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Participatory learning: Exploring place-based pedagogy for future teachers

Babita Maharjan [1], Binod Prasad Pant [1], Niroj Dahal [1*]

[1] Department of STEAM Education, Kathmandu University School of Education, Lalitpur, NEPAL
***Corresponding Author:** niroj@kusoed.edu.np

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ABSTRACT

Place-based knowledge, a legacy from our ancestors, is inherently sustainable. However, modern lifestyles have eclipsed this wisdom, leading to environmental issues such as land and water pollution. Similarly, the current pedagogical practices often fail to connect place-based knowledge. It resulted in a deviation of students' contextual learning. Thus, this paper explores the integration of place-based knowledge into pedagogy, fostering students' contextual engagement and promoting sustainable living. The guiding research questions for this study are how can integration of place-based knowledge in the pedagogical practice lead to contextualized learning and sustainability? and how can researchers, teachers, and community members incorporate place-based knowledge into pedagogical practices for contextualized learning and sustainability? This article identifies pertinent issues by subscribing to participatory action research and devises collaborative solutions with teachers, co-researchers, and the community. The study involved four teachers from a seventh-grade class in a school in Lalitpur, Nepal. The findings revealed that integrating place-based pedagogical practices helped students connect with their ancestors' knowledge about their local and its relationship with nature, thereby facilitating contextual knowledge construction. This study asserts that integrating place-based knowledge into pedagogical practices equips learners to effectively address present and future environmental issues.

Keywords: place-based knowledge, pedagogy, pedagogical practices, participatory action research, environmental issues

INTRODUCTION

"Place-based knowledge" refers to knowledge specific to a certain area, locality, or geographical region. Shannon and Galle (2017) argue that place-based education is a method that initially focuses on integrating local society and surroundings into the curriculum. It's important for everyone, teachers and students alike, to understand their starting point in order to progress. Shannon and Galle (2017) further claimed that place-based education as a means to incorporate learners into communities and ecological aspects, emphasizing the question "Where are we?" to help learners see education as an integral part of society and ecology. Place-based education brings students closer to their environment and helps them understand related issues. Gras-Velazquez and Fronza (2020) suggest that place-based education enhances students' understanding of environmental and societal issues through reflective and hands-on activities conducted in schools and communities, extending beyond the classroom. Shannon and Galle (2017) argue, sometimes, the most valuable learning doesn't occur because we overlook the context. Therefore, place-based education considers context, challenging pedagogies that disconnect learners from contextual learning and community and ecological connections.

Nepal is a diverse country, home to people of various values, norms, cultural and ethnic backgrounds, and traditions. These diverse groups possess their own place-based or local knowledge, which is primarily aimed at conserving and preserving our environment. Our ancestors' daily activities, practices, beliefs, values, traditions, and local knowledge are geared toward sustainable practices. Mazzocchi (2020) commends the unique perspectives of indigenous or local people, emphasizing the importance of giving back to nature. The first author, a member of the Newar Community from Kathmandu Valley in Nepal, recalls her childhood experiences. The Newars, who make up 5.48% of Nepal's total indigenous population (Phuyal, 2006), have their own local knowledge. She remembers storing grains in "Bhakhari", sitting on straw mats, using personal vessels for shopping, storing water in earthen pots, and drinking water from copper vessels. Everything was sourced from the surrounding environment, as people produced their necessities through their place-based knowledge. This realization led her to appreciate her ancestors' sustainable lifestyle.

Reflecting on current trends, it's evident that today's generation leans more towards importing goods rather than producing them domestically. This shift towards ready-made products raises questions about our ability to sustain ourselves independently. In the same vein, our reliance on plastic is undeniable. We use plastic containers for food and water storage, drink from plastic bottles, and even sit on plastic chairs. The first author herself receives 3 to 4 polythene bags at her home daily. The World Economic Forum has warned that if our consumption of plastic continues at the current rate, by 2050, there will be more plastic than aquatic life in the oceans (Taylor & Taylor, 2019). This overuse of plastic causes environmental issues and challenges its sustainability. If this trend continues, future generations may question our wisdom and existence. The reasons behind these challenges and issues are that children are not given an opportunity to learn about the context where they belong to; their learning is disconnected from their own place, resulting in diminishing their own place-based knowledge. Their disconnection has led to children being unable to think about their place-based knowledge. Thus, the main goal of this study are to carry on the contextual pedagogical approach, enhance the learners' connectivity with their own place to carry on their own place-based knowledge and motivate learners to keep the environment in their mind to carry on any activity. Fry (2019) suggested that a place-based approach could be the solution to these complex issues. Place-based approaches, which are collective, adaptive, and versatile responses implemented within a specific area, are considered effective. Incorporating such valuable place-based knowledge at the school level is crucial to address environmental issues. Goodlad and Leonard (2018) suggested place-based knowledge is considered a regenerative process that helps develop keen interest towards the place. Therefore, the research question arises: How can integration of place-based knowledge in the pedagogical practice lead to contextualized learning and sustainability?)How can we integrate place-based knowledge into pedagogical practices for contextual learning and sustainable development? This question emerged from realizing the need to make pedagogical approaches more contextual and develop students capable of addressing the global issue of sustainability. This research question was developed collaboratively with co-researchers following their self-assessment and critical evaluation of their existing beliefs.

