

Exploring the Integration of the Domains of Learning into the TPACK Framework through Art-Based Pedagogy in School Level Education in Nepal

Basanta Lal Lamichhane

Kathmandu University School of Education/Reliance Public School

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ABSTRACT

Instructional and pedagogical methods play a significant role in enhancing creativity, critical thinking, innovation and meaningful learning of students for developing the competencies needed for a competitive and globalized world. In the context of Nepal, the most practiced instructional pedagogy is traditional teacher-centered, unidirectional with rote memorization and standardized testing since long which are unable to promote the 21st century core skills that are essential for students to address and adjust in the digitally advanced and complex world. The main aim of this study is to explore the transformative learning by integrating the cognitive, affective, and psychomotor domains of learning into the Technological Pedagogical Content Knowledge (TPACK) framework. This research examines how these methodologies can bridge the gap between knowledgeable understanding and expressive engagement with inculcation of meaningful skills by explicitly converging Art-Based Pedagogy and the STEAM approach along with these domains.

This study primarily uses narrative inquiry to underpin how conventional instructional pedagogy in present context become worthless over transformative and modern instructional pedagogy in this contemporary situation of education system that observed in both private and government schools in Nepal. This study has been authenticated through the observation of teachers' activities performed inside the classroom. The key findings of this study indicate that the meaningful and effective integration of arts such as drama, drawing, poem and storytelling promotes the critical thinking, creativity, innovation and transformative and meaningful learnings of the students. Such integration promotes students' participation, engagement, collaboration and critical reflection that is indeed of holistic development of the students. From this study, it is need of time to reimagine TPACK framework and integration of art-based methods under STEAM approach of learning. Such integration with spiritual intelligence empowers students to step beyond the just transmission of knowledge but leap into the meaningful, sustainable, and transformative learning experiences. This research contributes to the educational discourse by providing a comprehensive strategy for nurturing well-rounded individuals who are scholastically skillful, emotionally intellectual, and communally responsible.

Keywords: TPACK, Art-Based Pedagogy, STEAM, Domains of Learning, Transformative Learning, Holistic Development.

INTRODUCTION

Teaching is an act of sharing the knowledge, skills, and experiences of a more knowledgeable person with others using different means and methods. Teaching is the process of informing the students about the knowledge and understandings that have been nurtured in the teacher's head or books. In school-level education, teaching plays a significant role in the construction of knowledge and skills. Teaching is referred to as the combination of various elements within the process where an educator identifies and establishes the learning objectives, develops teaching resources and implements the teaching and learning strategy (Munna & Kalam, 2021). The traditional approach to teaching, often characterized by teacher-centered instruction, places the teacher as the primary source of knowledge. This method relies heavily on lectures, rote memorization, and standardized testing to evaluate student learning. The traditional approach has its roots in behaviorist theories, emphasizing observable changes in behavior as indicators of learning.

In the context of the Nepalese education environment, the teachers' pedagogical awareness, self-efficacy, learning attitude, and skills have become crucial factors for transformative learning. For the transformation of learning, innovative and progressive teaching practices must be adapted by teachers while facilitating the students during their learning process. Progressive teaching is an educational approach that emphasizes student-centered learning, critical thinking, and the development of practical skills over rote memorization and traditional authoritative instruction (Pant & Luitel, 2016). However, transformational teaching and learning have been taken as classroom instruction with aligning different instructional pedagogies and practices.

Transformational teaching is a conceptually meaningful and practically useful framework for thinking about how to maximize student development, important questions remain along several lines of inquiry (Salvich & Zimbardo, 2012). Furthermore, for the transformation of an individual and society, the perceptions of all stakeholders of education should be modified and tailored into a new era of pedagogical use.

We are now more familiar with active learning, student-centered learning, collaborative learning, experiential learning, problem-based learning, peer learning, and more. For better understanding, creativity, criticality, innovations, problem-solving, and now along with all sustainable learning, and life learning, it is essential to integrate cognitive, affective, and psychomotor domains of learning along with teaching approaches.

