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Dr. Manoj Kumar

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FOREWORD

I am pleased to put into the hands of readers Volume-7; Issue-6: 2025 (November-December 2025) of “**Journal of Humanities and Education Development (JHED) (ISSN: 2581-8651)**”, an international journal which publishes peer reviewed quality research papers on a wide variety of topics related to, Humanities and Education development. Looking to the keen interest shown by the authors and readers, the editorial board has decided to release print issue also, journal issue will be available in various library also in print and online version. This will motivate authors for quick publication of their research papers. Even with these changes our objective remains the same, that is, to encourage young researchers and academicians to think innovatively and share their research findings with others for the betterment of mankind. This journal has DOI (Digital Object Identifier) also, this will improve citation of research papers.

I thank all the authors of the research papers for contributing their scholarly articles. Despite many challenges, the entire editorial board has worked tirelessly and helped me to bring out this issue of the journal well in time. They all deserve my heartfelt thanks.

Finally, I hope the readers will make good use of this valuable research material and continue to contribute their research finding for publication in this journal. Constructive comments and suggestions from our readers are welcome for further improvement of the quality and usefulness of the journal.

With warm regards.



Dr. Manoj Kumar

Editor-in-Chief

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From Betrayal to Belonging: An Autoethnography of Resilience, Loss, and Renewal in a Migrant Woman's Life in London

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Abstract— This autoethnographic study tells the story of a Turkish-born immigrant woman who rebuilt her life in England after facing numerous personal challenges, including betrayal, loss, and illness. After moving to London, she began a new life as an ESOL teacher, having been a certified ESOL teacher with extensive experience in various countries. Her journey demonstrates how people can discover new strength and meaning after facing difficult experiences as an immigrant in a different country. The study is based on three main perspectives: resilience theory (Masten, 2021), which explains how people recover after hardship; transformative learning theory (Mezirow, 1991), which shows how education can change the way people see themselves and the world; and post-traumatic growth (Tedeschi and Calhoun, 2004), which describes how people can grow emotionally after trauma. The narrator used teaching English as a way to heal herself and help others. By supporting adult immigrants in their learning and integration process, she also found her own sense of purpose and belonging. Through reflection and analysis, this paper demonstrates that education can serve as both a profession and a means of emotional recovery. It can give people a reason to move forward and rebuild confidence after pain. By linking personal experience with these theories, the paper contributes to current research on migration and well-being. It demonstrates that classrooms and educational settings can become safe and healing spaces where teachers and learners share experiences, find hope, and co-create new meanings together in multicultural societies (Masten, 2021; Mezirow, 1991; Tedeschi and Calhoun, 2004). Moreover, migration can be considered an act of recovery. Leaving behind places filled with painful memories and moving to a new environment can offer emotional distance, safety, and the possibility of a fresh start. Starting life in a country where no one is familiar allows a person to redefine their story and identity in a more empowering way (King, 2012). In this sense, migration is not only a response to loss or difficulty but also a process of healing and self-reconstruction (Ryan, 2018). It can give individuals the chance to rebuild meaning, find hope, and open a new chapter in life, turning movement into transformation. For many migrants, especially women who often face social pressure, limited opportunities, or painful memories in their home countries, migration represents both escape and rebirth, offering emotional and psychological recovery alongside new social and educational possibilities (Papadopoulos, 2007; Bhugra, 2020). Through migration to a new country, they gain the chance to rebuild self-confidence, rediscover their sense of identity, and shape a more hopeful future.

Keywords— Resilience, Autoethnography, Post-traumatic Growth, Transformative Learning, Migration, Identity Reconstruction, Language Teaching, Emotional Recovery.

I. INTRODUCTION

Migration often represents both an ending and a beginning, a dislocation from one life and the uncertain construction of

another (Bhugra, 2020). For women, this transition can be particularly complex, involving not only physical relocation but also emotional, cultural, and professional reorientation. This paper presents an autoethnographic exploration of

resilience, loss, and renewal through the lived experiences of a Turkish-born ESOL teacher who migrated to England after a sequence of intense personal crises. The narrative traces a journey from betrayal and bereavement to empowerment and belonging, illustrating how education, particularly language teaching, serves as both a means of survival and a site of healing.

The narrator's migration was not motivated by opportunity but by necessity: the search for safety, dignity, and a new sense of purpose after losing family, health, and stability. Yet rather than being defined by loss, this experience opened a pathway toward transformation through education. Already an ESOL teacher before migrating, the narrator arrived in London with linguistic proficiency but without security, connections, or resources. Over time, she rebuilt her professional and personal life by teaching English to adult immigrants, completing a master's degree, and later embarking on a PhD. Through this process, education functioned as both a professional identity and a therapeutic space, a way to reframe pain into meaning and solitude into contribution.

Scholars of migration and trauma have long recognised that recovery after displacement involves more than material adjustment; it requires the reconstruction of identity and belonging (Papadopoulos, 2021). For many migrants, the classroom can become a centre, a place where social connection and self-worth are gradually restored (Cooke and Simpson, 2008). However, most research focuses on migrants as *learners* of language rather than as *teachers* who facilitate the integration of others. This study reverses that lens, exploring how teaching English to adult immigrants enabled the narrator not only to regain stability but also to find emotional recovery and a sense of purpose. Teaching thus became a bridge between self and society, transforming individual resilience into shared empowerment.

The paper is grounded in three intersecting theoretical perspectives: *Resilience Theory*, *Transformative Learning Theory*, and *Post-Traumatic Growth (PTG)*. *Resilience theory* explains how individuals can adapt and grow after experiencing challenging events. It views resilience not as a natural strength but as a changing and shared process that develops through finding meaning and support from others (Masten, 2021). *Transformative learning theory* (Mezirow, 1991) suggests that adults can alter their worldview through deep reflection on their experiences, particularly following a confusing or traumatic event. For the narrator, experiences such as betrayal, loss, and illness were turning points that led her to question who she was and what she valued. *Post-traumatic growth theory* (Tedeschi and Calhoun, 2004) expands on these ideas by explaining how individuals can

experience positive change after trauma, such as becoming more grateful for life, forming stronger relationships, and discovering new opportunities. These theories help explain how education and language teaching supported the author's emotional recovery and personal growth after trauma.

This study is also situated within the broader field of migration and integration research, particularly in relation to the experiences of women. Women often go through migration as both caregivers at home and professionals in society. During this process, they face combined challenges related to gender, culture, and unstable economic conditions (Kofman, 2020). Yet they also demonstrate unique forms of resilience through relational strength, spirituality, and education (Erel and Ryan, 2019). Through the journey, the narrator demonstrates that continuous learning can empower individuals to regain confidence and connection, even in the absence of family or institutional help.

Autoethnography provides the methodological framework for this paper. As Ellis, Adams and Bochner (2011) describe, autoethnography allows researchers to analyse their own lived experiences as culturally situated phenomena, bridging personal story and social theory. By writing from within her own experience, the narrator seeks to connect the inner world of emotion with the outer structures of migration, education, and gender. This method acknowledges that knowledge is not produced in isolation but through reflexive engagement with life as it is lived (Richardson, 2000). The aim is not to make a personal confession, but to use personal experience as a way to explore wider human stories of loss, recovery, and belonging.

The significance of this paper lies in its double perspective: it approaches trauma and resilience not only as psychological processes but also as educational acts. Teaching English to newly arrived adults became, for the narrator, a way of healing through helping, a process of rebuilding meaning by enabling others to find their voices. As noted by Cranton (2016), transformative learning often involves dialogue, empathy, and the re-examination of assumptions; the ESOL classroom provided precisely such a space. Within it, the narrator found professional renewal, emotional stability, and a sense of contribution to the collective integration of others.

In a time when global displacement is increasing and mental health among migrants is a growing concern (WHO, 2023), understanding the healing potential of education becomes essential. This paper, therefore, argues that educational and linguistic engagement can serve as forms of resilience-building and social participation for those recovering from trauma. The narrator's journey from betrayal to belonging

exemplifies how education can transform vulnerability into agency and isolation into a sense of community.

The paper proceeds as follows: Section 2 outlines the theoretical frameworks underpinning the study, integrating resilience, transformative learning, and PTG (Post-Traumatic Growth) as complementary lenses. Section 3 outlines the methodological approach of autoethnography and the ethical considerations associated with self-narrative research. Section 4 presents the narrative account, highlighting key turning points in the narrator's personal and professional transformation. Section 5 explores the implications of these experiences for understanding education as a site of healing and empowerment, and Section 6 concludes with reflections on the broader significance of resilience and renewal in the lives of migrants.

Essentially, this study contributes to the qualitative research on migration and well-being by positioning education as both a means of survival and a source of hope. It shows that while trauma breaks identity into pieces, learning and teaching can rebuild meaning and unity. As the narrator's journey demonstrates, rebuilding one's life through education is not merely about achievement, but about reclaiming humanity; the process of turning suffering into strength and exile into belonging (Noddings, 2013).

II. THEORETICAL FRAMEWORK

Understanding resilience and recovery in migration contexts requires an interdisciplinary approach that connects psychological, educational, and sociocultural theories (Masten, 2021; Mezirow, 1991; Papadopoulos, 2021). The narrator's journey, from personal devastation to professional renewal, cannot be understood only in emotional or social terms; it represents a process of cognitive, moral, and existential transformation. To analyse this complex trajectory, three complementary frameworks are employed: *Resilience Theory*, *Transformative Learning Theory*, and *Post-Traumatic Growth*. Together, they offer insight into how individuals rebuild their sense of meaning, identity, and belonging after experiencing profound disruption.

2.1 Resilience Theory: Adaptation Through Hardship

Resilience theory focuses on the processes through which individuals adapt to and recover from significant life challenges. Early understandings viewed resilience as a fixed trait, a personal toughness or ability to "bounce back." However, contemporary scholars describe it as a dynamic and relational process shaped by social context, identity, and meaning (Masten, 2021; Ungar, 2018). Resilience is not the absence of distress but the capacity to move through

pain toward adaptation and growth. In this sense, it is less about endurance and more about reconstruction.

For migrants, resilience involves navigating not only psychological but also cultural and institutional transitions. Studies highlight that resilience is often sustained by community ties, spirituality, education, and purposeful work (Hutchinson and Dorsett, 2012; Wessendorf, 2019). These factors enable people to transform their struggles into a source of strength and control over their lives (Masten, 2021). In the narrator's case, teaching English to adult immigrants became such a source of empowerment, providing a renewed sense of usefulness and connection after betrayal, illness, and isolation. Rather than perceiving herself solely as a survivor, she gradually adopted the identity of a facilitator of resilience for others. Through the classroom, resilience became mutual: by helping learners adapt to a new society, she strengthened her own capacity for adaptation.

Resilience theory also recognises the importance of protective factors, including education, optimism, and social participation (Masten, 2021). Educational settings, particularly those that value empathy and dialogue, foster resilience by offering structure, routine, and mutual recognition. For the author, the ESOL classroom provided precisely such conditions. Teaching was not only a professional activity but also a stabilising force, a stabiliser that restored self-esteem and continuity. As Ungar (2018) notes, resilient individuals find "navigational pathways" that help them meet their needs in culturally meaningful ways. In this sense, education became the pathway through which the researcher navigated a new life.

2.2 Transformative Learning Theory: Education as Renewal

Transformative Learning Theory (TLT), first articulated by Mezirow (1991), explains how adults reinterpret their experiences through critical reflection, leading to fundamental changes in perspective. According to Mezirow, transformative learning often begins with a disorienting dilemma, an event that disrupts one's assumptions about oneself and the world. Such dilemmas may stem from loss, crisis, or migration.

Through reflection, dialogue, and self-examination, individuals reconstruct their meaning systems, achieving a deeper understanding of their identities and relationships (Cranton, 2016).

In the author's experience, betrayal, parental bereavement, and a health challenge constituted a succession of disorienting dilemmas. Each event challenged previously held beliefs about trust, safety, and purpose. Moving to England made this confusion even stronger. It took away the familiar roles and close social connections she once had.

However, re-entering education, first as a learner in a master's programme and later as a doctoral researcher, initiated a transformative learning process. Academic study provided not only intellectual stimulation but also existential clarity, enabling the author to situate personal suffering within broader social, gendered, and cultural frameworks. Through research, she redefined pain as data, experience as knowledge, and survival as a form of healing. Transformative learning is both an individual and collective experience. Mezirow (2000) and Dirkx (2012) emphasise the emotional and imaginative dimensions of adult learning, how empathy, creativity, and storytelling promote transformation. Teaching English to adult migrants intensified this process. Each classroom interaction mirrored the author's own efforts to belong, reminding her that integration and identity are shared, ongoing tasks. As learners expressed their fears, frustrations, and hopes, the author recognised fragments of herself in them. The ESOL classroom thus became a site of mutual transformation, a community of practice where personal and collective learning were interconnected.

From a transformative perspective, education can be understood as a form of healing dialogue. Cranton (2016) argues that through honest and open communication, adults reconstruct both knowledge and self-concept. In teaching migrant learners, the researcher uses dialogue, encouraging reflection and empathy among them. Simultaneously, she engaged in self-reflection, questioning how loss reshaped her purpose and worldview.

The act of teaching, preparing lessons, listening to learners' stories, and celebrating their progress became an emotional curriculum through which she re-learned compassion, patience, and hope. In doing so, she exemplified what Mezirow (1997) calls "perspective transformation": a shift from seeing oneself as broken to perceiving oneself as an agent of change.

2.3 Post-Traumatic Growth: Finding Meaning Beyond Survival

Post-Traumatic Growth Theory provides a complementary approach for understanding how individuals experience positive psychological and existential changes following trauma (Tedeschi and Calhoun, 2004). PTG does not deny suffering; instead, it acknowledges that severe crises can initiate profound development in areas such as appreciation of life, deeper relationships, personal strength, and spiritual evolution. Growth emerges not from the trauma itself but from the struggle to make sense of it.

In the context of migration, PTG is characterised by the capacity to rebuild one's life in unfamiliar surroundings while reinterpreting loss as a transformative experience (Joseph, 2015). For the narrator, post-traumatic growth

unfolded through the integration of personal hardship with professional purpose. Teaching and learning provided frameworks for meaning-making, enabling her to turn emotional pain into productive energy. The discipline of education, lesson planning, student feedback, and academic writing imposed rhythm and coherence on an otherwise fragmented life. As she observed her students overcoming linguistic and emotional barriers, she internalised their progress as evidence of collective resilience. This mutual reinforcement aligns with Tedeschi and Moore's (2020) view that growth often arises within relational and caring contexts.

Importantly, PTG also involves spiritual and existential dimensions. Survivors often report greater empathy and compassion for others, a renewed sense of purpose, and the desire to contribute to society (Calhoun and Tedeschi, 2014). The narrator's decision to pursue advanced degrees and dedicate her career to adult education reflects this orientation precisely. Her engagement in academic research, particularly in the area of the emotional well-being of migrants, demonstrates growth from personal healing to social contribution. In this sense, post-traumatic growth bridges psychology and pedagogy, illustrating how the will to help others can emerge from one's own suffering.

2.4 Integrating the Frameworks: From Survival to Contribution

Resilience, transformative learning, and post-traumatic growth intersect in the narrator's story as stages of a broader journey, from survival to contribution.

- *Resilience* explains the initial adaptation to crisis: enduring betrayal, loss, and illness while maintaining functionality.
- *Transformative learning* captures the reflective and cognitive reconstruction that occurs through education.
- *Post-traumatic growth* represents the concluding outcome: going beyond survival to achieve renewed purpose and empathy.

These frameworks are not separate steps that follow one another but part of a continuous cycle in which each element shapes and strengthens the others. Every classroom experience and academic achievement helped her build resilience and confidence. Each period of reflection led to deeper personal transformation, while supporting her students also contributed to her own growth and sense of purpose. This dynamic connection between theory and lived experience reflects what Dirkx (2012) calls "the soul work of adult learning", a process where thought, emotion, and spiritual awareness come together to create wholeness and meaning.

Moreover, integrating these frameworks within a migration context highlights education's double role as both structure and sanctuary. Structural because it provides opportunities, credentials, and stability; sanctuary because it fosters community, dialogue, and healing. For women migrants facing compounded vulnerabilities, such spaces can be lifesaving (Kofman, 2020; Erel and Ryan, 2019). Through teaching, the narrator reconstructed identity not as a victim of circumstance but as an educator contributing to the well-being of others. This shift symbolises what Mezirow (2000) describes as transformative learning: the realisation that agency is reclaimed through reflection and action.

2.5 Conceptual Model: The Education–Resilience Connection

Synthesising these theoretical elements helps visualise an Education–Resilience Nexus, where learning and teaching serve as mechanisms for emotional recovery and social participation. Within this connection:

1. *Adversity* triggers reflection and adaptation (Resilience).
2. *Education* facilitates reinterpretation and perspective shift (Transformative Learning).
3. *Contribution* to others' growth consolidates meaning and well-being (Post-Traumatic Growth).

This cyclical model suggests that teaching, far from being a one-directional act, is an exchange of resilience. As the researcher supported adult migrants in learning English, she experienced a sense of affirmation and a feeling of belonging. Language teaching thus became a dialogical process through which both the teacher and the learner co-constructed their identity.

Similar findings in adult education emphasise the restorative potential of teaching in post-migration contexts (Cooke and Simpson, 2008; Cranton, 2016).

The model also has implications for inclusive education and counselling practices. When educators recognise the emotional dimensions of learning, especially among displaced populations, they can design pedagogies that nurture well-being as well as knowledge. The narrator's experience exemplifies how trauma-informed education can operate at a people-centred level, where empathy, patience, and shared storytelling cultivate collective strength. Education in this sense becomes both intervention and inspiration.

III. AUTOETHNOGRAPHIC AND REFLEXIVE APPROACH

Autoethnography offers a unique methodological space where personal narrative and scholarly inquiry intersect. It

allows the narrator to use lived experience as both data and approach, linking the intimate with the structural (Ellis, Adams and Bochner, 2011). This study adopts autoethnography not as self-expression but as self-analysis within context, an interpretive framework that transforms individual experiences of migration, trauma, and recovery into academic insight. As Chang (2016) explains, the power of autoethnography lies in “turning personal pain into social meaning,” enabling the narrator to understand her life as part of wider patterns of resilience and education among migrant women.

3.1 Rationale for Choosing Autoethnography

The narrator's experiences could not be captured through detached observation or numerical data. The story of betrayal, illness, and migration is not only factual but emotional and existential; it requires a method that values *voice, vulnerability, and reflection*. Autoethnography offers this capacity by recognising that researchers are part of the world they study (Anderson, 2006). In the context of migration, this is particularly relevant because it reveals how structural inequalities, such as visa restrictions, gender norms, and cultural expectations, are experienced and negotiated at the individual level (Adams et al., 2017).

Furthermore, autoethnography aligns with the constructivist epistemology underpinning this paper. Knowledge is understood as co-constructed through experience, interpretation, and context rather than discovered objectively (Lincoln and Guba, 1985). By narrating her own journey, the narrator positions herself as both subject and analyst, illustrating how personal transformation can lead to conceptual understanding. The method thus serves a double function: it documents a life story while also theorising the social and emotional mechanisms that enable recovery through education.

3.2 Researcher as Participant and Observer

In this study, the narrator tells her own story while also analysing it. She is both a researcher and a participant. This approach reflects Anderson's (2006) concept of analytic autoethnography, in which the researcher remains aware of her personal involvement while still aiming to make theoretical contributions. During the writing process, the narrator continuously reflected on her experiences by keeping a journal, revisiting old letters, and reconstructing life events to maintain clarity and accuracy. Each memory was later examined through the lenses of resilience, transformative learning, and post-traumatic growth, turning personal experiences into meaningful data for analysis.

