

Indigenous Knowledge Systems and Philosophy of Education: Exploring their Relevance for Holistic and Transformative Pedagogical Practices in the 21st Century

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Abstract

The marginalization of Indigenous Knowledge Systems (IKS) in the official education system has become a major issue in the environment of rapid globalization, technological progress, and growing cultural homogenization. This paper focuses a critical analysis of the philosophical underpinning and pedagogical usefulness of IKS in the establishment of holistic and transformative learning in the twenty-first century. The paper follows a conceptual research design of qualitative research and focuses on philosophical analysis, comparative conceptual enquiry, and thematic synthesis to address the interface of Indigenous epistemology, Holistic Education Theory, and Transformative Learning Theory. The results indicate that IKS is a multidimensional approach to education, which facilitates cognitive, socio-emotional, cultural, ethical, and ecological growth. It helps a lot in the formation of cultural identity, epistemic justice, ecological consciousness, and development of critical consciousness among learners. In addition, the paper also emphasizes the potential of transforming curricula, pedagogy and policy in education by incorporating indigenous insights into the curriculum, teaching and learning processes as well as the learning environment to make them inclusive, context sensitive and socially responsive. The paper suggests that Indigenous Knowledge Systems are not ancillary to reinventing education as a whole, equitable, and sustainable venture. The research will contribute to a paradigmatic shift of the 21st century, through developing a transformative, pluralistic theory of education which can map the twenty-first century complexes.

Keywords: Indigenous Knowledge Systems, Philosophy of Education, Holistic Education, Transformative Learning, Epistemic Justice, Decolonizing Education, Sustainability Education

1. Introduction

The twenty-first century is characterised by unprecedented globalisation processes, accelerated technological change, the growing socio-economic inequalities, and the growing cultural pluralism. These have transformed the intentions, roles, and the conceptual basis of education, leading to a new round of controversy around equity, access, and the social good of schooling in general (Biesta, 2015; OECD, 2019; Tikly, 2019). Within the recent educational discourse, there is a growing understanding that education cannot be narrowed down to the transmission

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of decontextualized knowledge or the creation of human capital; instead, it needs to be seen as a highly normative and political undertaking that aims at the formation of democratic citizenship, ethical responsibility and social justice (Apple and Apple, 2004; Biesta, 2020; Noddings, 2015).

In this scenario, critical pedagogy has become a significant theoretical and pedagogical approach towards questioning the connexions between education and power, as well as, social inequality. Based on the emancipatory philosophy of Paulo Freire (1970), critical pedagogy is a conceptualization of education as a radical praxis that helps learners to critique and confront social structures that are oppressive. The critique of the banking model of education by Freire highlights the aspect of reproduction of domination through the traditional pedagogical practises that help to place the learners as the passive receivers of knowledge. He, in his turn, promotes dialogical and problem-posing education that encourages a sense of critical consciousness (*conscientizacao*) or a process by which people learn to rise to awareness of socio-political contradictions and gain the agency to change them (Freire, 1970; Freire, 1998).

Freirean thought has been later extended and recontextualised by other scholars in the modern educational context. Giroux (2020) theorises critical pedagogy in terms of cultural politics that oppose the neoliberal and market-oriented changes in schooling based on a vision of teachers as transitional thinkers. Likewise, McLaren (2015) and Apple and Apple (2004) contend that schooling is enshrined into more generalised socio-political processes that tend to reproduce the inequalities of classes, race, and culture, thus necessitating pedagogical practises that preempt opposition, critique, and social change. Such views are further reinforced by current studies on the role of education in helping to solve systemic inequities as well as creating inclusive and democratic societies (Connell, 2009; Fraser, 2009).

The applicability of critical pedagogy has become more eminent in the present globalised world, where marginalisation, increasing inequality and exclusion of various cultural voices continue to be common. Epistemic injustice, digital divides, and the commodification of learning, among others, are some of the challenges that educational systems in all parts of the world are still grappling with to guarantee the democratic and emancipatory potential of education (Giroux, 2020; Selwyn, 2021). To this, critical pedagogy provides a normative and pragmatic framework of reforming education as an arena of conversation, enabling and transforming society. It prefigures student agency, agency, and participatory learning as well as the ethical agency of schooling in the way it challenges injustice and as a means of reinforcing equity.

It is against this background that the present paper will critically look at the applicability of critical pedagogy in promoting social justice and transformative learning in the twenty first century education.

