Exploring Project-Based Group Learning: Lessons from a Case Study on Engagement and Mentorship

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ABSTRACT

Case-based actions and engagements are the recommendations for Project-Based Group Learning (PBGL) that explore the experiences and consequences in classroom settings and beyond. Thus, the study addresses the effectiveness of PBGL by considering the challenges and achievements experienced at a private school in Kathmandu Valley. It is a case study of the first author's son in which the first author is a mentee of the second author, and the first author serves as his son's mentor. Thus, the study intends to provide a unique, subjective view of the dynamics of PBGL through an ethically grounded analysis. Finally, this case study adds to the expanding body of information about creative educational approaches, offering valuable insights for educators, institutions, and researchers looking to improve PBGL experiences.

Keywords: 21st-century skills, Bees Buzzes, brainy breaks, constructivism, experiential learning, project-based group learning, and social icebreakers.

CONTEXT

Project-Based Learning (PBL) is normally considered an effective approach in educational settings through a group or collaborative environment. As an education

professional and a parent of school students, as the first author, I experienced that Project-Based Group Learning (PBGL) promotes a high level of satisfaction in cultivating social and communication skills, problem-solving, and self-learning skills as Trullàs et al. (2022) highlighted in the context of knowledge retention and academic performance. It has various forms and benefits in self-directed learning. Among them, I learned that PBGL seems most relevant for classroom-based teaching-learning, as well as family support during the MPhil in STEAM (Science, Math, Engineering, Arts, and Mathematics) at Kathmandu University, Nepal. At that time, I was educated on the primary focus of PBGL as an instructional strategy and problem-solving method, which is a dynamic task. Thus, for me, it refers to students' educational experiences in/outside a classroom and encourages peer participation. Organizing groups, choosing a project, allocating tasks and roles, collaborating, and strategies for determining participation, materials, and guidance are all crucial in this instructional strategy. Similarly, reflection and feedback, real-world applicability, and adaptability are key strategies for the success and achievement of PBGL.

In PBGL, students engage in a project for a set amount of time and a real-life context while studying and addressing a wide range of academic subjects and learning settings (Hidayati et al., 2023). This technique improves deep comprehension and critical thinking abilities by allowing students to investigate real-world problems and develop solutions actively. In this regard, the student's task could be beneficial in the real world and relate to problems, opportunities, or challenges in classroom settings and beyond. Students normally get motivated by PBGL's relevance, which emphasizes the value of their studies (Loyens et al., 2023). In this context, Saad and Zainudin (2022) highlighted that PBGL frequently incorporates several subjects or fields, allowing students to recognize the interdisciplinary nature of problems encountered in the real world. As a result, PBGL encourages a wide-ranging comprehension of the subject and promotes engagement in the community.

PBGL allows for a prominent role in contemporary school education due to its transformative effects on student learning, skill development, and overall learning understanding (Helle et al., 2006) because it supports intrinsic motivation, encourages collaboration and communication, fosters creativity and innovation, encourages active learning, strengthens critical thinking and problem-solving abilities, contextualizes learning, takes into account different learning styles, and aids in long-term knowledge retention.

PBGL in classroom settings and beyond may transform the educational process and foster diverse learners with the knowledge and abilities needed to succeed in a fast-paced and changing environment. Thus, in this study, PBGL is well-thought-out as an instructional technique carried out to promote the collaborative development of learners within the cognitive (higher-order thinking skills), affective (attitude, motivation, competence belief, etc.), and social

(cooperation and communication) domains with the connection of 21st-century skills (Demir, 2020). Hence, project-based group learning is a pedagogical technique well-aligned with creating 21st-century abilities.

However, I, one of the contributors to integrated curriculum development in Nepal, and as an advocate to integrate 21st-century skills in school curricula of Nepal, sometimes, Suyash used to discuss with me, in which his arguments did not correspond with the ideas of integrated curriculum and 21st-century skills. He mostly believed in disciplined learning in an isolated environment. Suyash and the school where he studies sometimes hold contrasting views on project-based group work, as Mutanga (2024) argued in the context of autonomous learning vs. collaborative learning and learning adaptation vs. self-directed learning.