This reflexive stance demands both intimacy and distance. As Ellis and Bochner (2000) note, autoethnographers “live in the tension between vulnerability and analysis.” To navigate this tension, the researcher wrote multiple drafts,

deliberately shifting between first-person narrative (“I”) and analytical commentary (“the narrator”).

This balance allowed the researcher to express genuine emotions without becoming overly emotional or sentimental. In this way, reflexivity served as a kind of protection, ensuring the story remained both personal and academically thoughtful.

3.3 Writing as Inquiry

Autoethnography treats writing itself as a method of inquiry (Richardson, 2000). The process of composing, revising, and interpreting one’s own story generates knowledge by revealing patterns that are invisible in lived experience. For the researcher, writing this article was part of her healing process: by naming and analysing experiences of betrayal, bereavement, and illness, she reconstructed their meaning within a framework of education and renewal. This approach transforms narrative into analysis; the act of storytelling becomes a form of sense-making (Adams and Holman Jones, 2022). Each paragraph reflects on past experiences through a present lens, transforming experiences of survival into meaningful academic insight.

3.4 Ethical and Emotional Considerations

Writing about personal trauma raises ethical questions distinct from those in conventional research. While there are no other external participants, the process still involves emotional risk and representational responsibility (Ellis, 2007). The researcher approached this work with what Berry (2021) refers to as *relational ethics*, a commitment to respect, empathy, and sensitivity toward all individuals mentioned, including family members and former partners. Identifying details were anonymised, and emotional distance was maintained through reflective rather than confessional language. The purpose is not to expose, but to illuminate: to demonstrate how education and teaching facilitated recovery without compromising privacy or dignity. Self-care was also integral to the ethical process. As Wall (2008) emphasises, autoethnographers must protect their own well-being when revisiting painful experiences.

During the writing process, the researcher paid close attention to her emotional state. She paused whenever emotions became too intense and continued only after regaining focus and emotional balance. This mindful approach ensured that writing served as a process of healing rather than a source of renewed pain.

3.5 Trustworthiness and Credibility

In qualitative inquiry, credibility replaces statistical validity as the key criterion for quality (Lincoln and Guba, 1985). For autoethnography, credibility arises from *transparency, reflexivity, and resonance* (Ellis et al., 2011). Transparency was maintained by clearly delineating the stages of

recollection and analysis. Reflexivity was achieved through continual questioning of assumptions: “Why am I telling this story? What social meanings does it reveal?”. Resonance was pursued by linking individual experiences to collective phenomena, such as migration, gender, and resilience, so that readers may recognise elements of their own or others’ lives. These strategies lend authenticity to the narrative while preserving academic rigour.

3.6 Reflexivity as Empowerment

Reflexivity in this study extends beyond methodological practices. The researcher regained a sense of control and independence over experiences that were once defined by loss and reliance on others. This reflects the transformative learning process described by Mezirow (1991), in which increased awareness and reflection lead to meaningful and empowering change. As Holman Jones, Adams and Ellis (2016) observe, autoethnography “makes the personal political” by revealing how private experiences are shaped by social forces. Through this act of scholarly storytelling, the researcher transforms vulnerability into voice and isolation into dialogue.

3.7 Limitations of the Approach

Autoethnography, while rich in depth, has limitations. It does not claim generalisability; rather, its value lies in *transferability*, the reader’s ability to connect the insights to their own contexts (Stake, 2010). Memory is selective, and emotions may shape interpretation. As Ellis and Bochner (2000) explain, personal feelings and perspectives are not weaknesses in research but natural aspects of human understanding. They demonstrate that real experiences are complex and cannot always be viewed as neutral or objective. By recognising these limits, the study remains honest and encourages open discussion instead of attempting to provide final answers.

This section has outlined the methodological and reflexive foundations of the study. Autoethnography was chosen for its capacity to integrate emotion, narrative, and analysis, enabling a deeper understanding of resilience and transformation within the context of migration. Reflexivity ensured balance between personal authenticity and academic discipline, while ethical mindfulness protected the integrity of all involved. Ultimately, the approach transforms lived experience into a site of knowledge production, demonstrating that scholarly inquiry can itself be an act of healing.

IV. NARRATIVE BODY: FROM BETRAYAL TO BELONGING

Autoethnographic writing transforms private memories into public meanings, revealing how individual experience can

reflect broader social truths (Ellis, Adams and Bochner, 2011). The researcher's story unfolds through several interconnected phases, including loss, migration, and rebuilding, as well as healing through teaching and renewal through education. Each phase shows how resilience, learning, and personal growth come together in the journey of a woman who rebuilds her identity and sense of purpose after trauma.

4.1 Loss and Disintegration

Every story of renewal begins with an ending. For the researcher, that ending arrived unexpectedly, marking the collapse of long-held trust and stability in her personal life. The sudden change dismantled the foundations on which her sense of security had rested. What once felt familiar became unrecognisable overnight, leaving a silence in which even language, once her profession and passion, seemed to lose meaning.

A major personal loss marked the beginning of a period of social and financial instability. Having placed her own academic goals on hold for several years due to personal circumstances, she later found herself with limited resources and uncertain prospects. Her professional identity as an educator conflicted with a personal reality shaped by loss and dependence. However, even during this difficult time, a quiet determination to rebuild emerged, a form of resilience that Masten (2021) describes as "ordinary magic," the human capacity to adapt and find meaning in adversity. Looking back, these moments of silence and grief became the foundation for later transformation.

Loss soon deepened, and after moving to London in search of renewal, the author faced another series of personal hardships that tested both her emotional and physical strength once again. These experiences shook her sense of security and stability more deeply this time. Yet, as Tedeschi and Calhoun (2004) note, trauma can also lead to growth by encouraging people to find new meaning in their lives. The narrator's recovery became a quiet expression of strength and transformation, demonstrating that through reflection, even the deepest pain can give way to renewal.

4.2 Migration and Rebuilding

Migration to London marked both the end of one era and the beginning of a new one. Arriving with limited resources but fluent in English, the narrator found herself in a challenging position: well-prepared in language yet often overlooked in society. Like many migrants, she entered an environment where people's value was largely judged by their legal status and income, rather than their skills or character (Kofman, 2020). At first, her survival depended on taking temporary jobs. However, it still provided a sense of purpose and self-respect.

Gradually, the multicultural environment of London began to reshape the author's understanding of herself and her place in society. The city's diversity offered both privacy and connection: she could remain unseen yet still feel part of a wider community of people who had also left their previous lives behind. Scholars of migration note that belonging is not a fixed condition but a continuous process of interaction between individuals and their social surroundings (Erel and Ryan, 2019). Through everyday encounters, in public spaces, local shops, and language schools, the author gradually reconstructed her identity, seeing herself not as a passive subject of circumstance but as an active participant in a new community.

This period also demanded pragmatic resilience. Navigating housing insecurity, financial strain, and bureaucratic processes required persistence and resourcefulness. Yet, as Ungar (2018) suggests, resilience is built through action, not avoidance. Each small victory, such as securing accommodation, completing paperwork, and establishing local connections, restored her sense of control. Starting to teach ESOL revived a sense of competence and purpose. Language once again became a bridge, this time not only between cultures but also between despair and direction.

4.3 Teaching as Healing

When formal employment became possible, the author joined an adult education institution as an ESOL teacher, working with adult immigrant learners from diverse backgrounds. Teaching, once a career, has now become a source of strength. Standing before her students, she rediscovered the rhythm of the classroom; the steady flow of teaching, the subtle dance between teacher and learner, and the work started to carry a new meaning. She was not simply teaching grammar or vocabulary; she was promoting confidence, self-expression, and integration for people navigating the same uncertainties she had endured.

The ESOL classroom thus became a therapeutic space, echoing what Cranton (2016) refers to as the "emotional dimension of adult learning." In guiding the adult immigrant learners, the author found herself guided as well. Each lesson mirrored her own process of adaptation: as students learned to introduce themselves, she learned to reintroduce herself to life. Their progress reflected her own growth, forming what Tedeschi and Moore (2020) describe as *relational resilience*, a mutual strengthening born from shared struggle.

One student, a Syrian mother, once confided: "*When I learn English, I feel I exist.*" That sentence resonated deeply. The narrator realised that teaching was not merely linguistic instruction but a form of existential affirmation. By helping others find their voices, she was restoring her own. This aligns with Mezirow's (1991) transformative learning

theory, which views education as a process of reframing meaning through dialogue and reflection. The ESOL classroom became a mirror reflecting resilience back to its source.

Teaching also offered structure and belonging. Throughout the chaos of recovery and the fatigue of illness, she continued working; the routine of lesson planning and classroom interaction provided a sense of stability. Professional recognition, however modest, revived her sense of worth. Education thus operated both as employment and as emotional rehabilitation. The act of teaching reaffirmed her narrative: she was no longer defined by what she had lost and gone through but by what she could offer.

4.4 Education as Renewal

Re-entering higher education marked the next phase of transformation. Encouraged by the intellectual environment of London, the narrator pursued a master's degree in adult education and migration, followed by doctoral studies that explored the psychological well-being of migrants in educational contexts. This academic journey represented not only professional ambition but also post-traumatic growth, a conscious effort to transform pain into knowledge (Joseph, 2015). Studying migration, language, and resilience allowed her to externalise her experiences, situating them within scholarly discourse rather than private memory.

Education also provided access to supportive networks: supervisors, peers, and fellow researchers, who offered validation and understanding. These relationships exemplify what Masten (2021) identifies as "resilience enablers": social connections that reinforce optimism and persistence. Through research, the author began to see life not as a fragmented sequence of crises but as a coherent narrative of learning. Each academic milestone symbolised survival: completing assignments after chemotherapy, presenting at conferences despite exhaustion, and submitting chapters while working full-time. The classroom, once a workplace, evolved into a community of inquiry and empathy.

Academic life also became a space for rebuilding. Having once given up her own studies, she was now able to continue learning on her own terms. This change gave her a new meaning to independence: education was no longer something she supported for others, but something she actively shaped and experienced for herself. Her doctoral research, which explores counselling and emotional well-being among migrants, reflects her path from pain to contribution.

As she listens to others' stories of adjustment, she recognises parts of her own experience, completing a

journey from being affected by trauma to understanding it through research.

4.5 From Survival to Contribution

Across these stages, a unifying pattern emerges: survival evolves into contribution. The author's trajectory demonstrates that recovery is not merely about returning to equilibrium but about achieving a higher level of functioning through empathy and purpose. Post-traumatic growth theory (Tedeschi and Calhoun, 2004) suggests that those who have suffered deeply often develop heightened compassion and a commitment to helping others. This resonates profoundly with the narrator's experience: teaching and research became vehicles for solidarity with other migrants.

Her work with adult learners provided daily reminders that resilience is a collective effort. Learners' laughter during lessons, their pride at passing exams, and their gratitude for small acts of kindness illustrated what Papadopoulos (2021) calls *healing through connection*. Within this microcosm of multicultural London, belonging was co-created. As one student remarked, "*You understand us because you are one of us.*" That recognition validated years of struggle: the pain of displacement had become the foundation of empathy.

In transforming personal adversity into social contribution, the author exemplified what Cranton (2016) terms *transformative praxis*: the application of learning to foster change in self and society. Her resilience was not individual heroism, but a relational process grounded in care and education. Through teaching and academic engagement, she redefined both professional identity and emotional well-being, illustrating how the educational sphere can serve as a crucible for post-traumatic growth.

4.6 Reflections on Meaning and Belonging

Looking back, the author recognises that her journey was less about recovery than about reconstruction, the deliberate rebuilding of identity, confidence, and hope. Resilience did not mean erasing pain but integrating it into a broader story of purpose. As Dirkx (2012) observes, adult learning often engages the "inner work of the soul," uniting intellect and emotion. In this sense, teaching English and pursuing higher education were not separate endeavours but complementary expressions of the same impulse: to transform suffering into meaning. She once reflected in her research journal: "*In teaching others how to speak English, I learned how to live again.*" By connecting personal experiences to theory, the narrative shows that when people reflect on their trauma, it can lead not to hopelessness but to personal growth and a deeper understanding of themselves and the world around them.

V. DISCUSSION AND IMPLICATIONS

The narrative presented in this study reveals the interconnected nature of trauma, resilience, and education in migrant women's lives. It illustrates that healing after displacement does not occur in isolation but through processes of meaning-making, reflection, and contribution. The narrator's journey from loss and betrayal to academic and professional renewal demonstrates how the human capacity to learn, teach, and create can transform suffering into empowerment. This discussion section connects those lived realities to theoretical and practical implications for education, counselling, and migration research.

5.1 Rethinking Resilience: From Endurance to Empowerment

In social narrative settings, resilience is often romanticised as individual toughness, the ability to "bounce back" after adversity. However, the narrator's experience supports a more nuanced understanding aligned with Masten's (2021) conception of resilience as a *process of adaptive systems*. Resilience here emerges not from denying pain, but from engaging with it. Teaching English, for example, allowed the narrator to process trauma by transforming emotional energy into purposeful activity. This redefinition shifts resilience from passive endurance to active empowerment.

For educators and policymakers, this distinction matters. Migrant resilience should not be framed solely as survival under hardship, but rather as the creative reorganisation of life through learning and participation. Institutions that support migrants, such as language schools, universities, and community centres, can nurture such resilience by recognising the emotional and relational dimensions of education. Classrooms become not only sites of instruction but also spaces of social repair where participants, like the narrator and her learners, construct new meanings together. As Papadopoulos (2021) observes, healing among displaced individuals often occurs in the ordinary moments of relational connection, rather than through formal therapy.

5.2 Education as a Space for Healing and Belonging

The author's story affirms that education is both a cognitive and affective process. ESOL teaching to adult immigrants functioned as an act of care, what Noddings (2013) calls "pedagogical compassion." Within the ESOL classroom, mutual empathy and shared struggles produced a sense of belonging. This aligns with transformative learning theory, which posits that dialogue and reflection serve as mechanisms for changing perspectives (Mezirow, 1991; Cranton, 2016). Through interactions with students, the narrator experienced her own transformation: each conversation about fear, hope, or identity mirrored her own reconstruction of self.

The implications extend beyond individual experience. Adult education programmes that integrate emotional and social learning alongside language instruction can serve as powerful platforms for community integration (Cranton, 2016). Educators working with migrants should be trained to recognise the psychosocial aspects of learning, acknowledging that language acquisition often accompanies healing from trauma. While the author did not face language barriers, she used linguistic and pedagogical skills as instruments of social connection. Her case illustrates that language education is not only about grammar and vocabulary, but also about giving and regaining voice, a process essential to human dignity.

Furthermore, universities and training institutions could incorporate reflective and trauma-informed practices into their ESOL teacher education programs (Norton, 2013). Encouraging teachers to explore their own identities and emotional journeys, as the narrator has done, may lead to more empathetic and inclusive classrooms. This echoes Dirkx's (2012) notion of "soul work," in which educators' engagement with their inner lives enhances their capacity to connect with learners' humanity.

5.3 Post-Traumatic Growth and Transformative Praxis

Post-traumatic growth theory (Tedeschi and Calhoun, 2004) offers a lens to understand the narrator's transformation from personal suffering to professional contribution. Her trajectory embodies the five domains of PTG: appreciation of life, relationships with others, personal strength, recognition of new possibilities, and spiritual change. These dimensions manifested through teaching, learning, and research. For instance, the narrator's commitment to empowering her students reflects *relational growth*, characterised by a shift from self-preoccupation to prosocial engagement (Tedeschi and Moore, 2020). Her pursuit of advanced education signifies *new possibilities*, while her compassionate teaching exemplifies *spiritual change* grounded in service.

This case demonstrates that educational practice can itself be a form of post-traumatic growth. In teaching others to navigate linguistic and cultural barriers, the narrator reconfigured her own trauma narrative into one of purpose and meaning. Such transformation highlights the potential for education to act as a medium of recovery, not only for learners but also for educators who have experienced loss or displacement. The narrator's journey supports Joseph's (2015) claim that growth following trauma is relational and meaning-based: people heal by engaging in purposeful activities that benefit others.

The concept of transformative practice (Cranton, 2016) further illuminates this process. By applying theoretical reflection to practical action, individuals turn insight into

self-direction. The author's movement from emotional paralysis to teaching and academic engagement exemplifies application in action: knowledge emerging from lived experience and feeding back into community well-being. Her research on migrant mental well-being represents a feedback loop where personal experience becomes a resource for social understanding, a powerful example of how education can serve humanity.

5.4 Gender, Migration, and Intersectional Resilience

The narrative also contributes to the fields of feminism and migration by emphasising the intersectional nature of resilience. This aligns with Erel and Ryan's (2019) argument that migrant women often build *cultural and social capital* through caregiving, learning, and teaching activities, which sustain communities while reconstructing their identities.

The narrator also represents what Kofman (2020) calls *agents of integration*, individuals who shape community cohesion through everyday acts of support and solidarity. Her ESOL teaching became both a livelihood and a lifeline, transforming professional competence into a mode of empowerment. For other women navigating similar transitions, this narrative offers a model of independence and strength rooted in compassion rather than competition.

5.5 Implications for Counselling and Educational Practice

The findings hold important implications for practitioners working with migrants in educational and counselling settings. First, the integration of emotional well-being within educational programmes should be prioritised. Counsellors and teachers can collaborate to create safe spaces where learners' stories are heard and validated. Trauma-informed pedagogy, which acknowledges the emotional impact of displacement, can enhance engagement and retention in adult learning environments (Horsman, 2018). The narrator's classroom experience suggests that empathy and recognition, simple gestures of listening, can have therapeutic effects comparable to formal counselling interventions.

Second, professionals supporting migrants should recognise the reciprocal nature of healing (Day and Leitch, 2001). Educators, too, carry emotional histories that shape their practice. Providing reflective supervision or peer discussion opportunities allows teachers to process their own experiences while sustaining their capacity to care. As the narrator's experience illustrates, teaching is not only cognitive labour but emotional work, a continuous negotiation between giving and replenishing energy. Institutional recognition of this dimension could improve both teacher well-being and student outcomes (Noddings, 2012).

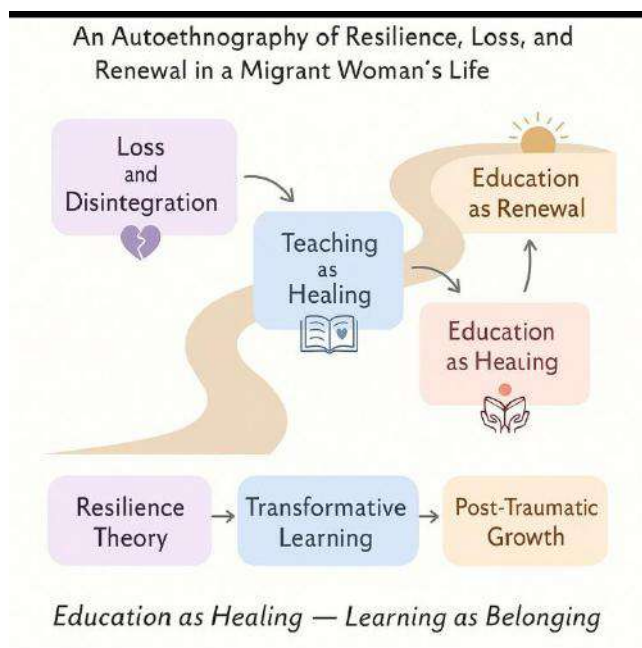
Finally, this study underscores the importance of storytelling as a counselling and educational tool. Encouraging migrants to narrate their journeys supports independence and integration (White and Epston, 1990). The narrator's own process of writing, transforming her life into a narrative, served as a form of self-counselling. Structured opportunities for learners to share and reflect on their stories could similarly promote psychological integration and mutual understanding within multicultural classrooms.

