Indigenous Geographical Knowledge of Santali Community and its Education through Generations for Sustainable Future

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Abstract

Ancient people loved the natural environment because it gave them food, shelter and comfort. Santali people have the indigenous knowledge which is passed down orally through generations. Those indigenous geographical knowledge gained from their ancestors, solve many problems in their day to day life. Environment and its positive use is a key factor for sustainable development. Different ecological inputs along with climate, soil, vegetation and drainage resources should be properly assessed. Bio-physical condition of any area is related with the economic order of the region which influences societal development. The purpose of the present study was to know different indigenous geographical knowledge of Santal community of Birbhum District and its transmission to the next generation, to make a sustainable future, better world. People were randomly selected from different Santali pockets of Birbhum District, West Bengal. Their opinion was taken through questionnaire and interview schedule. Self reporting technique and observational technique was used to gather information. Implementation of that indigenous geographical knowledge has immense positive effects on environment, which ultimately leads to sustainable development. Modernization has come to now a day in every field. New generations get the ancient traditions from grandfathers. Some of them blend modernization with indigenous knowledge. But a large amount of Santali people still follow the primitive knowledge. The present study aims at exploring that indigenous geographical knowledge which are environment friendly and can secure a sustainable future.

Key words: Indigenous geographical knowledge, Santali community, Education, Sustainable future, Generation, Modernization.
**Introduction:**

Indigenous education specifically focuses on teaching indigenous knowledge, models, methods, and content within formal or non-formal educational systems. Increasingly, there has been a global shift toward recognizing and understanding indigenous models of education as a viable and legitimate form of education. The synonyms of “Indigenous” are original, ancient, primitive, local, native etc. There are many different educational systems throughout the world, some of that are more predominant and widely accepted. However, members of indigenous communities celebrate diversity in learning and see this global support for teaching traditional forms of knowledge as a success. Indigenous ways of knowing, learning, instructing, teaching, and training have been viewed by many postmodern scholars as important for ensuring that students and teachers, whether indigenous or modern, are able to benefit from education in a culturally sensitive manner that draws upon, utilizes, promotes, and enhances awareness of indigenous traditions.

Geography is a field of science devoted to the study of the lands, the features, the inhabitants, and the phenomena of Earth. Geography has been called "the world discipline" and "the bridge between the human and the physical science". Geography is divided into two main branches: human geography and physical geography.

Human geography is a branch of geography that focuses on the study of patterns and processes that shape the human society. It encompasses the human, political, cultural, social, and economic aspects. We can find different types of indigenous people all over the world. They have different languages, different cultures and different attire. Human Geography deals with those people, who live in rural areas, far from the modernity. They love to live in their own world. The knowledge of indigenous people helps us to combat different environmental problems when we are facing global warming. Environment and its positive use is a key factor for sustainable development. The word ‘Sustainable development’ is now considered as a medicine to combat all development related problems. Sustainable development should be ecologically conformable, economically viable and socially acceptable. Major objectives of sustainable development are:

1. Provision of basic human requirements like food, shelter, clothing, health, education etc with minimum disturbance of natural eco systems.
2. Environment and bio-diversity should be preserved for the ultimate future of mankind.
3. Individual and countries should be integrated to the process of sustainable development.

To fulfill these objectives, we have to give education to the people. The indigenous Knowledge related to geography is indigenous geographical knowledge. Through the indigenous geographical education the Santals teach descendants some process which ultimately fulfill the objectives of sustainable development.

A tribe is a group of people living in a primitive condition and still not popularly known to more modern culture. There are many tribes living all over India as well as various parts in the
World. According to Oxford Dictionary "A tribe is a group of people in a primitive or barbarous stage of development acknowledging the authority of a chief and usually regarding them as having a common ancestor."

Out of them, Santal is an important tribe which contributes more than 50% of the Indian tribal population and can be found mainly in the states of Jharkhand, Bihar, West Bengal, Madhya Pradesh, Assam, Tripura and Orissa. In India, 90 million people belong to the indigenous communities known as adibasi or tribal. According to the 2011 census, India has 8.10% of tribal population. The Santals constitutes more than half of the total ST population of the West Bengal (51.8 per cent).