TRANSFORMATIVE LEARNING AS A THEORETICAL REFERENT

Western culture and values have significantly influenced many people, often overshadowing the traditional knowledge systems of Eastern societies. How can we safeguard this place-based wisdom? In the pursuit of modern comforts, resources are frequently exploited without considering environmental impacts or future implications. How can we raise awareness about the environmental consequences of our lifestyle choices? How can we awaken individuals to the environmental impact of their daily habits while highlighting the importance of ancestral or place-based knowledge in preserving these traditions and promoting environmental sustainability? The lead author suggests that this can be achieved through critical reflection (Carroll, 2010) on everyday activities such as food consumption, plastic usage, and clothing choices. We can effect change by empowering students to transform these activities through sustainable practices, such as consuming locally produced, healthy food, minimizing plastic use, and wearing locally made garments. According to Mezirow (1997), critical reflection on our assumptions, presuppositions, and reasoning makes transformation possible. Therefore, reflecting or self-reflecting on existing practices, behaviours, beliefs, thoughts, and perspectives is essential for transformation. Engaging in these practices can lead to positive transformation.

This discussion canters on transforming one's practices to preserve and protect place-based knowledge for sustainability. This can be achieved by integrating place-based knowledge into pedagogical practices. Through critical thinking from the school level, learners must empathize with the current situation of gradually losing their place-based knowledge due to the adoption of Western culture and the impact of humanity's destructive footprint. To achieve this, a transformation of existing pedagogical practices is necessary. Current pedagogical practices often focus on decontextualized content, disconnecting students from real-life experiences. Rai and Acharya (2020) argued that the growth and progress of education have primarily focused on systematic, teacher-centered, and analogous pedagogical practices that disregard students' prior knowledge and beliefs, resulting in fully decontextualized learning practices. Teachers should act as facilitators, guiding learners in empathy, critical reflection or self-reflection, rational decision-making, collaboration, communication, negotiation, and problem-solving through contextual pedagogical practices. In line with this, Mezirow (1997) stated that the effectiveness of creating an environment where learners can construct their knowledge, critically reflect on their assumptions, value others' perspectives, and make rational decisions depends entirely on the teachers or facilitators.

RESEARCH METHODOLOGY

This study employs participatory action research as its research design. As the name implies, participatory action research involves both participation and action (Savin-Baden & Wimpenny, 2007). The unique aspect of this research is that it positions the participants as co-researchers, actively involved in the research process. As this study focus on the integration of the place-based knowledge in the pedagogical approach, teachers are the one who implement the place pedagogy in the classroom practices. Their collaboration in the study contributes to the effective implementation of the plan.

Participants

This study aligns with Savin-Baden and Wimpenny's (2007) assertion that participatory action research aims to build knowledge with the participants, not merely about them. Consequently, this method fosters a learning environment for all involved, as participants take on the role of co-researchers, thereby narrowing the divide between the researcher and the

researched. The participants of the study comprised four seventh-grade teachers who specialize in social studies, mathematics, English, and health education, along with three community members.

Data Collection and Analysis Process

Lewin (1997) posits that participatory action research comprises planning, action, and evaluation of the action outcomes, a process considered to be praxis-driven. After obtaining the principal's consent, The first author initially engaged in informal conversations with the teachers to establish rapport. I introduced myself, shared my previous teaching experiences, and listened to their experiences. Following this introductory phase, the study conducted a needs assessment to identify existing issues. To understand the teaching and learning culture, I began by observing classes, as observation is a crucial data collection tool (Cowie, 2009). Subsequently, I utilized each teacher's free time to delve into the challenges associated with the teaching and learning process. This exploration was facilitated through informal communication and open-ended questions, prompting reflection on teaching practices, students' perceptions of their cultural and traditional knowledge, the influence of Western culture and values, and the importance of teaching about our own culture and traditions. These questions prompted the participants to reflect on the need to contextualize teaching and learning, raise students' awareness of their own culture and traditional knowledge, and its role in promoting environmental sustainability. Open-ended questions also encouraged participants to express a wide range of ideas (McNiff, 2006). This realization motivated the teachers to participate in the study as co-researchers. We then collaboratively developed the research purpose and question aimed at transforming their thinking and actions to make students' learning contextual, place-based, and equip them with skills to address the global issue of sustainability. Thus, as co-researchers, the participants were involved in planning, implementing, observing, reflecting, and replanning, and together we co-constructed the research findings (Van Niekerk & Van Niekerk, 2009). The study underwent three cycles (see **Table A1**, **Table A2**, and **Table A3** in **Appendix A**) lasting seven days. Some glimpses of the field visit are given in **Figure B1**, **Figure B2**, and **Figure B3** in **Appendix B**.

