RESEARCH ARTICLE

Sustainability lessons in traditional Bengali proverbs

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Abstract – By employing an exploratory sequential mixed method, the present article examined the traditional ecological knowledge (TEK) and the ecological components of traditional Bengali proverbs (Khanār bacan), which is almost on the verge of extinction. Subsequently, we surveyed the current generation to assess their familiarity with these proverbs and explore connections between their understanding and eco-literacy. Our investigation encompassed 150 ecological proverbs, illustrating an understanding of ecological patterns and sustainability. The qualitative examination of the proverbs revealed the ecological component of scientific understanding of environmental patterns and cosmology. The proverbs are embedded with an ecosophy that appreciates the interconnectedness between the social systems and the surrounding ecology. The survey pointed out that participants whose residences belong to urban areas are not very familiar with the Khanār bacan. In contrast, the rural participants performed better in identifying the proverbs. Notably, the findings also indicated that the participants who were familiar with the proverbs demonstrated accuracy in responding to questions with TEK-based perspectives. The study underscores the efficacy of proverbs in cultivating ecoliteracy among the Bengali folk. Again, it presented a grim picture of the Bengal youth who are obscuring the indigenous knowledge in their minds and are becoming more susceptible to ecological catastrophe. In fact, the well-being of both humans and the environment is interconnected. Therefore, there is a dire need to protect indigenous knowledge because it provides a novel way to reduce the human-nature divide.

Keywords – Proverbs; Traditional Ecological Knowledge; Ecoliteracy; Sustainability; Bengal

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INTRODUCTION

Proverbs not only provide colourful elements to daily discourse but are also the sources of traditional wisdom in a particular community. These wise sayings act as pedagogical and survival tools in a particular community by providing shared beliefs, norms, and values (Brodt, 2001; Syzdykov, 2014). By highlighting the characteristics of proverbs, Mieder (2004) stated that “[p]roverbs contain everyday experiences and common observations in succinct and formulaic language, making them easy to remember and ready to be used instantly as effective rhetoric in oral or written communication” (p. xi). Thus, proverbs have had the power to reflect both the cognitive and cultural richness of nations through centuries. Consequently, a study on proverbs provides useful linguistic signs of cultures and worldviews. Keraf (2010) defined local wisdom as a range of insights, convictions, interpretations, and cultural or moral principles that guide human conduct within a specific ecological community. Likewise, community members internalize these guiding principles and perceive them as traditional. Kim et al. (2007) regarded proverbs “as pithy axioms of [Traditional Ecological Knowledge] TEK and can be a useful medium for sustainable education” (p. 2). As a consequence, the transmission of this intergenerational knowledge creates ecoliterate people who can “identify local plants and animals, name their uses, and tell stories about them” (Pilgrim et al.,
2007, p. 1742). Based on this understanding, the oral tradition of Traditional Ecological Knowledge (TEK) is crucial in preserving ecoliteracy and ensuring the continuity of sustainable resource management methods across different generations. Ecoliteracy encompasses an understanding of and care for the environment and its related issues. Therefore, ecoliteracy, as a reservoir of knowledge, presents solutions to environmental challenges at the local, national, and global levels by offering insights into the utilization of resources that are readily accessible within specific regions (Hassan et al., 2005). However, in the contemporary age of urbanization (Young, 2002), globalization, and westernization, many proverbial thoughts are getting lost due to the lack of appropriate local wisdom management and a reduction in the number of ecoliterate people (Pilgrim et al., 2007). Disruption in disseminating proverbial wisdom hinders the flow of traditional knowledge in the community, resulting in the loss of local sustainable practices. Thus, awareness is needed to revitalize the vitality of traditional knowledge and also to highlight the ecosophy1 stated in the expressions. Otherwise, the wisdom of the planet will be in crisis.

The diversity of India is rooted in its topography, culture, language, climate, and knowledge. Exploring the knowledge tradition of India can be enhanced by tapping into local wisdom, which proves valuable in fostering pro-sustainable behaviors and offering ecosystem services. Among the Bengali speakers2, once Khanar bacan (Khanar’s sayings) was a widely known collection of proverbs or sayings transmitted intergenerationally. According to Nuri (2021), Khanar’s2 sayings or bacan have contributed to a sustainable model for survival strategies and ecological wisdom for the local people. Thus, it can be said that these traditional proverbs of Bengal promote the philosophy of sarva bhuta hita. In Hinduism, the Sanskrit phrase “sarva bhuta hita” talks about the Vedic view of nature that believes in the broader vision of life in the welfare and respect of all living beings on the earth. This compassion arises from the Vedic approach to ecology that suggests — we are one earth family — vasudhaiva kutumbakam. Thus, the deep understanding of oneness inspires people to care for all the manifestations of life. Regardless of the profound knowledge of the ecosystem, the sayings of Khanar are now disappearing from the minds of the local folk. Only a few sayings are still in use among the rural people of Bengal (Kaushik, 2019). This loss can be reduced if the ecoliteracy among the community members gets revived and the sayings of Khanar bacan (Khanar’s sayings) are documented or digitized appropriately.