India is a land of ancient civilization rich in traditional science, art and culture. These traditions have passed on through the centuries to the present period. They are reflected in the form of socio-religious festivals, costumes, folk songs, dances, music, sports & games, drawing & painting, sculpture and architecture, traditional medicine etc.

The cultural heritage of a nation is not solely composed of moments and a museum collection, but also of living in tangible expressions inherited from our ancestors and passed on to our descendants. They have been passed from one generation to another, have evolved in response to their environment and they contribute by giving us a sense of identity and continuity, providing a link from our past, through the present, and into the future.

We claim that now a day, we are in the postmodern period. Many inventions, discoveries, development are going on all around the world. We the common people, run after, to know about this news. Besides these, researcher has a keen interest to know about the primitive people, Knowledge and their lifestyles, languages etc. That is called indigenous culture. Indigenous knowledge is passed down orally from generation to generation. These ways of knowing are particularly important in the era of Globalization, a time in which Indigenous knowledge as intellectual property is taking new significance in the search of answers to many of the world’s most vexing problems.

Tribal people have the indigenous knowledge and experience traditionally oral myth they apply those in every sector. Sometimes it gives a good result. This title focuses mainly in the indigenous geographical knowledge of the Santal community. They do not have the formal geographical knowledge. But they can solve the problem with their primitive knowledge gained from their grandfathers.

**Rationale of the Study:**

The study gives us present status of Indigenous Geographical knowledge of Santal community. We know that, Indigenous Education specifically focuses on teaching indigenous knowledge, models, methods and content within formal or non-formal educational system. Indigenous knowledge is an emerging area of the study that focuses on the way of knowing, seeing and thinking that are passed down orally from generation to generation. These ways of understanding reflect thousands of years of experimentation and innovation in topics like agriculture, educational system, medicine and natural resources management – among many
other categories. Indigenous knowledge has value, not only for the culture in which it develops, but also for scientist and planners seeking solutions to different community problems.

Development professional treasure this local knowledge, finding it extremely useful in solving complex problems of health, agriculture, education and the environment, both in developed and in developing countries.

Indigenous education is flowing from one generation to the next. The Indigenous knowledge of climatology, agricultural geography, economic geography, biogeography, settlement geography, Environmental knowledge & disaster management etc. spread through generations. This indigenous education will help the tribal people very much in their daily life. We are also curious about that ancient knowledge which can fulfill the objectives of sustainable development.

**Objectives of the study:**

1. To search the Indigenous Geographical knowledge of the Santal community.
2. To assess how Santal community acquire the indigenous geographical knowledge and experience.
3. To find out the acceptance of indigenous geographical knowledge & experience with the level of education of Santal people.
4. To find out the level of acceptance of indigenous geographical knowledge according to the age group of the Santals.
5. To analyze the dependence of Santal people to these Indigenous geographical educations.
6. To analyze the result of indigenous geographical education on sustainable future.

**Delimitation of the study:**

- The study has been delimitated only in the Birbhum District Santal community.
- The study has been delimitated only the Indigenous Education of Santal people.

**Geographical characteristics of Birbhum District:**

**Area:** Birbhum District is surrounding by Dumka in East, Murshidabad in North and Burdwan in West. Ajoy River has become a border of Birbhum and Burdwan District. The District is more or less Triangular in shape. The area of Birbhum District is 100 KM in Southern & Northern side and 80KM in East-West side. According to the Administrative record the area is now 4562.14 square KM.
Weather: Mainly the weather can be divided in three phases i.e. summer, winter & rainy season. March to May the temperature is maximum 41 degree and minimum is 28 degree Celsius, June to September is rainy season & temperature is 37 to 23 degree Celsius. October to February is winter season. Rain fall is 1425 mm.

Geographical Importance: Few Eastern & Middle parts of the District is extended towards Malbhumi of Chotanagpur, Surrounded with Lateritic soil. Southern, Western & few area of middle are low or plain area. Eastern side of the District Surrounded with Sal, Palash, Arjun, Mahua forest. Western Gangetic area mix with plain, that’s why surface of the earth is plain, spell of transported soil, some area with gravel and cultivated land.