5.6 Implications for Research and Policy

At a broader level, this study invites researchers and policymakers to reconsider the role of education in integration and mental health policy. While language instruction is often framed as an economic necessity, it also carries profound social and emotional significance (O'Connor, 2008). Supporting adult education initiatives that combine language learning with psychosocial support could strengthen community cohesion and reduce isolation among migrants (Rodgers and Scott, 2008). Policymakers should view education not only as a means of skill-building but also as a form of social infrastructure that promotes resilience.

For future research, this narrative demonstrates the potential of autoethnography in migration and well-being studies. By centring lived experience, researchers can access the emotional textures of migration that quantitative data overlook. Further comparative autoethnographic or narrative inquiries, particularly among educators who are themselves migrants, could enrich understanding of how teaching mediates belonging and recovery across cultures.

The discussion confirms that resilience, learning, and belonging are not isolated phenomena, but rather interdependent dimensions of human adaptation (Jennings and Greenberg, 2009). The narrator's lived experience exemplifies how trauma can be transmuted into contribution through reflection and education. For practitioners, this narrative highlights the therapeutic potential of teaching and the importance of empathy in multicultural learning environments. For researchers and policymakers, it offers evidence that education is a psychosocial as well as an intellectual process. This story illustrates that healing and integration are collective endeavours, fostered through dialogue, compassion, and the courage to continue learning.



The diagram illustrates the continuous movement from disintegration to renewal, demonstrating how teaching and learning serve as transformative spaces where healing occurs. It integrates the theoretical foundations of resilience, transformative learning, and post-traumatic growth to demonstrate that education can be both restorative and empowering.

VI. CONCLUSION

This autoethnographic study examines the intersection of resilience, learning, and belonging in the lived experience of a migrant woman who rebuilt her life through education after experiencing profound loss. Through the lens of personal narrative, the paper has illuminated how betrayal, bereavement, illness, and migration can disrupt identity yet also generate opportunities for transformation. The author's journey, from silence to expression, from isolation to community, demonstrates that recovery is not a return to a former self but the creation of a new one. Education, particularly language teaching and academic engagement, emerged as the central medium through which this reconstruction occurred.

The story highlights the importance of approaching resilience not as an individual trait, but as a relational and educational process. As Masten (2021) suggests, resilience is sustained through ordinary systems of human interaction, including family, friendship, community, and learning. For the narrator, the ESOL classroom became such a system, a reflection of the multicultural structure of London, where empathy and dialogue fostered healing. Teaching adult immigrants allowed her to re-engage with life through service and solidarity. In giving others a voice, she

rediscovered her own. This interconnected healing process reveals that education can serve as a form of social therapy, offering both structure and a sense of belonging in the aftermath of displacement (Ellis, Adams, and Bochner, 2011).

At a theoretical level, the paper is grounded in three complementary frameworks: Resilience Theory, Transformative Learning Theory, and Post-Traumatic Growth, which are used to interpret this journey (Mezirow, 1991; Tedeschi and Calhoun, 2004). Together, these frameworks highlight that the author's transformation was not accidental but the outcome of deliberate reflection, engagement, and action.

Importantly, this study demonstrates that education can serve as a form of self-restoration. The narrator's re-entry into higher education represented a reclaiming of autonomy that had been lost to circumstance. In academia, she found both intellectual challenge and emotional sanctuary. Through her study, she transformed private pain into collective knowledge, converting her own memory into a contribution. This transformation from a subject of trauma to a producer of insight exemplifies the essence of autoethnography: making the personal political and the emotional analytical (Ellis, Adams, and Bochner, 2011).

The implications extend beyond the individual case. For educators and counsellors working with migrants, this narrative illustrates the importance of recognising education's emotional dimensions. Learning and teaching can be profoundly therapeutic when approached with empathy and reflection (Frank, 2013). Institutions that nurture these qualities, offering spaces for dialogue, cultural recognition, and shared storytelling, can facilitate both integration and well-being. The narrator's experience confirms that belonging is not granted by citizenship alone but cultivated through participation and contribution. In her case, professional identity and emotional recovery were inseparable: to teach was to heal; to study was to survive.

This narrative also challenges deficit-based portrayals of migrant women. Migration literature positions women as vulnerable dependents rather than active agents of change (Erel and Ryan, 2019). This story challenges the argument by illustrating how education empowers autonomy, even in the context of loss and illness. Her resilience was characterised not by detachment or denial, but by care both for herself and others. In this sense, her journey exemplifies *relational resilience* (Tedeschi and Moore, 2020): the capacity to grow through connection, compassion, and contribution. This reframing encourages policymakers to view migrant women not as recipients of support but as potential leaders and educators within their communities.

On a methodological level, the study demonstrates the analytical and ethical potential of autoethnography. By integrating lived experience with theoretical reflection, it produces knowledge that is both personal and transferable. The method foregrounds the humanity of research, inviting empathy while maintaining rigour. As Richardson (2000) explains, writing is not just a means of describing experiences, but also a way to understand them more deeply; it helps people think critically and make sense of what they have lived through.

Through this process, the act of storytelling became inseparable from the act of healing. This highlights the value of narrative methodologies in migration and well-being research, where emotion, identity, and meaning are central concerns.

From a policy and practice perspective, the findings invite a reimagining of adult education as a holistic system of integration. Language teaching should be recognised not only as a skill-based intervention but as a psychosocial support mechanism (Mezirow, 2000). Investment in adult education, particularly in ESOL programmes, can yield dividends in public health, community cohesion, and mental well-being. Similarly, academic institutions can play a crucial role by supporting migrant scholars through mentorship, inclusive curricula, and recognition of experiential knowledge. The narrator's trajectory demonstrates that, given access to education and community, even those who have faced extreme adversity can become contributors to knowledge and society.

The central message of this paper is one of hope and continuity. This journey from betrayal to belonging illustrates that life, even when fractured by loss, can be rewoven through learning. Education that includes empathy can help people feel human again. The strength that grows from this is not just about surviving difficulties but about finding meaning and purpose in them. For both migrants and teachers, this suggests that healing and teaching are closely interrelated; each requires listening, understanding, and the courage to start anew (hooks, 1994; Freire, 1972; Mezirow, 2000).

As the narrator reflects, "Teaching others how to speak English helped me find my own voice. Education became my bridge from survival to belonging." This stance highlights the transformative potential of learning, not merely as an academic pursuit but as a fundamental human necessity. In a world marked by displacement and division, such stories serve as reminders that resilience is not a solitary achievement, but a shared endeavour. Through compassion, reflection, and education, it is possible to rebuild what has been broken; to find, within the very act of learning, the essence of belonging.

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Exploration of the Reform of the Sedimentary Petrology Laboratory Course Assessment System from Pre-class to Post-class

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Abstract— This paper addresses the challenges associated with assessing sedimentary petrology laboratory courses. To tackle these issues, digital technology was integrated to establish a comprehensive assessment system, which evaluates pre-class preparation, in-class participation and operation, group work, and laboratory reports. Through the use of intelligent teaching platforms and wireless digital microscopes, students' learning process is comprehensively monitored and assessed. The findings of this study provide a valuable reference for experimental teaching assessment in geology-related disciplines.

Keywords— Laboratory Course; Comprehensive assessment; Diversification; Sedimentary Petrology.

I. INTRODUCTION

Depositional rocks are formed through a series of geological processes such as transportation, deposition, and consolidation. They are one of the three major types of rocks that make up the Earth's lithosphere. These rocks are primarily distributed in the upper part of the lithosphere and the surface layer of the Earth's crust, accounting for 75% of the the exposed surface area on Earth. Depositional rocks harbor the vast majority of the world's mineral resources, including energy sources like petroleum, natural gas, and coal, as well as a large number of non-metallic, metallic, and rare element minerals, and paleontological fossils^[1]. Sedimentary petrology is a core basic course for undergraduate majors such as geology, resource exploration engineering, and exploration technology and engineering in colleges of geology and mineral resources, and petroleum. It is crucial for workers in the related industries^[2]. The course includes both theoretical and experimental content. The theoretical part mainly explains the concepts and basic principles related to sedimentary rocks and sedimentary

processes. the experimental class deepens students' understanding of the macro characteristics and microstructure and structural characteristics of sed rocks through their observation of sedimentary rock hand specimens and rock thin sections, which is of great significance for improving teaching quality and cultivating students' abilities^[3]. It is widely acknowledged that assessment is a crucial component of teaching, and the effectiveness of teaching largely hinges on the assessment methods^[4]. However, due to the factors such as the singleness and fragmentation of the assessment methods for laboratory courses, the assessment results may not be able to objectively evaluate the effects of students' practical learning. Therefore, based on a systematic analysis of the existing problems in the assessment of the laboratory Course in Sedimentary Petrology, this paper proposes a comprehensive assessment system that covers the entire process from pre-class preparation, in-class activities to the submission of experimental reports.

With the help of the wireless digital interactive microscope experimental platform for monitoring and real-time evaluation, the course goal of scientific assessment of experimental teaching for cultivating applied technical talents with integrated learning, thinking and application, and first-class comprehensive quality is ultimately achieved.

II. THE CURRENT STATUS OF THE ASSESSMENT SYSTEM FOR SEDIMENTARY ROCK EXPERIMENTAL COURSES

2.1 Lack of Pre-class Preview Assessment

Laboratory courses are important teaching links to consolidate and deepen students' theoretical knowledge, stimulate their interest in learning, cultivate their innovative consciousness and the ability to connect theory with practice. The practicality and rationality of the assessment methods play a crucial role in the selection and training of various types of talents^[5]. However, in the current teaching of sedimentary petrology experimental courses, some students have obvious deficiencies in the pre-class preview stage. For example, when teachers ask questions such as the macroscopic identification characteristics of feldspar and how to distinguish calcite from dolomite under the microscope, students' answers are often vague and inaccurate. After entering the experimental stage, these students are at a loss, with only a superficial understanding of the operating procedures and precautions of the microscope, which reflects that they have not seriously previewed the experimental content before class. This problem of insufficient preview seriously affects the progress and accuracy of the experiment.

2.2 Coarse Assessment in Laboratory Experiments

In the current sedimentary petrology laboratory teaching, there is a problem of coarse assessment in experiments. Under normal circumstances, teachers mainly evaluate students through class attendance and experimental operation performance. However, class attendance can only reflect whether students are present in class, and cannot reflect their actual performance and ability level during the experimental process. On the other hand, due to the limited energy of teachers, it is often impossible to fully record and accurately evaluate the operational details of each student. Therefore, the evaluation of

experimental operation performance can only rely on subjective impressions for scoring. In this case, students' participation in classroom interaction, practical ability, problem-solving ability, and innovative thinking have not been fully assessed^[6].

2.3 Simplification of Experimental Course Grades

At present, the assessment of experimental courses in most domestic colleges and universities is mostly focused on the learning outcomes, while neglecting the learning process. The assessment methods are relatively singular and subjective, and the composition of experimental grades is relatively simple. In most universities, the grades of sedimentary rock experimental courses are composed of class attendance and the evaluation of experimental reports according to a certain proportion. Some even use the evaluation of experimental reports as the final grade, lacking a unified assessment standard and a reasonable assessment method.

III. CONSTRUCTING A NEW TYPE OF DIVERSIFIED ASSESSMENT SYSTEM FOR SEDIMENTARY PETROLOGY LABORATORY COURSES

The laboratory course of sedimentary petrology covers two aspects: hand specimens and thin sections. The identification of hand specimens is the foundation, which mainly involves preliminary identification of the color, lithology, structure, and texture of sedimentary rocks, as well as their genetic markers, to lay the foundation for subsequent research. The identification of thin sections, on the other hand, involves observing and analyzing sedimentary rocks at the microscopic level with the aid of a microscope. It is an extension and deepening of fieldwork and a crucial step in verifying the correctness of preliminary understandings^[7].

With the establishment of smart laboratories and the widespread application of intelligent teaching systems such as Yu Classroom and Learning Through, a new intelligent teaching model for laboratory courses has gradually taken shape. Against this backdrop, the establishment of a diversified experimental performance assessment system can comprehensively, multi-dimensionally, and throughout the entire process examine students' learning engagement and outcomes, thereby effectively promoting students' self

- directed learning and enhancing their internal motivation for learning ^[8].

3.1 Pre-class Assessment

The purpose of pre-class preview is to enable students to master the identification characteristics of the main rock-forming minerals of sedimentary rocks. To this end, we have used tools such as the Fanya Classroom to build an online preview management platform that meets the course requirements. The platform provides a variety of preview materials, such as videos and documents. After completing the preview content, students must pass the test on the preview platform before entering the laboratory to start the experiment. The AI teaching assistant will record each student's test score, which will be used as the score for pre-class preview.

3.2 In-class Assessment

3.2.1 Class Attendance

Class attendance is an important means for teachers to grasp students' attendance information, and the main purpose is to urge students to attend classes on time ^[9]. Teachers import an Excel file containing information such as student ID, name, and class into the system through the class management function of NowLab and set the effective sign-in time to 15 minutes before class. A sign-in dialog box will pop up on the student's end, and students need to enter their student ID and name to complete the sign-in. Students who sign in after the effective time will be considered late. After the sign-in is completed, the teacher will compare the students' sign-in information with the student list and export the Excel file for storage as the students' attendance score.

3.2.2 Experimental Operation

In class, students are divided into groups using the wireless interactive teaching platform, and experiments are conducted on a group basis. The experimental content includes two major categories: clastic rocks and carbonate rocks. The teacher first explains and demonstrates the experimental content, and then the students operate independently. Throughout the experimental process, teachers should shift from the "main role" to the "supporting role," allowing more time to students to explore on their own. This not only provides the teacher with more time to assess the students' operational performance but also fully stimulates the students' initiative and self-learning abilities. During this period, the teacher closely monitors each

student's experimental situation through classroom monitoring, provides timely guidance and assistance, promotes interaction between teachers and students as well as among students, answer questions, and evaluates students' operational performance.

3.2.3 Group Assessment

Group assessment aims to enhance students' team collaboration ability and sense of responsibility, and to include team scores in the total score. The initial score of team members is based on the benchmark score and is assessed according to the team's contribution value ^[10]. Although the wireless digital microscope teaching platform can achieve real-time interaction between students and teachers, given the limited class time, the group leader is given management authority. Group members can feedback their observation results and questions to the group leader and discuss within the group. The group leader needs to promptly summarize the group members' experimental achievements and collect the problems that have not been solved in the experiment.

Before the experimental course assessment, a group presentation and answering questions session is scheduled. The judges, composed of excellent students with a solid professional foundations, group leaders, and professional teachers, will score each group's presentation. After discarding the highest and the lowest scores, the average score will be taken as the group's score. The group leader will then score the group members based on the group's score and the members' contributions to the presentation, and this score will be counted towards the regular grade. The answering questions session aims to solve the problems students encounter in the course learning and help them better complete the course learning.

3.3 Experimental Report Assessment

The experimental report primarily evaluates students' proficiency in writing standardized identification reports for rock hand specimens and thin sections, as well as their comprehensive analytical skills for sedimentary rocks. Students randomly draw numbered sedimentary rock hand specimens and thin sections, then independently complete two integrated identification reports within the allotted time. Instructors review the reports, and the scores contribute to the final experimental report grade. This assessment method

not only ensures students' engagement but also eliminates any temptation to plagiarize.

3.4 Composition of Experimental Grades

Assessment not only serves as a test of the effectiveness of experimental teaching by instructors but also provides a comprehensive evaluation of students'

experimental attitudes, practical skills, and their ability to apply learned knowledge to solve real-world problems^[11]. In reforming the assessment methods for sedimentary petrology experiments, it is essential to fully engage students' enthusiasm and initiative while avoiding mechanical or rote learning (Fig 1) .

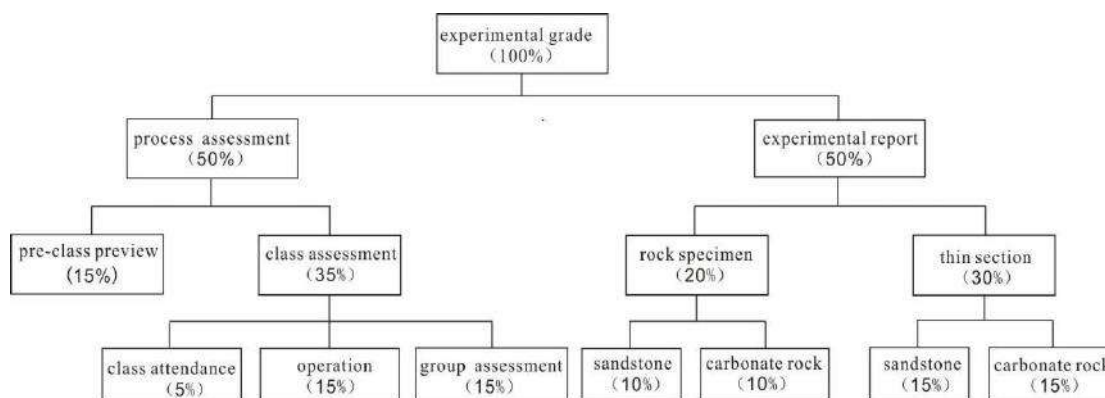


Fig.1 Composition of Experimental Grades

After five years of pedagogical practice and alignment with professional training plans and relevant institutional requirements, we have increased the proportion of process assessment scores and determined that the course grade is composed of 50% process assessment scores and 50% experimental report scores. Process assessment scores cover pre-class preview, class attendance, experimental operation, and group assessment. The experimental report grade is composed of two parts: hand specimen identification report and thin section identification report. The experimental course grade of each student is calculated according to the corresponding proportion. Students who neglect pre-class preparation or fail to diligently observe and record experimental data during class will struggle with group presentations and cannot produce high-quality reports. This approach ensures a fairer, more objective evaluation of experimental performance.

IV. CONCLUSION

Sedimentology experiments are a core course in the mineral resource exploration major of university geology and mining programs. It mainly assesses students' ability to comprehensively identify sedimentary rock hand specimens and thin sections, and is a highly practical experimental course. With the development of digitalization and the

continuous improvement of the school's online teaching platform, this paper explores the assessment methods for sedimentology experiments and initially establishes a diversified course assessment system to comprehensively, objectively, and fairly evaluate students' learning outcomes.

The reform of assessment methods for experimental courses is a long and intricate endeavor, requiring instructors to continuously learn and innovate through teaching practice. This process is constrained by multiple subjective and objective factors, including students' foundational knowledge and learning initiative, laboratory infrastructure and management, the completeness of rock specimen collections, and allocated class hours. By establishing a comprehensive, multi-dimensional, and process-oriented diversified assessment system, we have not only stimulated students' interest and enhanced classroom engagement but also strengthened their practical skills, critical thinking, and problem-solving abilities. These improvements have elevated the teaching effectiveness of sedimentology experiments and cultivated more high-caliber talents with innovative spirit and practical competence.