As we, teachers, and the school experienced, some children, like Suyash, struggled to learn through PBGL. It might be due to differences in their learning styles and levels (Chen & Yang, 2019). Sometimes, I observed him completing learning through group projects, which seemed challenging and tedious. The school and teachers were concerned that Suyash, a student representative, had been unable to co-learn in this environment, but he was continually whining about the opposing viewpoint at home. Suyash used to argue that his friends came to the group work without preparation. According to him, it takes a lot of time to learn, which is a boring task to him. Therefore, as a parent, I committed to preparing my child for learning under such circumstances.

As per my experience as a teacher, there was minimal opportunity for individual teaching or remedial education for all pupils in group teaching and classroom instruction (Major et al., 2021). Considering this situation, as a former teacher in a private school, I could not put as much pressure on the school. Except for a few children who do not receive remedial instruction in school, learning about remediation from other sources is deemed necessary. The repercussions of this problem would last for a very long time if deeper comprehension were not applied to its solution. As a result, this study was designed to provide an in-depth understanding of the experiences of using PBGL during Suyash's learning. It also disclosed the complexities of the experiences, difficulties, and rewards during the learning method.

As a mentor, I tried to know several issues behind the situation (e.g., Suyash's shortage of interest in communication and collaboration) in the process of problem-based learning as Schmidt et al. (2011) stressed learning through activation–elaboration viewpoint and situational interest assumption. Since Suyash might not find the project engaging or relevant, I wondered if the shortage of interest was the problem. He had imprecise expectations regarding the project's objectives, duties, or expectations overall. The reason for his nonappearance of active involvement could be his discomfort or anxiety in social situations. It could be his disinterest in learning the necessary content or skills. In this context, I shared the situation with my mentor, the second other, and the first and second author

concluded that it must be flexible or allow more time for his transformation as Müller and Mildenberger (2021) highlighted the implementation of blended learning as classroom and online learning. Thus, Suyash might need help managing his time, which would prevent him from participating. He might only be motivated if he recognizes the project's value and relevance beyond grades. His friends' communication issues might be keeping him from participating fully. As I learned from his learning behavior, my child might think the evaluation should provide more credit for his efforts in this context.

The study focused on the question, 'How do stakeholders (teachers, school, and parent) address challenges and successes encountered in implementing project-based group learning at the chosen institution?' It also sheds light on potential areas for development in PBGL implementation by providing insights into the elements that contribute to its success and limitations. The study was focused on a particular school that uses PBGL and was carried out over a certain period, focusing on the obstacles and successes experienced.

NARADIC SYMBOLISM FOR THE CASE STUDY'S ROOT

One of the most revered iconographies in ancient Sanskrit literature and mythology was Narada, the son of Lord Brahma and a representative of not taking birth from the womb (*Manasaputra*). Many facets of Vedic or perennial culture, including music, art, architecture, justice, law, storytelling, agriculture, and devotion, had been linked to him (Singh, 2005). As a learner of STEAM education, I connected it with my position as a mentee of the second author and mentor of Suyash for investigative learning and its use in real-life settings. Therefore, STEAM is an innovative educational approach that highlights reducing subjective egocentrism and integrating possible heterogeneous disciplines such as STEAM (Yakman & Lee, 2012). Fortunately, my kid seemed a STEAM practitioner from the perspective that Suyash demonstrates an interdisciplinary approach to learning that motivates natural symbiosis among STEAM disciplines to foster creative problem-solving, collaboration, and critical thinking. The STEAM approach was a modern interdisciplinary learning and instructional approach for integration, adaptation, and innovation.