Domains of Learning

The cognitive, affective, and psychomotor domains of learning are fundamental components that contribute to effective education in schools. Each domain addresses different aspects of the learning process, ensuring that students develop not only intellectually but also emotionally and socially. According to de Souza (2005), effective learning takes place when these domains of learning function in complementary roles. Cognitive learning emphasizes the mental processes involved in learning such as memory, problem-solving, and critical thinking for the development of intellectual abilities and skills.

According to Bloom's Taxonomy, cognitive skills are categorized into six levels: knowledge, comprehension, application, analysis, synthesis, and evaluation. However, when transformative and life-long learning approaches are immersed into the action in instructional framework, the bloom's taxonomy has been slightly revised which elucidates the new six level of learning: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating (Anderson et al., 2001). This modification also tells that the teaching is not only an act of transferring knowledge but it is the way of creating the environment for critical and creative solution through collaboration, discussions, participations, presentations, and hands-on activities. Effective teaching strategies in this domain involve scaffolding, differentiated instruction, and formative assessment to support and challenge learners at various stages of cognitive development. Jean Piaget's theory of cognitive development outlines how learners construct knowledge through interactions with their environment (Piaget, 1952). Cognitive strategies in teaching include scaffolding, where teachers provide successive levels of temporary support to help students achieve higher levels of understanding and skill acquisition (Wood et al., 1976).

Similarly, the affective domain of learning addresses the emotional aspects of learning, such as motivation, attitudes, and values. It is essential to foster a supportive learning environment where students feel valued and encouraged. Hoque (2016) suggested that affective domains of learning happen on different levels such as receiving and responding to phenomena, valuing, organizing, and characterizing. The incorporation of such affective domains in teaching pedagogical processes supports the student's academic achievement (Green & Batool, 2017). de Souza (2001) suggested that the affective domain is where a person's emotional intelligence is cultivated. Attention to the affective domain in the learning process can provide an opportunity to invite students to internalize learning encountered within the cognitive domain by its potential to touch an array of emotions within the individual. The incorporation of the affective domain in learning promotes emotional well-being, social skills, self-esteem, and confidence.

Next to this, the psychomotor domain of learning addresses physical movement, coordination, interpretive movements, and reflexes. According to Hoque (2016), this domain of learning focuses on reflex movements, fundamental movements, perceptual, and physical activities, and skilled movement. In this sense, psychomotor is the various physical and reflex movements that support the other domain of learning. However, proper

integration of these three domains along with the STEAM approach promotes the intellectual, emotional, and physical (holistic development) of students that also facilitates the students' creativity, critical thinking, innovative skills, and problem-solving skills.

The spiritual domain (Mathew & Abernethy, 2017) of learning nowadays is gaining popularity in the field of education as one of the main domains of learning. This domain of learning fosters the spiritual intelligence of learners along with their cognitive, affective, and psychomotor competencies. To foster the spiritual intelligence of learners, the teachers need to develop a plan of teaching incorporating all these domains of learning and teachers should be sure that the activities they are going to do/demonstrate in class help to develop such a domain of learning.

TPACK Framework

TPACK framework integrates technology with pedagogy and content knowledge to enhance teaching effectiveness and learning experiences (Mishra & Koehler, 2006). This framework supports the teachers in integrating educational technology with content and methods of delivery (pedagogy). TPACK is the combination of technological knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK). Content knowledge in general refers to the content that has to be taught in class. Content knowledge (CK) is teachers' knowledge about the subject matter to be learned or taught (Koehler & Mishra, 2009). Knowledge of content is of critical importance for teachers. As Shulman (1986) noted, this knowledge would include knowledge of concepts, theories, ideas, organizational frameworks, knowledge of evidence and proof, as well as established practices and approaches toward developing such knowledge.

For effective teaching, how students learn effectively, how different domains of learning are incorporated, and how various skills are built on students have to be planned and managed with effective assessment. PK includes knowledge about techniques or methods used in the classroom; the nature of the target audience; and strategies for evaluating student understanding. A teacher with deep pedagogical knowledge understands how students construct knowledge and acquire skills and how they develop habits of mind and positive dispositions toward learning (Mishra & Koehler, 2006).