2. Literature Review

2.1 Indigenous Knowledge Systems: Concept and Characteristics

Indigenous Knowledge Systems (IKS) have become more widely perceived as a subject of educational and epistemological discourse because of their dynamic, contexted, and embedded cultural systems of knowing which are created through extended interrelation between

community and environment. Oral traditions, lived practises, rituals, and collective memory are some of the ways these knowledge systems are passed down across generations and demonstrate an internalisation of the ecological, cultural, linguistic, and spiritual aspects (Battiste, 2002; Berkes, 2017; Nakashima et al., 2012). The reason is that unlike static or codified knowledge, IKS are dynamic and changing, adjusting to environmental, social and historical variations.

Indigenous epistemologies, scholars claim, attempt to undermine Western systems of knowledge by providing relational, holistic and non-dualist accounts of reality (Dei, 2011; Tuhiwai Smith, 2012). The main idea of IKS is the concept of interconnectedness- between people and nature, as well as the cosmos- which is radically different with Cartesian dualism and reductionism which are the foundations of Western science (Berkes, 2017). Moreover, indigenous knowledge is usually practical and concrete based on life and daily community processes, instead of abstract, decontextualized, and knowledge confined to disciplines, commonly privileged in formal education systems (Kincheloe and Semali, 1999; Battiste, 2002). Such an epistemological difference can play a major role in reconsidering education in pluralistic and culturally diverse societies.

2.2 Philosophy of Education and Indigenous Perspectives

Philosophically speaking, indigenous education lies in holistic, relational and ethical perspectives of values that focus on the enhancement of the entire individual in the context of community. Ways of Indigenous philosophies of education make conceptualizations of knowledge as a relationship, collective, and morally oriented, not individualistic and value-neutral (Grey, 2024; Cajete, 1994). Learning is considered as a process of life long, experience based, and participative in social, cultural and ecological interactions.

Cajete (1994) points out that indigenous education is essentially geared towards learning by engaging in the natural and social world where knowledge is not independent of identity, responsibility and place. On a similar note, Grey (2024) believes that indigenous epistemologies preempt relational accountability, in which the process of knowledge acquisition is connected with ethical responsibility to the community and the environment. This viewpoint disputes the prevailing neoliberal and individualistic paradigms of education that put attention on competition, standardisation, and economic productivity (Biesta, 2015; Tikly, 2019).

Furthermore, native philosophies do not subscribe to the atomism approach to knowledge dissemination, but they support integrative and contextual approaches to learning. This corresponds to the modern criticism of the present system of modern educational institutions that do not consider the moral, cultural, and ecological aspects of the human development (Noddings, 2015). Therefore, the indigenous visions provide a critical philosophical rationale of redefining the concept of education as a relational and ethical becoming.

2.3 Indigenous Knowledge and Holistic Education

Holistic education includes the combination of cognitive, emotional, social, ethical, and spiritual aspects of human development, which aim at producing whole-minded individuals who can fully engage in meaningful activities in the world (Miller, 2019; Forbes, 2003).

Indigenous knowledge systems in their focus on balance, harmony, and interconnectedness are intrinsically based on these principles.

Studies have shown that inclusion of indigenous knowledge in the educational practises leads to increased engagement of learners, development of cultural identity and socio-emotional well-being (Kovach, 2021; Jones Brayboy and Maughan, 2009). Culturally responsive approaches like storytelling, experience learning, and community engagement are features of indigenous pedagogies, which appeal to the experiences and identities of learners (Ladson-Billings, 1995; Gay, 2018).

Moreover, IKS has a great contribution to sustainability education since it results in environmentally-awareness and appreciation of nature. As Berkes (2017) reflects, traditional ecological knowledge can be of helpful information in terms of sustainable operational of resources and environmental protection. In this regard, the incorporation of indigenous views in education has been consistent with international demands of education towards sustainable development (UNESCO, 2017; Sterling, 2011).

Therefore, the indigenous knowledge systems do not solely supplement but also expand the theory of holistic education as they introduce the elements of the learning process into the cultural and ethical as well as ecological contexts.

2.4 Indigenous Knowledge and Transformative Learning

The theory of transformative learning as presented by Mezirow (1997) focuses on critical reflection, perspective change and reconstruction of meaning patterns. Indigenous knowledge systems can provide transformative learning because they expose learners to other epistemologies and motivate them to be critical of dominant storeys and power patterns.

By aiming to decolonize the education system by including the indigenous knowledge, learners would be able to question the hierarchy of epistemology and challenge the superiority of the Western knowledge systems (Tuhiwai Smith, 2012; Andreotti, 2011). This is a process that can lead to what Freire (1970) conceptualised as critical consciousness, which allows learners to be able to perceive as well as resist different forms of cultural and epistemological oppression.