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Qualitative Research Approaches and Data Collection Methods: Understanding Meaning and Experience

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Abstract— *Qualitative research aims to explore and understand how individuals make sense of their experiences and the social world around them. Unlike quantitative research, which focuses on measurement and generalisation, qualitative inquiry values depth, context, and human meaning (Creswell and Poth, 2018). This paper outlines the primary approaches and data collection methods employed in qualitative research, illustrating how philosophical assumptions influence the design of inquiry. It discusses key qualitative approaches, including phenomenology, ethnography, grounded theory, narrative inquiry, case study, and participatory action research, each offering a distinct way to study human experience. The article also examines the most common data collection methods, interviews, focus groups, observations, document analysis, and visual or digital tools, highlighting their role in generating rich and authentic data. Finally, it argues that qualitative research is guided by interpretivist and constructivist paradigms, where knowledge is co-created through a process of reflection and interpretation between the researcher and the participant (Schwandt, 2015; Denzin and Lincoln, 2018). This discussion lays the groundwork for the subsequent section, which examines the philosophical foundations and methodological principles of qualitative inquiry.*

Keywords— *qualitative research, research approaches, research design, data collection methods, interpretivism, constructivism, narrative inquiry, paradigm, and philosophical assumptions.*

I. INTRODUCTION

Every research study begins with certain ideas about the world and about knowledge. These ideas are referred to as philosophical assumptions or worldviews, which guide researchers in planning and conducting their studies (Creswell and Poth, 2018). They act like a pair of glasses; different beliefs make researchers see reality in different ways. For example, some believe that truth is one and can be measured; others believe that truth is multiple and depends on personal experience. These beliefs shape every step of a research project, from how questions are asked to how results are understood (Lincoln and Guba, 1985). Since philosophical beliefs influence how knowledge is created, they naturally guide researchers in selecting an appropriate research approach that aligns with their worldview and study objectives.

A *research approach* is a broad way of doing research, and it depends on what the researcher wants to learn. There are

three main approaches: *quantitative*, *qualitative*, and *mixed methods* (Creswell and Plano Clark, 2018).

- In a *quantitative approach*, the focus is on numbers, measurement, and testing ideas. For example, a researcher may study how much students' motivation to learn English increases after using a new mobile app.
- In a *qualitative approach*, the focus is on meanings and experiences. The researcher may conduct interviews with students to explore their experiences with the app and understand why it is helpful or not.
- In a *mixed methods approach*, both numbers and words are combined. The researcher may collect survey data and then conduct interviews with students to gain a deeper understanding of the reasons behind the results.

Each approach helps answer different kinds of questions and offers a distinct way of understanding the world (Creswell and Plano Clark, 2018). To understand why researchers choose certain approaches, it is essential to examine the underlying beliefs that inform their decisions. These beliefs form what is called a research paradigm. Before choosing a research design or tools, the researcher must decide on a *research paradigm*. A paradigm is a worldview; a general way of thinking about reality, knowledge, and values (Denzin and Lincoln, 2018). It explains what the researcher believes to be true, how knowledge is acquired, and what values shape and guide the study. For example:

- The *positivist paradigm* assumes that there is one reality that can be measured objectively. It fits well with quantitative studies.
- The *interpretivist* or *constructivist paradigm* assumes that there are many realities, shaped by people's experiences and interactions. It supports qualitative studies.
- The *pragmatic paradigm* focuses on what works best to answer a question, often combining methods from both traditions.

Each paradigm contains *philosophical assumptions* that describe how the researcher sees and studies the world (Lincoln and Guba, 1985). These include:

- *Ontology* – what is real (one truth or many truths)
- *Epistemology* – how we know and understand the world (through measurement or interaction)
- *Axiology* – what values and ethics guide the research
- *Methodology* – what process or logic is used to gain knowledge (Creswell and Poth, 2018).

To sum up, a *paradigm* is the *broad worldview* or belief system that guides the researcher.

→ It answers: “How does the researcher see the world and knowledge?”

→ It shapes everything — approach, design, and methods.

- *Philosophical Assumptions* = the *core beliefs* that make up that paradigm.
 - They are the inner parts of the paradigm — what the paradigm is built on.
 - They answer:
 - **Ontology:** What is reality?
 - **Epistemology:** How do we know it?
 - **Axiology:** What values matter?
 - **Methodology:** How do we find out?

For example, a qualitative researcher studying students' motivation to learn English believes that each student's experience is unique (ontology), that knowledge is created through conversation and reflection (epistemology), that emotions and values matter (axiology), and that interviews or stories are the best way to explore meanings (methodology).

In this example, the researcher operates within an interpretivist paradigm, which emphasises understanding individual meanings and lived experiences rather than seeking a single universal truth.

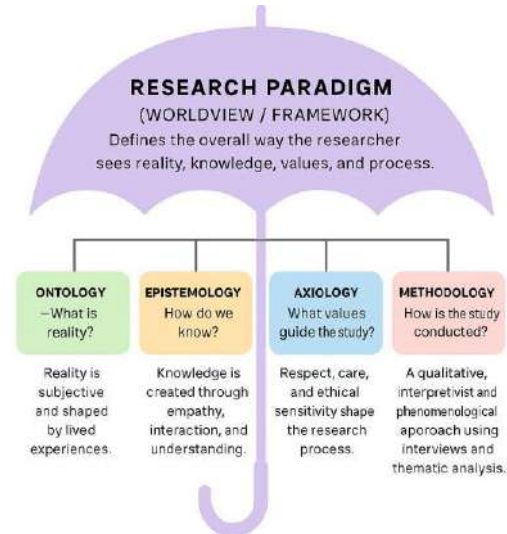


Fig.1: Relationship Between Research Paradigm and Philosophical Assumptions

Philosophical assumptions, all four of them, are mini worldviews. They are combined into a coherent worldview (paradigm).

This figure illustrates how the research paradigm serves as an umbrella, connecting four key philosophical assumptions: ontology, epistemology, axiology, and methodology. Together, these elements form the researcher's worldview and shape how reality, knowledge, values, and research processes are approached within this qualitative, interpretivist study (Creswell and Plano Clark, 2018; Guba and Lincoln, 1994; Denzin and Lincoln, 2018; Flick, 2018).

Clarifying the Relationship Between Paradigm and Philosophical Assumptions

A research *paradigm* is the overall perspective a researcher adopts to view and understand the world. It includes four main *philosophical assumptions* (ontology, epistemology, axiology, and methodology). These four beliefs collectively form the paradigm. In practice, the paradigm also guides the use of these assumptions in the study.

Thus, the relationship is reciprocal; the assumptions shape the paradigm, and the paradigm, in turn, influences how the study is designed and carried out (Guba and Lincoln, 1994; Creswell and Poth, 2018).

Once the researcher's philosophical stance and paradigm are established, these beliefs guide the development of a suitable *research design* that connects theory with practical steps of data collection and analysis. A *research design* is the overall plan or structure for conducting a study. It shows how the researcher will collect and analyse data to answer the research questions (Creswell and Poth, 2018). In qualitative research, common designs include *phenomenology*, *case study*, *ethnography*, *grounded theory*, *narrative inquiry*, and *action research*. In quantitative research, designs such as *experiments*, *surveys*, or *correlational studies* are often used. The design links the researcher's worldview (paradigm) with the practical steps of data collection and analysis (Denzin and Lincoln, 2018).

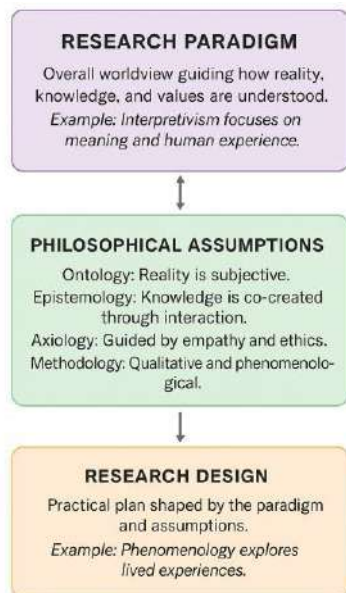


Fig.2: Paradigm–Assumptions–Design Relationship

This figure illustrates the interconnection between the research paradigm, philosophical assumptions, and research design. It shows that the paradigm provides the overall worldview that both shapes and is refined by the philosophical assumptions (↕), while together they inform and guide the research design. This reciprocal and integrated structure ensures that the study's philosophical stance, methodological choices, and practical strategies remain coherent and aligned throughout the research process (Guba and Lincoln, 1994; Creswell and Poth, 2018; Flick, 2018).

It is essential to recognise that research design and research methods or tools are distinct concepts. The *design* is the big

picture that explains *how* the study will be organised. The *methods* are the specific techniques used to collect information, such as interviews, surveys, or observations (Flick, 2018). For example, in a qualitative case study about students' motivation, the design is "case study," and the methods might be "interviews" and "observations." The design gives the structure; the methods are the tools used within that structure.

In short, "design" is the big picture of how the study is organised, the overall plan of the study, "methods" are the approach or way to collect data, such as interviews, observations, and "tools" are the instruments or materials to use when collecting data, such as interview questions, questionnaire forms, observation checklist, audio recorder).

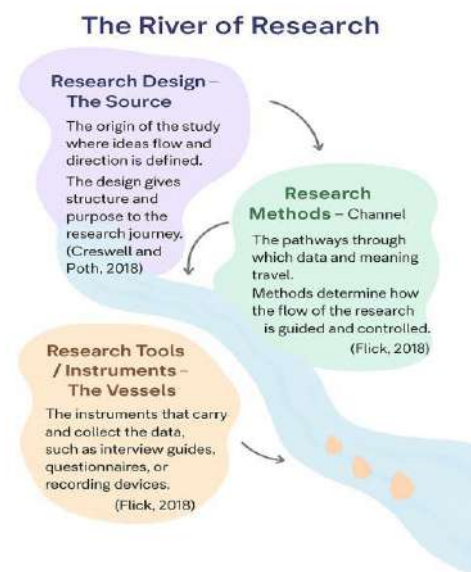


Fig.3: The Flow of Research Design, Methods, and Tools

This figure represents the flow of the research process, illustrating how ideas originate in the research design, travel through the methods that guide data collection, and are ultimately carried out using the tools or instruments that make the study possible. The river metaphor highlights the continuous and connected nature of research, where each stage supports and shapes the next (Creswell and Poth, 2018; Flick, 2018).

Qualitative studies focus on exploring meanings, emotions, and human experiences in depth rather than testing or predicting (Lincoln and Guba, 1985). Researchers work closely with participants to co-create knowledge, respecting their voices and perspectives (Creswell and Poth, 2018). To explore these experiences effectively, qualitative researchers employ various designs that offer structured approaches to studying meaning and human experience.

Common qualitative designs include:

- *Phenomenology* – exploring people’s lived experiences
- *Case Study* – studying one case in depth
- *Ethnography* – understanding culture and social behaviour
- *Grounded Theory* – building theory from data
- *Narrative Inquiry* – studying personal stories
- *Action Research* – working with participants to create change (Flick, 2018).

Once the design is determined, researchers choose the most appropriate tools for collecting rich and detailed data.

To collect data, qualitative researchers often use *interviews*, *focus groups*, *observations*, and *document analysis*. These methods allow them to understand people’s feelings, beliefs, and meanings in natural settings rather than through numbers or tests (Flick, 2018).

In qualitative research, data collection methods are not fixed but rather chosen according to the study's purpose, design, philosophical stance, and context. They aim to capture depth, meaning, and lived experience, rather than numbers or variables (Creswell and Poth, 2018; Flick, 2018).

In short, every research project is built on several connected layers. At the base are *philosophical assumptions*, or “core beliefs,” that shape the researcher’s perspective on how knowledge is understood and studied. These inform the *paradigm*, which provides the worldview. The paradigm guides the *approach*, which determines whether the study is quantitative, qualitative, or mixed. The approach leads to a *design*, which gives the study its plan, and the design includes *methods* or *tools* for collecting and analysing data. Each level supports the next, creating a logical and meaningful research structure (Creswell and Plano Clark, 2018; Lincoln and Guba, 1985).



Fig. 4. Viewing Research Through the Lens of Philosophy

This figure illustrates how a researcher’s philosophical assumptions form the inner focus of the lens, shaping the paradigm, approach, and design of a study. Each outer layer refines how knowledge is viewed, interpreted, and explored within the context of qualitative inquiry.

This understanding forms the foundation of *qualitative inquiry*, which focuses on meaning, interpretation, and human experience rather than measurement or prediction. The following sections provide a more detailed examination of how qualitative approaches, paradigms, and methods work together to study lived experiences.

II. PHILOSOPHICAL AND THEORETICAL FOUNDATIONS

Every research study is shaped by philosophical assumptions, deep-seated beliefs about what constitutes reality, knowledge, and value. These assumptions form the foundation of every decision a researcher makes, from choosing a topic to interpreting findings (Guba and Lincoln, 1994; Creswell and Poth, 2018). In qualitative research, these assumptions are especially important because the researcher is not a detached observer but a participant in the meaning-making process. Understanding the philosophical foundations allows qualitative researchers to design studies that are coherent, ethical, and true to the human experience.

To understand how these foundations shape research practice, it is essential to examine the key philosophical assumptions, ontology, epistemology, and axiology that underpin every qualitative inquiry.

2.1 Philosophical Assumptions: Ontology, Epistemology, and Axiology

Ontology refers to beliefs about the nature of reality. In qualitative research, reality is understood as subjective, multiple, and socially constructed rather than objective and measurable (Crotty, 1998). Different people may perceive and interpret the same event in distinct ways due to their backgrounds, emotions, and cultural experiences (Schwandt, 2015). For example, two migrants attending the same English class might experience “integration” differently; one may feel empowered, while the other may feel isolated.

Ontological assumptions, therefore, remind researchers that there are many truths rather than one single reality.

Epistemology concerns the creation of knowledge and what constitutes truth. In qualitative inquiry, knowledge is co-constructed between researcher and participant through dialogue, reflection, and interpretation (Lincoln and Guba, 1985). Researchers do not stand outside reality; they

interact with it. This means that understanding grows from human relationships and the shared meaning they convey. The interview or observation process becomes a space where knowledge is collaboratively built rather than objectively discovered (Charmaz, 2014).

Axiology addresses the role of values, emotions, and ethics in research. Qualitative researchers acknowledge that complete neutrality is impossible and that their values influence every stage of the process (Tracy, 2020). Rather than trying to eliminate bias, they practice reflexivity; the continuous examination of how personal beliefs, emotions, and identities shape interpretation (Finlay, 2012). Axiological awareness ensures that research remains transparent and ethically sound, especially when dealing with sensitive topics such as trauma, identity, or inequality.

Together, ontology, epistemology, and axiology form the philosophical foundation of a study. They influence both the overall methodology and the specific methods used to collect and interpret data. For instance, a constructivist researcher who believes that reality is co-constructed tends to use open-ended interviews rather than structured surveys, as interviews allow shared meanings to emerge naturally (Creswell and Poth, 2018).

Building upon these philosophical assumptions, research paradigms translate these abstract beliefs into coherent worldviews that guide the design and interpretation of qualitative studies.

2.2 Research Paradigms in Qualitative Inquiry

A research paradigm combines philosophical assumptions into a coherent worldview or lens through which the researcher views the world (Denzin and Lincoln, 2018). Paradigms define what constitutes valid knowledge and which methods are suitable for discovering it. Qualitative research is most often guided by interpretivist and constructivist paradigms, but other paradigms, such as critical, feminist, postmodern, pragmatic, and transformative, also play significant roles (Mertens, 2015). Qualitative inquiry aligns particularly with interpretivist and constructivist paradigms because both emphasise understanding the meanings individuals assign to their experiences rather than seeking objective, generalisable truths. These paradigms assume that reality is socially constructed, context-dependent, and co-created through the interaction between the researcher and the participant (Schwandt, 2015; Creswell and Poth, 2018). Consequently, qualitative researchers aim to interpret rather than measure phenomena, focusing on how people make sense of their world within specific cultural and social contexts (Lincoln and Guba, 1985).

2.2.1 Interpretivism

Interpretivism assumes that reality is socially constructed through human interaction. Researchers working within this paradigm seek to understand the meanings people attach to their actions, rather than explaining behaviour through universal laws (Cohen, Manion and Morrison, 2018). The interpretivist researcher becomes a mediator who interprets the world through participants' perspectives.

For example, an interpretivist exploring the emotional lives of migrant learners would focus on how participants describe their experiences of belonging, shame, or pride. The goal is not to measure emotions but to understand what they mean to the people who experience them (Flick, 2018). In the interpretivist paradigm, interpretation is central, and empathy is the researcher's key instrument.

2.2.2 Constructivism

Constructivism builds on interpretivism, placing a stronger emphasis on the co-construction of knowledge. Meaning is created through dialogue between researcher and participant rather than existing independently (Lincoln and Guba, 1985). This perspective sees both parties as active agents in the production of knowledge.

For instance, during a semi-structured interview, a participant may reflect on her struggles with learning the English language. Through the conversation, she and the researcher together construct a new understanding of how language learning influences confidence and identity. This interaction exemplifies constructivist epistemology, where knowledge emerges in the moment through reflection and relationship (Charmaz, 2014; Denzin and Lincoln, 2018).

Interpretivism and constructivism are closely related paradigms. *Interpretivism* is concerned with understanding what people mean when they discuss their experiences. *Constructivism*, on the other hand, is about *creating* meaning together through those experiences. In both views, knowledge is not something that exists independently; it is constructed through human interaction and reflection (Schwandt, 2015; Creswell and Poth, 2018).

2.2.3 Other Paradigms in Qualitative Research

Beyond interpretivism and constructivism, several other paradigms also guide qualitative research. Each offers a unique perspective on reality, knowledge, and power, enabling researchers to explore different dimensions of the human experience.

- *Critical Theory* seeks to uncover hidden power structures and inequalities. It argues that research should not only interpret the world but also help change it (Kincheloe and McLaren, 2018). A critical researcher studying education might ask

how class or race shapes access to learning opportunities.

- *Feminist Paradigms* foreground gender, emotion, and lived experience. They highlight how patriarchal systems shape knowledge and aim to amplify women's voices (Hesse-Biber, 2014). Feminist researchers frequently employ collaborative and narrative approaches to investigate identity, care, and empowerment.
- *Postmodern* and *Poststructural Paradigms* challenge universal truths and fixed meanings. They examine how language and discourse construct social realities (Foucault, 1980). Such research may analyse how "integration" or "success" are defined in policy or media.
- *Pragmatism* focuses on what works best to answer the research question. It values flexibility and practical outcomes over strict philosophical alignment (Patton, 2015). Pragmatists may combine methods to gain a more comprehensive understanding of a problem.
- *Transformative Paradigms* combine critical and participatory traditions, emphasising empowerment and collaboration. They engage marginalised communities as co-researchers to promote social justice and change (Mertens, 2015).

Each paradigm carries distinct ontological and epistemological assumptions, providing researchers with diverse ways to view and understand human experience.

After identifying the main paradigms, qualitative researchers must consider how reasoning connects their philosophical stance with the process of analysing and understanding data.

2.3 The Logic of Reasoning in Qualitative Research

Philosophical paradigms also influence the logic of reasoning, as well as how researchers navigate the relationship between data and theory. Three main reasoning processes are used: deductive, inductive, and abductive reasoning (Braun and Clarke, 2021; Timmermans and Tavory, 2012).

- Deductive reasoning starts with an existing theory and tests it against data. It moves from the general to the specific and is common in quantitative research.
- Inductive reasoning begins with data and builds a theory from patterns and insights that emerge during analysis. It moves from the specific to the general and is central to qualitative inquiry.

- Abductive reasoning moves back and forth between theory and data to explain surprising findings. It is used in some forms of grounded theory and case study research.

In interpretivist and constructivist paradigms, inductive reasoning predominates because researchers aim to uncover meanings from participants' voices rather than impose pre-existing frameworks (Creswell and Poth, 2018). However, abductive reasoning can be useful when theory and data interact to refine understanding.