River: There are many rivers cross Birbhum District like Ajoy, Mayurakshi, Brahmoni, Kushkarnika, Kopai, Sal, Bokraswar, Chandrabhaga, Daraka, Pagla, Bashloi, Palasi, Gambhira river etc. Starting point of these rivers is hilly area of Jharkhand. Ajoy and Mayurakshi River has joined with Ganga. Now a day’s river has no navigability. There is a hot spring at Bakraswar. Beside this there are many Cold Spring at Tentulia village, 16 km from Dubrajpur, Andera village of Nanoor P.S and Bara village and Sian area.

Forest: Now the forest area of this District 159.26 sq. Km. Forest area was much more in the past. The forest area has been decreased because of Agricultural land, Road construction & locality. But every year forest department take afforestation programme to balance the environmental condition.

Administration Division: There are 19 Blocks in Birbhum District. Those are Suri –I, Suri-II, Mohammad Bazar, Sainthia, Dubrajpur, Rajnagar, Khayrashol, Illambazar, Bolpur-Sriniketan, Nanoor, Labhpur, Mayureshwar-I, Mayureshwar-II, Rampurhat-I, Rampurhat-II, Nalhati-I, Nalhati-II, Muraro-I and Muraro-II. Birbhum District is divided into three Sub-Division i.e. Suri Sadar, Rampurhat and Bolpur.

Methodology:

The investigator broadly stated questions about human experiences and studied through contact with people in their natural environment generate rich, descriptive data that helps to understand their experiences and attitudes. Therefore Purposive Random sampling method was used to choose from taking key points during interviews, a voice recorder was used. The researcher, gather more information about indigenous knowledge and insight of what they might have failed to explain during interview by observing the people’s activities, as well as observation of people at work. Information used in this paper is generally qualitative in nature based on field observation, household serve and informal discussion.

- Interview schedule were developed by the investigator to find out the indigenous geographical knowledge of the Santal people. Through discussion with people
investigator came to know their ideas and opinion about indigenous geographical knowledge and how they are transmitted to next generation.

The present study will be conducted based on Survey Method, from which the researcher finds out the Indigenous Geographical knowledge of Santal people.

1. **Population and Study Area:**
The population of the present study is the Santal community of Birbhum District, West Bengal. The researcher has visited several Tribal (Santal) villages in the districts of Birbhum, West Bengal, India. According to the Govt. Census of 2011, maximum rural Santals live in the districts of Birbhum, Burdwan, Bakura, Purba Midnapur, Paschim Midnapur, Purulia.

2. **Sample:**
Samples of 300 Santals were selected for the study which includes 150 male and 150 female in Birbhum District in West Bengal. Normally the study areas were conducted in three sub divisions in Birbhum district namely;
1. Rampurat
2. Sadar-Suri
3. Bolpur

The distribution of sample is shown below in the following table:

<table>
<thead>
<tr>
<th>Sub Divisions</th>
<th>MALE</th>
<th>FEMALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAMPURHAT</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>SADAR-SURI</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>BOLPUR</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

The distribution of sample according to Age

<table>
<thead>
<tr>
<th>Age (Yrs.)</th>
<th>RAMPURHAT</th>
<th>SADAR</th>
<th>BOLPUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 - 39</td>
<td>37</td>
<td>18</td>
<td>52</td>
</tr>
<tr>
<td>40 - 59</td>
<td>41</td>
<td>66</td>
<td>42</td>
</tr>
<tr>
<td>60 - 80</td>
<td>22</td>
<td>16</td>
<td>06</td>
</tr>
</tbody>
</table>
Table- 3 Showing the distribution of sample according to the level of Education

<table>
<thead>
<tr>
<th>Level of Education</th>
<th>RAMPURHAT</th>
<th>SADAR</th>
<th>BOLPUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illiterate</td>
<td>73</td>
<td>61</td>
<td>53</td>
</tr>
<tr>
<td>I - V</td>
<td>21</td>
<td>24</td>
<td>27</td>
</tr>
<tr>
<td>VI - X</td>
<td>06</td>
<td>15</td>
<td>20</td>
</tr>
</tbody>
</table>

3. **Tools:**

   Interview schedule will be developed by the investigator to find out the indigenous geographical knowledge of the Santal people. Reliability and validity of the newly constructed questionnaire will be established.