Similarly, technological knowledge (TK) in TPACK deals with the integration of technology in education which means the use of various technological apps, software, and tools in the teaching and learning process. Traditional notions of computer literacy require that persons understand information technology broadly enough to apply it productively at work and in their everyday lives, to recognize when information technology can assist or impede the achievement of a goal, and to continually adapt to changes in information technology. TK therefore, requires a deeper, more essential understanding and mastery of information technology for information processing, communication, and problem solving than does the traditional definition of computer literacy (Koehler & Mishra, 2009). Acquiring TK in this manner enables teachers to accomplish the teaching process effectively and students also can generate the knowledge and ideas themselves through different technological tools. Thus, the integration of these three components of TPACK is essential for effective, meaningful, creative, and innovative learning.

Art-based Pedagogy

Art-based pedagogy elucidates the integration of artistic methods and creative expression into the teaching and learning processes. This concept promotes the role of the arts in developing critical thinking, creativity, problem-solving, and emotional intelligence (Shanwal & Kaur, 2008). This approach to learning engages the students in learning processes and promotes a deeper understanding of diverse perspectives and cultures thereby producing well-aware citizens with supportive, collaborative, innovative, culturally harmonized, and eco-friendly characteristics. The integration of arts and artistic demonstration makes students understand the content easily and memorable. Students can connect this information to society, culture, and themselves as well. Sousa et al. (2022) explained the interplay between pedagogy and artistic practices promotes the innovative engagement of the students with course materials and enhances effective interventions and a deeper understanding of social reality.

In the context of basic school-level education, students have to be inculcated with various skills, understanding, and knowledge more than core subject ideas. Assurance of students' participation, development of creativity, critical thinking, innovation, problem-solving, and leadership skills with harmony and peace is the need of today's 21st-century education. The selection and utilization of pedagogical tools, lesson plans, and working strategies interplay the role of enhancing student understanding and achievement of learning goals. Peer assessment, formative assessment, and feedback (Zlabkova et al., 2021) promote the student's proficiencies and competencies as well.

STEAM Approach

STEAM is an approach to teaching and learning in the field of education in recent years. STEAM education emphasizes an integrated curriculum and pedagogy to utilize knowledge and skills in creative and imaginative (i.e., artistic) ways. For instance, arts-based methods (such as painting, model building, storytelling, and singing) help teachers and students connect various disciplinary skills (pant et al., 2020)

STEAM sees school as a space of learning by doing rather than transferring the knowledge stored on the heads of teachers and mentioned in books. This approach supplants traditional lecture-based pedagogy with a series of meticulously crafted sessions that actively involve students in exploration, analysis, evaluation, and the creation of academically pertinent and useful outcomes. By facilitating opportunities for learners to produce novel creations, STEAM education has the potential to enhance student engagement within the educational process.

STEAM education also promotes transformative learning by engaging students in interconnected ways of knowing, such as cultural self-knowing, relational knowing, critical knowing, visionary and ethical knowing, and knowing in action (Taylor, 2015). An inquiry-based approach promotes STEAM disciplines by enabling students to engage in authentic and meaningful activities that improve reasoning skills.

Purpose of Study

The fundamental aim of this study is to explore the various teaching approaches, domains of learning, and pedagogies used in school-level teaching and learning activities. In this study, the transition of my previous experiences as a student in school and college (as part of conventional methods) to the transformative view on the pedagogies used now is to explore effective and meaningful pedagogies and domains used in effective teaching and learning in school-level education. The cultivation of collaborative and democratic means of teaching and learning, knowledge constructive techniques rather than informing and reforming means, and a deeper understanding of 21st-century core skills is essential for fostering student-centric learning and enhancing creativity, criticality, innovations, and sustainable problem-solving skills. This study deeply focuses on investigating how teaching approaches, domains of learning, and TPACK are used in school-level education through interviews and observations.