Because of his adaptability and innovative skill, Narada was well-liked throughout South Asia's various language, religious, and ethnic groupings. I and Suyash grew up among Vedic traditions within the Eastern knowledge seekers, so they were accustomed to the spiritual atmosphere and figures found in Narada, the Vedas, the Upanishads, and other Sanskrit scriptures. Consequently, this case study took advantage of these individuals and situations by utilizing Vedic traditions for learning such as the dialogue between Narada and Sanatkumara based on Bhumavidya.

The conversation between Narada and Sanatkumara begins because Narada, as Brahma's *Manasaputra*, was endowed with superior talents and powers of all knowledge, but he could not acquire the highest level of happiness. I have connected it with Aristotle's last level of happiness among the four levels of happiness, such as happiness from material objects; ego gratification and comparison; happiness from doing well for others; and ultimate or perfect happiness as a balance among all levels of happiness and seeking a sense of transcendence. Because of this, Narada approached Sanatkumara to obtain the ultimate happiness, giving up all pride in his excellent heritage, knowledge, conduct, and abilities. This conversation alone demonstrated that knowing oneself is the only way to reach absolute consciousness like Parabrahma (supreme reality). The Chhandogya Upanishad (*Adhyaya* or chapter 7) explains this Bhumavidya clearly. The entire universe was given an understanding of subtle mindfulness processes in the discourse, known as Bhumavidya. *Naam Jnana* and *Vaani Jnana* were the conceptual foundations for this dialogic process.

METHOD

This study followed the qualitative research case study method (Denzin & Lincoln, 2011) utilizing the last four months of 2023. Individuals and groups were the focus of the case study method (Hyett et al., 2014; Thornberg, 2012). Similarly, a core case study method emphasized a unique event to the scholar (Creswell, 2013). In the sphere of education, the case study method was advantageous. Tellis (1997) acknowledged utilizing computing as an example that case studies were becoming more popular due to patterns of acquiring knowledge, characteristics of acquisition, managerial issues that arise from the rapid acquisition, and the balance between need and effort for further improvement in education. Thus, the case study seems a relevant methodology in a teaching-learning environment.

This study found that researcher-case interactions and operations are defining characteristics of the case study method (Stake, 1995). In addition, this study seeks to answer the question of how to do diversity as opposed to how it should be done (Punch & Oancea, 2014). As a result, the study used to ask such questions in conjunction with multiple contextualized sub-questions. Schoch (2020) proposed that the researcher is physically present in a case study at the action being examined and closer to the investigation object. Brewer and Hunter (1989) stated that the case study feature allowed scholars to focus on behaviors and interactions. As a result, this study gathered narratives through observation, interviews, and discussions.

As per my realization, Suyash constantly needed more engagement, even though project-based learning is a participatory learning approach, as Almulla (2020) highlighted case studies for collaborative learning, disciplinary subject learning, iterative learning, and authentic learning. At that time, he rarely offered

suggestions during group discussions and cooperative activities. Side by side, teachers were concerned about his need for more participation, and he frequently displayed disengagement or apathy when working on projects. Therefore, performing a case study offered an integrated perspective on the child's educational journey, considering multiple variables (Vega, 2022) that could impact their involvement in PBGL as a typical case. With that thorough understanding, I collaborated with teachers and implemented specific methods to encourage my child's active participation in PBGL. So, it generalized as a typical instance by comprehending particular obstacles, customizing interventions, creating a supportive environment, encouraging effective communication, and assessing the impact of interventions.

I gathered narratives through dialogue and observations (Warwick et al., 2016). Doing, feeling, reflecting, and cooperating are the key actions for dialogue and observations. At that point, collaborating, cooperating, and interacting with Suyash, his schoolteacher, and my mentor played a vital role in this case study. Dialogue was based on the sharing of ideas to ensure a conducive environment to learning and improvement. The observations were based on Suyash's performance, which was subsequently linked to their practical understanding. Dialogues were issue-based and open-ended. After that, I could compile information by observing Suyash's actions or interactions with other kids and the teacher. For that, I followed the facilitating curiosity strategy as a pedagogical tool with hands-on learning, classroom learning, and discovery learning through self-reflections and informal learning (Kent, 2025). It created a positive learning environment at home.