4. **Techniques:**

   Self-reporting technique and observational technique will be used to gather the information. The subjects will be selected through Purposive Random Sampling. Some information relating to indigenous Geographical knowledge will be collected from the people who are very near to the indigenous people.

5. **Data Collection:**

   The investigator will visit different Santal villages of Birbhum District to know the ancient Geographical knowledge, their acceptance to the new generation, and their effects among the society. Through interview schedule data will be collected.

**Interpretation and discussion:**

**Status & Indigenous Education related to Agriculture:**

Agriculture is one of the main occupation of the Santal people of Birbhum. The people here used to cultivate paddy, potato, and other vegetables. Near the area of Mayurakshi River is very fertile. Potato, mustard, vegetables like pumpkin, ladies finger, Chili, Brinjal, Tomato etc. are cultivated here. Ajoy River is in the border of Birbhum and Burdwan district. The area beside Ajoy River is also very fertile. The Santal people live here are used to this type of weather. They give all their effort in cultivation, either in their own land or other’s land.

By experience they gain the knowledge that which crops or plants can grow easily in which type of soil. Cashew nut, Dates, ‘Tal’ plants easily grow in the small gravel mixed soil. So we can see a lot of ‘Tal’ trees, Date trees in Birbhum.
### Table-4 Showing what measures are taken to pest free Cultivation

<table>
<thead>
<tr>
<th>Use pesticide/ insecticide</th>
<th>Use indigenous methods</th>
<th>Use pesticide + indigenous methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
<td>30</td>
<td>36</td>
</tr>
</tbody>
</table>

70% people of Birbhum use pesticide to get rid of pests in the crops. In Rampurhat subdivision the Santals mix bitter leaves with water and splash it to the crops to prevent pest attack. To prevent pests from brinjal plant they use cowdang ash. They get good results.

6% tribal of Bolpur subdivision used modern processes of cultivation. Near Bolpur town Santal Village Balipara, Baganpara, Fuldanga, Kalidanga adibashipalli use the modern process of cultivation. But 20% people of Khoyrasol, Dubrajpur Rajnagar (Sadar subdivision) use modern process of cultivation. They use processes learn from their grandfathers.

To maintain the fertility of soil they use compost. They mix cowdang with the soil. People keep the remnants of the plants in the soil. After few days they mix the soil. It makes the soil fertile.

Canal serves water to the field. Now a days 80% people of the Bolpur subdivision use tractors for ploughing in the field. 70% people of Rampurhat subdivision and 50% people of Sadar subdivision use tractors. Others plough the land manually. Cow and Buffaloes are use for ploughing the land.

### Status & Indigenous Education related to Hazard and Disaster Management:

We have no hand upon natural calamity. Due to some natural accidents when assets and human being, animals are destroyed a lot, that is called natural hazards and disaster. Natural hazards are earthquake, flood, drought storm etc. In Birbhum district people face the problem of flood and drought a lot. In which year the amount of rainfall is high, that year face flood. Ajoy, Mayurakshi river are flooded a lot of area. Besides, which year have low amount of rainfall, that face drought. That is also show the effect upon the agricultural productivity.
Table-5 Showing how the people predict about flood, drought & earthquake

<table>
<thead>
<tr>
<th>With some indigenous indications</th>
<th>To know information from Weather stations</th>
<th>Can’t give reply</th>
</tr>
</thead>
<tbody>
<tr>
<td>157</td>
<td>81</td>
<td>62</td>
</tr>
</tbody>
</table>

West Bengal is considered as a medium intensity zone of earthquake. In Birbhum also earthquake has taken place.

The Santals can sense in which year the natural hazard will happen. 60% people of Rampurhat subdivision can sense about hazard. They said in which year tamarind will grow high in quantity that year face drought. The new generations of Santals who has gone through educational system, they hear these from their father, fore father.

Bird make nest on the tree. In which year dove make nest on the lower zone of a tree that mean, storm will occur. Birds, animals can forecast the weather condition, they have the sense. The tribal watch their behavior and relate that with the weather condition. Tribal are very near to the environment, they practically face the situation, and learn more than the so called civilized people. They learn those tips from their ancestors and face it practically. The leech is mainly live in the damp area. Tribal see that leech come out from water before the earthquake. Leech can feel the tremor in the water. Tribal observe the behavior of leech and understand the cause behind the behavior.