In summary, qualitative research is grounded in philosophical assumptions that shape how reality, knowledge, and values are understood and interpreted. Ontology reminds researchers that reality is subjective and multifaceted; epistemology emphasises that knowledge is co-constructed; and axiology highlights that values and ethics are inextricably linked to inquiry. These assumptions form the basis of research paradigms, interpretivist, constructivist, critical, feminist, postmodern, pragmatic, and transformative, that guide methodological and ethical choices.

Understanding these philosophical and theoretical foundations ensures that qualitative research remains coherent and trustworthy. It connects belief with practice, linking how researchers see the world with how they study it (Schwandt, 2015; Tracy, 2020). In the next section, these paradigms and assumptions are translated into specific research approaches, the frameworks through which qualitative researchers explore meaning and experience in human life.

III. MAJOR QUALITATIVE RESEARCH APPROACHES

Qualitative research is not a single method, but rather an umbrella term that encompasses a variety of research designs, each shaped by distinct philosophical beliefs and purposes. These designs guide how data are collected, analysed, and interpreted, ensuring that every decision reflects the study's underlying worldview (Creswell and Poth, 2018). Although they share the common goal of understanding human experience, they differ in focus, process, and outcome. The six major qualitative designs, phenomenology, grounded theory, ethnography, narrative inquiry, case study, and participatory action research (PAR), are described below.

3.1 Phenomenology

Phenomenology seeks to understand and describe the lived experiences of individuals. Originating from the philosophical work of Edmund Husserl and Martin Heidegger, it asks what a particular experience means to the

person who lives it (van Manen, 2016). The phenomenological researcher attempts to uncover the essence of a phenomenon, its deep, universal meaning across individual cases (Moustakas, 1994).

In this approach, participants are not seen as data sources but as meaning-makers. Researchers typically use in-depth interviews, diaries, or reflective journals to capture personal perceptions, feelings, and thoughts. Data analysis involves identifying significant statements, clustering them into themes, and describing the essence of the experience (Finlay, 2012).

Phenomenology aligns closely with interpretivist and constructivist paradigms, as it assumes that reality is subjective and knowledge is co-created through interaction. The researcher's goal is not to generalise but to illuminate the richness of lived experience.

Example: Exploring how adult immigrants experience learning a new language and how this affects their sense of identity and belonging in a new country.

3.2 Grounded Theory

Grounded theory, developed by Glaser and Strauss (1967), aims to generate theory from data rather than test existing theories. It is built on an inductive process; the researcher collects and analyses data simultaneously, identifying categories, relationships, and patterns through constant comparison (Charmaz, 2014).

The process usually involves open coding (naming and grouping data segments), axial coding (connecting categories), and selective coding (integrating core themes into a theoretical framework) (Corbin and Strauss, 2015). The goal is to produce a theory that is grounded in participants' lived experiences and explains social processes or interactions.

Originally, grounded theory had positivist tendencies; however, modern versions, particularly constructivist grounded theory, now embrace subjectivity and reflexivity. Charmaz (2014) argues that researchers and participants co-construct meaning, making grounded theory both rigorous and human-centred.

Example: Developing a theory that explains how migrant learners build resilience and emotional strength through participation in community education programmes.

Both phenomenology and constructivist grounded theory are qualitative designs that study people's real-life experiences. They are *subjective*, meaning they focus on personal meanings rather than numbers or measurements. However, they have different goals and approaches to work.

Phenomenology tries to understand what people experience and how they make sense of those experiences (Creswell

and Poth, 2018). The researcher listens carefully to participants' stories to uncover the essence of their experience; the deep meaning that is shared by everyone (Moustakas, 1994). For example, if the study is about migrant women learning English, phenomenology would ask, "*What does it feel like to learn English in a new country?*"

Constructivist grounded theory, on the other hand, focuses on how people's experiences are shaped through interaction and meaning-making over time (Charmaz, 2014). It is not only about describing experience, but also about building a theory or model that explains the process. For example, it might ask, "*How do migrant women build confidence while learning English?*" The researcher and participants co-construct meaning together through reflection and dialogue.

In short, *phenomenology* aims to describe the essence of lived experience, whereas *constructivist grounded theory* seeks to explain the social processes underlying that experience (Birks and Mills, 2015). Both are flexible, interpretive, and value subjectivity, but grounded theory aims to move one step further by developing a conceptual understanding from the data.

3.3 Ethnography

Ethnography comes from anthropology and focuses on studying people within their natural cultural environments. The aim is to understand the social meanings, values, and practices that shape a community's life (Hammersley and Atkinson, 2019). Ethnographers immerse themselves in the field, often living among participants for extended periods to observe interactions, routines, and rituals.

Ethnographic research relies heavily on participant observation, field notes, interviews, and sometimes cultural artefacts (Fetterman, 2019). The process of immersion enables researchers to observe how people perceive their world from within their own cultural context.

Ethnography assumes that culture is key to understanding human behaviour and that the researcher must balance involvement with observation. Reflexivity is crucial, as the researcher's identity inevitably shapes interpretation (Hammersley and Atkinson, 2019).

Example: Observing migrant learners in adult education classes to understand how cultural norms and expectations influence participation, communication, and learning relationships.

3.4 Narrative Inquiry

Narrative inquiry explores people's stories to gain insight into their experiences. It suggests that people give meaning to their lives through stories that link their past, present, and future (Clandinin and Connelly, 2000). Stories are not simply reflections of reality but ways of constructing it; they

reveal how individuals understand themselves and the world (Riessman, 2008).

Researchers collect stories through interviews, letters, diaries, or digital recordings and analyse them for structure, theme, and emotional tone (Webster and Mertova, 2007). Narrative inquiry values the individuality of each story and resists reducing experiences to abstract categories.

Because narrative inquiry is deeply relational, the researcher and participant co-create the story through dialogue. This process reflects the constructivist idea that meaning emerges in interaction (Charmaz, 2014).

Example: A narrative study with immigrant women exploring how education became a path from isolation to empowerment, showing how storytelling contributes to healing and identity reconstruction.

3.5 Case Study

A case study provides an in-depth exploration of a single case, which may be an individual, a group, an organisation, or an event, within its real-world context (Yin, 2018). It enables researchers to examine complex social phenomena holistically by utilising multiple sources of data, such as interviews, documents, and observations (Stake, 1995).

Case studies are flexible and can draw from various paradigms; however, qualitative case studies typically adopt an interpretivist or constructivist stance. The goal is to understand the unique characteristics of the case and to provide rich, contextual insights that others may learn from, even if they cannot generalise (Creswell and Poth, 2018).

Researchers often distinguish between intrinsic case studies (focused on understanding one unique case) and instrumental case studies (using the case to understand a broader issue). Transparency, thick description, and reflexivity are key features of this approach.

Transparency means being open and clear about every step of the research process, such as how data are collected, analysed, and interpreted (Yin, 2018). It helps readers trust that the researcher works carefully and honestly.

Thick description refers to providing detailed and rich information about the people, places, and contexts studied (Geertz, 1973). Instead of providing short summaries, the researcher describes what happens, what people say, and what those events mean within their cultural context or specific situation. This enables readers to gain a deep understanding of the case and imagine being there.

Reflexivity refers to the researcher's thoughtful consideration of their own role, background, and emotions, as well as how these may impact the study (Finlay, 2002). By being self-aware, the researcher ensures the findings are thoughtful and balanced.

Example: Studying a specific adult education centre in London to explore how counselling and emotional support services influence the integration of Turkish-born Kurdish migrants.

This study can be viewed as an instrumental case study because it focuses on one adult education centre in London to explore a wider issue, the role of counselling and emotional support in the integration of Turkish-born Kurdish migrants. The case is studied in its real-life context, where educational, emotional, and social factors are closely connected (Yin, 2018; Stake, 1995).

3.5.1. Main Types of Case Studies

Researchers often describe three main types of case studies: intrinsic, instrumental, and collective. Each type serves a distinct purpose and enables the researcher to explore real-life situations in various ways (Stake, 1995; Yin, 2018).

An *intrinsic case study* focuses on understanding one case for its own sake. The researcher chooses this case because it is unique, special, or meaningful. The aim is not to generalise the findings but to gain a deep and detailed understanding of that specific situation (Stake, 1995). For example, a researcher may study a single school that uses an unusual counselling approach.

An *instrumental case study*, on the other hand, uses a specific case to explore a broader issue, idea, or theory. The case helps the researcher understand something larger than the case itself. For instance, studying one adult education centre in London to learn how counselling and emotional support influence migrant integration represents an instrumental case study (Stake, 1995; Creswell and Poth, 2018).

A *collective or multiple case study* involves examining several cases together to identify patterns, similarities, or differences. This approach enables researchers to compare findings across different contexts, thereby strengthening the overall conclusions (Creswell and Poth, 2018).

These three types of case studies offer flexible and rich ways to explore complex human experiences within their real-life settings.

3.6 Participatory Action Research (PAR)

Participatory Action Research (PAR) is both a methodology and a movement. It involves participants as co-researchers throughout the process, from defining the problem to analysing data and implementing action (Reason and Bradbury, 2008). PAR is grounded in critical and transformative paradigms, seeking not only to understand the world but also to change it (Mertens, 2015).

PAR assumes that knowledge is socially and politically constructed, and that those affected by a problem are best

positioned to understand and solve it. The process includes repeated cycles of reflection, action, and evaluation, often using methods such as focus groups, workshops, or community discussions.

This approach challenges traditional hierarchies between researcher and participant, promoting equality, collaboration, and empowerment. The findings are typically shared in accessible formats, allowing participants to use them for advocacy or community development (Kemmis, McTaggart, and Nixon, 2014).

Example: Collaborating with immigrant learners to co-design a well-being and language-learning programme, reflecting their needs and supporting their emotional resilience.

Each qualitative research approach offers a distinct lens for examining the human experience. Choosing the right approach depends on the research question, the philosophical stance, and the desired level of participation. A *phenomenological study* may best answer “What is the lived experience of...?”, while *grounded theory* explores “How does this process occur?”, and *ethnography* asks, “How do people in this setting live and interact?”. By aligning approach, paradigm, and purpose, qualitative researchers ensure coherence and depth in their studies (Creswell and Poth, 2018; Flick, 2018).

As a result, qualitative research approaches provide multiple pathways to the same goal: to understand human life as it is lived, felt, and told. Their diversity enriches the field, offering flexible yet rigorous frameworks for exploring meaning and experience in social reality.

IV. DATA COLLECTION METHODS IN QUALITATIVE RESEARCH

Data collection is one of the most critical phases of qualitative inquiry. The aim is not to measure variables but to explore people’s feelings, perceptions, and meanings in depth. Qualitative data are rich and detailed, allowing the researcher to capture the complexity of human experience within real-life settings (Creswell and Poth, 2018). Unlike quantitative methods, which rely on numerical data, qualitative methods use words, observations, and visual materials to understand lived realities. The most used data collection techniques are interviews, focus groups, observations, document and text analysis, and visual or digital methods. These can be used alone or in combination, depending on the study’s purpose and paradigm.

4.1 Interviews

Interviews are the most frequently used data collection method in qualitative research. They enable researchers to enter participants’ worlds through direct dialogue and are

particularly effective for exploring personal experiences, emotions, and beliefs (Brinkmann and Kvale, 2015).

There are three main types of interviews:

- Structured interviews follow a fixed set of questions, offering consistency but limiting flexibility.
- Semi-structured interviews balance structure with openness, allowing researchers to probe further based on participants’ responses (DiCicco-Bloom and Crabtree, 2006).
- Unstructured interviews resemble natural conversations, offering maximum freedom but requiring high reflexivity and skill (Seidman, 2019).

Semi-structured interviews are the most common type in interpretivist and constructivist research because they provide both guidance and flexibility. Questions are open-ended to encourage reflection and detailed storytelling. The researcher’s listening skills, empathy, and cultural awareness are essential to create a trusting environment (Roulston, 2010).

Example: Asking migrant women, “Can you describe how learning English has changed how you feel about yourself?” allows participants to freely express their identity and emotions.

While individual interviews provide in-depth personal insights, focus groups allow participants to share and discuss their experiences collectively, creating a more interactive form of data generation.

4.2 Focus Groups

Focus groups bring together six to ten participants to discuss a topic, guided by a facilitator (Morgan, 2019). Interaction within the group stimulates ideas, memories, and perspectives that might not surface in one-to-one interviews. This method is particularly useful for exploring shared meanings, community dynamics, and social norms (Krueger and Casey, 2015).

Focus groups enable researchers to identify areas of agreement and disagreement among participants, as well as how they collectively create shared meanings through discussion. They are often used in community or educational research to explore how people negotiate group identities. However, they require careful moderation to ensure all voices are heard. Researchers must manage group dynamics and be sensitive to power relations, cultural hierarchies, and emotional comfort (Tracy, 2020).

Example: Conducting a focus group with adult immigrant learners to explore their perceptions of inclusion and belonging in classroom environments.

Focus group discussions reveal participants' perceptions, whereas observation provides a direct way to study their behaviour and interactions in natural contexts.

4.3 Observation

Observation allows researchers to witness actions and interactions as they occur in natural settings. It provides contextual data that interviews alone cannot capture, such as body language, routines, or environmental cues (Cohen, Manion, and Morrison, 2018).

There are two main types:

- Participant observation, where the researcher joins the setting and interacts with participants, gaining an insider's view (Spradley, 1980).
- Non-participant observation, where the researcher observes without taking part to minimise influence on the situation.

Observation is often employed in ethnography but can also support case studies or phenomenological research. Field notes and reflexive journals are vital tools for recording both what happens and the researcher's thoughts and feelings during observation (Hammersley and Atkinson, 2019).

Example: Observing language classroom interactions to understand how cultural background and gender influence communication between migrant learners and teachers.

While observation helps researchers understand behaviour and interaction in real-life settings, document and text analysis provide insight into the written materials and policies that shape those experiences.

4.4 Document and Text Analysis

Documents, such as diaries, letters, reports, policy papers, social-media posts, and photographs, offer valuable insights into how meaning is expressed in written or visual form. Document analysis is the systematic examination of these materials to understand how language, discourse, and power construct reality (Bowen, 2009).

This method is useful for providing historical or institutional context and can be combined with interviews and observations to triangulate findings (Flick, 2018). Documents can reveal how ideas such as "integration," "achievement," or "identity" are represented and contested across social contexts (Prior, 2011).

Example: Analysing government or NGO policy papers to explore how immigrant integration is framed in educational discourse.

In addition to written documents, researchers can also utilise visual and digital materials to gain a deeper

understanding of participants' experiences and social realities.

4.5 Visual and Digital Methods

Visual and digital methods have become increasingly popular in qualitative research, allowing participants to express experiences that might be difficult to articulate verbally (Pink, 2013). These include photo-elicitation, video diaries, drawings, and digital storytelling. Participants create or share images that represent their emotions or identities and then discuss their meanings with the researcher (Rose, 2016).

The rise of online platforms has also expanded the collection of qualitative data. Virtual interviews, online focus groups, and social-media ethnographies enable researchers to reach diverse and geographically distant participants (Salmons, 2021). However, digital research requires strong ethical consideration; privacy, consent, and data security are critical.

Example: Asking participants to share a photograph that symbolises "home" and explaining what it means to them helps uncover emotional and cultural layers of belonging.

To ensure that findings are trustworthy and well-balanced, researchers often combine different data sources and reflect on their own role throughout the study.

4.6 Triangulation and Reflexivity

Qualitative research values depth and credibility over replication or generalisation. To ensure trustworthiness, researchers often use triangulation, collecting data from multiple sources or using different methods to confirm consistency (Denzin, 2012). Triangulation can include data triangulation (using different participants or settings), methodological triangulation (combining interviews and observations), and theoretical triangulation (applying multiple lenses). This cross-checking strengthens confidence in the findings.

Equally important is reflexivity, the process of examining how the researcher's position, values, and assumptions influence data collection and interpretation (Finlay, 2012). Reflexive notes capture thoughts, emotions, and ethical dilemmas during fieldwork. This practice enhances transparency and shows how understanding evolves through interaction (Tracy, 2020).

Example: A researcher conducting interviews and classroom observations keeps a reflexive journal to record personal reactions and methodological decisions, later using these reflections to interpret data more critically.

In addition to maintaining reflexivity, it is essential to follow ethical guidelines that safeguard participants' rights and well-being throughout the data collection process.

4.7 Ethical Considerations in Data Collection

Because qualitative research often involves sensitive personal experiences, maintaining ethical awareness is crucial throughout the data collection process. Participants must give informed consent, and confidentiality must be respected. Researchers should also ensure emotional well-being, especially when discussing traumatic or personal topics (Orb, Eisenhauer and Wynaden, 2001).

Cultural sensitivity is another ethical imperative. When working with diverse populations, researchers must respect the language, religion, and social norms of these groups. Empathy, humility, and respect for participants' time and stories build trust and authenticity (Tracy, 2020).

Ethics is not a single procedural step but a continuous commitment that shapes the researcher-participant relationship. Data collection becomes an act of mutual respect and care.

4.8 Summary

Data collection in qualitative research is an interpretive and human-centred process that values meaning, context, and emotion. Each method —interviews, focus groups, observations, documents, and visual materials —offers different pathways for understanding experience. Combined through triangulation and guided by reflexivity, they allow researchers to construct a full and authentic picture of participants' lives (Creswell and Poth, 2018; Braun and Clarke, 2021).

Unlike quantitative surveys or experiments, the qualitative data collection process values empathy and conversation. It transforms the act of research into a shared journey of discovery, where both researcher and participant learn from one another. When designed ethically and analysed thoughtfully, these methods reveal the depth, emotion, and diversity of human meaning.

V. DISCUSSION

Qualitative research is more than a collection of techniques; it is a philosophical way of seeing and understanding the world. The approaches and data collection methods described in this paper are grounded in interpretivist and constructivist paradigms, which emphasise meaning, context, and human subjectivity (Schwandt, 2015; Lincoln and Guba, 1985). These paradigms remind us that knowledge is co-created through the interaction between the researcher and the participant. The relationship between ontology, epistemology, and axiology provides the foundation for a research design that is not only rigorous but also ethical and compassionate.

5.1 Connecting Paradigm, Approach, and Method

Qualitative research needs a clear connection between the researcher's worldview, the research approach, and the data collection methods. The worldview, or paradigm, shows how the researcher sees reality. The approach transforms this view into a plan for the study, and the methods refer to the practical ways used to collect information (Creswell and Poth, 2018).

For example, a constructivist researcher who believes that meaning is co-created may choose a phenomenological or narrative approach and use in-depth interviews as a method. In contrast, an ethnographer guided by interpretivism might focus on cultural meanings and rely on participant observation. When these three levels — philosophy, design, and method — are consistent, the research gains coherence, credibility, and theoretical integrity (Flick, 2018).

However, the inconsistency between them weakens the study. Using open-ended interviews under a positivist framework, for instance, would be philosophically contradictory because positivism seeks objectivity, while interviews rely on interpretation and emotion. Coherence across all levels ensures that the study genuinely reflects the researcher's worldview.

After ensuring consistency between the paradigm, approach, and methods, researchers must reflect on how their own beliefs and experiences shape the research process.

5.2 The Role of the Researcher and Reflexivity

The researcher in qualitative inquiry is not a detached observer but a co-creator of meaning. Their background, values, and emotions shape every stage of the process, from formulating questions to interpreting data (Finlay, 2012). This is why reflexivity is essential. Reflexivity involves constant self-examination of how one's identity and assumptions influence the research. It turns awareness into a tool for improving depth and honesty (Tracy, 2020).

A reflexive researcher keeps a journal, notes emotional responses during interviews, and acknowledges personal biases. Rather than trying to be neutral, they aim to be transparent. This honesty strengthens the study's trustworthiness and ensures that the findings genuinely represent participants' voices rather than the researcher's projections (Braun and Clarke, 2021).