Khanar’s sayings are wise statements on agriculture, food habits, rain, climate, etc. Her words in the form of proverbs are very helpful to Bengal folk consciousness. Khanar suggested and instructed the agro communities on when and how to do farming. Her teachings help the community follow a world view that can interpret the signs and rhythm of nature, henceforth creating a life at peace with nature. Therefore, the present study showcases select Bengali proverbs’ ecological relevance and value (Khanar bacan). The proverbs not only provide suggestions on agroecology and how to read nature to mitigate disasters but also communicate ecological philosophies.

In the prior research, proverbs were analysed from different perspectives to understand the cultural ethos of a community. A collection of proverbs of a community displays the sociocultural distinctions and acts as contours to map the real and cultural spaces of human experiences. Proverbs help us understand the position of men and women in a sociocultural space. Like, proverbs were discovered as the social markers to signify women’s oppressed and subjugated conditions in African (Hussein, 2004, 2009; Diabah and Nana, 2015; Chikwelu, 2019), English and Spanish communities (Rodriguez, 2009). Other than the sociocultural milieu, previous researchers have established proverbs as a pedagogical tool in many studies. It is a good way of transmitting cultural values related to moral conducts (Oboko, 2020; Angwah, 2020).

Even the previous literature on proverbs has identified the didactic power (Gabriel et al., 2019; Mutonyi, 2016; Bagchi, 1993; Carreira and Burgelie; Banda and Banda, 2016), but needs to pay more attention to the ecosophy that the traditional proverbs teach to the people. However, after the ecological turn in the study of proverbs, a few studies extended the pedagogical power of proverbs to nonmechanistic practices, highlighting the importance of traditional knowledge (Singh and Dorjey, 2004; Brodt, 2001; Kurien, 1998; Lekshmi, 2009; Lam, 2014; Parrotta and Chang, 2016). As Kurien (1998) mentioned that the Asian coastal communities preserve the traditional ecological knowledge in their oral traditions that include songs, narratives, and coastal proverbs. The proverbs consider “the sea is mother; [the community members] are her children and rely totally on her for a livelihood” (Kurien, 1998, p. 82). Modern fisheries development in Asia primarily aimed to maximize resource extraction within the shortest timeframe, often overlooking the unique attributes of tropical aquatic ecosystems. Whereas the traditional approach reflects


2 Bengali speakers are the community of speakers following and sharing the linguistic norms of Bangla (exonym: Bengali) language in their linguistic exercises. Bangla originated from the Indo-Aryan language and it is mainly spoken in South Asian countries like India and Bangladesh.

3 According to Alam and Naser (2020), Khanar was a Bengali astrologer and a learned woman. She is believed to live between ninth and twelfth century. Her sayings and predictions are commonly known as Khanar bacan or Khanar’s sayings. The verse of Khanar reflect the guidelines for Bengali culture to act upon for a better livelihood.
ecosystem-appropriate technologies and counter the modern technologies.

However, little attention is paid to the eco-cosphy that the traditional proverbs of Bengal teach to the people. Rather, earlier studies (Pal and Mohamadi, 2010; Siddique et al., 2022; Nuri, 2021) presented nature as inert. Also, the need to protect nature arises from the fact that it serves as an abundant resource that supports the well-being of human civilization. The present study challenges this worldview and believes that nature should be assigned inherent value independent of the functions it provides for humans. Thus, the paper aims to inculcate pro-environmental attitude among people that can promote a sustainable livelihood by protecting soil, air, water, and all life forms.