According to the recent scholarship, transformative learning is not merely a cognitive process but is also characterised by emotional, cultural, as well as relational aspects (Illeris, 2014). Such multidimensional transformation thrives well in indigenous pedagogies, which focus on storytelling, reflection and community dialogue (Kovach, 2021). Further, these methods encourage moral consciousness, compassion, and social responsibility, which are major elements of transformative education within the framework of global issues like inequality, environmental pollution, and cultural marginalisation (Taylor, 2018; UNESCO, 2017).

2.5 Knowledge Gap

In spite of the increasing literature on the importance of indigenous knowledge systems, its incorporation into formal education is still mostly scattered, marginal and tokenistic. Most of the existing studies have been descriptive and advocacy oriented in nature and there has been little efforts to come up with potent theoretical frameworks to systematically interlink

indigenous epistemology with modern pedagogical theories including holistic education and transformative learning (Dei, 2011; Tikly, 2019).

Additionally, there exists an evident gap in the areas of bridging indigenous philosophies of education and existing policy frameworks and institutional practises, especially on the globalised and standardised systems of education. Insufficient interdisciplinary and comparative analyses restrict the possibility of having interdisciplinary and comparative integration of IKS into mainstream education.

It is necessary to fill this gap with a conceptual synthesis that places indigenous knowledge in greater educational discourses to allow establishment of culturally responsive, epistemologically inclusive and socially transformative pedagogical models. This paper aims to make a contribution to this new area of knowledge by providing a detailed philosophical and pedagogic discussion of whether indigenous knowledge systems are relevant in the twenty-first century.

3. Research Questions

1. What are the philosophical underpinnings of Indigenous Knowledge Systems (IKS) to the discourse of education?
2. How do Indigenous Knowledge Systems ensure comprehensive growth of learners in the cognitive, socio-emotional, cultural and ethical sectors?
3. What is needed is how to systematically incorporate Indigenous Knowledge Systems into twenty first century pedagogical practises to enable transformative and socially responsive learning?

4. Theoretical Framework

An integrative theoretical framework on the basis of which the given work was created is the combination of Indigenous epistemology, Holistic Education Theory, and Transformative Learning Theory to suggest a multidimensional perspective on the role of Indigenous Knowledge Systems (IKS) in modern education. This interdisciplinary approach allows a critical analysis of how the culturally mediated knowledge systems can be used in order to make informed in the context of pedagogical practises that are holistic, reflective, and socially transformative.

4.1 Indigenous Epistemology

Indigenous epistemology is a relational and contextually entrenched mode of knowing that is distinctly different to dominating Western epistemological cultures. It focuses on interrelation between people, communities, nature and the spiritual world, and thus it locates the knowledge in a wider ecological and cultural context (Battiste, 2002, 2013; Wilson, 2020). The issue of knowledge in this view is not simply an abstract intellectual notion as it is an experience that is lived and relational and it is co-created when one communicates and engages in cultural practises.

According to the scholars, Indigenous epistemologies disrupt the universalizing habits of the western knowledge systems by preempting plurality, locality, and cultural particularism (Dei, 2011; Tuhiwai Smith, 2012). An example is given by Wilson (2020) when the knower

conceptualises knowledge in the form of relational accountability, which holds the knower ethically accountable to the community and the environment. On the same note, Cajete (1994) focuses on the fact that place-based learning and ecological relationships form the basis of Indigenous ways of knowing and enable a strong sense of identity and responsibility.

Indigenous epistemology as applicable to education offers a critical base on which to re-conceptualise pedagogical practises in terms of community-based learning, continuity, and ethical participation. It is also involved in decolonizing education by destabilising epistemic hierarchies and making marginalised knowledge systems legitimate (Battiste, 2002; Andreotti, 2011).

4.2 Holistic Education Theory

The theory of Holistic Education will provide a complementary approach that focuses on the holistic growth of the person through the combination of cognitive, emotional, social, ethical and spiritual aspects of learning (Miller, 2019; Forbes, 2003). Holistic education is based on humanistic and ecological philosophy of education, which aims at achieving interconnectedness of the self with others and the natural environment.

Miller (2019) claims that meaningful learning happens when education is connected to the not only intellectual but also emotional well-being and moral development in addition to spiritual awareness. In a similar manner, Noddings (2015) mentions the role of care, relational ethics, and moral education to create human and inclusive learning conditions. These views are closely aligned with the Indigenous knowledge systems, which also focus on the compatibility and harmony and interconnectivity.

