Score with different levels (0-Lowest to 5-Highest) given by the students according to the enhancement of the skill inculcated in them.

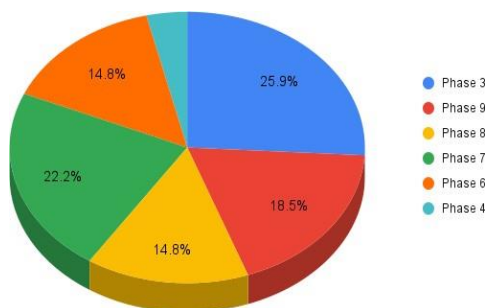


Figure.5 Participation of Students in different Phases of VY Project

TABLE I

Score given by Participating Students to different questionnaires

Question	Score given by the students 1-Lowest to 5- Highest					No. of student response
	1	2	3	4	5	
Identification of problem of rural people	0	1	7	9	10	27
Developed interpersonal skill	0	3	3	9	12	27
Conduct feasibility survey	0	1	7	10	9	27
Proposed a different technical design	0	0	5	4	18	27
Explore a report writing skill	0	1	2	7	17	27
Developed a soft skill	0	0	2	9	16	27

Liaison with government officials	0	0	6	8	13	27
Improved presentation skill	0	0	4	4	19	27

Above survey result reveals that the highest percentage of improvement in various types of skills which is directly reflect their overall development and interpersonal skill.

VIII. CONCLUSION

Implementation of project based learning like Vishwakarma Yojana could be benefited not only for 360⁰ developments of students but also for the development of rural area and support the nation. This type of scheme is an opportunity for students. It gives platform to all technocrats to learn. Outcome of this activity is beneficial for society as well as students. Villages selected by the students are getting expertise of engineers and students are getting opportunity to work with real life problems. Even one of the major outcome is improvement in 21st century skills.

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