During this study, blending of PBGL and interdisciplinary learning approach, I drew my experiences and praxis of learning using descriptive statistics and critical thinking skills (Cheung Ching Ching & Mao, 2025). For that, I used participant observation to identify discrepancies between what people say and do. All information was sequenced using a theme-based case study approach and was categorized by open and selective coding approaches (Wood, 2021). Analyzing the collected information, I became aware of developing codes, looking for and analyzing themes, and identifying and naming themes. Six codes (in an action form) developed from the dialogue and observation connected to PBGL, such as 'inspiring, modeling, encouraging, mentoring, demonstrating, and involving'. The themes were based on these codes and the study purpose. The themes were analyzed according to the constructivist learning environment. By analyzing the complex connections between cognitive processes, decision-making, and handling projects, these themes highlighted the significant advantages of interdisciplinary approaches in improving project management effectiveness and outcomes (Kisi & Sulbaran, 2025). This process made the study focused and purposeful.

Figure 1: *Interconnection of Themes with Actions*
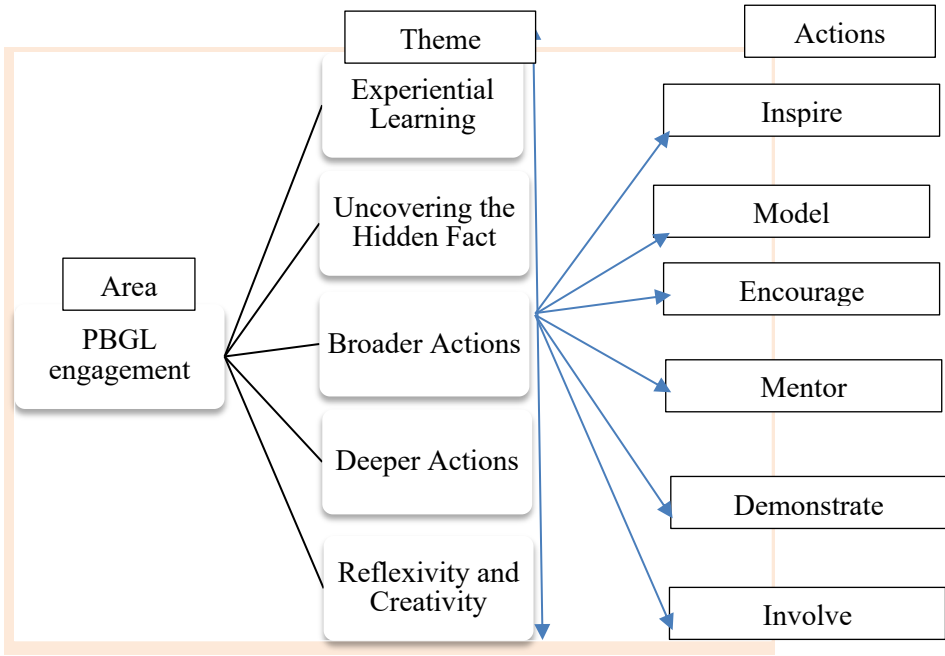
In this case study, thematic analysis was essential because it offers a methodical and thorough way to find, examine, and understand patterns in the information (Creswell & Poth, 2016). This process enabled the identification of essential themes that surfaced from the case study information. Through organizing and classifying information, thematic analysis assisted in gaining valuable insights, connecting disparate pieces, and crafting a cohesive story that enhanced the overall complexity and validity of the case study findings.