In collaboration with the co-researchers, the first cycle drafted a systematic plan where students empathized with environmental issues and familiarized themselves with their ancestors' daily activities, implemented in the teaching and learning process, and reflected on the entire process. In the second phase, we crafted a lesson plan that incorporated local knowledge into social studies, health, English, and mathematics. Based on the requirements of the curriculum, we organized a field trip where students learned about the connection between agriculture and industry, the advantages of community health, how to calculate profit and loss, and communication skills. In the final phase, we arranged for the students to present their acquired knowledge to the entire class. We also gathered reflections from the co-researchers to wrap up the data collection process. Data was gathered through observations (noted in the field) and both formal and informal conversations (recorded). This data was then transcribed into a narrative format and organized under various themes aligned with relevant literature per the research objectives.

Ensuring the Quality

To maintain the study's quality, I consistently prioritized the beliefs of the co-researchers, actively involving them in the planning process and incorporating their viewpoints and ideas into the implementation of the designed plan. This approach aimed to enhance the study's quality (Vennik, 2016). As a result, this study ensured mutual acceptance, democratic participation, active knowledge construction, and distinctiveness (Banks & Brydon-Miller, 2018) in both pedagogical practice and everyday life activities.

Based on the developed research question and constructed methodological map, following section discusses the spirit of integrating place-based knowledge in pedagogical practices for contextualized learning and sustainable development.

CONNECTEDNESS WITH PLACE-BASED KNOWLEDGE

In the conversation with the participants, they shared about the diminishing value of place-based knowledge and loss of identity. Similarly, students empathized with the environmental issues and when they interviewed their parents, resource persons and community people, they built a sense of attachment with the place-based knowledge and its contribution in solving environmental issues.

Modernization and technological innovation has taken over our ancestors' way of knowing due to which the next generation are not aware about the uniqueness of our ancestors' knowledge. One of the participants claimed, "Our tradition, culture is our identity. Our own tradition and culture recognize our country, so it is necessary to save it. Following western culture, we are losing our identity." Implementation of place-based knowledge cultivates student's attachment to their ancestors' knowledge. Caretta et al. (2022) stated that, "The most prominent sub dimension of place identity is emotional attachment, in which individual relationship to place leads to emotional bonding" (p. 851). This attachment awakens one's responsibility towards the environmental issues or the issues in their own place or community. Students began to empathize with the video related to environmental pollution after interacting with their parents regarding the practices of their ancestors and their contribution to the environment. "Our ancestors were very much self-dependent, they life is dependent upon the things that their land provided and in return they conserve them and worship the nature as Goddess." Hence, in order to manage, handle and preserve the environment, the embodiment of place-based values is necessitated (Augustine & Dearden, 2014). For this, it was necessary to make students aware of the existing environmental issues and how our ancestors practised their daily life based on their place to understand the rationale of ancestors' place-based practice in conserving the environment.

> "Our parents and grandparents used to live very environmentally friendly lives. Neither they used any kind of plastic material nor was it available during that time. Materials like straw or hay mat, bamboo or wooden chairs, mud house,

> earthen pot, jug and vessels, karuwa, tapari plate made of leaves which they obtain from the environment are used in their daily practices."

They connected daily practices and knowledge of our ancestors with the environmental aspects. Their dialectical discourse with their parents makes them aware of the importance of our ancestor's place-based knowledge in preserving and stewardship the environment. Gallay et al. (2016) stated that the responsibility increases when students are cognizant about the attachment of environmental resources and its value to human life. The interconnectedness between human life and environment cannot be denied.

In the process of observing the different things made out of straw (straw hat), one of the students said:

> Student: Sir, do you sell this hat?
>
> Resource person: Yes
>
> Student: Sir, who will buy this hat?
>
> Resource person: I sell these hats and other decorative items made of hay and straw to our foreigners. They love these items and take them to their home place.

Similarly, during the students' visit to the cloth weaving factory as well one of the students asked a question to the resource person:

> Student: Can you please tell us who the highest possible users of these are?
>
> Resource person: our 80% users are foreigners and 20% are Nepali.

The students' exploration towards these facts awakened the respect towards the uniqueness of the place-based knowledge. The students being unaware about their own culture, values and place-based knowledge leads to the loss of these knowledge.

PLACE-BASED KNOWLEDGE AS ONCE UPON A TIME

One of the global challenges people face is sustainability, sustainability in terms of environmental aspects. One of the co-researchers shared his experience:

> "I still remember when I was a child, we used neither any kind of plastic materials nor disposable materials. We used to have our own environmentally friendly vessels, i.e., made of mud, copper or bronze, leaf plates (tapari) were used, But these days, we are being more fashionable, and we want everything in an instant due to which our ancient knowledge is diminishing. So our ancestors' knowledge will be like Ekadesh ko Katha for the next generation."