India is the land of ‘Vedas’, where the Vedic tradition teaches that there should be a proper balance and harmony of the pancha-maha-bhuta (five elements) — prithvi (earth), vayu (air), agni (fire), aapa (water) and akasha (space). This is because “[t]heir proper balance and harmony are essential for the well-being of human kind” (Krishna, 2017, p. 8). “Indian traditions provide an insight into value for conservation, not only of species, but also of ecosystem processes and functions and have important ecological ramifications for the protection of threatened and ecologically important populations of species” (Kala and Sharma, 2010, p. 85). Thus, it can be said that throughout human history, ecological consciousness has been an integral part of societies from their very beginnings. Regardless of these past social-ecological linkages, the contemporary time has alienated human beings from nature. The anthropocentric worldview creates an inequality in the ecology and compromises the worth of nature. In the words of Krishna (2017), “a fast-changing world, growing consumerism and population and the consequent pressure on land and natural resources has changed [Indians’] value systems” (p. 16). Thus, by highlighting the diverse ecological knowledge system of India, the current study has exposed the ecological components in the local proverbs of Bengal. The present research has also connected a link between folk knowledge and ecoliteracy.

OBJECTIVES

The research aims to make people reclaim the commons and protect the biological diversity for future generations. The indigenous knowledge systems embedded in the stories of the Bengali proverbs are one of the indispensable approaches to reducing human-nature estrangement and conserving the integrity of the ecosystems around us.

In order to achieve a better understanding of the effectiveness of local knowledge, the following research questions have been formulated:

1) What are the ecoliteracy components in the traditional Bengali proverbs (Khanār bacan)?
2) What contribution do these proverbs make to the youth of present-day Bengal?

METHODOLOGY

The study has employed an exploratory sequential mixed method (Creswell and Clark, 2017) to evaluate qualitatively the ecological wisdom embedded in the proverbs and understand their impact on the current generation of Bengal. An exploratory sequential design refers to a mixed-method research approach in which the collection and analysis of qualitative data precede the collection and analysis of quantitative data (Fetters et al., 2013). Likewise, the first qualitative study purposively selected 150 ecological proverbs from a book on Bengali proverbs (A Collection of 9100 Bengali Proverbs, Local Stories, 1952). The select proverbs are then analyzed for the ecological frame and ecoliteracy components that those proverbs provide for the community members. The positive frames that the proverbs bring forth will teach people to follow a sustainable livelihood — valuing all the life forms on the planet. Later, in the quantitative phase, a survey with two studies was conducted on a random sample of 100 Bengali students with a mean age of 22.5 years (SD = 1.05) to understand the familiarity of the ecological proverbs and local ecosystem among the youth of Bengal.

Ecosophy through the qualitative exploration of Khanār bacan

Out of the collected 150 proverbs, there were proverbs on agricultural practices (82.66%), weather forecast (16%), and social life (1.33%). Many farming-related proverbs indicate that India is predominantly an agro-based country. According to Prasad et al. (2020), India's economy is closely tied to agriculture, and approximately 70% of rural households in the country continue to rely primarily on farming as their main source of livelihood. The weather-forecasting proverbs are often associated with rainfall and flood, suggesting the people’s knowledge of environmental patterns as climate preparedness. The state of West Bengal in Eastern India experiences both riverine and coastal flooding, which are caused by various factors, including heavy rainfall, overflowing rivers, cyclones, tidal surges, and inadequate drainage systems (Mukherjee and Bardhan, 2021). This suggests that the sayings of the proverbs have the ecological components to mitigate the flood waters from inundating farmlands and causing large-scale human suffering.

In this study, all the ecological proverbs related to farming and nature are classified into three groups as per the ecological components suggested by the proverbs. The classification used in the present study was inspired by a

framework (Jordan et al., 2009) that integrates three aspects of ecological literacy (see Table 1). As per the model, Jordan et al. (2009) suggested three essential elements of ecological literacy: i) embracing scientific ways of thinking within ecology, ii) grasping the concept of ecological interdependence and fundamental principles, Lastly, iii) valuing the connections between human behaviours and the natural surroundings.