People cannot escape from any natural calamity. But precaution makes the devastation less. When earthquake occur people come out from their house. Before flood they keep the important document, food and other things with them. In the time of drought they search the source of drinking water. Precautions will be taken for any health disease. But not all the tribal are aware of health hazards. They face the situations as it comes. They have the strength, from others, to combat any worst situation. They are the people near to the mother earth.

**Status & Indigenous Education related to Settlement:**

After food, shelter is the most important need of man. People constructed houses and develops settlements to protect them against the effect of weather. It reflects man’s relationship with his natural environment. A long ago human being were nomads. Wondering the tribal are across the landscape in search of food and water. Slowly they progressed, started agriculture, domesticated animals and started living in a particular area and settlement developed. Depending on the nature and quality of resources the settlements may be temporary or permanent. Any settlement in which most of the people are engaged in agriculture, forestry, mining and fishery is known a rural settlement.

In Birbhum, Santal community builds their houses with mud. Here the mud is full of stones and gravels. 60% people of Bolpur subdivision mix paddy stacks, with mud. They mix it
very well with local wood and ‘Konchi’ they frame the house. They also mix sticky molasses, with the mud, to make the house termite free. After the house is made tribal coat the house with black tar. That works as a waterproof. The houses of tribal are having mainly two rooms and a covered baranda. Some houses having first floor.

**Table-6 Showing what type of colour they use for drawing on the house wall**

<table>
<thead>
<tr>
<th>Natural colour from mud, cow dang etc.</th>
<th>Artificial colour made by different company</th>
<th>Can’t give reply</th>
</tr>
</thead>
<tbody>
<tr>
<td>178</td>
<td>66</td>
<td>56</td>
</tr>
</tbody>
</table>

Mainly the Santal make colour on the walls of the houses. They mainly use the natural colours. They find blue colour mixing blue with water and ‘Kharamati’, a type of white soil. There are different types of soils in our earth, depending upon the minerals and components of the soil. Tribal use those soil to colour the house walls. They also draw pictures on the walls. They mainly draw animals, flowers, different designs on the wall. Mainly the females draw those pictures. The drawing and paintings make the house very beautiful and strong. The floor of the house is coated with cowdang and water. So with natural ingredients make their houses more beautiful and cleaned.

Mainly the Santals use hay on the roof top. The villages near the town having the asbestos or tin on the roof. In the Bolpur subdivision we can see concrete houses in Santal villages. The houses made up of mud and hay need a lot of maintenance throughout the year. After few years changing of hay is needed. The mud coating is also needed on the outer wall after few years. But concrete house need less maintenance after once made properly. But it needed a lot of money. A large amount of Santal people of Birbhum district are poor. But some people near town who are engaged in good occupation, earned money. They are able to make a concrete house.

**Status & Indigenous Education related to Economy:**

Human being is active to satisfy his basic needs of food, clothing and shelter. When these needs are fulfilled, they aspire for higher needs which make them work continuously. All types of human activities may be classified into various types. On the basis of economic activities mainly there are 3 sectors.
1. **Primary sector**: In this sector primary activities are performed. It include activities such as hunting of animals, gathering of plant products such as fruits and nuts, obtaining minerals from the earth’s crust, fishing and harvesting of crops and trees etc. These activities are concerned with obtaining products from nature directly.

2. **Secondary sector**: Secondary activities are concerned with addition of value to the already existing products by changing their form. These activities include processing and increasing the utility of the products of the primary activities. Examples include production of textiles by processing fibres obtained from animals or plants and production of steel goods by processing iron ore.

3. **Tertiary sector**: Tertiary activities are concerned with providing service rather than production of tangible goods. These activities include a range of personal and business services, and they involve a rapidly growing number of workers in highly developed and diversified areas.