Reflexivity also promotes empathy. When researchers recognise their emotional reactions, they can better connect with participants without overstepping ethical boundaries. This emotional awareness transforms data collection into a mutual act of respect and understanding.

5.3 Integrity and Trust in Qualitative Research

Ethical awareness is a cornerstone of qualitative inquiry. Because qualitative studies often explore sensitive, emotional, or private experiences, researchers must ensure that participants provide informed consent, maintain confidentiality, and feel emotionally safe (Orb, Eisenhauer, and Wynaden, 2001). Ethical practice extends beyond institutional approval—it is an ongoing commitment to treating participants with dignity.

In addition, qualitative research is judged by its trustworthiness rather than by numerical reliability. Lincoln and Guba (1985) define trustworthiness through four criteria: credibility, dependability, confirmability, and transferability. Researchers can enhance credibility through triangulation, member checking, and thick description, providing detailed, contextual accounts that allow readers to visualise the setting (Geertz, 1973; Denzin, 2012). Dependability and confirmability are achieved through careful documentation of all research decisions, creating an audit trail. Transferability refers to the extent to which readers can apply insights to similar contexts.

When reflexivity and ethical care are combined with transparent reporting, qualitative findings become trustworthy, rich, and meaningful. They invite readers not only to understand participants' experiences but also to reflect on their own.

5.4 Integration of Approaches and Methods

Each qualitative approach and method offers a distinct perspective on understanding human life. Phenomenology captures individual meaning; ethnography reveals culture; grounded theory builds explanations; narrative inquiry explores identity; case studies offer depth; and participatory action research connects understanding to change (Creswell and Poth, 2018).

Integrating these approaches requires philosophical sensitivity. For example, combining narrative inquiry with participatory action research can allow participants to both share their stories and take collective action. Such flexibility is a hallmark of qualitative inquiry, as it values creativity as long as the design remains consistent with its underlying paradigm.

Qualitative research thus becomes a space for dialogue, empathy, and imagination. It invites both researcher and participant to explore meaning together, bridging personal stories and social understanding.

5.5 Summary

This discussion highlights that qualitative research is most effective when philosophical assumptions, methodological design, and ethical reflexivity work in harmony. The interpretivist and constructivist paradigms emphasise co-

creation of knowledge and meaning, guiding researchers to listen, interpret, and connect. Reflexivity ensures transparency and emotional awareness, while ethical commitment guarantees respect and trust. When combined, these qualities make qualitative inquiry not only a method of investigation but also a moral and emotional act of understanding human experience (Tracy, 2020; Denzin and Lincoln, 2018).

VI. CONCLUSION

Qualitative research offers a human-centred way of understanding reality. Rather than seeking prediction or control, it values meaning, emotion, and lived experience. Guided by interpretivist and constructivist paradigms, qualitative inquiry posits that knowledge is constructed through a dialogue between the researcher and the participant (Lincoln and Guba, 1985; Schwandt, 2015). This philosophical stance enables researchers to examine how individuals perceive their world and how culture, identity, and context influence their understanding.

Throughout this paper, qualitative research is presented as a coherent system that links philosophy, approach, and method. Its foundations, ontology, epistemology, and axiology remind us that reality is subjective, knowledge is relational, and values are integral to every decision (Creswell and Poth, 2018). These assumptions guide the choice of research paradigm and the selection of appropriate approaches such as phenomenology, grounded theory, ethnography, narrative inquiry, case study, and participatory action research. Together, these frameworks enable researchers to explore human experience from multiple perspectives.

The discussion of data collection methods, including interviews, focus groups, observations, document analysis, and the use of visual or digital tools, demonstrates how qualitative researchers capture complex emotions and social meanings. When combined with triangulation and reflexivity, these methods produce findings that are credible, transparent, and ethically sound (Braun and Clarke, 2021; Tracy, 2020). Ethics in qualitative inquiry extend beyond procedure; they are an ongoing act of respect for participants' stories and dignity.

As a result, qualitative research contributes not only to academic knowledge but also to empathy and social understanding. It gives voice to those whose experiences are often overlooked and helps transform personal narratives into collective insight (Denzin and Lincoln, 2018). By illuminating how people construct meaning in their daily lives, qualitative inquiry deepens our awareness of humanity's emotional and cultural complexity.

Looking forward, the field continues to evolve. Digital technologies, the creative arts, and participatory practices are expanding the scope of what constitutes qualitative data and how it can be represented. Future researchers are encouraged to combine methodological rigour with imagination, to listen carefully, think reflexively, and engage ethically. As Tracy (2020) suggests, qualitative research at its best is an act of care, connecting intellect with emotion, analysis with empathy, and knowledge with humanity.

In conclusion, qualitative research is not merely about collecting data; it is about understanding the lives of individuals. It transforms inquiry into relationship, information into insight, and research into a shared journey of meaning-making. Through this commitment to understanding and compassion, qualitative inquiry continues to shape a more reflective, inclusive, and humane vision of knowledge.

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Assessing Quality of Life in Smart Cities vs Non-Smart Cities: A Geographical Study of Faridabad and Rohtak Districts of Haryana

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Abstract

This study examines the differences in quality of life between the Smart City of Faridabad and the Non-Smart City of Rohtak in Haryana, focusing on socio-economic, environmental, and infrastructural aspects. Using selected indicators such as education, income, housing, sanitation, air quality, and health, the research assesses how urban governance models influence living standards. Faridabad, as part of the Smart Cities Mission, exhibits improved income levels and enhanced access to sanitation and housing facilities, reflecting the benefits of planned urban development. However, it also faces challenges such as rising pollution and urban congestion, with its air quality often falling into the “poor” category, affecting public health and livability. Rohtak, although not a smart city, offers a more community-focused lifestyle with moderate income levels, stronger social cohesion, and a relatively healthier environment in certain aspects. Yet, limitations in healthcare infrastructure and employment opportunities remain. The comparison reveals that smart city initiatives improve infrastructure and economic growth but do not automatically guarantee social and environmental well-being. The study concludes that quality of life depends not only on technological or infrastructural progress but also on social inclusivity, environmental sustainability, and equitable access to basic amenities, highlighting the need for a more human-centred approach to urban development.



Keywords— Environmental Sustainability, Smart Cities Mission, Quality of Life, Life Expectancy.

I. INTRODUCTION

Urbanisation in India has emerged as one of the defining forces shaping the social, economic, and environmental fabric of the nation. However, this rapid urbanisation also brings challenges such as congestion, environmental degradation, and unequal access to infrastructure. In response to these complexities, the Government of India launched the **Smart Cities Mission (SCM)** in 2015 under the Ministry of Housing and Urban Affairs (MoHUA, 2025), aiming to promote sustainable and inclusive urban development through the adoption of digital technologies, improved infrastructure, and participatory governance. The central goal of this mission is to enhance the **Quality of Life (QoL)** for urban residents by ensuring better service delivery, transparent governance, and efficient use of resources (MoHUA, 2024).

Quality of life (QoL) is a multi-dimensional concept that includes material well-being, health, education, environmental quality, public services, and subjective life satisfaction (health, housing, sanitation, mobility, and safety). Across India, the Smart Cities Mission (SCM)—launched by the Government of India—aims to utilise technology, data, and integrated planning to enhance urban living conditions in select cities. Faridabad (part of the Delhi metropolitan region) is one of the cities chosen for smart city development under SCM and has established an institutional and online presence for implementing smart projects. Rohtak, another administrative and economic centre in Haryana, is not listed among the SCM flagship cities and thus serves as a useful comparator as a non-Smart City district within the same state. This comparative study asks: Do smart city designations and related investments lead to better measurable QoL outcomes compared with

non-Smart City districts in the same regional context? The selection of Faridabad and Rohtak accounts for the state-level policy environment, while allowing for the examination of urban scale, industrial profile, and governance differences associated with the SCM. Faridabad's Smart City programme emphasises ICT-enabled services, urban infrastructure upgrades, and project-based urban renewal initiatives. The city's official smart city profile and baseline assessments highlight priorities such as water management, mobility, and e-governance. Rohtak, governed through traditional municipal frameworks, exhibits distinct investment patterns, with a focus on social infrastructure and regional connectivity. Population differences are significant: Faridabad district and city have substantially larger populations than Rohtak, which in turn influences service demand and the complexity of urban governance. Baseline demographic data (Census 2011 and district profiles) show Faridabad's urban and industrial concentration, whereas Rohtak exhibits a mixed urban-rural profile with distinct human development dynamics. These differences make the two districts suitable for evaluating how smart interventions interact with existing conditions to influence QoL outcomes.

Faridabad: as a Smart City

On May 21, 2016, Faridabad was selected for the Fast-Track Smart City initiative. "Developing Faridabad through Transit Oriented Development, smarter mobility, and urbanism for creating development which provides social, economic, and environmental benefits for its citizens and promotes overall quality of life" is the city's overarching aim. On August 12, 2016, Faridabad Smart City Limited (FSCL), a Special Purpose Vehicle (SPV), was established to implement the city's objectives. FSCL has included the city's residents as partners in the planning and development process. During implementation, the co-creation process, which involves a combination of cooperation and competition, will continue to be used to prepare the Smart City Proposals (SCP).

Significance of the Study: -

By comparing Faridabad (a Smart City) and Rohtak (a Non-Smart City) in Haryana, the research provides critical insights into the spatial, social, and environmental dimensions of urban living. It examines how infrastructural improvements, digital systems, and citizen participation in smart cities translate into tangible benefits for residents, and how non-smart cities maintain livability despite limited technological interventions. The geographical lens enriches this comparison by analysing the spatial distribution of resources, accessibility of services, and regional disparities in development.

The study is significant for policymakers, urban planners, and researchers as it contributes to the ongoing debate about the inclusivity and sustainability of smart urbanisation. The findings can guide future urban policies by emphasising the need for people-centred, place-specific, and environmentally sustainable development strategies rather than relying solely on technological solutions. It will also help identify best practices from both smart and non-smart cities that can be integrated into holistic urban planning. Ultimately, the research highlights that enhancing the quality of life should remain the primary objective of urban development, extending beyond the mere adoption of smart technologies.

Study Area: -

The present study examines Faridabad and Rohtak, two major urban centres in Haryana that embody different models of urban growth and governance within the same regional context. Faridabad, situated in the southeastern part of Haryana, is a key component of the National Capital Region (NCR) and serves as one of the state's largest industrial and commercial hubs. Covering about 741 square kilometres, the district had a population of 1.81 million according to the 2011 Census, which is expected to increase to approximately 2.48 million by 2025 (Census of India, 2011). Faridabad was chosen under the Smart Cities Mission in 2016, aiming to upgrade urban infrastructure, improve mobility, and deliver better services through digital technologies. The city has launched several projects, including the Integrated Command and Control Centre (ICCC), smart street lighting, waste management systems, and e-governance platforms, to enhance efficiency and livability. However, despite these efforts, Faridabad continues to face ongoing challenges, including air and water pollution, traffic congestion, waste disposal problems, and urban inequality, highlighting the complex issues associated with rapid urbanisation in the NCR region.

In contrast, Rohtak, situated in the central part of Haryana, offers a different urban experience shaped by traditional and institutional growth rather than technological modernisation. The district, covering 1,745 square kilometres, had a population of 1.06 million in 2011, which is projected to reach 1.29 million by 2025 (Census of India, 2011). Rohtak serves as a regional educational and healthcare hub, housing prominent institutions such as Maharshi Dayanand University (MDU) and the Pandit Bhagwat Dayal Sharma Postgraduate Institute of Medical Sciences (PGIMS). The city's economy mainly relies on education, public administration, and small-scale industries. Although Rohtak is not part of the Smart Cities Mission, it features a moderate cost of living, lower congestion, and strong social cohesion, which positively influence residents

perceived well-being. Comparing Faridabad and Rohtak thus provides an ideal geographic framework to evaluate how different models of urban governance—smart versus conventional—affect the quality of life and sustainability of cities in Haryana.

Objectives of the Study

This research aims to undertake a comparative geographical assessment of Quality of Life between Faridabad (Smart City) and Rohtak (Non-Smart City) with the following objectives:

1. To assess the spatial variation in quality-of-life indicators across Faridabad and Rohtak districts.
2. To identify key socio-economic, infrastructural, and environmental factors that influence quality of life in both cities.

II. RESEARCH METHODOLOGY

The study is based on both primary and secondary data sources. Secondary data were collected from the 2011 Census of India, published and unpublished government documents, Reports, NFHS-5, and Statistical Abstract of Haryana. Primary data were collected in the study area through an extensive door-to-door survey. Various Bar diagrams were created using Microsoft Excel. After the data was analysed, a logical evaluation of the socioeconomic conditions of the research area was drawn. For the primary survey in this study, 50 Households, totalling 150 respondents, were selected from the Faridabad and Rohtak Districts.

Analytical Framework: -

Although determining a household's quality of life status is a complex task, it is nonetheless necessary for a thorough examination. Although it may not always be possible to obtain such data directly, academics frequently use asset indices as proxies. To determine quality of life

status, these indices consider various variables, including income level, educational attainment, and Household Amenities. Ownership of televisions, refrigerators, automobiles, bikes, and tractors, as well as access to gas connections and sanitary facilities, are examples of indicators that fall under the category of Household amenities.

Details about each household member are collected, including the total number of family members, gender, age, relationship to the household, marital status, level of education attained, and highest degree obtained. The following lists the particular indicators that were used in the primary survey: -

- Education Level Attained
- Income-Level
- Sanitation Facility

Secondary data have been used for the following indicators: -

- Air Quality
- Housing Quality
- Health Dynamics

Data Analysis: -

The data analysis section systematically examines the collected information using both quantitative and qualitative methods to identify spatial and socio-economic differences in quality-of-life indicators. Graphical representations are employed to interpret variables such as housing, infrastructure, health, education, and environmental quality. The analysis aims to find patterns, correlations, and disparities that reflect the living conditions and development status of the study area. By combining numerical data with perceptual responses, this section provides an evidence-based understanding of urban livability and supports the development of meaningful policy recommendations.

Table No. 1: Education Level Achieved by the Respondents

Sr. No.	Districts	Education Level of Respondents					
		10 th	12 th	Graduation	Masters	Illiterate	Others
1.	Rohtak	10	23	55	34	8	20
2.	Faridabad	22	25	51	15	16	21

Source: Primary Survey

The educational profile of respondents in Rohtak and Faridabad districts highlights crucial differences that directly influence their respective quality of life. Education is a fundamental dimension of human development and a key determinant of social well-being, employment

opportunities, and civic awareness. In Rohtak, 55 of the respondents are graduates, 34 hold master's degrees, and only 8 are illiterate. This reflects a strong educational foundation supported by major institutions, including Maharshi Dayanand University, IIM Rohtak, and PGIMS.

The dominance of higher education in Rohtak indicates a knowledge-oriented urban economy where people possess greater awareness of health, sanitation, and governance. Educated individuals are more likely to access better jobs, healthcare, and digital services, resulting in an overall higher quality of life. The low illiteracy rate further enhances social inclusion and equitable growth within the district.

In contrast, Faridabad, despite being a Smart City, exhibits lower educational attainment beyond secondary school,

with 51 graduates and only 15 holding postgraduate degrees. The illiteracy rate of 16—double that of Rohtak—reflects gaps in educational outreach, particularly among industrial and migrant populations. Faridabad’s economy is largely dependent on the manufacturing and service sectors, which rely on semi-skilled labour, explaining the higher proportion of respondents who are educated up to the 10th and 12th levels. Although the city benefits from advanced infrastructure and smart technologies, the limited spread of higher education restricts residents’ ability to fully utilise digital and civic opportunities.

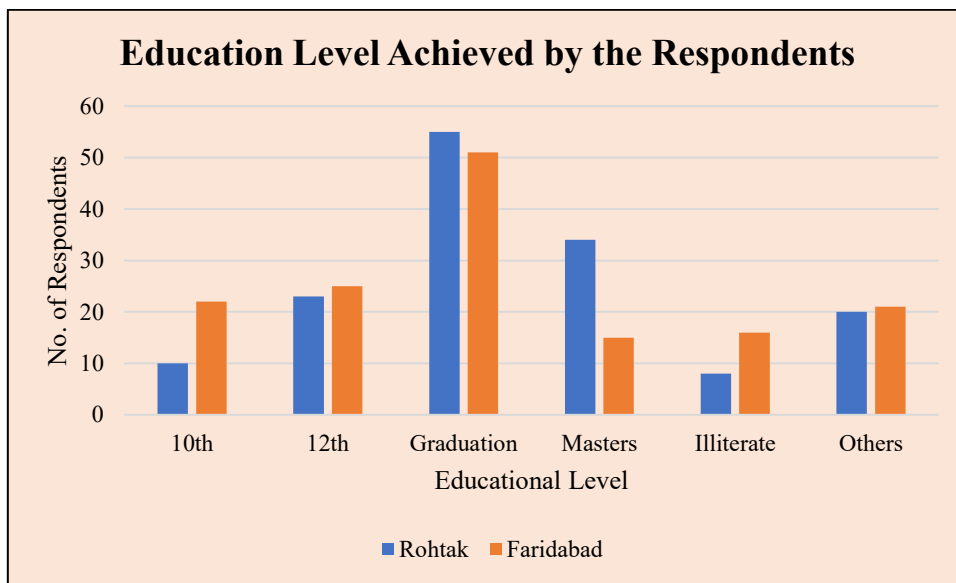


Fig. No. 1: Education Level Achieved by the Respondents

Source: Table No. 1

Thus, while Faridabad’s development is driven by infrastructure, Rohtak’s progress stems from educational empowerment. The comparison suggests that true urban well-being extends beyond technological modernity to

include human capital development. A well-educated population, as seen in Rohtak, contributes to better health, environmental awareness, and civic participation—all essential components of a high quality of life.

Table No. 2: Comparing Educational Structure and Social Equity

Aspects	Rohtak	Faridabad
Literacy and Higher Education	High literacy and a strong presence of higher education institutions.	Moderate literacy; fewer higher educational institutions relative to the population.
Skill Profile	More professional and academic workforce (teachers, medical professionals, administrators).	More industrial and technical workforce (mechanics, factory workers, service employees).
Social Awareness	Higher awareness about civic rights, healthcare, and environmental issues.	Lower awareness among marginalised or migrant communities due to education gaps.
Urban Inclusivity	Education plays a crucial role in promoting social inclusion and mobility.	Socioeconomic inequalities persist between industrial workers and the elite.

Table No. 3: Linkage Between Education and Quality of Life Dimensions

Quality of Life Dimension	Role of Education	Rohtak	Faridabad
Economic Well-being	Education improves employability and income potential.	Highly diverse employment in education, healthcare, and services.	Moderate—industrial dependency and low-skilled labour.
Health and Hygiene	Education leads to better health awareness and sanitation practices.	Strong correlation—better health awareness.	Moderate—awareness is lower in slum and industrial worker areas.
Social Inclusion	Education reduces gender and caste disparities.	Higher inclusivity through access to universities.	Persistent social stratification due to the informal labour economy.
Governance Participation	Literate citizens engage more in governance and planning.	Active civic participation.	Lower civic engagement despite the use of Smart City apps.