### Table 1. Classification of Khanār bacan (proverbs)

<table>
<thead>
<tr>
<th>Proverbs</th>
<th>Interpretation of Proverbs</th>
<th>Ecoliteracy components</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ṣya năng ḍaṇha ḍaŋha, ṣiḡhra brishtī ḍaṇa jena. ‘When frog croaks frequently, rainfall is imminent’.</td>
<td>Frogs’ behaviour indicate rainfall. Hoyt (2021) reported that frog needs water to survive. Consequently, they can sense the humidity level in the atmosphere, which influences their mating behavior. The frogs strategically create multiple ephemeral ponds and pools to deposit their eggs, providing a suitable freshwater environment for developing their tadpoles.</td>
<td>Scientific understanding of ecological pattern.</td>
</tr>
<tr>
<td>2. piprā bāṇdā bārī, baṛṣan hē bhārī. ‘When ant makes mounds, rainfall is imminent’.</td>
<td>Ants behaviour can predict impending rain. The antennae of ants can sense a fall in the air pressure.</td>
<td>Ecological connectivity.</td>
</tr>
<tr>
<td>3. purbak āṣār ḍakhinā ḍae, sei baṭsur bānā ṭāre. ‘early monsoon with southward moving air signals flood in that year’.</td>
<td>The southwest monsoon winds blow over the warm places, bearing moisture and bringing heavy rainfall in the low-pressure areas of the Indian subcontinent. This abundance in rainfall can result in a flood.</td>
<td>Appreciating the connection of ecological interdependence and fundamental principles.</td>
</tr>
<tr>
<td>4. nadī dhārē pūṭe kacu, kacu ḍae ṭēn hē ṭāc. ‘By planting taro near a riverbank, taro will be tall and healthy’.</td>
<td>The nourishment of the taro plant happens from the soil beside the riverbank and also from cows (cow dung cake ash). The symbiotic relationship between the biotic and abiotic components of the ecosystem is strongly felt through organic farming.</td>
<td></td>
</tr>
<tr>
<td>5. kacu bane ḍarē ḍe ḍe, ḍhanā bale tār sāṅkhā ṭātā. ‘Spread cow dung cake ash in taro, khana say’s taro production will increase’</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. nīm nīsindā, tēṭul, ṭal, dhārē pūṭanā ḍana kāl. ‘Never plant trees like neem, Chinese chaste, tamarind and palmyra palm near your house’.</td>
<td>The roots of these trees are very firm and they spread to a large extent. The roots go deep down to get water, shrinking the soil of the surrounding area. This results in damage to the foundation. Specifically, neem trees are not only famous for their medicinal properties but also well known for damaging buildings in proximity.</td>
<td></td>
</tr>
<tr>
<td>7. jāṭa ḍā ṭämé ḍhače, ṭal ṭēṭule ḍā ṭāre. ‘Fog affects mango but not tamarind and palmyra palm’.</td>
<td>Chakraborti and Bandyopadhyay (2015) suggest that the powdery mildew disease in mangoes becomes evident from the second week of February when there's cloudy or foggy weather during the flowering stage of the mango trees. This has a detrimental impact on mango production. In contrast, the blossoms of the palmyra palm (Borassus flabellifer Linn) and tamarind (Tamarindus indica Linn) remain unaffected when exposed to foggy weather conditions.</td>
<td>Ecological connectivity.</td>
</tr>
<tr>
<td>8. jāra ḍhīṭā ṭūṭe ghar, je āṣe ṭārī jār. ‘The house that is built on dirty and marshy land is bad and the people who will be living and visiting the house will have a fever’.</td>
<td>Natural environment influences human beings’ well-being. A clean environment contributes goodness to human health both physical and psychological. Many diseases can be prevented from healthy surroundings. Poor sanitation and unhealthy housing foster breeding grounds for Malaria and the transmission of many other diseases. Therefore, a clean environment is necessary for a healthy livelihood.</td>
<td>Appreciating the connection of ecological interdependence and fundamental principles.</td>
</tr>
</tbody>
</table>

The traditional proverbs (Khanār bacan) promote sustainability:

- **Environmental stewardship:** The proverbs involve responsible management of natural resources, minimizing pollution, conserving biodiversity, and protecting ecosystems to ensure they can thrive for future generations. For example, the fourth proverb identifies plantation sites for specific trees, and the fifth proverbforegrounds the significance of organic fertilizers (Table 1).
• **Social Equity:** The sayings of Khanā were meant for the whole community. It promotes fairness, justice, and equality among diverse social groups, ensuring that the benefits of development and progress are accessible to all, irrespective of differences.

• **Resilience:** The proverbs aim to build systems that can adapt and recover from shocks, whether they are environmental, social, or economic, in order to maintain stability and functionality over time.

• **Interconnectedness:** We are a part of the biome. Like other organisms in a biome, our existence, behaviors, and activities impact the ecosystem and are influenced by it. Our actions can shape the health and functioning of the biome, and conversely, changes in the biome can influence our well-being and survival (Table 1).