The things that our ancestors and we as a child used to practice are being shadowed by the change in the lifestyle of the people. our change in lifestyles. Batibo (2013) explained that the traditional technique where language, culture and environment-based knowledge are preserved and disseminated has been adversely impacted due to the embracement of Western lifestyle. Due to this, the next generation will definitely not be able to understand its importance and contributions. One of the resource persons shared his experience and knowledge,

> "We used to live in a homemade of mud. If anybody is building the house, people from the local community collaborate to help. The mud house provides us warmth in the cold weather and in the hot season, it provides us coolness, but unfortunately this generation of children won't understand this as we rarely see such houses in urban areas as people are habituated with living a comfortable life in a cemented and marbled house."

Batibo (2013) explained that people in society started to consider the traditional way of living as not aligned with the contemporary world. Following that, life pulls them backward, leading to the development of an opposed perception of conventional way of living. Hence, this dragged urban people to collapse the mud house and build the cemented and marbled house. The resource person further added showing the shoes made of hay, "these days people living in the marbled house must use these shoes because in the winter season most of the people suffer from swelling of leg due to coldness and these shoes keeps them warm". People living in the urban areas aren't privileged to experience the mud house. So, I took the students to the mud house and let them stay there for a while. "Ma'am, it's so cool here." They were amazed to experience such coolness in such scorching heat.

Today's generation is not aware of the knowledge and lifestyle that our ancestors used to practice because one of the co-researchers admitted that

> "We started forgetting our old knowledge and we have been adopting other cultures, we are modernizing. Therefore, 10 years from now, the next generation will be completely different. Our ancestors' practices and activities were totally different from that of ours. Our activities have an impact on our own lives and our environment. While talking about transferring our own place-based knowledge to the younger generation, it depends upon what type of environment

> children have been brought up in. These days parents' are so busy in their own professional life, and they are not able to give them time to share about our ancestor's knowledge or our place-based knowledge. So how can our younger generation be aware of our place-based knowledge?"

Forrest (2018) claimed that it is possible to protect the culture and knowledge for the future generation when family members affirm to share the cultural values to their young ones. In the same way, another co-researcher added, "These people live in nuclear families and children are not attached with their grandparents, no interaction, no sharing." Sianturi et al. (2022) also claimed that when family members are not into protecting their cultural values and norms, then these values and norms will be diminished. Then the real life story of our ancestors will be "Ekadesh ko katha." Therefore, it is necessary to make students aware of our own identity and make them realize the importance of doing things in Rome as the Romans do.

PEDAGOGICAL APPROACH AS DO IN THE ROME, AS THE ROMANS DO

Many researchers have identified the effectiveness of inculcating place-based education in teaching and learning practices. Wade-Lyles (2016) explained that place-based education facilitates teachers to expand the prior knowledge of the students by mobilizing the students beyond the four walls of the classroom by reunifying the information going back to the real scenario. Hence, not limiting students only to the book content, students were taken for the field visit under the theme "we and our society" integrating three disciplines; "Samajik Shikshya", "math", and "health." In Samajik Shikshya, students were learning about the 'infrastructure of development: education and health', in math, 'profit and loss' and in health, 'community health'. The students were taken to the place where people have been practicing their ancestors' place based knowledge for years and years. Students were given opportunities to engage in discourse with the people based on their prepared questions and observe how people have been engaging in such activities. Students were actively engaged in interaction, questioning and raising queries related to their observation. This activity broadened the students' prior knowledge through observation and interaction with the community people in the real scenario. Wade-Lyles (2016) claimed that place-based learning deepens the children's current understanding, knowledge, and allows the learners to implement their learning in another context. Students practiced or learned about the concept of infrastructure of development, profit, and loss in the production of such goods, and impact of those production and knowledge in the health of the community people. This fortified learners to get connected with the people of the community, apply their learning concept to the real life situation, and most of all appreciate the place-based knowledge of our ancestors and its contribution in the environmental aspect.

Gallay et al. (2016) explained that place-based education is stranded in a teaching learning that does not limit students to the classroom boundaries but rather exposes students to local communities engaging in experiential learning where they are facilitated to study the natural and social environments. But having a resource person at the school premises can also engage and excite students. Hence, we brought the resource person (a person who weaves hay mat) form the community to make students aware about the lifestyles of our ancestors, their contribution towards the environment, health benefits of using hay mat, different things that can be weaved through hay, process of weaving hay mat, where teachers connected it with the calculation of mean and area and health benefits of using straw mat as well. This integrated approach in our ancestors' place-based knowledge deepens the students' understanding of the content as they themselves get engaged in the process of knowledge creation and interact with the community people as a resource person. Wade-Lyles (2016) advocated that the place-based learning provides the prospect to get attached to the community and its people rather than only going beyond the classroom and engages students in enhancing their critical thinking abilities. Place-based education enables students to reflect on their ancestors' practice and relevance in different aspects of life, think critically about their own practices, and keep place-based knowledge in thoughts and action.