Theoretical Referent

As this study is based on the various teaching approaches and domains of learning with STEAM and Art-based pedagogy, several theories are connected or support the objective of this study. While experiencing the conventional teaching and learning methods and adapting the new tech-influenced pedagogical methods, it is indeed to visualize the generation of ideas or theories and how they support and authenticate them in the present context.

Transformative Learning Theory

Transformative Learning Theory (TLT), developed by Jack Mezirow, is a comprehensive framework that explains how learners can undergo profound shifts in their perspectives, beliefs, and ways of thinking. It occurs when individuals critically reflect on their assumptions and perspectives (Mezirow, 2008), leading to a fundamental restructuring of their understanding of themselves, others, and the world around them. Mezirow's transformative theory works only when the learners realize that, to change the frame of reference, one has to critically reflect by stepping out of one's comfort zone (Rajbanshi & Luitel, 2020). The pedagogical tools used

by teachers, their plans, integration of STEAM, and other learning approaches promote the transformative learning of students through critical reflection on issues, ideas, perspectives, and even solutions. Transformative learning theory promotes creativity and critical thinking that foster innovative and sustainable solutions to problems. Hoggan and Kloubert (2020) stated, in actuality, that transformative learning involves educators actively attempting to promote a paradigm shift. Learning happens when someone comes across a different viewpoint that challenges pre-existing thought patterns (Cranton, 2006). Transformative learning focuses on experiences that are obtained from active participation and hands-on activities so that learners feel themselves and critically overview it.

Critical reflection and discourse help to generate new ideas, perspectives, beliefs, and values. Reflective practices promote learners' understanding and ability to examine the presuppositions underlying our knowledge of the world (Taylor, 2011). In the same line, Zhao & Liu (2022) illustrate the critical reflective process that allows us to compare and contrast new experiences with long-held assumptions, beliefs, and values. However, different approaches and theories are also aligned with transformative learning theory while discussing the issues under the STEAM approach to learning. Active learning, continual learning, and collaborative learning in totality progressive learning promote transformative learning in school-level education. Context and action are the influential parts of transformative learning. Such learning also depends on the context and how actions are carried out. Context influences how individuals interpret and develop a deeper appreciation of personal and sociocultural factors and an awareness of the emotional, moral, cultural, and social aspects of their being (Schnepfleitner & Ferreira, 2021).

However, students' creativity, critical thinking, and problem-solving skills always come from critical reflective practices and teachers have to create such space during teaching and learning to foster such skills in students. It emphasizes the active engagement, social interaction, and role of the teacher as a facilitator rather transmitter of knowledge. Furthermore, collaborative learning, inquiry-based activities, and problem-solving learning help to construct knowledge, and critical reflection revise the knowledge as per the context and situation. However, in the STEAM approach of learning, transformative learning theory along with others plays a significant role in the transformation of teaching and learning practices in school that promotes the student's holistic development and achievements for sustainable and naturalistic progress in society.

Experiential Learning Theory

Experiential learning theory underscores the importance of learning through experience. This approach involves a cyclical process of experiencing, reflecting, thinking, and acting (Kolb, 19). It encourages learners to draw connections between their experiences and theoretical concepts, fostering deeper understanding and retention of knowledge. This theory gives experience a central role in human learning. John Dewey advocated reflective views on the experiences gained through the different learning activities, hands-on activities, and art-based activities. This theory also focuses on the development of the learning process and a multilinear model of development (Kolb, 1984). To improve learning in school education, the engagement of students in the process is essential that enhance their learning with effective feedback. This also posits that all kinds of learning are relearning. Learning facilitated by the process draws out the students' beliefs and ideas about a topic so that they can be examined, tested, and integrated with new, more refined ideas.

Learning requires the resolution of conflicts between dialectically opposed modes of adaptation to the world. Conflict, differences, and disagreement are what drive the learning process. In the process of learning, one is called upon to move back and forth between opposing modes of reflection and action and feeling and thinking. Therefore, experiential learning is also part of the transformation of an individual and the whole system of education in school.