### Table-7 Showing what type of handicrafts they make

<table>
<thead>
<tr>
<th>Weaving Mat with palm, date leaves</th>
<th>Make ornaments with seed, grass etc.</th>
<th>Make plate, bowl with sal leaf</th>
<th>Weaving basket, bowl with bamboo</th>
<th>Not engaged in handicraft</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>36</td>
<td>87</td>
<td>59</td>
<td>77</td>
</tr>
</tbody>
</table>

In Birbhum district the Santals are mainly dependent on primary activities. Agriculture, stone crush, collecting leaves and seeds of different trees are the main activities there. Mainly women’s are weaved mat with Palm and Date leaves. That is very nature friendly. Many people of Bolpur sub division are engaged in handicraft works. They collect different kinds of seeds, leaves and make ornaments with that. Those ornaments have much demand in West Bengal. Some of them make lucrative showpieces with those seeds. Near Santiniketan a small ‘haat’ is set up at Sonajhuri. There many people sit with their handicrafts work for selling. The Santal pockets Fuldanga, Bonerpukur danga, Ballavpur is situated near that place. Many Santals sell their handicrafts there. They get handsome money through it. The soil of Birbhum is very good for Sal tree. Collecting Sal leaves is a good means of earning. With those leaves plates, bowls are made which is very nature friendly. People use those plates, bowls in many functions. Weaving basket with bamboo pieces is also a good means of earning. Sometimes they make these above things for their own use. Some of them sell those in local markets. Moderate amount is earned by them. Many Santals domesticate animals like goat, sheep, hen, duck, pig, cow etc. They consume egg, meat, milk from them. Some people sell egg, milk and get their livelihood. From survey researcher has noticed that they like to domesticate dogs. History shows that in ancient time also,
dogs are loyal companion for hunting. In Sainthia, Mayureshwar, Labpur, Nanoor block a lot of tribals are engaged in agriculture. Some are worked in others field. Some have their own land. They keep surplus grains for their own use. Working in stone crusher is an important occupation of many Santals in Rampurhat, Nalhati, Muraroi, Rajnagar Bolcks. New generations of Santal community go to schools. Some of them are now working in different offices, schools etc.

**Status & Indigenous Education related to Environment, Health and Hygiene:**

Currently this is very important topic. Whole world is worried about degradation of environment, global warming, sea level rise etc. People are taking different measures to combat environmental degradation.

### Table-8 Showing the use of plate bowl in any programme

<table>
<thead>
<tr>
<th>Mud plate, bowl</th>
<th>Steel, aluminium Plate, bowl</th>
<th>Sal leaf plate, bowl</th>
<th>Plastic plate bowl</th>
</tr>
</thead>
<tbody>
<tr>
<td>73</td>
<td>56</td>
<td>91</td>
<td>80</td>
</tr>
</tbody>
</table>

### Table-9 Showing where they keep drinking water

<table>
<thead>
<tr>
<th>Mud made matka</th>
<th>Plastic bottle</th>
<th>Aluminium bucket</th>
<th>Filter</th>
</tr>
</thead>
<tbody>
<tr>
<td>102</td>
<td>90</td>
<td>67</td>
<td>41</td>
</tr>
</tbody>
</table>

A large amount of tribal people in Birbhum District use nature friendly things. They are very close to nature. They know that they have to survive in nature; no one can live if natural environment is ruined. In different functions Santals mainly use the plate and bowl of sal leaves. Survey shows that people who live near city use the plate, bowl, glass of plastic or thermocol. In Sainthia near Village Nandara, there are some shops selling muri, chop, luchi, ghugni. They use the newspaper packet and plate made up of sal leaves. The tribals who use plastic cup, plate; do not know the adverse effects of that. So there is a need to tell them about adverse effects of plastic. Some people use mud cup, plate and bowl in their daily use. Tala Murmu of ‘Buiche’ village of Sainthia, Mahurapur said that, previously in their childhood they use lotus leave, banana leave as plate. Parbati Soren of that village said that now they use plastic mat for sitting
on the floor. But previously all the villagers use mat made up of palm leaves. They used to make those mat at home. According to Sundari Maddi of ‘Fuldanga’ village of Bolpur subdivision, 10-12 years ago they were dependent upon rainfall for agriculture, but now they get the canal water. Many villagers of Rajnagar block opined that a vast change in life styles is seen now than 10 years.

**Modes of communication:** Still some Santal villages are there where communication mode is not so good. In Muraroi, Nalhati tribals used to go to city by walking because the villages are in very interior part. The Santal pockets near to city area have good means of transport. Toto, rickshaw, cycle, motorcycle are available there. In those area air pollution is less, because of minimum use of petrol, diesel base transport. Large amount of tribal people prefer walking to go to nearer village or market that is good for health also.