PLACE-BASED KNOWLEDGE IN THINKING

Reflecting is one of the important components of building on a sustainable attitude. The teachers reflected, "We have been facing different kinds of environmental issues and it is necessary that we have to create such citizens which will help to solve these kinds of problems. But I think we are not into it. We are making students memorize the content and formulas only." Kirby and Kirby (2020) also claimed, "The first step in influencing a sustainable mindset and implementing successful policies is to understand current thinking" (p. 130). It is necessary to acknowledge the current thought process to bring sustainability in the mindset, which will direct towards developing and executing more sustainable strategies.

The students were facilitated to reflect on their own practices by taking interviews with their parents or grandparents regarding their lifestyles and daily practices, compare their parents and grandparents' lifestyle with theirs and reflect on the same. Kassel et al. (2016) also claimed reflection to be the effective elements for developing the sustainable mindset. Some of the students compared and reflected,

> "Our ancestors were so healthy. They used to get grains, rice and vegetables from their own field. They consume food they themselves grow and use. Unlike us, they used to have good exercise in the field that they don't need to go to gym, yoga or Zumba. They were so independent, but now we have left them all and are practicing more unhealthy practices. That is why most people are suffering from different diseases."

Some students even reflected that,

> "Our grandparents' generation was the best generation because there was no pollution, no waste, only clean air, clear sky and no global warming. Their practices were more sustainable and healthier. So, I think the old time was better and we realize that we have to work for the same."

This reflection on their own practices on the basis of our ancestors' place-based knowledge helps students provide space to develop a sustainable mindset among the students. Similarly, Kassel et al. (2016) advocated that sustainable mindset is the element of head, heart and hand. Sustainable mindset is associated with cognizance, feeling and doing. Hence, students, at the very beginning, were made aware of the existing issues and how our ancestors used to practice place-based knowledge (cognizance). Then they realized (feeling),

> "Our ancestors were very close to nature, they lived very sustainable lives. They did not use any kind of plastic material, nor was it available during that time. Materials like straw or hay mat, bamboo or wooden chairs, mud house, earthen pot, Tapari (plate made of leaves) were used in their daily practice. They further make manure out of damaged hay mats, broken earthen pots and wooden and bamboo chairs."

Then finally shared about their change in the practice initiated with small steps (doing),

> "We and nature are very much interconnected. Our activities have an impact on nature, and it will further impact us. So, we, as a family, started to classify waste into biodegradable and non-biodegradable. Biodegradables are used to make manure and non-biodegradable are used to recycle and reduce. So, we started to follow 3Rs."

Sustainable mindset is a process of thinking and influencing others to conduct a deed in the favour of nature and people (Rimanoczy & Kligenberg, 2021). The initiation of students influenced the family members to take some steps towards solving the environmental issue.

DISCUSSION OF THE FINDINGS

Integrating place-based knowledge in the pedagogical practices benefits students to get connected with their own place, enhance contextual learning, preserve the knowledge that the ancestors hold and likely to direct their acitivities towards sustainability.Co researchers have their own frame of reference which guide their way of living. Their status quo belief regarding the daily activities they have been practicing for years is difficult to change. However, through informal conversation and posing open-ended questionnaires related to their practices and that of ancestors, the co-researchers were in a disorienting dilemma. Gillan et al. (2021) claimed that keeping forth the appealing interaction led to a disorienting dilemma for transformative learning to take place. The co-researchers self-examined and critically reflected on their hypothesis. The co-researchers reflected critically on their experiences as well as the approach they construct their experience in transformational learning (Carroll, 2010). They realized the need to shift their pedagogical approaches to make learners aware of place-based knowledge and transform their way of living. The co-researchers and the first author developed and implemented the place-based lesson plan and revealed that the linkage of content and context in the pedagogical process enhanced in-depth understanding of the content as students were able to link their learning with their own context and construct knowledge by themselves. Students learn best by experiencing (Kulekci, 2014). The contextual pedagogical practice focuses on the student's engagement in exploring the things being considered and connecting with the real life context for its application (Syafitri, 2020). In the process of identifying the problems associated with pedagogical practices, teachers accepted that they have not been able to engage the students in their own learning, connect their learning in the real life situation due to the implementation of decontextualized pedagogical practice.

In creating the contextual learning, it is necessary to expose contextual issues like loss of our traditional and place-based knowledge and environmental issues. Because until and unless they are not made aware, they won't be able to empathize with the existing issues. This allows them to reflect on and think critically about their daily practices. In solving problems, students are motivated to reflect on their thoughts and execute the designed plans (Samo & Kartasasmita, 2018). We also find out that exposing students to different existing issues is crucial because when they are familiarized with the existing issues, they can empathize with the issues, think critically, and make rational decisions to take steps towards solving them. In the present context, where the western values and culture highly influence young generations, environmental-based knowledge is diminishing due to the influence of the western culture (Batibo, 2013). Thus, students are unaware of its impact on environmental factors and eclipsing our ancestors' knowledge, culture and transition because they are not fortunate enough to get attached with their place-based knowledge. The reason behind this is the parents' busy schedule that they have been unable to educate the students on their own traditional place-based knowledge. We came to realize that the incorporation of place-based knowledge in pedagogical practices bound students to connect with their parents and provide the space to educate students about their place-based know-how because it facilitates the involvement of the parents and community in the students' learning. Therefore Iyengar (2021) advocated that educational institutions should be versatile enough to inculcate the community-based engagement of parents in order to provide place-based education to the students. Additionally, most people are aware about the positive impact of incorporating place-based knowledge in their daily lives in the human health and environmental health though they have not been able to implement them in their daily practices. Cincera et al. (2019) claimed, "Place-based education programs may help to improve the local environment" (p. 1511). Thus, place-based knowledge and environmental conservation are closely interconnected (Parissi et al., 2023) in action-oriented place-based knowledge processes