Empirical studies indicate that holistic methods of education lead to more engagement, well-being, and better comprehension as the approach allows linking learning to real-life experience and value (Sterling, 2011; UNESCO, 2017). Moreover, holistic education questions the disintegration of knowledge and fosters interdisciplinary and experience-based learning, which is in line with the modern objectives of education sustainability, global citizenship, and lifelong learning (OECD, 2019).

4.3 Transformative Learning Theory

The theory of transformative learning, which was first introduced by Mezirow (1997), is a process-based model that could be used to explain how humans update their sense-making perspectives by engaging in critical reflexivity and dialogic interaction. The most important part of this theory is the idea of perspective transformation, according to which learners scrutinise assumptions, beliefs, and worldviews critically, resulting in more inclusive, reflective, and socially conscious knowledge.

Further theorists have built on this theory to add emotional, cultural, and relational aspects of learning (Illeris, 2014; Taylor, 2018). Transformative learning is increasingly being considered as a comprehensive experience of not only cognitive, but also identity change, values change and social consciousness change.

Transformative learning, in its prospective to the Indigenous knowledge systems, offers a process that allows interacting with other epistemologies and narrative challenges dominance.

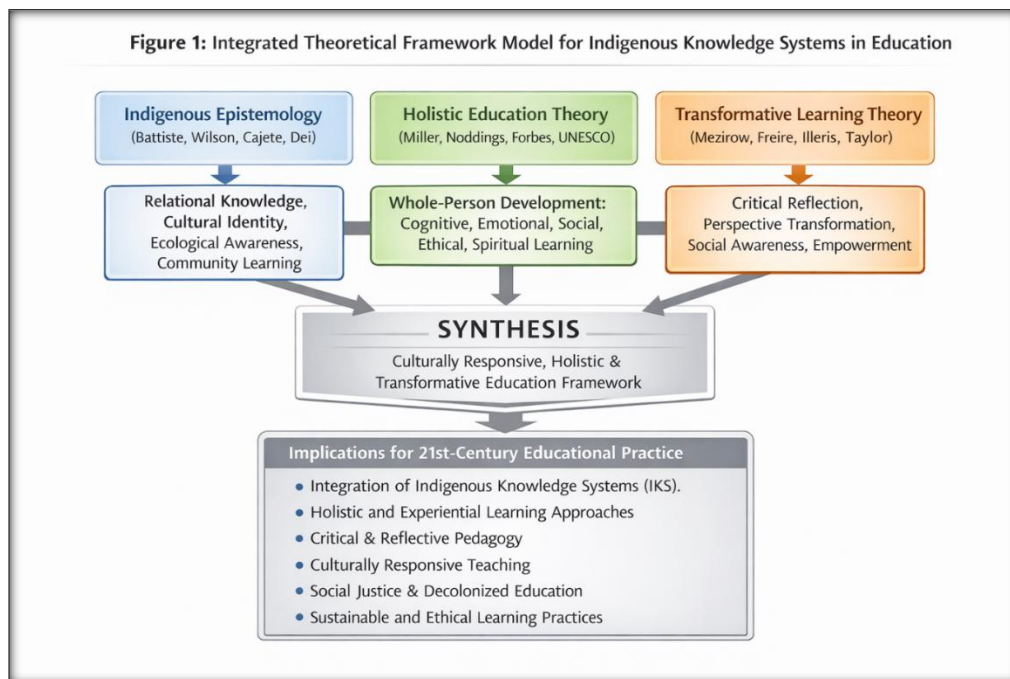
Inclusion of Indigenous perspectives into learning may help to develop critical awareness of cultural biases, epistemic injustice and power relations and therefore to establish more inclusive and socially responsive modes of learning (Andreotti, 2011; Freire, 1970). This correlates to the idea of critical consciousness by Freire where education is important in enabling people to change the oppressive social situations.

4.4 Synthesis of the Framework

The combination of Indigenous epistemology, Holistic Education Theory, and Transformative Learning Theory give a multidimensional understanding of Indigenous educational relevance of Indigenous Knowledge Systems in the twenty first century. Whereas Indigenous epistemology provides a culturally based and relational conceptualization of knowledge, holistic education offers a pedagogical approach that is concerned with the whole-person, and transformative learning offers a critical-reflective process of personal and social change.

The combination of these frameworks leads to the establishment of an educational paradigm with cultural identity, ethical responsibility, ecological awareness, and critical awareness. This synthesis corrects reductionist and instrumental methodologies of education by recommending pedagogical practices, inclusive, contextual, and transformative. It also offers theoretical basis to reconstruct education as process that does not only instil knowledge to humans but also enables human flourishing, social justice and sustainable development.