Methodology and Procedures

Two classes were chosen and observed to explore the integration of learning domains and different teaching approaches practiced by teachers in school. I have selected one private school (Reliance Public School) where STEAM makerspace practices were continuously carried out and one government school (Jalpa Devi Secondary School), Melamchi where the art-based class was performed. I observed one STEAM class at a private school

and one art-based class at a government school. I have collected information and ideas on how teachers integrated all domains with STEAM and Art-based pedagogy or how are teachers aware of integration and how the learning of students happens through art-based pedagogy. However, for a comprehensive and comparative understanding, I took my autobiographical inquiry when I was in school and college as a student in poetic form along with observations inside the classroom

DISCUSSION

Thinking and re-evaluating the previously used or adapted teaching approaches and means also provide ideas for moving forward. What types of skills were developed from the teaching approaches used in education in the past? Are these approaches relevant in today's education? Teachers were about the approaches and domain of learning. I have taken as an example of how the teacher taught us during my schooling and even in college education.

The teacher told me to copy from the board,
I scribbled the lessons, word for word.
The teacher said to memorize each line,
I memorized, thinking all was fine.
The teacher gazed at diaries, books in hand,
I mimicked, trying to understand.
The teacher taught the exam's set phrase,
I repeated, lost in the haze.
Seldom left the classroom's door,
Rarely touched the world, explored.
My mind, a mirror of theirs, confined,
Where was the room for my mind?
Curiosity bloomed, with nowhere to grow,
No paths were shown, and no seeds to sow.
Creativity stifled, cognition bound,
In the echo of their words, my voice drowned.
No talk of collaboration or thought profound,
No projects to make, no new ground.
No teamwork, no reflection space,
No chance to express my unique grace.
I walked with the teacher's head, their note,
Thinking this was the only way to float.
Yet in my heart, a silent plea,
For a chance to learn, to be truly free.

Such traditionally applied approaches as reflected in poems do not support knowledge construction and transformation. These are just mugging off the text, notes, and other fixed-defined ideas without creating the space for students to think and do. Such teacher-centric, focusing on book and note knowledge, and a controlled environment never give better results and lack creativity, critical thinking, innovation, and problem-solving skills (Jin et al., 2022). The connection of head, hands, and heart is essential for transformative learning and to connect

the learning to real life and for the sustainable world. As mentioned in the poem, teachers bound the students around their periphery and within the classroom. Where is the space created by teachers for the flourishing of the ideas and knowledge of the students and to develop the different skills that are essential for 21st-century education and to cope with the various problems happening in the world? There should not be an overshadowing of the student's unique abilities to generate the ideas and construction of knowledge.



In contrast to this, some changes have been seen in school education, however, different teaching approaches are not sufficiently and meaningfully used in the teaching and learning process in school. As a teacher-to-school leader, most of the schools are still teacher-centered, with rote memorization, lecture method, and pen-paper assessment. However, the recently revised curriculum and evaluation system of Nepal in school-level education has put some pressure on teachers to go in formative assessment and to engage students in activities, project works, and group work. Still, teachers provided the internal evaluation marks during the terminal and final examination rather than unit-wise evaluation measuring students' creativity, critical thinking, innovation, leadership skills, communication, and collaboration.

The cognitive, affective, and psychomotor domains of learning are essential for the holistic development of the students and their creativity. If teachers are going to do project-based learning using different teaching approaches, teachers must be clear about what approach should be used and how this project-based learning promotes three domains of learning. Effective teaching requires a balanced integration of cognitive, affective, and psychomotor strategies. For example, a science teacher might use inquiry-based learning (cognitive) while fostering a collaborative classroom environment (affective) to support student engagement and motivation.