This study also reveals that integrating place-based knowledge helps develop a sustainable attitude among the learners because students reflect on their own practices and analyse their daily activities, keeping the environmental aspect in their thoughts and conducting action accordingly. Their awareness influenced their family members and the community members as a whole. Hence, this study considered that integration of place-based knowledge is the initial step towards instilling students with a sustainable mindset. Finally, this study finds out that the integration of place-based knowledge helps to instil 21st century skills among the learners because students were engaged in the exploration, investigation, critical thinking, rational and logical reasoning, decision-making, collaboration, interaction, problem-solving, and adaptability skills along with enhanced empathetic, and sustainable mindset.

FINAL REMARKS

Current educational practices often decontextualize learning, distancing students from their own cultural and contextual values. This shift towards Western values and culture indirectly impacts the environment. Reflecting on our grandparents' daily routines and lifestyle, which ensured both human and environmental well-being, we can see the importance of integrating place-based knowledge. This knowledge allows students to empathize with current environmental issues and reflect on their ancestors' practices, understanding the relationship between place-based practices and environmental aspects. We introduced this place-based knowledge into classroom settings, integrating it into pedagogical practices and engaging students with community members who practice this knowledge. This study shows that students' understanding of their place-based knowledge and its environmental contributions brings them closer to their own place-based knowledge, fostering a sustainable mindset to address global issues. This study provides valuable insights for teachers, teacher educators, and curriculum developers on how to incorporate place-based knowledge into teaching methods. It offers a framework for integrating place-based knowledge into pedagogical practices. It also encourages curriculum developers to consider integrating place-based knowledge into the curriculum, making student learning more engaging, contextually relevant, and conducive to sustainable living.

Limitations of the Study

This study delimits its focus only towards the integration of place-based knowledge in the pedagogical practices to explore the benefits among the students. Thus, this research opens opportunities for further investigation into how place-based knowledge can be incorporated into national-level curricula.

Future Prospect and Contribution Towards New Domain

This approach could help preserve the wisdom and culture of our ancestors, which has been overlooked, making teaching practices more contextually relevant and engaging. It helps to foster the development of globally minded citizens equipped with a sustainable mindset to tackle global challenges.

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REFERENCES

Augustine, S., & Dearden, P. (2014). Changing paradigms in marine and coastal conservation: A case study of clam gardens in the Southern Gulf Islands, Canada. *The Canadian Geographer/Le Géographe Canadien, 58*(3), 305-314. https://doi.org/10.1111/cag.12084

Banks, S., & Brydon-Miller, M. (2018). *Ethics in participatory research*. Routledge.

Batibo, H. M. (2013). Preserving and transmitting indigenous knowledge in diminishing bio-cultural environment: Case studies from Botswana and Tanzania. *African Study Monographs, 34*(3), 161-173. https://doi.org/10.14989/185088

Caretta, M. A., Rothrock, B. A., & Zegre, N. P. (2022). Exploring climate change perspectives. An analysis of undergraduate students' place-based attachment in Appalachia, USA. *Rural Sociology, 87*(3), 847-872. https://doi.org/10.1111/ruso.12433

Carroll, M. (2010). Supervision: Critical reflection for transformational learning (part 2). *The Clinical Supervisor, 29*(1), 1-19. https://doi.org/10.1080/07325221003730301

Cincera, J., Valesova, B., Krepelkova, S., Simonova, P., & Kroufek, R. (2019). Place-based education from three perspectives. *Environmental Education Research, 25*(10), 1510-1523. https://doi.org/10.1080/13504622.2019.1651826

Cowie, N. (2009). Observation. In J. Heigham, & R. A. Croker (Eds.), *Qualitative research in applied linguistics: A practical introduction* (pp. 165-181). Palgrave Macmillan. https://doi.org/10.1057/9780230239517_8

Forrest, W. (2018). The intergenerational transmission of Australian Indigenous languages: Why language maintenance programmes should be family-focused. *Ethnic and Racial Studies, 41*(2), 303-323. https://doi.org/10.1080/01419870.2017.1334938

Fry, R. (2019). *Simple rules for place-based approaches addressing disadvantage* [Doctoral dissertation, The University of Melbourne].