Figure-1, Integrated Theoretical Framework Model



Explanation

Figure 1 demonstrates a conjunctive theoretical framework that theorises the mutually supportive and reinforcing relationship between the Indigenous epistemology, the Holistic Education Theory and the Transformative Learning Theory as dimensions of modern educational thought. The paradigm underlines interdisciplinary scholarship which tries to

transcend reductionist and Eurocentric conceptualizations of education; to more inclusive, relational and transformative conceptualizations.

The Indigenous epistemology occupies the upper level of the model and forms the philosophical basis with focus on relational knowledge, continuity of cultures and ecological interconnectedness. Ways of knowing among the indigenous conceptualise knowledge as an ever-evolving practise that is social, contextual and ethically situated along the relationship between individuals, communities and the natural world (Battiste, 2002; Wilson, 2020; Cajete, 1994). These views are critical of the Western epistemological culture that emphasises on objectivity, abstraction, and fragmentation, but demands a comprehensive and experiential approach to learning (Dei, 2011; Tuhiwai Smith, 2012). In this regard, the Indigenous epistemology remaps education as cultural transmission process, identity formation and stewardship of the ecological responsibilities.

Based on this epistemological platform, the theories of Holistic Education and Transformative Learning are understood as mutually intersecting and complementary pedagogical perspectives. The concept of holistic education anticipates building the wholeness of the individual through the incorporation of cognitive, emotional, social, ethic, and spiritual aspects of learning, thus creating a sense of unity between the self and the society as well as the environment (Miller, 2019; Forbes, 2003; Noddings, 2015). Empirical and theoretical literature indicates that these integrative strategies can promote the well-being, engagement and meaning-making of the learner by means of placing education in a larger human and ecological context (Sterling, 2011; UNESCO, 2017).

Transformative Learning Theory, on the other hand, offers a process based dimension, which focuses on critical reflection, dialogic interaction and perspective conversion as a means of deep learning and social change (Mezirow, 1997; Taylor, 2018). The modern developments of the theory also emphasise the impact of emotional, cultural, and relational aspects of formation of transformative learning experience (Illeris, 2014). Transformative learning is an effective instrument of critical consciousness when it is placed in Indigenous and holistic contexts, as it allows learners to challenge existing knowledge systems and thereby criticise socio-cultural assumptions and practise emancipatory learning (Freire, 1970; Andreotti, 2011).

A key element of the model, which is called the Synthesis, is the dynamic integration of all three frameworks into one pedagogical paradigm. This synthesis shows how the culturally rooted knowledge systems (Indigenous epistemology), the whole-person development (holistic education) and the critical-reflective processes (transformative learning) are intersected to inform the context sensitive-inclusive-socially responsive pedagogical practices. This form of integration conforms to the current demands of decolonizing education and building pedagogies that are sensitive to cultural diversity and the global issues (Tikly, 2019; Battiste, 2002).

The framework will finally result in a combination of mutually supportive educational results, such as the holistic learner development, the formation of cultural identity, the critical awareness, the ethical and ecological awareness, and the transformative democratic practise. These are the results that mirror the breaking down of education as a social practise that transforms individuals and leads to social justice, sustainability, and global citizenship (Biesta,

2015; OECD, 2019). In this respect, the model highlights the possibility of Indigenous Knowledge Systems, as a paradigm, to provide a blueprint of transforming education in the twenty-first century into a more equitable, inclusive, and human-flourishing entity.

5. Methodology

5.1 Research Design

The current project will involve a conceptual research design that is based on philosophical inquiry and interpretative analysis as qualitative. The approach of conceptual research is especially suitable in educational philosophy, in which the goal is to critically analyse the theoretical constructs, elucidate the major ideas, and investigate their applicability to modern pedagogical discourse (Biesta, 2015; Guba and Lincoln, 1994). Conceptual studies also interact with the extant body of knowledge to produce new theoretical concepts and frameworks unlike the empirical research designs, which use data collection in the field (Rocco and Plakhotnik, 2009).

The proposed research is based on interpretive and critical traditions, in particular on the analysis of Indigenous Knowledge Systems (IKS) and their pedagogical outcomes. The interpretative and critical approaches allow studying the culturally embedded epistemologies and studying the relations of power and epistemological hierarchies as well as the marginalisation of indigenous knowledge in mainstream education (Tuhivai Smith, 2012; Dei, 2011). This practise conforms to the current demands of decolonizing research methodology and acknowledging other forms of knowing (Battiste, 2002).

5.2 Sources of Data

The research is premised on an in-depth examination of both primary and secondary materials to the Indigenous knowledge systems and the modern theory in education.