The proverbs of Khanā also stressed the fact that a good harvest is only possible when manures are added rightly to the crops (sana sana caś̄ā bhāī, sār nā dile phasal nāī). As a consequence, by appreciating ecological interdependence, the sayings of Khanā mention several techniques to create natural fertilizers. Interestingly, the proverbs also hinted at production of biochar and its importance in crop yield. Several studies (Lehmann & Stephen, 2015; Das et al., 2016) reported that biochar has a significant role in soil amendment because the multitude of pores in biochar creates a beneficial setting for soil bacteria, safeguarding them from drying out and predation. Table 2 mentions the crops and the manures for organic farming.

**Table 2. Manuring and organic farming**

<table>
<thead>
<tr>
<th>Proverbs</th>
<th>Translation</th>
<th>Manures</th>
<th>Crops</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. läàer bal mācher jhal, dhena jamite jhāl prahal</td>
<td>Bottle gourd production can increase if one uses fish water in its soil.</td>
<td>Fish wash</td>
<td>Bottle gourd</td>
</tr>
<tr>
<td>2. tāmāk khete gabar sār, tāmāk bāre bejāe bhāī</td>
<td>Tobacco yield will increase if one applies cow dung in the tobacco farms.</td>
<td>Cow dung</td>
<td>Tobacco</td>
</tr>
<tr>
<td>3. citā dile nārkel mule, gāch hae tājā matā</td>
<td>Rice husk in coconut trees’ soil can make tree roots healthy and sturdy.</td>
<td>Rice husk</td>
<td>Coconut</td>
</tr>
<tr>
<td>4. dakhkhātāi inā pindi purī dāa lāu gācher gārāe</td>
<td>Burn the waste of agriculture skillfully to make biochar, which is good for the health of the gourd plants.</td>
<td>Burning agricultural waste in a unique way may be hinting about Biochar</td>
<td>Bottle gourd</td>
</tr>
<tr>
<td>5. nārkelgācche nun mātī; ūghra ūghra bādhē guṭī</td>
<td>For optimal growth and early flowering of coconut trees, it is essential for the farmers to apply sufficient soil to the soil.</td>
<td>Common salt</td>
<td>Coconut</td>
</tr>
</tbody>
</table>

Further, the collected proverbs also mentioned the 12 months of the traditional Bengali calendar. The Bengali calendar follows a solar calendar that starts from the month of baiśākh and ends in caitra (refer Table 3). The nature-related indigenous Bengali proverbs provide seasonal knowledge that can develop a conceptual framework of the agro-climatic conditions in Bengal. For example, “A farmer needs to ensure the proper application of salt in the soil where coconut trees are cultivated” and “Betel plants should be planted during the month of śrāban” are the ecological proverbs of Khanā that have the power to guide for organic farming and horticulture. The maxim suggests that the correct time of sowing crops and natural fertilizers can result in a good harvest. Thus, the traditional weather knowledge of Bengali folk holds significant potential in enriching the understanding of natural resource management.

**Table 3. The Bengali months and seasons**

<table>
<thead>
<tr>
<th>Months following the Bengali Calendar</th>
<th>Traditional season in Bengal</th>
<th>Months following the Gregorian Calendar</th>
</tr>
</thead>
<tbody>
<tr>
<td>baiśākh</td>
<td>grīṣṣa (Summer)</td>
<td>April–May</td>
</tr>
<tr>
<td>jaiśṭha</td>
<td></td>
<td>May–June</td>
</tr>
<tr>
<td>āśar</td>
<td>barsa (Monsoon)</td>
<td>June–July</td>
</tr>
<tr>
<td>śrāban</td>
<td></td>
<td>July–August</td>
</tr>
</tbody>
</table>
The proverbs that are derived from Khanā’s sayings frame a worldview that is ecologically beneficial. “Most of her meteorological readings seem to be very much based on local weather. But [t]oday’s experts found scientific bases behind these predictions” (Hossain et al., 2000, p. 14). Therefore, these sayings can help us to learn sustainability from traditional communities. Indigenous knowledge or traditional knowledge is deeply embedded in many communities and has helped the communities survive natural calamities. As in the case of the local Thakar tribes of Maharashtra who have the knowledge of 26 plant species to nurse the snake bite victims (Singh and Saxena, 2023). Further, in Andaman Islands, “[t]he Sentinels are believed to have survived the tsunami through the knowledge they have gained from observing the sea, animal behaviour, and perceptions of changes in airflow” (Mikulecký et al., 2023, p. 10). India has realized the worth of this knowledge and “has started mobilizing indigenous knowledge for environmental, economic and ecological gain. The Government of India, with the United Nations Development Programme (UNDP) set a Community-based Disaster Risk Management Programme (CBDRM) in 2002 to strengthen and build resilience through promoting community participation” (Bhattacharjee, 2020).