GROUP-BASED PROJECTS AND 21st-CENTURY SKILLS

The ideas of PBGL, Dewey's experiential learning, and twenty-first-century skills-based learning made sense as Lawlor et al. (2018) explored that teamwork-induced project learning, an effective companion in creating an engaging and independent learning experience, a team-based model of 21st-century learning, and the team-based learning model of the world scout movement. All three approaches stressed the value of dynamic, student-centered 21st-century learning environments that develop critical thinking, collaboration, communication, creativity, innovation, and problem-solving skills to equip people to navigate a changing world. The educational approach of Dewey (1997) and reflective practice strongly emphasized experiential learning, instructional theory, practice integration, analytical thinking,

and continuous advancement. In many respects, reflective practitioners—learners and other professionals—embodied Dewey's idea of a dynamic, interactive learning environment that equipped students for meaningful, and active social participation. By combining these strategies, a practical and thorough instructional experience was produced during this study.

The ability to examine complicated situations, investigate questions with possible answers, assess many points from various perspectives or information sources, and come to suitable conclusions based on logic and evidence are critical thinking skills in kids (Hixson et al., 2012) like Suyash as a student representative. The term collaborative skills describes a student's ability to collaborate with others to solve issues or provide answers, to work well and politely in groups to achieve a common objective, and to take responsibility for a task's completion. The ability of learners to arrange their ideas, information, and conclusions and successfully communicate them verbally, in written form, as well as via a range of media and other mediums is called communication skills. However, I experienced that Suyash struggled to utilize critical thinking, collaborative skills, and communication skills at the beginning of this case study.

As a STEAM educator and mentor of Suyash, I realized that PBGL and 21st-century skills are intimately related as the educational landscape changes to suit the demands of a world that is changing quickly. The term 21st-century skills describes a collection of competencies necessary for success in the contemporary, information-driven world (Hixson et al., 2012). These abilities cover many talents beyond traditional academic disciplines and help people succeed in the digital age, which seems very relevant to Suyash's learning. In this context, PBGL offered practical, cooperative, and real-world experiences outside the traditional classroom, creating a rich environment for developing 21st-century skills for Suyash through this case study. After that, it prepared Suyash's thinking and action with the abilities in today's contemporary learning and its implementation approach. In this context, the parent-teacher relationship and joint effort as communication, collaboration, and problem-solving approaches played a vital role in Suyash's growth and development.

After Suyash's progress, I learned that parents and teachers who know each other well could support learners' success (Herman & Reinke, 2017). Similarly, I realized that teenagers suffer due to inflated expectations arising from minor to no relationships. Like mine, families in the profession sometimes had multiple issues and fewer good encounters with educators or educational institutions. My collaboration with the school and teachers highlighted that these factors made it more difficult for teachers to connect with parents and get teenagers interested in studying. As per my experience of school visits, less than half of their pupils' parents were involved in teaching and learning. Engaging parents was challenging because many parents wanted to separate their kids throughout the school age, when their involvement was significant. As a result, fostering solid teacher-parent

relationships was essential to guaranteeing that parent participation techniques were initiated and carried out in a way that would be long-lasting and could be a model for others. In this context, group-based projects for students and 21st-century skills-based practices for parents played critical roles in a child's development according to Suyash's learning development. The mentioned strategies provided a broad space for experiential learning.

QUICK THINKS FOR UNCOVERING THE HIDDEN FACT

By realizing Suyash's change in learning and sharing, I started to have frequent dialogues with the school, such as

> *I:Namaste, how are you? How do you understand the change in Suyash?*
> *Teacher: I'm fine. The change has begun in Suyash. He has started working in groups. He has also started co-contacting knowledge with us and his friends. That's very good. How are you feeling?*
> *I:But I think he is just sharing learning, but not co-contacting. Can you help me by finding the reality?*
> *Teacher: Let us observe him for some time.*
> *I: Okay. Thank you very much. I will wait for your understanding.*