Gallay, E., Marckini-Polk, L., Schroeder, B., & Flanagan, C. (2016). Place-based stewardship education: Nurturing aspirations to protect the rural commons. *Peabody Journal of Education, 91*(2), 155-175. https://doi.org/10.1080/0161956X.2016.1151736

Gillan, P. C., Jeong, S., & van der Riet, P. (2021). Undergraduate nursing students' transformative learning through disorientating dilemmas associated with end-of-life care simulation: A narrative inquiry study. *Nurse Education in Practice, 55*, Article 103174. https://doi.org/10.1016/j.nepr.2021.103174

Goodlad, K., & Leonard, A. E. (2018). Place-based learning across the disciplines: A living laboratory approach to pedagogy. *Insight: A Journal of Scholarly Teaching, 13*, 150-164. https://doi.org/10.46504/14201808go

Gras-Velazquez, A., & Fronza, V. (2020). Sustainability in formal education: Ways to integrate it now. *IUL Research, 1*(2), 154-175. https://doi.org/10.57568/iulres.v1i2.84

Iyengar, R. (2021). Rethinking community participation in education post COVID-19. *Prospects,* 1-11. https://doi.org/10.1007/s11125-020-09538-2

Kassel, K., Rimanoczy, I., & Mitchell, S. F. (2016). The sustainable mindset: Connecting being, thinking, and doing in management education. *Academy of Management, 2016*(1), Article 16659. https://doi.org/10.5465/ambpp.2016.16659abstract

Kirby, E. G., & Kirby, S. L. (2020). Examining the changing sustainability mindset in practice. *Journal of Strategic Innovation & Sustainability, 15*(4), 129-137. https://doi.org/10.33423/jsis.v15i4.2964

Lewin, K. (1997). *Resolving social conflicts and field theory in social science*. American Psychological Association. https://doi.org/10.1037/10269-000

Mazzocchi, F. (2020). A deeper meaning of sustainability: Insights from indigenous knowledge. *The Anthropocene Review, 7*(1), 77-93. https://doi.org/10.1177/2053019619898888

McNiff, J. (2016). *You and your action research project*. Routledge. https://doi.org/10.4324/9781315693620

Mezirow, J. (1997). Transformative learning: Theory to practice. *New Directions for Adult and Continuing Education, 1997*(74), 5-12. https://doi.org/10.1002/ace.7401

Parissi, M., Komis, V., Dumouchel, G., Lavidas, K., & Papadakis, S. (2023). how does students' knowledge about information-seeking improve their behavior in solving information problems? *Educational Process: International Journal, 12*(1), 113-137. https://doi.org/10.22521/edupij.2023.121.7

Phuyal, N. (2006). Indigenous people of Nepal and their healing practices. *Education and Development, 22*, 69-74.

Rai, I. M., & Acharya, B. R. (2020). Integrating indigenous knowledge via Information and Communication Technologies: Towards a pedagogical paradox. In E. Carm, M. Johannesen, B. C. Luitel, L. Øgrim, & P. Phyak (Eds.), *Innovative technologies and pedagogical shifts in Nepalese higher education* (pp. 237-252). Brill. https://doi.org/10.1163/9789004448865_013

Rimanoczy, I., & Klingenberg, B. (2021). The sustainability mindset indicator: A personal development tool. *Journal of Management for Global Sustainability, 9*(1), 43-79. https://doi.org/10.13185/JM2021.09103

Samo, D. D., & Kartasasmita, B. G. (2018). Culture-based contextual learning to increase problem-solving ability of first year university student. *Journal on Mathematics Education, 9*(1), 81-94. https://doi.org/10.22342/jme.9.1.4125.81-94

Savin-Baden, M., & Wimpenny, K. (2007). Exploring and implementing participatory action research. *Journal of Geography in Higher Education, 31*(2), 331-343. https://doi.org/10.1080/03098260601065136

Shannon, D., & Galle, J. (2017). Where we are: Place, pedagogy, and the outer limits. In D. Shannon, & J. Galle (Eds.), *Interdisciplinary approaches to pedagogy and place-based education* (pp. 1-8). Palgrave Macmillan. https://doi.org/10.1007/978-3-319-50621-0_1

Sianturi, M., Lee, J. S., & Cumming, T. M. (2022). A systematic review of Indigenous parents' educational engagement. *Review of Education, 10*(2), Article e3362. https://doi.org/10.1002/rev3.3362

Syafitri, R. A. (2020). The importance of the student worksheets of electronic (E-LKPD) contextual teaching and learning (CTL) in learning to write description text during pandemic COVID-19. In *Proceedings of the 3rd International Conference on Language, Literature, and Education* (pp. 284-287). Atlantis Press. https://doi.org/10.2991/assehr.k.201109.048

Taylor, P. C., & Taylor, E. (2019). Transformative STEAM education for sustainable development. In Y. Rahmawati, & P. Taylor (Eds.), *Empowering science and mathematics for global competitiveness* (pp. 125-131). CRC Press. https://doi.org/10.1201/9780429461903-19

Van Niekerk, L., & Van Niekerk, D. (2009). Participatory action research: Addressing social vulnerability of rural women through income-generating activities. *JAMBA: Journal of Disaster Risk Studies, 2*(2), 127-144. https://www.doi.org/10.4102/jamba.v2i2.20

Vennik, F. (2016). *Interacting patients: The construction of active patientship in quality improvement initiatives*. http://hdl.handle.net/1765/93075

Wade-Lyles, T. A. (2016). *Integration of place-based education into science classes from prekindergarten through grade 5* [Doctoral dissertation, Walden University].