Also, India has recently been facing a deep and growing food crisis. Food has been transformed into a commodity from which profit businesses are established, creating war and destruction across the global ecosystem. In the name of progress, industrial agriculture harms the health of the environment and human community by using toxic agricultural tools. Thus, creating hunger across the globe. An alternative farming method can succeed where sustainable practices are recognized, and indigenous knowledge systems are conserved and followed. However, “[i]mpacts of globalization have eroded the biodiversity and knowledge sovereignty of local communities, pushing them into deep poverty and unemployment” (Shiva, 2020, p. 3).
**Quantitative Study: Survey**

**Study 1**

From the qualitative study, we found that the traditional Bengali proverbs appreciate the idea of connectedness and consider it to be a description of the state of the world. Subsequently, a survey has been conducted to grasp the effectiveness of proverbs in conveying ecological information and ecological awareness of young people in Bengal. To this end, a purposive sampling method has been conducted with a special focus on young adults whose age will range from 20 — 40 years. According to Erikson (1950), it is an important stage in the human's psychosocial development, where “young people emerge from their identity struggles” (Erikson, 1950, p. 229) and try to build intimate connections with the world that is outside of one’s family. Henceforth, the study purposively selected university Bengali student samples to understand the ecological vitality among the young adults of Bengal. Also, adhering to the subject-item-ratio of 10:1 (Everitt, 1975) the sample size was kept to 100. The 100 participants (52 female, 48 male) who took part randomly in the study were all university students with a mean age of 22.5 years (SD = 1.05). The study’s ethical conduct received approval from the university’s research ethics committee. Additionally, before their involvement, each participant expressed their willingness to participate in the research by providing consent to the authors.

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>(n = 100)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>48</td>
</tr>
<tr>
<td>Female</td>
<td>52</td>
</tr>
<tr>
<td><strong>Age (in Years)</strong></td>
<td></td>
</tr>
<tr>
<td>&lt;20</td>
<td>0</td>
</tr>
<tr>
<td>20-25</td>
<td>100</td>
</tr>
<tr>
<td><strong>Place of residence</strong></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>47</td>
</tr>
<tr>
<td>Urban</td>
<td>53</td>
</tr>
<tr>
<td><strong>Education Qualification</strong></td>
<td></td>
</tr>
<tr>
<td>Undergraduate</td>
<td>16</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>63</td>
</tr>
<tr>
<td>Pursuing Post Doctoral Programme</td>
<td>21</td>
</tr>
</tbody>
</table>

The students were shown a sample of 50 collected proverbs and were asked the following questions with respect to the dependent and independent variables for our analysis: 1) Have you heard these proverbs? (0 = No and 1 = Yes), 2) Where is your place of residence? (0 = Urban and 1 = Rural), 3) Do you have good interaction with your grandparents? (0 = No and 1 = Yes), 4) Did you study in an English medium school or a vernacular medium school? (0 = English medium and 1 = Vernacular medium).

By keeping age and gender as control variables, we used a binary logistic regression model in IBM SPSS Statistics 21 to explore the relationship between the familiarity of proverbs and the following predictors: i) place of residence, ii) gender, iii) schooling, and iv) association with grandparents. According to Sperandei (2013), “Logistic regression works very similar to linear regression, but with a binomial response variable” (p.13).

**Study 2**

Further, the ecological knowledge of the students was assessed through an ethnobotanical test based on the four levels of ecological knowledge stated by Berkes et al. (2000). Likewise, questions were given related to the traditional village landscape of Bengal that are commonly featured in proverbs. Flashcards of a few plant species were shown to the students and were asked questions about the Bengali months and seasons. To supplement the understanding of whether the rural students are more ecoliterate than the urban youth, we divided our sample based on the regression analysis findings. Henceforth, we grouped the sample into two groups. One group with rural students (n = 47) and the other with urban students (n = 53). Notably, in this case also the rural students (85.10%) responded better than the urban students (41.50%) in identifying their local ecosystem.