After a few weeks, the teachers again shared that Suyash has not left rote-based cognitive development, rather than affective and social development. I (as a parent) and the school knew that when a learner was unprepared to leave one-dimensional thinking and diversified activities seemed pulled by force (Bathgate et al., 2014). So, we needed to support him properly. Thus, conversation or interaction with Suyash was a learning approach that was implemented in such a circumstance through the Socratic technique and Pippalad's study approach to Prashnopanishad (Dhungana & Luitel, 2022). Our Hindu background and home environment of Vedic culture helped to utilize it because the Mundakopanishad, which argued for *Para* and *Apara Vidya*, is the *Mantra* section of the Atharva Veda, whereas the Prashnopanishad is the Brahmana section. The Prashnopanishad is an elaborate version of the Mundakopanishad. It begins with the story of six *Rishis*, or seers, who knew about the Vedas but were drawn to self-realization.

Since Suyash was in a similar situation of self-realization. I observed Suyash's self-realization as a deep and life-changing process that helped him comprehend who he is and where he fits in the learning process. It entailed discovering hidden realities, investigating his inner self, and bringing his ideas, convictions, and behavior into line with who he is. This process explored the psychology of self-realization, its significance for personal development, how to attain it, the steps involved, indicators that Suyash is on the path to self-realization, typical obstacles, and solutions.

I encouraged the school to implement Pippalad's Prashnopanishad study techniques, such as asking questions like "How did life begin? What was a living being? What made a person what he was, and why was that? What makes a person perfect? Why meditate, and what does it entail? Moreover, what was everlasting in human beings?" used contemporary instances for multiloop thinking with the 'quick-thinks' technique for pluralized information generation (Nilson, 2016). I felt that I could support him in eliminating rote learning practice by employing Prashnopanishad's questioning skill and dialectic practice principally employed by Pippalad, a comparable practice to Narada and Sanatkumar's (Chandogya Upanishad, 7.1-26) dialectical healing side by side, such as:

"Share with me what you know, and I will teach you what is beyond that." Sanatkumara.
Narada, "I learned grammar, rituals, astronomy, math, philosophy, psychology, arts and crafts, and many other conventional subjects; however, all of this understanding has not assisted me in gaining insight into the Self. I am so lost in sadness. Please, show me the way to go beyond."
After a protracted conversation, Sanatkumar tells Narada that all he (Narada) knows are names (absolute knowledge). He says one must understand the contextual and broader meanings of what is more important than a name to transcend.
Sanatkumar: "Oh Narada, master the senses and cleanse the intellect. There is a continuous sense of the Self in a pure intellect. Eternal awareness of oneself is the source of both freedom and happiness."

Connecting this philosophical knowledge with a practical example, I asked Suyash why the *Jamara* is yellow and the green vegetables are not. I described how green plants produce food through the photosynthesis process. Then, I used direct sunlight with the yellow *Jamara* and continued asking inquiries about plants. At that time, the school designed many projects that promoted collaboration with the parents side by side. After realizing the limitations of knowledge and skills, Suyash became attracted to the More Knowledgeable Other, i.e., MKO (Abtahi et al., 2017). The strong parent-teacher relationships assisted him in succeeding. Establishing solid parent-teacher connections was a continuous process that calls for social skills, active listening, honesty, respect, and efficient communication techniques (Lekli & Kaloti, 2015). When there was not much of a relationship, there were inflated expectations, which seemed to harm Suyash. Thus, with the collaboration of subject teachers, my mentor, and the school, I continued to create learning beyond classroom settings.

Our strategy gradually became successful as Sanatkumar became Narad's technical foundation (*Naam Jnana*). He also achieved academic success by getting the highest grade in the class. After this succession, I encouraged him to use a

technical foundation through communication (*Vaani Jnana*), as Sanatkumar explored. I began by saying that, despite knowing the *Naam Jnana*, many people cannot express the meaning (*Vaani Jnana*) in a manner that others can understand. It took excellent understanding to describe what was going on through *Vaani Jnana*. Furthermore, knowledge was revealed, shared, or implemented with him where the Vaani were pure and clean. I began to explain that exposing is one thing, revealing in a way that others can understand is another, and revealing in a way that others can use is a higher-level thing. Just as Narada believed Sanatkumar's words, Suyash came to believe in me. The school had made continuous efforts with similar support. As a result, he recently got the first position in a municipal oratorical competition.