Table No. 4: Income Level of the Respondents

Sr. No.	Districts	Income Level of Respondents				
		Below 5000	5001-10000	10001-25000	25001-50000	Above 50000
1.	Faridabad	0	05	50	71	24
2.	Rohtak	0	07	94	36	13

Source: Primary Survey

The income distribution of respondents in Faridabad and Rohtak districts offers significant insight into the relationship between economic status and quality of life, particularly in the context of Smart and Non-Smart Cities. Faridabad, identified as a **Smart City**, exhibits a relatively higher income profile, with 71 respondents earning between ₹25,001 and ₹50,000, and 24 earning above ₹50,000, while none fall below ₹5,000. This reflects the district’s strong industrial and service sector base, supported by its integration into the National Capital Region (NCR) and its inclusion under the **Smart Cities Mission**. The development of smart infrastructure, improved connectivity, and digital governance mechanisms has created economic opportunities and enhanced the material well-being of many urban residents. However, this income-driven growth also brings disparities, as much of Faridabad’s labour force is employed in industries or informal sectors where income inequality persists. High

living costs, pollution, and urban congestion partly offset the benefits of higher income levels, highlighting that technological advancement alone cannot guarantee overall quality of life.

In contrast, Rohtak, a **Non-Smart City**, presents a more moderate-income profile—94 of respondents fall within the ₹10,001–₹25,000 range, with only 13 earning above ₹50,000. Although income levels are lower compared to Faridabad, Rohtak’s economy is primarily driven by education, healthcare, and administrative services rather than heavy industries. The city’s smaller scale, lower cost of living, and cohesive social environment often translate into a stable and satisfactory lifestyle despite lower earnings. The availability of educational and health facilities, such as Maharshi Dayanand University and PGIMS, improves social well-being and human development.

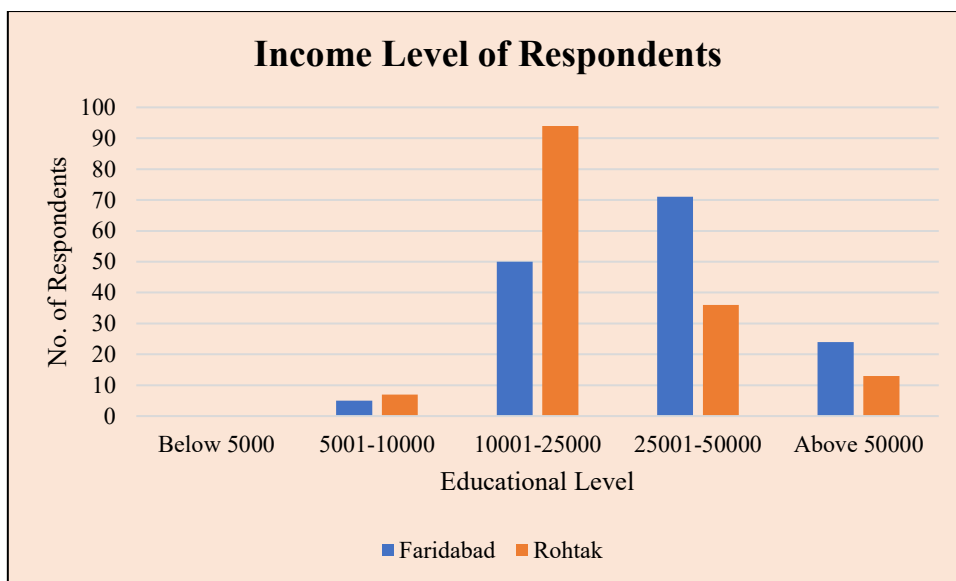


Fig. No. 2: Income Level of the Respondents

Source: Table No. 4

Thus, while Faridabad’s Smart City model promotes economic affluence and infrastructural growth, Rohtak’s Non-Smart City character emphasises social cohesion and affordability. The comparison illustrates that quality of life

is not solely determined by income or smart infrastructure, but by the balance between economic prosperity, environmental quality, and social inclusivity.

Table No. 5: Availability of Sanitation Facilities

Sr. No.	Districts	Sanitation Facility among the Respondents		
		Toilets Available	Under Construction	Not Available
1.	Faridabad	134	16	00
2.	Rohtak	141	08	01

Source: Primary Survey

The data on sanitation facilities among respondents in Faridabad and Rohtak districts reveals a crucial dimension of quality of life, highlighting the relationship between urban infrastructure, public health, and living standards in Smart and Non-Smart Cities. Sanitation is one of the most significant determinants of a population’s well-being, influencing health outcomes, environmental hygiene, and social dignity. The table shows that in Faridabad, a **Smart City**, 134 respondents have access to toilets, 16 reported

that toilets are under construction, and 0 respondents have no access to toilets. In contrast, in Rohtak, a **Non-Smart City**, 141 respondents have access to toilets, 8 have toilets under construction, while 1 respondent lacks any facility. While both districts demonstrate high levels of sanitation coverage, subtle differences reflect broader socio-economic and infrastructural contrasts between smart and non-smart urban spaces.

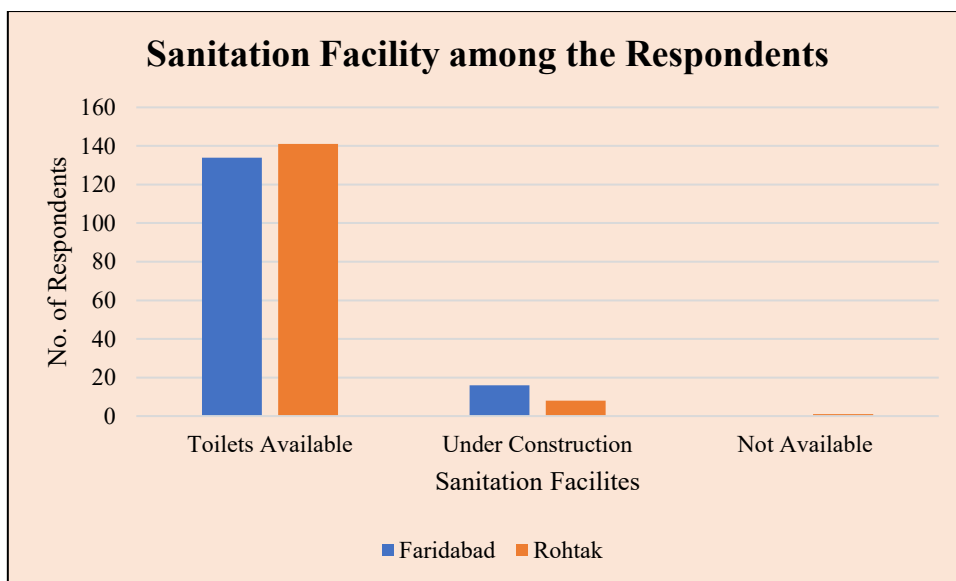


Fig. No. 3: Availability of Sanitation Facilities

Source: Table No. 5

In Faridabad, the near-universal availability of toilets (over 90%) reflects the impact of urban modernisation initiatives under the **Smart Cities Mission** and national programs such as the **Swachh Bharat Mission**. The city’s integrated approach to urban management—combining digital monitoring, waste management systems, and urban sanitation planning—has strengthened hygiene standards and reduced open defecation. The ongoing construction of toilets for a small number of respondents indicates continuous infrastructural expansion and administrative responsiveness. Access to proper sanitation not only prevents water-borne diseases but also enhances women’s safety, privacy, and social dignity, which are key aspects of quality of life in urban areas. However, challenges such as maintenance of community toilets, waste disposal, and uneven access in informal settlements still persist, reflecting the complexity of urban sanitation even in Smart Cities.

In Rohtak, the high proportion of households with access to toilets (approximately 94%) reflects the effectiveness of government interventions and increasing awareness in smaller, non-urban cities. Despite being outside the Smart City framework, Rohtak has benefited from rural–urban development programs, such as the Swachh Bharat Mission, and state-level initiatives aimed at achieving universal sanitation coverage. The lower number of toilets under construction (8) and minimal cases of non-availability (1) indicate a strong local implementation of sanitation schemes and community participation. The city’s smaller scale and close-knit social structure may also facilitate more effective monitoring and behavioural change compared to larger urban centres.

Table No. 6: Various Indicators of Quality of Life

Sr. No.	Districts	Various Indicators of Quality of Life among Respondents				
		Air Quality Index	Housing Structure			Total Crime (IPC)
			Pucca	Kutchha	Other Material	
1.	Faridabad	218	322114	5343	23281	10294
2.	Rohtak	348	149968	2980	49356	6358

Source: The Indian Express, 2025, DCHB, 2011, Statistical Abstract of Haryana

The data on various indicators of quality of life—Air Quality Index (AQI), housing structure, and total crime under the Indian Penal Code (IPC)—for Faridabad and Rohtak districts highlight the multidimensional nature of

urban well-being, especially when comparing a Smart City (Faridabad) and a Non-Smart City (Rohtak). Faridabad's AQI of 218 indicates a “poor” air quality category, while Rohtak's higher AQI of 348 falls into the “very poor”

category, suggesting that air pollution significantly affects residents' health in both districts, with more severity in Rohtak. This reflects industrial activities, vehicular emissions, and limited green spaces, which decrease environmental quality and directly impact the livability and sustainability of urban life. In terms of housing structure, Faridabad has 3,22,114 pucca houses, 5,343 kutchra houses, and 23,281 made of other materials, indicating a high proportion of durable and permanent dwellings—an encouraging sign of infrastructure quality and housing stability. Rohtak, on the other hand, reports 1,49,968 pucca houses, 2,980 kutchra houses, and 49,49,356 of other material types. Although the total number of pucca houses is lower due to its smaller population, the proportion remains notable, showing that even non-smart cities are

improving housing through state-level schemes and rural-urban development programs. Regarding safety, Faridabad reports 10,294 IPC crimes compared to 6,358 in Rohtak, reflecting how rapid urbanisation and population density in smart cities can correlate with higher crime rates and social stress. While Faridabad's smart city framework emphasises physical infrastructure and digital governance, issues such as pollution and urban crime still affect its overall quality of life. Conversely, Rohtak, despite being a non-smart city, benefits from moderate housing density, better community cohesion, and lower crime rates, illustrating that social harmony and sustainable development are equally vital in defining urban quality of life beyond technological advancements.

Table No. 7: Health Indicators

Sr. No.	Districts	Indicators		
		Sex Ratio of Birth	Life Expectancy	Infant Death
1.	Faridabad	91	70.62	298
2.	Rohtak	85	71.25	6957

Source: Statistical Abstract of Haryana, 2023-24, Payal Taver et.al (2025)

The demographic indicators—sex ratio at birth, life expectancy, and infant deaths—offer deep insights into the social and health dimensions of quality of life in **Faridabad (Smart City)** and **Rohtak (Non-Smart City)** districts of Haryana. Faridabad records a sex ratio of 91 females per 100 males at birth, a life expectancy of 70.62 years, and 298 infant deaths. In contrast, Rohtak reports a slightly lower sex ratio of 85, a marginally higher life expectancy of 71.25 years, and a significantly higher number of infant deaths at 6,957. These variations reveal that economic progress and urban infrastructure, although vital, do not uniformly translate into improved social and health outcomes. Faridabad's relatively better sex ratio at birth indicates moderate success in addressing gender bias through awareness programs, education, and the enforcement of laws such as the *Pre-Conception and Pre-Natal Diagnostic Techniques (PCPNDT) Act*. However, the persistence of a low ratio still reflects deep-rooted socio-cultural preferences and gender inequality that continue to challenge overall social well-being. Rohtak's poorer sex ratio highlights similar patriarchal norms more pronounced in non-metropolitan settings, despite widespread literacy and healthcare accessibility. In terms of life expectancy, Rohtak marginally surpasses Faridabad, which may be attributed to its lower levels of industrial pollution, less stressful lifestyles, and community-based healthcare access, suggesting that smaller cities can sometimes offer healthier living conditions despite fewer smart infrastructures.

However, the high number of infant deaths in Rohtak compared to Faridabad points to gaps in maternal and child healthcare facilities, nutrition, and medical infrastructure in semi-urban areas. Faridabad's lower infant mortality, supported by better-equipped hospitals and improved sanitation under the *Smart Cities Mission*, reflects the role of urban modernization in enhancing health outcomes. Overall, while Faridabad's smart city status contributes to improved healthcare and gender awareness, Rohtak's data demonstrate that social attitudes, healthcare reach, and environmental quality are equally critical determinants of quality of life beyond the scope of smart infrastructure.

III. CONCLUSION

In conclusion, the comparative assessment of quality of life between the smart city of Faridabad and the non-smart city of Rohtak reveals that technological advancement and infrastructural development alone do not guarantee holistic well-being. Faridabad, as a smart city, reflects the benefits of urban modernisation—better connectivity, housing, sanitation, and digital governance—which have enhanced material comfort and access to services. However, the challenges of environmental degradation, urban congestion, and social inequalities continue to hinder the realisation of sustainable urban living. On the other hand, Rohtak, despite lacking the institutional framework of a smart city, demonstrates that smaller and traditionally planned cities

can provide a good quality of life through social cohesion, lower living costs, and stronger community networks.

The study highlights that quality of life is a multidimensional concept encompassing not only economic and infrastructural factors but also environmental health, gender equity, safety, and social well-being. Smart cities must therefore move beyond their focus on technological solutions and integrate human-centric approaches, emphasising inclusivity, environmental sustainability, and participatory governance. Non-smart cities like Rohtak, meanwhile, can learn from the efficient service delivery models of smart cities while retaining their community-based strengths. Thus, the path toward improved quality of life in both contexts lies in a balanced model that combines smart urban planning with social equity and ecological consciousness—ensuring that progress reaches every section of society, not just through technology but through sustainable and inclusive development.

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The Embodied Motivation of Synesthetic Metaphors on Gustatory Adjective “suan (酸/sour)” in Chinese

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Abstract

Synesthetic metaphor is an important research topic in recent years. Yet, there is almost no discussion on the underlying motivation for the occurrence of synesthetic metaphor. Embodied cognition theory (EC) views that cognition is shaped by the kind of body possessing the organisms. According to EC, people can conceptualize things based on bodily experience, where the more abstract and less direct experience is understood by means of the concrete and more direct experience. In order to address the gap, this paper tends to choose gustatory adjective “suan (酸/sour)”, one of the gustatory experience, which is also extensively used to express people’s feeling and life experiences in Chinese, to further study the motivation that stimulates the synesthetic mapping from the gustatory domain to another sensory domains.

Keywords— *synesthetic metaphor, embodied cognition theory, embodied motivation, “suan (酸/sour)”, gustatory domain.*

I. INTRODUCTION

Synesthetic metaphor becomes a hot-point and frontier in the field of cognitive metaphor. In recent years, linguistic researchers focus on the elaboration on its definition, the classification on the types of synesthetic metaphor and the investigation of cross-sensory mapping models, such as the mapping from visual domain to auditory domain, from gustatory domain to psychological domain, etc. Yet, the analysis on the underlying motivation on the occurrence of synesthetic mapping remains

underexamined. To address this gap, this paper founded on the embodied cognition theory (EC) provides a valuable lens. In accordance with EC, the cognition originates from bodily experiences, and abstract concepts can be comprehended through concrete physical experiences. This perspective provides a foundational explanation for why synesthetic metaphor emerge. It is because they are rooted in people’s embodied interactions with the world. For instance, when we use “心酸” in Chinese to describe sad feelings, we are mapping a gustatory experience onto an mental domain, a process that EC theory frames as a

product of embodied cognitive mechanisms.

The common sense of “suan (酸/sour)” refers to “an acid taste like lemon or vinegar” or “(food, especially milk) having gone bad because of fermentation, a gustatory adjective in Chinese, which is now used widely to express emotion and social experiences. The synesthetic usage of “suan (酸/sour)” in Chinese is a typical case that presents the mapping type from gustatory domain to other sensory domains or abstract domains. Therefore, this paper choose the gustatory adjective “suan (酸/sour)” in Chinese as research object to reveal the embodiment motivation of synesthetic metaphor.

II. LITERATURE REVIEW

The cognitive foundation of synesthetic metaphors lies in the theory of embodied cognition theory (EC), which posits that human cognition is rooted in bodily experience. Cross-domain mappings of gustatory adjectives in Chinese are typical manifestations of this theory by which individuals could understand abstract concepts such as emotions and social interactions through concrete taste sensations (Zhao, 2001). In existing studies on Chinese gustatory metaphors, researchers have predominantly paid attention to analyze the synesthetic characteristics of “tian (甜/sweet)” (mapping positive emotions) and “ku (苦/bitter)” (mapping suffering experiences). However, specialized analyses of “suan (酸/sour)” remain scattered, failing to form a systematic research framework. This gap creates opportunities for in-depth exploration of the embodied motivations behind the synesthetic metaphors of “suan (酸/sour)”. In the view of previous research, the studies on “suan (酸/sour)” centers on two dimensions: diachronic semantic mapping and historical-cultural connections. Therefore, this part will analyze the previous literature in terms these two parts.

2.1 Semantic Mapping Types of “Suan (酸/sour)” in Chinese

According to the search of “suan (酸/sour)”’s semantic meaning in *Modern Chinese Dictionary*, *Dictionary of Ancient Chinese*, and *Great Dictionary of Chinese*, this paper found its semantic meanings including: (1) vinegar; (2) tastes like vinegar or has an acid taste; (3) the unpleasant and pungent smell; (4) a feeling of weakness due to slight pain in the body caused by illness or fatigue; (5) grievance and sorrow; (6) poor and pedantic; (7) abbreviation for acids in chemistry, which are compounds that produce only hydrogen ions as positive ions when ionized in electrolytes. They can react with bases to form salts and water, react with certain metals to form salts and hydrogen gas, have a sour taste in aqueous solutions, and can turn litmus paper red. Among them, the second semantic meaning: tastes like vinegar or has a sour taste, is proved to be the basic meaning and the prototype in the categorization of “suan (酸/sour)”’s perceptual meaning (Mo, 2018).

In terms of semantic mapping, current studies generally categorize “suan (酸/sour)”’s synesthetic mapping into four types. First is from the gustatory domain to olfactory domain, such as “suanchou xuntian (酸臭熏天)” and “hansuanwei (汗酸味)”. These usages connect the gustatory sensations of “suan (酸/sour)” (e.g., astringency in the mouth, or slight discomfort in the stomach) with olfactory experience of unpleasant or pungent smelling. Second is from the gustatory domain to pain domain. It is represented by expression like “yaosuan beitung (腰酸背痛)” and “shouwan suantong (手腕酸痛)”, regarding the taste of “suan (酸/sour)” as a sort of bad experience and linking it to the uncomfortable body pain. Third is from the gustatory domain to the emotional domain. For example, “xinsuan (心酸)” and “suanchu (酸楚)”, expressions like these are all used to convey people’s sorrow or unhappy emotions during the interactions with the outer world. The emotional semantic meaning of “suan

(酸/sour)” is expanded from the gustatory experience, where the acid taste of fragmented food or unripe fruit might acidify or tart people’s tongue and stomach, and therefore, such similarity evokes unpleasant associations on emotion. The fourth is from the gustatory domain to visual domain, with the typical examples like “suanmiankong (酸面孔)” describing a harsh facial expression. The mapping is caused by the comparison between irritating taste and displeasure in one’s expression. However, the fourth mapping type is less frequently documented in literature and are often mentioned as supplementary types.

Concerning to the mechanism of semantic formation, researchers mostly adopt the conceptual blending theory to argue that the semantic meaning and synesthetic meaning of “suan (酸/sour)” are integrated on the basis of “feature similarity” and gradually developed into stable metaphorical usages in the end. However, the underlying logic of “how similarity is established” has not been further elaborated.

2.2 Diachronic Change of “Suan (酸/sour)”’s Semantic Meaning

In *Shuo Wen Jie Zi*, “suan (酸/sour)” primarily refers to vinegar, and takes “you(酉)”, representing a wine jar, which indicates fermented things as its radical and “qun(夂)” as its phonetic component.