**RESULTS**

The qualitative study in our research discovers the immense resources of ecological wisdom in the Bengali traditional proverbs. These proverbs, known as *Khanâr bacan*, advocate for sustainability on various fronts. They emphasize responsible management of natural resources, including efforts to minimize pollution, preserve biodiversity, and...
safeguard ecosystems to ensure their prosperity for future generations. Moreover, these sayings promote social equity by fostering fairness, justice, and equality among diverse social groups, ensuring that the benefits of progress are universally accessible, regardless of differences. They also emphasize the need for resilience, aiming to construct systems capable of adapting and rebounding from environmental, social, or economic disruptions to maintain stability over time. Additionally, these proverbs highlight the interconnectedness between humans and the environment, illustrating how our actions affect the ecosystem and, in turn, how changes in the environment can significantly impact our well-being and survival. Therefore, by following the ecoliteracy framework of Jordan et al. (2009), the traditional sayings of Bengal can facilitate sustainable environmental knowledge and environmental ethics among Bengali folks.

The quantitative analysis of Study 1 shows that the logit model as a whole is significant (\( \chi^2(5) = 23.15, p < .001, n = 100 \)). The survey pointed out that students whose residences belong to urban areas are not familiar with the Khanār bacan (b = -1.8, p < 0.01). Whereas, the rural residents (students) performed better in identifying the proverbs. The analysis further shows that the students associated with grandparents in their homes tend to know more proverbs than others (b = 1.03, p < 0.05). Gender was not statistically significant for this sample size and age group. The positive correlation between traditional ecological knowledge and place of residence was reaffirmed by the results of the ethnobotanical test (Study 2), which showed better performance among rural students compared to urban students. This suggests that people's ecological knowledge is catalyzed by their in-situ experiences.

Table 6. The direct effect of place of residence, gender, schooling, and association with grandparents on familiarity with traditional proverbs.

<table>
<thead>
<tr>
<th></th>
<th>Coefficient B</th>
<th>Standard error</th>
<th>z</th>
<th>p</th>
<th>Odds Ratio</th>
<th>95% conf. interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.21</td>
<td>0.23</td>
<td>0.92</td>
<td>.359</td>
<td>1.23</td>
<td>0.79 – 1.91</td>
</tr>
<tr>
<td>Residence: Urban</td>
<td>-1.8</td>
<td>0.64</td>
<td>2.83</td>
<td>.005**</td>
<td>0.17</td>
<td>0.05 – 0.58</td>
</tr>
<tr>
<td>Schooling: Vernacular medium</td>
<td>0.44</td>
<td>0.64</td>
<td>0.68</td>
<td>.495</td>
<td>1.55</td>
<td>0.44 – 5.41</td>
</tr>
<tr>
<td>Gender: Female</td>
<td>0.57</td>
<td>0.47</td>
<td>1.23</td>
<td>.219</td>
<td>1.77</td>
<td>0.71 – 4.42</td>
</tr>
<tr>
<td>Association with grandparents: Yes</td>
<td>1.03</td>
<td>0.47</td>
<td>2.17</td>
<td>.03*</td>
<td>2.81</td>
<td>1.11 – 7.11</td>
</tr>
<tr>
<td>Constant</td>
<td>-4.99</td>
<td>5.01</td>
<td>0.99</td>
<td>.32</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: **p < 0.01, and *p < 0.05

**DISCUSSION**

The present study has made a small contribution to studying proverbs in the Indian geo-cultural context. This research adds value to sustainability education in two ways: firstly, by revealing how traditional proverbs carry indigenous knowledge and ecological awareness, and secondly, by investigating the effectiveness of using these proverbs to promote ecological literacy, fostering environmentally conscious citizens. The study reconstructs the traditional wisdom of proverbs, activating positive frames in human minds to encourage sustainable living. In the modern times of urbanization and privatization, there is a hindrance in the transfer of indigenous knowledge. However, ecoliteracy, as a reservoir of knowledge, presents potential remedies for environmental issues at local, national, and global levels, offering insights into the effective utilization of resources readily accessible within a particular area (Pretty, 2011).

Like, during the COVID-19 outbreak in India, the characteristic of COVID-19 is ‘novel’ and has raised questions on the existing global bio-security and bio-safety measures. In fact, a ray of hope came when Indians recognized their diverse traditions and knowledge to live by. Traditional knowledge was harnessed to develop medicines for respiratory infections and to build a robust immune system (Arkiariaj, Vincent, Vannam, 2020). According to Kotecha (2021), one potential reason behind the reduced instances of illness and lower mortality rates in India might stem from the utilization of immunity-enhancing methods derived from ancient traditional healthcare systems, including Ayurveda, Yoga & Naturopathy, Unani, Siddha, Sowa Rigpa, and Homeopathy (collectively known as AYUSH). Additionally, incorporating various home remedies rooted in traditional wisdom could contribute to these favorable health outcomes. Henceforth, the Government of India's Ministry of AYUSH has initiated numerous research and development projects and public health campaigns to leverage the capabilities of AYUSH systems in mitigating the effects of the COVID-19 pandemic.