BRAINY BREAKS FOR BROADER ACTIONS

Being excited about Suyash's achievement, I implemented the 'brainy breaks' (Nilson, 2016) notion with the conversational epistemic model. For his engagement, I opted for student-active breaks, also known as "brainy breaks," which were the core of the interactive process and have transformed the conventional approach. Its main goal was to explore the necessity for a symbolic representation of the curriculum, demonstrate how to gradually arouse Suyash's curiosity, and discuss how learning may support this by utilizing 21st-century skills. From the constructivist point of view, brainy break practice changed his critical thinking and creativity, and he started to compare several globally relevant topics as the subject matter for constructivism, like the round bottom of lab equipment and *Kasaudi* and *Karai* in our kitchens.

During the case study, constructivism represented a concept of learning that gained popularity due to the contributions of Lev Vygotsky and Jean Piaget. Constructivism endorsed the conceptual and scientific foundations of the project-based approach in social and individual settings (D'Ambra, 2014). According to Jean Piaget's theory of constructivism, knowledge is created by learners as they engage with their surroundings, rather than being taught to them. Project-based learning drew inspiration from Piaget's constructivist theory and was a protracted project in which students tackle real-world issues to create a concrete concept (Babakr et al., 2019). This approach inspired Suyash to design, resolve issues, think critically, and conduct investigations through constructivism.

SOCIAL ICEBREAKERS FOR DEEPER ACTIONS

As a participant observer in the planned events, I employed social icebreakers (Nilson, 2016) relevant to the fields of investigation. Every scheduled activity and extra reflection notes allowed for applying Vygotskian social constructivism and scaffolding techniques, including online investigation and silent ball. The idea of

the online investigator gave me the freedom to work on projects alone with Suyash and look up as much information as we could about the other person, subject, issue/event online. All of the "facts" that we could locate were recorded. We then checked off any that were accurate or not and shared them for confirmation. The outcome demonstrated that I needed to help Suyash identify reliable and false internet material. After that, he started collaborating with family members.

I used a silent ball icebreaker idea side by side that involved no spoken or audible conversation. We practiced just looking each other in the eye, i.e., having conversations through body language and symbolic expression. Learning from one another that communication involved more than words was the goal. It became a very effective strategy for group-based learning.

The concepts of close relationship studies have also been included in many icebreakers (Chopik & Oh, 2022). Among them, I applied topic-matter icebreakers, which encouraged Suyash to begin thinking about the material, and the social, or get-to-know-you, kind, which introduced him to one another with me. In this context, inquiry-based learning strategies and Suyash's creation of concepts based on prior knowledge were two ways that individual and social learning are similar (Powell et al., 2009). Nowadays, when Suyash is given guidance and encouraged to complete an assignment at home that has some meaning, I should scaffold his internalization. To promote this concept with the zone of proximal development (Vygotsky, 2012), the inquiry needed to be well-planned and structured, particularly for the less-prepared pupils who might need more prior experience or skills for problem-solving (Wolk, 1994). Based on his capacity for acceptance, reasoning, or information collection, real or significant understanding suggests that Suyash has created meaning via learning. Consequently, he is drawn to the culture of campfires and aloof gardening and has begun to feel a turning towards *Samidha* culture (the self-modeling practice of Hindu ritual).

I experienced that he began recording his similar and divergent thoughts after searching the internet for mango wood, formalin, formic aldehyde, cow ghee, fat particles, dust particles, rain, grass, and cows. He created a group to share these findings. One day, by utilizing brainy breaks and social icebreakers, he shared with me lots of things about my health that startled me: my body requires a specific type of protein, which was a shocking achievement for me. Therefore, project-based learning incorporated two primary forms of constructivism, social by Vygotsky and cognitive or individual by Piaget, as brainy breaks and social icebreakers. Finally, I realized that Suyash is a co-learner to me.