In STEAM classrooms, integrating project-based learning (cognitive) with teamwork and peer feedback (affective) can enhance both knowledge acquisition and social skills through the involvement of students in prototype-making and hands-on activities (psychomotor). Class teacher used a combination of visual aids, slideshows, and videos for the preparation of a project. After his presentation and demonstration of the videos, the teacher facilitated group discussions where students could exchange ideas, ask questions, and collaborate on problem-solving tasks (cognitive). This encouraged peer learning and enhanced critical thinking skills. Students vigorously and seriously participated in hands-on activities (psychomotor) related to the lesson topic, allowing them to apply theoretical knowledge in practical scenarios. This approach promoted experiential learning and skill development. Students get involved in teamwork, peer discussion, and connection of learning to real life

(affective). Frequent use of inquiry and engaging students in experiments encourage students to conclude easily. Students are also engaged in the process and investigate the factors affecting the project finalization.

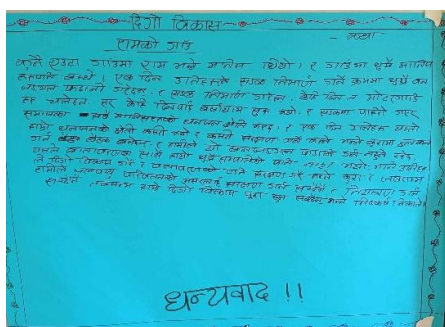
In STEAM Makerspace activities, the teacher engages students in critical thinking, problem-solving, and understanding scientific concepts. The cognitive dimension of learning looks meaningful and sufficient. The influence of the cognitive dimension on school curriculum was reflected in the focus on outcomes-based learning that promoted almost exclusively the cognitive dimension of learning in terms of declarative and functional knowledge. However, how teaching should take place into account the cognitive processes by which learning occurs (Taber, 2014).



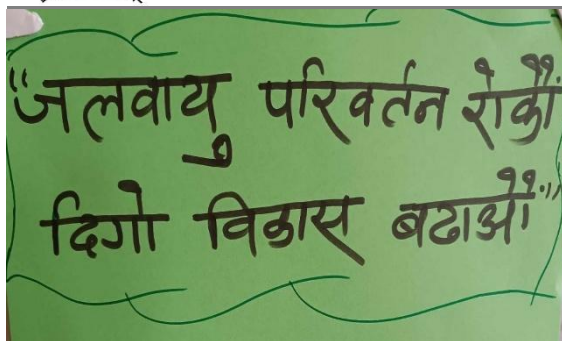
Teachers intentionally engaged students in the making process using physical skills and coordination. In STEAM maker space, such activities provide opportunities for the students to develop practical skills, handling tools and other equipment. Students were involved in measuring, cutting, bending, screwing, and other activities for making objects. In this case, the psychomotor domain of learning is dominated whereas the cognitive domain persists during such activities. In such activities, students use their hands-on work and learn practical skills.



Psychomotor skills range from manual tasks, such as digging a ditch to more complex tasks, like operating a complex piece of machinery (Wu et al., 2022). Moreover, the participation of students in activities, teamwork, and peer learning promotes their affective domain of learning as it evokes wonder and curiosity, feelings, and ownness, and sees the issues or problems in their real life and socio-cultural phenomena. de Souza (2001) suggested that the affective domain is where a person's emotional intelligence is cultivated. Attention to the affective dimension in the learning process can provide an opportunity to invite students to internalize learning encountered within the cognitive dimension by its potential to touch an array of emotions within the individual. However, elements of the affective domain, such as emotions, attitudes, and values, were also addressed through group discussions albeit to a lesser extent in the observed classroom activities.



Assessment is another crucial part of teaching and learning. Assessment should not measure only students' knowledge in terms of grades or marks but it should support the students' learning through assessment continuously. During this STEAM maker space activities, the teacher has used an assessment sheet for assessing the students' participation, leadership, creativity, critical thinking, and innovative ideas during the handling of project activities.