Primary sources are texts and philosophical materials about Indigenous epistemologies, traditions, and knowledge practises. Most Indigenous knowledge systems are taught through oral traditions and experience; however, the study in question involves written interpretations and academic research of the oral knowledge (Cajete, 1994; Wilson, 2020). These are the sources that offer the epistemological as well as philosophical basis of the nature and breadth of Indigenous knowledge.

Secondary sources will include academic books, peer-reviewed journal articles, and governmental policy documents that deal with the themes of holistic education, transformative learning, decolonizing pedagogy, and sustainable development. Educational philosophy and critical pedagogy researchers have made significant contributions and are used to place Indigenous knowledge in a wider context of theoretical arguments (Miller, 2019; Mezirow, 1997; Tikly, 2019; UNESCO, 2017). The OECD Learning Compass 2030 and global education agendas are also regarded as policy frameworks that can be used to place the discussion into the context of present-day educational reforms (OECD, 2019).

5.3 Method of Analysis

The analysis utilized in the study is a multi-layered approach that involves philosophical analysis, comparative conceptual analysis and thematic synthesis.

Firstly, the philosophical analysis is employed to identify the principles of Indigenous Knowledge Systems and pay attention to such important concepts as relationality, interconnectedness, and cultural continuity. The approach permits a critical analysis of the epistemological assumptions and their connotations about education (Wilson, 2020; Battiste, 2002).

Second, a conceptual examination is carried out with the aim of comparing the concepts of Indigenous epistemology and the modern educational theories, specifically the Holistic Education Theory and Transformative Learning Theory. Comparative analysis allows revealing conceptual points of convergence and divergence and, therefore, pointing to the possibility of integrating indigenous views into the current pedagogical systems (Miller, 2019; Illeris, 2014).

Third, an integrated approach to the philosophical analysis and comparative analysis is adopted by using a thematic synthesis to draw conclusions. This assumes the process of identifying common themes, including holistic development, cultural identity, critical consciousness and ecological consciousness and then integrating them into a clear pedagogical framework (Thomas and Harden, 2008). The synthesis finally leads to the creation of an interconnected theoretical model that connects the Indigenous knowledge systems with the transformative educational practices.

5.4 Scope and Limitations

The given study is more theoretical and conceptual than empirical in its character, as it relates to the philosophical and pedagogical examination of the Indigenous Knowledge Systems instead of the actual research. Although such a method gives the opportunity to explore the aspects of the theory in depth and understand the concepts clearly, it lacks the direct empirical confirmation of the offered framework.

Also, the research is based on written accounts of the Indigenous knowledge as it might not adequately reveal the diversity and specifics of the local context of lived indigenous experiences. Indigenous knowledge is localised and dynamic as observed by scholars, and thus is hard to generalise in other cultural settings (Dei, 2011; Tuhiwai Smith, 2012).

It is consequently suggested that future studies include empirical research techniques, including case studies, ethnographic research and participatory approaches, to address the question of the practical application of Indigenous knowledge-based pedagogies in various educational institutions (Creswell and Poth, 2016). These studies would make the theoretical framework suggested in this research more applicable and valid.

6. Findings and Discussion

6.1 Reframing Holistic Development: Beyond Cognitive Reductionism

An important conclusion of this paper is that Indigenous Knowledge Systems (IKS) provides a potent remedy to the cognitive reductionism inherent in mainstream systems of education. Learning mainstream education frameworks, especially within the context of neoliberal policy agendas, are often inclined to emphasis on quantifiable educational results, on standardised testing and on the development of human capital (Biesta, 2015; OECD, 2019). IKS, by contrast,

anticipates a multidimensional concept of learning that incorporates cognitive, emotional, social, ethical and spiritual aspects.

Experiential learning, storytelling and embodied participation are indigenous pedagogical methods that enable the construction of deeper meaning and formation of identity (Cajete, 1994; Kovach, 2021). These strategies can be connected to modern advances in educational neuroscience, which place an emphasis on emotion, social context, and identity as the key factors in the learning process (Immordino-Yang, 2015). Moreover, according to the theorists of holistic education, divided curricula do not produce wisdom, compassion, and ethical responsibility, all of which are needed to face complicated situations in the world (Miller, 2019; Noddings, 2015).

In such a way, the very concept of IKS addition into the educational process does not only make it richer in terms of its methodology but also changes the very meaning of education itself, making it the process of knowledge acquisition instead of the process of development of the whole person and human well-being.