APPENDIX A

Table A1. 1st cycle

Days	Planning
1 (March 8, Time: 2: 30 pm-4:15 pm)	Took consent from the principal, introduced to the teachers of grade 7 by the principal, shared my purpose of doing the research
2 (March 17, Time: 3:30 pm-5:00 pm)	Rapport building with the teachers through informal communication. Sharing each other's experiences as a student and teacher to understand their prior knowledge
3 (April 16, Time: 10:00 am-10:40 am)	Observed three classes before implementing the plan to understand their pedagogical culture: English
4 (April 17, Time: 10:40 am-11:20 am)	Observed three classes before implementing the plan to understand their pedagogical culture: Social studies
5 (April 18, Time: 1:20 pm-2:00 pm)	Observed three classes before implementing the plan to understand their pedagogical culture: Math
6 (April 21, Time: 10:00 am-4:30 pm)	Identified the problems through informal interaction with teachers and drafted a rough plan (considering the leisure time of each co-researcher), collaboratively developed the purpose and research question with co-researchers. All the conversations were audio recorded and transcribed in narrative form
7 (April 23, Time 4:00-5:00 pm)	Drafted a systematic plan in collaboration with co-researchers where students will empathize with the environmental issue and get familiar with our place-based knowledge
8 (April 25, Time 10:00 am-11:30 am)	Implementation of the plan: Brainstorming with the students regarding the environmental issues, shown video to empathize with the issues, and assigned the project to interview their parents and grandparents how their life used to be, kind of materials they use in their daily lives and management of waste
9 (April 28, Time 10:00 am-10:40 am)	Had a conversation with the students, took updates and asked them to prepare the presentation on the basis of their outcomes in a group
10 (May 2, Time 10:00 am-12:00 pm)	Presentation by the students to assess their knowledge construction through interaction with their parents and grandparents
11 (May 3, Time 4:00 pm-4:30 pm)	Reflection with teachers regarding the development of lesson plan and engagement of the students in their own construction of the knowledge

Table A2. 2nd cycle

Days	Planning
1 (May 7, Time 4:00 pm-5:00 pm)	Meeting with teacher to develop the lesson plan integrating place-based knowledge (brainstorming)
2 (May 8, Time 10:00 am-10:40 am)	Implementation of the plan and observation (providing concept of calculation of area through integration of place-based material, i.e., hay mat)
3 (May 9, Time 10:00 am-1:00 pm)	Brought resource person who weave straw and hay mat and facilitate interaction of the students and resource person. I also interacted with the resource person regarding their practice in earlier days.
4 (May 12, Time 10:40 am-11:20 am)	(Under the topic "Lok Nritya" of Samajik Sikshya-Social studies) Students were given a project to explore their traditional instruments in their community. Then make a presentation in social studies subject.
5 (May 17, Time 10:00 am-12:00 am)	Presentation by students of their own traditional musical instrument and its importance
6 (May 18, Time 4:00 pm-4:30 pm)	Reflection with students (comparison of their previous way of learning with the current way)
7 (May 19, Time 4:00 pm-5:00 pm)	Reflection with teachers regarding their previous way of delivery with the current process

Table A3. 3rd cycle

Days	Planning
1 (24 May, Time 4:00 pm-5:00 pm)	Planned field trip to students that met the demand of teachers' subject topic, three different sections will be taken to different places and will share the information in front of the whole section.
2 (26 May, Time 10:00 am-1:00 pm)	Field trip to Khokona (oil mill)-Kanchenjunga section: Take away-write a reflective journal and prepare presentation slides
3 (30 May, Time 10:00 am-1:00 pm)	Field trip to Thasi (cloth factory)-Langtang section: Take away-write a reflective journal and prepare presentation slides.
4 (5 June, Time 10:00 am-1:00 pm)	Field trip to Balkumar (bitten rice factory)-Sagarmatha section: Take away-write a reflective journal and prepare presentation slides.
5 (9 June, Time 4:00 pm-4:30 pm)	Took updates on students' preparation and progress and the total time they will need to complete the presentation
6 (16 June, Time 10:30 am-1:00 pm)	Presentation by the students where each section shared about their visit, and their understanding by connecting with their subject topic
7 (18 June, Time 4:00 pm-5:00 pm)	Reflection by the teachers on the overall cycles and their learning and findings from the research

APPENDIX B: SOME GLIMPSES OF THE FIELD VISIT

Figure B1. Visit to the oil factory (Source: Field survey, 2023)

Figure B2. Weaving sukul (Source: Field survey, 2023)

Figure B3. Bitten rice factory visit (Source: Field survey, 2023)