Also, the National Education Policy (NEP) of India 2020 recognizes the richness and diversity of local indigenous knowledge in contributing to holistic development for the welfare of all. Henceforth, starting from the foundational
stage, the curriculum and teaching methods will be revamped to have a deep connection with Indian culture, traditions, languages, geography, ancient and modern knowledge, and indigenous learning methods. This will make education engaging and effective by aligning it with local context and values.

The indigenous knowledge system guides the community members with its values and ecological philosophies, which will help mitigate disasters. Alienation from the traditional community structure due to urbanization “often leads to a danger of higher infection” (Biswas 2020). Hence, the paper makes an attempt to preserve communities’ cultural knowledge and heritage to live harmoniously, ensuring a safe life for future generations. The study has also tried to inculcate ecological wisdom to recognize the ecological connectivity necessary for the functionality of the ecosystem around us.

The anthropocentric mindset of the dominant cultural trend needs to be challenged by biocentrism. Nevertheless, this can be achieved if people have an ecological consciousness. Existing literature (Sawitri et al., 2015; Liu et al., 2018; Whitley et al., 2018; Arthi and Bhuvaneswari, 2023) suggests that pro-environmental behaviour can improve environmental sustainability by orientating people to value nature. In essence, in the present study, the traditional proverbs of Bengali have the potential to build a harmonious relationship with nature. Tragically, in the modern age of urbanization, the Bengal youth are obscuring the indigenous knowledge in their minds. Therefore, there is a dire need to protect indigenous knowledge. This knowledge provides a sustainable livelihood by protecting soil, air, water, and all life forms. The disappearance of this knowledge “from the commons leaves it vulnerable to [privatization]” (Shiva, 2020, p. 39). The community members need to realize the worth of traditional knowledge for sustainability — sarvabhuta hita.

According to McGregor (2018), the “global environmental crisis is arguably a result of the predominantly Western industrialized nations’ distorted conception of nature and humans’ relationship with the natural world” (p. 109). Such an unhealthy human-nature relationship is visible in India also. The ancient tradition of India is slowly fading away. In the words of Krishna (2017), “a fast-changing world, growing consumerism and population and the consequent pressure on land and natural resources has changed [Indians’] value systems” (p. 16). Shiva (2016) effectively highlights the idea that genetic modification and industrial agriculture are not successful solutions to the problem of hunger. Instead, she proposed that attaining equilibrium with the environment represents the ultimate solution for addressing these challenges.

CONCLUSION

The present article touches on the importance of traditional proverbs, which are at the risk of extinction. In this process, the study has foregrounded the ecoliteracy components in the proverbs of Khanār bacan and discussed how the proverbs can be helpful in educating people about the ecosystem and the environmental functions around us. This set of proverbs has been investigated because of their heritage and impact as demonstrated in various folklore. However, there are many such forms of folklore which, when investigated in future researches, have the potential to supplement the current study. An increased sample size with a broader age range of the respondents may also add more validity to such research. Further, the Khanār bacan of Bengal also prescribe environmental ethics for a way of life that is harmonious and intimate with nature. Remarkably enough, the key findings of the paper also suggested the set of proverbs as a medium for ecological literacy because the sayings of the proverbs resonated with the ecoliteracy models of existing literature (Berkowitz et al., 2005; Jordan et al., 2009). A thorough knowledge of proverbs literate the citizens with an interpretive view of nature. In addition, the performance of the participants in identifying the local ecosystem as the predictor in our quantitative study has shown a positive correlation with the familiarity of the traditional proverbs.

Thus, the proverbs bearing a community-based knowledge provide the community members a frame to conceptualize nature as important, and its well-being as the duty of all. Based on this, it can be inferred that the sayings or maxims of Khanā have the ability to orientate pro-environmental behaviours among people, which can make a balance in the imbalance of urbanization and globalization. A participatory mind is necessary to recognize the larger ecology of the world. This is because all the environmental policies will be ineffective if they cannot impact one’s behaviour. Thus, the current research findings can be imbibed by the ecologists to revitalize the significance and relevance of traditional knowledge in the present-day scenario.

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