6.2 Cultural Identity, Epistemic Justice, and Inclusive Education

The results also create a strong emphasis on the importance of Indigenous Knowledge System in the development of cultural identity, epistemic justice, and inclusive education. Historically, dominant system of education has marginalised other forms of indigenous and non-western knowledge which has led to what Fricker (2007) refers to as epistemic injustice-the systematic devaluation of some forms of knowing.

Incorporating indigenous knowledge into school curricula allows students, especially those who belong to marginalised groups, an opportunity to feel their cultural identities represented and affirmed in school (Dei, 2011; Jones Brayboy and Maughan, 2009). This is in line with culturally responsive pedagogy, which underlines the necessity of relating learning to the cultural backgrounds of students in order to promote their engagement and/or success (Ladson-Billings, 1995; Gay, 2018).

Nevertheless, the results show that there is a conflict between symbolic inclusion and substantive transformation too. Although policy frameworks are becoming more supportive of inclusion, the process of introducing indigenous knowledge is usually superficial or tokenistic (Tikly, 2019). Thus, considerable integration involves curricular inclusion as well as a structural reorganization of epistemological hierarchies in education systems (Battiste, 2002; Tuhiwai Smith, 2012). This makes IKS the heart of the overarching project of decolonizing education.

6.3 Ecological Consciousness and Sustainability: Indigenous Knowledge as a Pedagogical Resource

The other important result is that Indigenous Knowledge Systems help in promoting ecological consciousness and sustainability-based learning. The native worldviews are ecological in nature where the relationship between the humans and their surrounding environment is reciprocal (Berkes, 2017; Cajete, 1994). This relation ontology is a stark contrast to anthropocentric and exploitative developmental patterns that have been the foundation of most modern-day environmental crises.

The empirical and theoretical studies reveal that traditional ecological knowledge offers useful information on sustainable management of resources, conservation of biodiversity and climate resilience (Berkes, 2017; Nakashima et al., 2012). Such knowledge in education is consistent with the international systems like Education for Sustainable Development (UNESCO, 2017) and is associated with the building of the ecological citizenship (Sterling, 2011).

Notably, the results indicate that ecological education based on IKS surpasses the technical knowledge to take into account the ethical and spiritual aspects of the environmental steward. This comprehensive entry mode is key to filling the values gap in sustainability education whereby knowledge will not suffice to change behaviour (Sterling, 2011; Tikly, 2019).

6.4 Transformative Learning, Critical Consciousness, and Decolonial Pedagogy

The research also clears up that Indigenous knowledge Systems serve as a medium of transformational learning and training of critical consciousness. There is the ability to question the dominant systems of knowledge, the cultural assumptions as well as the power relationship that the learners are exposed to the diverse epistemologies (Andreotti, 2011; Tuhiwai Smith, 2012).

This is in line with what Mezirow (1997) defines as transformative learning as a perspective transformation via critical reflection. However, present-day research holds the view that transformative learning should consider the cultural, emotional, and relational aspects of learning as well (Illeris, 2014; Taylor, 2018). Such multidimensional transformation has a rich context in the Indigenous pedagogies with their focus on storytelling, dialogue, and engagement with communities.

In addition, the results connect with the idea of critical pedagogy introduced by Freire (1970) according to which education is a practise of freedom that would address oppression and promote social transformation. Here, IKS is also used to support a decolonial pedagogical framework that does not only criticise the current power structures, but also, asserts alternative modes of knowing and being (Andreotti, 2011; Battiste, 2002).

6.5 Community-Centered Learning and Social Cohesion

Another important discovery is that Indigenous Knowledge Systems focus on the community-based learning and shared responsibility. Indigenous learning is social participatory and is inherent in the practises of the community and knowledge transfer across generations (Wilson, 2020; Cajete, 1994).

These practises are the opposite of an individualistic and competitive orientation of mainstream education, which, in many instances, puts a lot of emphasis on the achievement of individuals instead of collective well-being. Community based learning has been indicated to increase social cohesion, civic participation, and problem solving (Putnam, 2000; Jones Brayboy and Maughan, 2009).

The results indicate that community-oriented pedagogies are likely to enhance social significance of the learning process and enhancement of a sense of belonging and responsibility in the learners. It is especially relevant to the situation of growing social disintegration and cultural alienation in modern cultures.

6.6 Critical Synthesis: Toward a Transformative and Pluralistic Educational Paradigm

Collectively, these observations indicate the development of transformative and pluralistic approach of education that combines Indigenous knowledge of epistemology, holistic education, and transformative learning. This paradigm seeks to dismantle mainstream paradigms of education that are highly specific to economic productiveness and standardisation, in favour of more inclusive, ethical, and sustainable one.