Art-based pedagogy such as drama, song, poem, drawing, pictures and more facilitates social interactions and collective actions, strengthening group feelings and bonds (Sousa et al., 2022). From the observation of class, when teachers gave different tasks to different groups to present in art-based form, first-group students quickly dramatized the content (cause and effect of climate change) and presented it in the classroom within a short period meaningfully. Another group made and presented a drawing representing the issue (sustainable development) with a slogan ensuring equitable participation. Art-based pedagogy (approach) enhances students' engagement, flexibility in thinking, creativity, and respect for multiple viewpoints (Pieczura, 2013). Teachers also need to focus on such action plans or strategies for a better understanding of the connection to the real-life situation. This pedagogy contextualized concepts and theories in real life, enhancing students' interest in learning (Hunter & Frawley, 2023).

Along with pedagogy, proper continuous assessment of the students motivates them to immerse into the study deeply and they get a chance to deeper and more critical understanding. During the classroom activities, I used peer evaluation as well. while presenting one group, members of another group assessed their friends based on the rubric provided.

Teachers' awareness, preparedness, and self-motivation play a vital role in the integration of domains of learning and teaching approaches. First and foremost, part is the integration of different approaches and domains and how teachers make the plan and strategies for the inculcation of creativity, critical thinking, innovative skills, leadership, and communicative skills. Therefore, the pedagogical knowledge of teachers is crucial for its implementation. Teachers must have content knowledge which is a primary and basic need for teachers. Next is pedagogical knowledge which has to be developed by teachers. Teachers must possess different pedagogical skills, ideas, and practices. Different approaches are there in education and teaching in the classroom. Teachers should be aware of them and need to select them as per the needs of the course and skills that have to be developed by students. To utilize approaches, some technical tools and means are essential that make learning more meaningful and effective. For such conditions, technology is a part. Therefore, teachers should develop their technological knowledge to make their class activities more effective, engaging, interactive, and meaningful.

CONCLUSION

The integration of cognitive and affective dimensions into the Technological Pedagogical Content Knowledge (TPACK) framework, with a particular focus on art-based pedagogy, represents a significant advancement in educational theory and practice. This approach acknowledges the holistic nature of learning, where emotional engagement and intellectual understanding are interwoven, creating a more inclusive and effective educational experience.

Art-based pedagogy serves as a powerful medium to bridge cognitive and affective domains, fostering creativity, critical thinking, and emotional intelligence. By incorporating artistic methods into various subject areas, educators can create rich, multi-sensory learning environments that resonate with students on multiple levels. This method not only enhances student engagement but also nurtures a deeper connection to the material, facilitating long-term retention and application of knowledge. It also promotes social change and justice in educational advocacy efforts (Cahnmann-Taylor & Sanders-Bustle, 2019). Art integration in curriculum and teachers' preparedness plays a significant role in better students' holistic and academic development and for the

teachers' professional development and satisfaction. Finally, art integration is for social change and social justice.

The reimagined TPACK framework, enriched with cognitive and affective considerations, underscores the importance of empathy, cultural awareness, and emotional expression in teaching. It encourages teachers to adopt a more reflective and responsive approach to their practice, adapting to the diverse needs of their students. This holistic model supports the development of well-rounded individuals who are not only knowledgeable but also emotionally intelligent and socially responsible.

Incorporating art-based pedagogy into the TPACK framework also aligns with contemporary educational goals that emphasize the development of 21st-century skills. These skills include creativity, collaboration, communication, and critical thinking, all of which are essential for students to navigate and succeed in an increasingly complex world.

The fusion of cognitive and affective dimensions through art-based pedagogy within the TPACK framework offers a comprehensive strategy for school-level education. It promotes a balanced and engaging learning experience, preparing students to thrive both academically and personally. As educators continue to explore and implement these integrative approaches, the potential for transformative learning experiences in schools becomes ever more attainable, paving the way for a future where education fully embraces the dynamic interplay of mind and heart. Needless to say, these are all essential for the transformative learning however, teachers' and school leaders' preparedness, awareness, and commitment of transforming the pedagogical issues still remained unanswered. That means, teachers' proactiveness, equipped with technology, planned strategies, activities designation for integration of learning domains using STEAM approach and Art-based pedagogy is a basic requirement for transformative learnings.

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