**Drinking water:** History shows that any civilization has been situated near water bodies. Santal villages in Birbhum District also situated near river or pond or any water body. Almost all the villages have ponds. They use the pond in their daily life. Bathing, cleaning cloths, utensils in the water make it dirty. Almost all the villages have hand pump, tap. Government takes initiative to give purified drinking water. Santal villagers collect drinking water from tube well, well, time tap etc. They keep water in the mud pot or ‘kalsi’. Few Santali families who live near city or in city area use filter for drinking water. During survey investigator observed that they drink water from plastic bottle.

**Industry:** The northern part of Birbhum District is much known for stone crush. A lot of tribals work in the stone crusher. There the air is much polluted. That is the cause of many diseases.

The villagers cooked in ‘chulha’, they fire it with dried wood & leaves collected from the trees. Some of them use coal, cow dang cake to light the fire. Near city area few Santal use gas oven for cooking.

If any domestic animals die, the tribals bury it below the soil; they give some salt to the dead body, so that it can decompose easily.

**Transmission of Indigenous Geographical knowledge and experiences through generations:**

In our society, we can see reflection of family’s upbringing upon a person. A person carries his/her family tradition in their behavior, speaking, dressing sense etc.

The survey also leads that the Santal of Birbhum District learns many things practiced in daily life, from their ancestors. New generation used to mix with different cultures. So intermixing of different cultures is seen in the behavior of mainly the tribals who live near city.

Out of 110 cultivators 76 Santal learn the pest free measure from their ancestors. From childhood they have seen the process in the field. 34 people learn the pest free measure from agricultural helper or from others.
Table-10 Showing from where they learn about pest free measure

Out of 110 cultivators

<table>
<thead>
<tr>
<th>From ancestor</th>
<th>From agricultural helper</th>
</tr>
</thead>
<tbody>
<tr>
<td>76</td>
<td>34</td>
</tr>
</tbody>
</table>

Table-11 Showing if there are any difference of opinion between old people & new generation who take Education

<table>
<thead>
<tr>
<th>Difference in opinion</th>
<th>Not any difference in opinion</th>
<th>Can’t tell any thing</th>
</tr>
</thead>
<tbody>
<tr>
<td>173</td>
<td>88</td>
<td>39</td>
</tr>
</tbody>
</table>

Table 11 shows that new generation of Santal have the difference of opinion from the elders. Survey shows that new generations go to school; they are near to smart technologies, which make difference in opinion. They take formal education, that blend with indigenous knowledge, which has effect on the thought of any dimension. Near city area the santal are in contact with other people. But in interior village of Birbhum the scenario is not changed. They are much depended upon Indigenous knowledge.

Findings according to objectives:
1. Survey reveals different indigenous geographical knowledge of Santal people of Birbhum District. Indigenous knowledge of different dimensions are discussed above.
2. The Santals acquire the indigenous geographical knowledges from their ancestors.
3. Table 3 shows the level of education of the Santals of Birbhum District. The people who take education come across with different formal knowledges. So many of them follow the mixture of indigenous and formal knowledges. Which sometimes prove more beneficial. Now many people are in contact with TV, radio, social media. That also gives them different new knowledges.
4. Table 2 shows the age group of people taken from different sub divisions of Birbhum District. Older people are more near to the indigenous knowledges than younger people. The Santals who mix with different people have different idea.
5. Survey shows a large amount of Santals are dependent upon indigenous geographical education. After birth they learn those from elders. Gradually they go to school, interact with different persons and develop their knowledge. That makes them more confidants.
The Santal village near to city area gets more benefit. Their thoughts blend with modern vision. But the interior santal villages are more dependent upon indigenous knowledge.

6. For sustainable future indigenous geographical knowledge is very much needed. Currently we love to live with new technology, smart phones, laptops, different home appliances etc. Those also have bad effects on human being. Indigenous knowledge teaches us to live simply, love the nature, use the natural thing which leads to sustainable development. Future generation also consume fruits of sustainable development. In few dimensions Modernization hinder sustainable development. To save our World, Flora and Fauna we have to dependent upon indigenous geographical knowledges. Balanced life styles is needed for sustainable development.

References