Nevertheless, other obstacles, such as institutional resistance, epistemological hierarchies, and the danger of superficial integration are also mentioned in the study. To overcome these challenges, there is a need to implement a systemic change at various levels such as curriculum design, teacher education, and educational policy.

After all, the process of Indigenous Knowledge Systems implementation in modern education is not only a pedagogical breakthrough but also a paradigm shift to more equitable, culturally responsive, and socially transformative modes of learning.

7. Conclusion and Future Research

7.1 Conclusion

This paper has critically evaluated the importance of Indigenous Knowledge Systems (IKS) to philosophical and pedagogical contexts of the twenty-first-century education. The paper, based on Indigenous epistemology, the Holistic Education Theory, and the Transformative Learning Theory proves that IKS can provide a powerful and multi-dimensional framework to re-conceptualise education that should not be limited to the cognitive accomplishments and economic efficiency only.

The results of the research show that the Indigenous Knowledge Systems can play an important role in the holistic development of the learners, which helps to enhance the learning process, based on cognitive, emotional, social, ethical, and spiritual aspects. This integrative practise goes against the very fragmentation of the traditional education systems and is in line with new demands to provide education of the whole person and human thriving (Miller, 2019; Noddings, 2015). Moreover, IKS is important in the development of cultural identity and epistemic justice that allows marginalised learners to legitimise their systems of knowledge in formal education and resolves the long-standing imbalance in knowledge representation (Battiste, 2002; Tuhiwai Smith, 2012).

Moreover, the paper emphasises the role of Indigenous knowledge in fostering ecological awareness and sustainability and provides other paradigms of human-nature relationships which are highly required in the realm of ecological disasters caused by the global environmental crisis (Berkes, 2017; UNESCO, 2017). Incorporation of IKS in education, therefore, has not only a personal outcome but also a larger societal interest of sustainability and moral accountability.

Namely, the paper highlights the significance of IKS in promoting transformative learning and critical consciousness that would allow learners to participate critically in dominant epistemologies, as well as social and cultural formations (Freire, 1970; Mezirow, 1997). This places Indigenous knowledges at the heart of a decolonizing and transformative pedagogical

initiative, and aims at the establishment of more inclusive, democratic, and socially responsive education systems (Andreotti, 2011; Tikly, 2019).

Nevertheless, the paper does not ignore the obstacles related to the implementation of IKS in the mainstream education, such as institutionalised resistance, epistemological difference, and the possibility of superficial or tokenistic integration. To eliminate these challenges, a systemic change on various levels is necessary such as the design of the curriculum, education of teachers, and education policy.

In general, the research postulates that Indigenous Knowledge Systems do not only serve to add to the already existing educational paradigms but they form a paradigm upon which education should be reorganised in the twenty-first century. Ultimately, IKS can serve as a way of making education systems more equitable, sustainable, and human-centred by combining the approaches of relational, holistic, and transformative.

7.2 Future Research Directions

Although this work presents a thorough conceptual examination, there are also various research possibilities that occur, and which are essential to the further development of the theoretical and practical knowledge.

First, it requires an empirical study that analyses the practise of the use of Indigenous knowledge-based pedagogies in various educational settings. This can be well explored through case studies, ethnographic research, and approaches that are participatory in how IKS can be effectively implemented in a classroom environment and in institutional structures (Creswell and Poth, 2016; Kovach, 2021).

Second, the interdependence between Indigenous Knowledge Systems and digital and technological innovation needs to be examined in the future. With the growing integration of digital technologies and artificial intelligence in education, one should explore the role of indigenous epistemologies in shaping ethical and culturally responsive practises in the use of technology in education (Selwyn, 2021; Carney, 2022).

Third, the future studies should focus on the use of IKS in teacher education and professional growth. The process of knowledge mediation and the creation of learning environments heavily relies on teachers, so culturally responsive and critically informed teacher education needs to be created in order to facilitate successful integration of indigenous perspectives (Gay, 2018; Zeichner, 2010).

Fourth, comparative and cross-cultural research could enrich the knowledge of the workings of Indigenous Knowledge Systems in various socio-cultural conditions and ways they could benefit the world educational discourses, such as equity, sustainability, and social justice (Tikly, 2019; Nakashima et al., 2012). This type of research may assist in bridging the local body of knowledge and making it integrated in the educational systems across the globe.

Lastly, more theoretical research is required that also builds upon theoretical frameworks integrating Indigenous epistemology with more recent educational theories, such as critical pedagogy, posthumanism and sustainability education. This will help to come up with more

holistic and contextualised approaches to education that can help in handling the complexity of the twenty-first century.

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