BUZZ GROUPS CONCEPT FOR REFLEXIVITY AND CREATIVITY

I had multiple conversations with teachers at the school who were asked to list the key takeaways from using a PBGL strategy in the classroom. Teachers stated that

they thought PBGL offered the best model of instruction for offering a contemporary curriculum connected to possibilities for learning in work-based or real-life settings and 21st-century skills (Hixson et al., 2012). Teachers frequently mentioned in casual conversations that group learning—especially in small groups—had improved their comprehension of the relationship between PBL curriculum design and 21st-century abilities. In the regular schedule, they designed a project based on science education in collaboration with the Karkhana concept (an approach to material development and its use in Nepal). I had experiences where teachers used to form small groups like Bees Buzzes (Nilson, 2016) and the whole class group and divide them into small ones when they had another leader, with strategies such as cooperation and active participation.

Buzz groups typically relate to smaller discussion groups or teams that are part of a larger group, such as a classroom. Buzz groups are meant to promote participant engagement and active participation. In a smaller, more personal context, participants in a Buzz Group debate particular subjects or concerns, share thoughts, and swap perspectives (Jones, 2007). The word "buzz" suggests that these organizations are lively and active. The teachers and Suyash both enjoyed the event.

I requested Suyash to share his reflection because he was doing the science project preparation based on the solar family, and I was a witness. The kid revealed his realization in the following way:

As I learn more and consider academic preparedness, I understand that PBGL is the best option. We will present it as a small group presentation. For that, we will discuss a lot and develop a shared understanding. The simplest method to integrate academic and career components into project-based learning opportunities is to create projects that span many courses and subject areas and involve co-learners in the classroom. They go hand in hand.

Suyash had recently developed 21st-century skills, improving his ability to analyze situations and make informed decisions. Nowadays, he is even encouraging me to do the same just the opposite. I connected it with reflective practitioners, including educators and other professionals, who exemplify Dewey's notion of an interactive learning environment that prepares learners for active social participation. Additionally, I was convinced that regular reflection fosters a lifelong mindset toward learning (Rushton & Suter, 2012). Learners who habitually reflect on their experiences are more likely to seek out opportunities for continual education (Schon, 1983) and maintain curiosity about new developments in knowledge-story fields while also linking theoretical concepts with practical application through reflection, thus making them useful when faced with real-life scenarios.

CONCLUSION

Parental participation has a significant impact on children's social and intellectual development (Park & Holloway, 2017). Using PBGL methods effectively connected with the experiences of teachers, parents, and learners. The project-based group learning approach integrated constructivism theory, which believes students actively create their knowledge through experience, along with John Dewey's experiential learning principle, which emphasized real-world exposure to foster thorough understanding. Project-based group activities assisted in the cooperative building of knowledge acquisition (Khalid et al., 2025) while offering realistic applications for comprehensive topics. In this context, parent involvement was an alternative tool within sociocultural approaches because education aims beyond classroom settings, preparing them for twenty-first-century demands seeking subjects' proficiency alongside interdisciplinary abilities such as cooperation, flexibility, and communication; these key skills lead to career growth opportunities today.

Furthermore, project-based group learning ensured that students were actively engaged by cultivating critical thinking skills through encountering authentic challenges (Martinez & Gomez, 2025) and participating in regular training opportunities guided by pedagogical insights. This comprehensive integration resulted in a holistic curriculum that produces informed individuals who have a learning-by-doing-based approach to addressing modern global issues effectively. In contemporary times, this collective effort fostered confident progress toward achieving multilateral goals while setting new standards for success transparently across various platforms. As competency levels reach unprecedented heights with each passing moment, positive societal alterations become more evident globally, turning aspirations into tangible outcomes swiftly and consistently as we lead the way forward.

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