The earliest appearance of “suan (酸/sour)” is in Zhou Dynasty. From the Zhou Dynasty to Spring and Autumn Period, “suan (酸/sour)” refers to sour taste. For example, in *Zuo Zhuan*, “Sidai zhuizhi, ji Suanzao (驷追之, 及酸枣)”, “suanzao (酸枣)” is used to refer to the sour flavour of jujube. As time goes on, the new meaning of “suan (酸/sour)” appear in Warring States Period, describing the acid smell. For instance, in the Annotation of *LvShi ChunQiu*, “Fou Xi Huang, sui juzhi, yousuan, tushui ze bibuke (缶醢黄, 蚋聚之, 有酸, 徒水则必不可)”, the meaning of “suan (酸/sour)” is identified as a kind of sour smell. In the period of Han

Dynasty, “suan (酸/sour)” is defined to a new meaning, except for the the meaning concerning taste and smell. According to the annotation in *HuangDi NeiJin*, “Qi suanzhe, yi xinsan (其酸者, 宜辛散)”, “suan (酸/sour)” is used to describe muscle soreness. Besides that, in the annotation of *Houhan Ji*, “Chengzhong laomu yinger, kou yi wanshu, binghuo dazong, kewe suantong (城中老母婴儿, 口以万数, 兵火大纵, 可为酸痛)”, “suantong (酸痛)” is used for the emotional sorrow because of war. In Song Dynasty, the semantic meaning of “suan (酸/sour)” evolves to describe a visual scene, such as in *FoYu Lu*, “jinli hansuan, bu shang renyan (今例寒酸, 不上人眼)”. “hansuan (寒酸)” refers to shabby or poor scene.

However, from Pre-Qin Dynasty to Tang Dynasty and Song Dynasty, the synesthetic usage of “suan (酸/sour)” is mainly confined to intra-sensory mappings, including the meaning for pain which is also classified into the meaning related to touch in some researches like Wang (2007), Mo (2018) and Zhou (2025). Until the Ming Dynasty and Qing Dynasty, the meaning of “suan (酸/sour)” widely extend to the emotional domain. A typical example is in *Dream of the Red Chamber*, a lot of expressions like “niansuan chicu (捻酸吃醋)”, “ban hansuan (半含酸)”, “xinsuan luolei (心酸落泪)”, etc. The frequent appearance of “suan (酸/sour)”’s emotional usage can be seen as a formal establishment for negative emotions. Deng et al (2021) believes that this transformation is related to the trend of vernacular literature focusing on individual emotions. In modern times, the meaning of “suan (酸/sour)” for pain like “yaosuan beitung (腰酸背痛)” and jealous or envious emotion such as “shuo xie suanliuliu de hua (说些酸溜溜的话)” are frequently used by people (Yang, 2017). Such evolution might account for the more and more interactions and the popularization of expressions for jealousy in current cultural context of society.

III. THEORETICAL FOUNDATION

This paper is based on the embodied cognitive theory

(EC), which provides a valuable lens to the explanation of the underlying motivation on the production of synesthetic mapping. The theory emerged relatively late and has only been studied in the last two decades. The discussion on embodiment became increasingly frequent since 1990 in philosophy, psychology, neuroscience, linguistics, etc. The beginnings of EC was in the 1980s for philosophical work in phenomenology, and advances in cognitive psychology and cognitive linguistics, emerged as the idea of the mind as embodied and situated. The advent of the embodiment prompted a shift to embodied cognitive linguistics, which has greatly enriched the system of cognitive linguistics.

The human mind is deeply dependent upon features of the body, which have causal and constitutive roles in cognitive processing (Varela, Thompson, & Rosch, 1991). According to Francesco (2010), the modality-specific systems are involved in the cognitive processing which gives rise to “embodied” mental representations. For example, when observing a given object, people will unconsciously activate the congruent motor information required to interact with it. In *Philosophy in the Flesh—The Embodied Mind and Its Challenge to Western Thought* (Lakoff & Johnson, 1999), they synthesized the a number of previous findings in metaphors, image schema, categorization, etc., broadening the scope of embodiment research. Their studies gave specific meaning to the embodied minds by showing the importance of the human motor and perceptual mechanism for language understanding. Embodied cognition theory (EC) views that cognition is shaped by the kind of body possessing the organisms. As a complement to CMT, EC is intended as a response to the dominance of the classic representational and computational theories of the mind (RCTM) in cognitive science (Borghi & Caruana, 2015). Atkinson (2010), “we experience, understand, and act on the world through our bodies.” This implies that the mind is not only closely linked to the body, but the body also influences the mind. According to Borghi & Caruana

(2015), there are two commonalities among all of the embodiment thesis: the one is that cognitive processes are constrained by perception and motor processes so that the kind of body possessed by organisms shapes their cognition; the other one is that the refusal of the information processing model of the mind and of the metaphor of the mind are equal to the software that manipulates symbols. EC suggests that all concepts rely on the simulation of the sensorimotor experience with objects or events they refer to.

According to Lakoff and Johnson (1999), they distinguished three levels of the embodiment: neural, phenomenological, and “the cognitive unconscious”. The neural level refers to the neurological structures supporting the embodied thinking structure. The phenomenological level concerns everything that people are conscious of, for instance: physical bodies, mental stage, the surroundings and their interaction with the environment. The unconscious level involves all the unconscious mental operations underpinning the possible conscious experience.

Kövecses (2010) proposed that conceptual metaphor is constrained by two distinct and concomitant pressures: one is from the embodiment, the other is from the context. The context is decided by local culture which plays an important role in prompting the metaphors with the variations of intracultural and intercultural interaction. Besides people’s physical body, interaction with the environment and cultural contexts are also at the same level of the embodiment. However, the issue of cultural context is not the central part concerned by current researches and fails to receive much attention.

The advance of embodiment thesis enriches the system of the cognitive linguistics research by providing the motivation for central concern to linguists. In contrast, the embodiment thesis is also expanded by the increasing converging linguistic researches.

IV. MOTIVATIONS BEHIND THE SYNAESTHETIC METAPHOR OF THE GUSTATORY ADJECTIVE “SUAN (酸/SOUR)” IN CHINESE

According to the previous analysis about the extending of “suan (酸/sour)”’s semantic meaning through different dynasties, it is found that “suan (酸/sour)” extends radially around the prototype meaning—the gustatory meaning for tastes like vinegar or a sour taste. The extending of a word’s meaning is not only caused by the economical principle, but also a result of metaphorical conception (Guo, 2023). This paper tends to categorize the mapping types of “suan (酸/sour)” for four types: from the gustatory domain to olfactory domain, from the gustatory domain to pain domain, from the gustatory domain to emotional domain, from the gustatory domain to visual domain. To reveal the underlying motivation that evokes different synesthetic mappings on the gustatory adjective “suan (酸/sour)” in Chinese, this section will focus on the example analysis of “suan (酸/sour)” from CCL corpus.

4.1 Example Analysis on “suan (酸/sour)”’s Synesthesia Mapping from the Gustatory Domain to Four Target Domains

- (1) “一进车间大门，一股热浪夹着刺鼻的醋酸味迎面扑来。”《人民日报》

“Yi jin chejian damen, yigu relang jiazhe cibi de cusuanwei yingmian pulai.”

“Into the workshop door, a heat wave with a pungent acetic smell head on.”

- (2) “沟里凉气袭人，还有股腥酸味。”《野火春风斗古城》

“Gouli liangqi xiren, haiyou gu xingsuanwei.”

“The air in the ditch was cold and sour.”

- (3) “跨进这座大楼，迎面扑过来一阵夹杂着汗酸和烟酒味的臭气”《人民日报》

“Kuajin zhezuo dalou, yingmian puguolai yizhen jiazazhe hansuan he yanjiuwei de chouqi.”

“As I stepped into the building, I was greeted by a stench of sweat, smoke and alcohol.”

- (4) “回家打开盒盖，一股腐酸扑鼻而来”《人民日报》

“Huijia dakai hegai, yigu fusuan pubi erlai.”

“When I went home and opened the box, a smell of rotten acid came to me.”

- (5) “整个化工厂被浓浓的黑烟罩住，并有刺鼻的酸味向四周弥漫。”《新华社》

“Zhengge huazhongchang bei nongnongde heiyān zhaozhu, bing you cibide suanwei xiang sizhou miman.”

“The whole chemical plant was covered with thick black smoke, and there was a pungent sour smell spreading around.”

Examples from (1) to (5) all belong to the mapping type from the gustatory domain to olfactory domain, founded on the chemical perception of taste, through the association of common “pungency” and “corruption” or “fermentation”, mapping to the olfactory domain. In example (1) and (5), “cusuanwei (醋酸味/acetic acid odor)” and “suanwei (酸味/acid smell) refers to the pungent smell of a chemical medicine in a workshop. Example (2) “xingsuanwei (腥酸味/rank sour odor/腥酸味)” describes an unclean environment. Example (3) “hansuan (汗酸/sweat acid) is connected to the physiological state of person or animal, referring to the acidic odor produced when sweat is broken down by bacteria on the skin. Example (4) with “fusuan (腐酸/sour and putrid smell)” is the smell as a result of organic decay. Concluded from the foregoing example analysis, the synesthetic mapping from the gustatory domain to olfactory domain is based on the following four core logic: (1) common chemical foundation, a lot of organic materials will release acid odor like acetic acid or lactic acid when they decay; (2) pungency, the taste of lemon or vinegar obviously has tingling and pungent sense, which could be automatically

transferred from tongue to nose; (3) the implication of physiological state, smells like “hansuanwei (汗酸味/sweat acid odor)”, “naisuanwei (奶酸味/sour milk odor), etc., directly connect certain physiological state or metabolite product with “suan (酸/sour)”, and hence becomes a intuitive description. Therefore, when we use “suan (酸/sour)” in daily conversation or in literature work, we may not indeed taste with our tongue, but it is our brain that automatically invoke a cross-sensory shared experience repository.

(6) 如果走得乏力，双腿**酸痛**。《路亭》

“Ruguo zou de falì, shuangtui suantong.”

“If you walk weakly, your legs ache.”

(7) 擦擦嘴角，捶捶有些**酸胀**的腰。《作家文摘》

“Caca zuijiao, chuichui youxie suanzhang de yao.”

“Wipe my mouth and give my aching, stiff back a rub.”

(8) 她那空空如也的胃在热辣辣的胃酸刺激下**酸涩疼痛**。《厄兆》

“Ta na kongkongrue de wei zai relala de weisuan ciji xia suanse tengtong.”

“Her empty stomach burned with a sharp, sour pain from the fiery gastric acid.”

The usage of “suan (酸/sour) in examples from (6) to (8) is the synesthesia mapping from the gustatory domain to the pain domain, which captures a sort of discomfort that is not sharp, but dull, diffusive and erosive. The foundation of this mapping type lies in the transformation of sourness—the chemical stimuli, into a physiological deep sensation. “suantong (酸痛/sore)” in examples (6) and “suanzhang(酸胀/aching and swollen) in (7) imply direct physiological soreness, resulting from excessive exercise or lack of oxygen on muscle, which are common metaphors in terms of the mapping from the gustatory domain to the pain domain. “Suanse (酸涩/stomach sourness)” in example (8) is used for stomach pain caused

by hyperacidity.

The interior motivation resulting the mapping from the gustatory domain to the pain domain is as followed: (1) common physiological basis, the lactic acid, produced during muscle fatigue literally connects “suan (酸/sour)” (taste/chemical) and “pain” (somatosensory sensation); (2) similar sensory qualities, including persistence, where neither sourness or soreness is fleeting but persists for a period of time, diffusion, where none of them is a single point, but diffuses into an area, such as the entire mouth or whole muscle, and deepness, where the soreness does not occur on the surface of skin like tingling, instead feel from deep inside; (3) similar alarming function, the excess sourness on gustatory sensation and the sour soreness of the body both signaling body being overloaded and developing problems. Therefore, when we use “suanzhang(酸胀/aching and swollen)”, we are describing a physiological a sensation by virtue of the primal and immediate sensory experience, i.e. sour taste.

(9) 想起来一阵**心酸**，直掉眼泪。《评讲聊斋》

“Xiang qilai yizheng xinsuan, zhi diao yanlei.”

“I felt a little sad and started to cry.”

(10) 提起这些往事，真使俺**心酸鼻酸**。《人民日报》

“Tiqi zhexie wangshi, zhen shi an xinsuan bisuan.”

“Talking about these past events really tugs at my heartstrings and chokes me up.”

(11) 每日辛劳不得一饱，此景此情不胜**酸楚**。《人民日报》

“Meiri xinku bu de yi bao, ci jing ci qing bu sheng suanchu.”

“Daily labor brings no relief from hunger; the scene before me stirs deep sorrow.”

(12) 那一股醋火**酸溜溜**地从脚心里一直冲到头顶上。《汉代宫廷艳史》

“Na yigu cuhuo suanliuliu de cong jiaoxin li yizhi

chongdao touding shang.”

“A surge of jealousy flared up, sharp and acrid, rising from the soles of her feet right to the top of her head.”

(13) 你再说，他便**尖酸**刻薄地讽刺你几句。《人民日报》

“Ni zai shuo, ta bian jiansuan kebo de fengci ni jiju.”

“You say it again, and he will sarcastically and bitterly satirise you.”

(14) 把那些晦气、怨气、**穷酸**气都吹干净！《人民日报》

“Ba naxie huiqi, yuanqi, qionsuanqi dou chui ganjing!”

“Blow away all the bad luck, all the resentment, all the poverty!”

(15) 因为里面经过这许多年的**辛酸**刻苦。《红玫瑰与白玫瑰》

“Yinwei limian jingguo zhe xuduonian de xinsuan keku.”

“That’s because it’s been through so many years of hardship and bitterness inside.”

Examples from (9) to (15) belong to the mapping type from the gustatory domain to the emotional domain. When “suan (酸/sour)” transfers from the gustatory domain to the emotional domain, it demonstrates some negative and complex emotional experience, usually integrated with sadness, jealousy, grievance, hardship and slight irony. “Xinsuan (心酸/heartbroken)” in example (9), which refers to the grieved feeling as if the heart is soaked in acid liquid, contracting slightly and aching, is a classical type of mapping to the pain domain. “Bisuan (鼻酸/nose stings)” in example (10) usually a implication for crying, expresses the irritative sense on the rear part of nose cavity when people feel sorrowful or moved. “Suanchu (酸楚/bitterness)” in example (11) carries a deeper degree of sorrow than that on “xinsuan (心酸/heartbroken)”,

describing a sort of clear and profound grievance and bitterness. Emotions portrayed in examples from (12) to (14) are jealousy and carping. “Suanliulu (酸溜溜/jealousy)” in example (12) describes people’s mental state and demeanor of jealousy. When using this word combination, it seems like users could taste the sourness in one’s words because of enviousness. “Jiansuan (尖酸/acrimony)” in example (13) refers to sharp and prickly words that can sting others. The “suan (酸/sour)” here transfers the irritation on the taste to the aggression of the language. The example word combinations don’t absolutely correspond to a certain meaning as shown previously, but are decided by the context they are in. When “qionsuan (穷酸/shabby-genteelism)” in example (14) is used with other two abstract nouns, it does not refer to a man, but implies a kind of spiritual temperament and mentality, which is established by poverty, pedantry and unfulfillment. “Xinsuan (辛酸/heartache)” in example (15) is used to illustrate the bitterness and hardship of life experience.

The core logic that elicits the mapping from the gustatory domain to the emotional domain is as followed: (1) common stimulation, the way that the gustatory sourness tickles person’s taste buds is as same as the way that the “emotional acid” stir the mind; (2) shared “corrosiveness”, acids can corrode objects, and in the same way the negative emotions could also erode people’s inner world; (3) shared “negative evaluation”, the overly sour food results taste discomfort and the “sour emotions” are as well as unpleasant; (4) cultural solidification, vinegar has been associated with the “jealousy” since the ancient times, which has greatly strengthened this metaphorical usage.

(16) 一张脸又黄又瘦，看来就像是**个穷酸秀才**。

《多情剑客无情剑》

“Yizhang lian you huang you shou, kanlai jiu xiangshi ge qionsuan xiucai.”

“His face was sallow and gaunt, making him look just

like a shabby, down-at-heel scholar.”

(17) 那些车夫、小贩，穿着寒酸的人。《日出》

“Naxie chefu, xiaofan, chuanzhuo hansuan de ren.”

“Those rickshaw pullers, vendors, and people dressed in shabby clothes.”

(18) 酸绿相间的颜色让小编的口水瞬间流出来了！

来自网络语料,微信公众号【Art 小咖秀第十三期】如果将酸与甜碰撞在一起会怎么

“Sun lv xiangjian de yanse rang xiaobian de koushui shunjia liu chulai le!”

“The color of sour acid made my mouth water!”

Examples from (16) to (18) serve for the mapping type from the gustatory domain

to the visual domain. “Qionsuan (穷酸/shabby-looking)” in (16) and “hansuan (寒酸/shabby-looking)” in (17) describe the men shabbily dressed and in straitened circumstances. “Qionsuan (穷酸/shabby-looking)” in (16) here is used differently from the previous example in (14) that refer to a kind of mentality. It expresses a poor looking which could be recognized visually at the first sight. “Suanlv (酸绿/color of sour and green)” refers to the food that is not fully marinated, eliciting people’s association on “suan (酸/sour)”’s chemical sensation transferring to the sensation on the judgement on texture and colour through visual observation.

The underlying motivation initiating people’s association follows two mapping pathways: (1) the sour flavour closely connects to food not fully marinated or less-ripe, and such experience will be projected to certain colors lacking vitality, luster and freshness; (2) a strong sour taste induces a tightening and dry tactile sensation (i.e., astringency) in the oral mucosa, which will transform this internal dry and astringent tactile sensation into the visual texture of an subject’s surface being rough, dull, and dehydrated, further extending to a person’s poor situation. The synaesthesia of “suan (酸/sour)” from the gustatory domain to the visual domain allows us to “see” a furrowed

face, a faded hue and a parched landscape through the sensation of the tongue, greatly enriching our language of visual expression.

4.2 Summary

The mapping from the gustatory domain to four target domains: the olfactory domain the pain domain, the emotional domain and the visual domain, are represented by various word combinations as shown in the foregoing examples. However, it does not mean there is a one-to-one relationship between certain word combinations. The mapping type should be analyzed according to specific context. For instance, “qionsuan (穷酸/shabby-looking)” in example (16) and (14) belong to different types: one is for the emotional domain, and the other is for the visual domain. Besides, there is never a clear-cut boundary on the division of mapping type. For example, when word combination like “hansuan (寒酸/shabby-looking)” is used in example (17), which is classified into the mapping type to the visual domain, there is a slight overlapping usage to the emotional domain that signals a kind of disdainful and mean attitude.

V. CONCLUSION

The usage of the gustatory adjective “suan (酸/sour)” can be extended to different meanings in the olfactory domain, pain domain, emotional domain and pain domain as a result of the inspiration of similar body experience on the basis of embodiment. This paper systematically analyze this cross-sensory synesthesia mapping in virtue of careful investigation the usage of “suan (酸/sour)” in Chinese. The analysis shows that these seemingly scattered mapping pathways are not in casual, but follow an uniform and systemic cognitive motivation: embodiment. People’s bodily experience, specially the physiological interaction with the chemical stimulus of “suan (酸/sour)”, lays the cornerstone for the comprehension of abstract concepts and expression.

According to the previous investigation, the shared core logics that elicit the mapping to four domains all originate people's immediate bodily experience: chemical stimulation logic, physiological reaction logic, and evaluative judgement logic. The common irritation is the most basic physical precondition for the cross-sensory mapping. The shared physiological reaction model bridges the analogy between different sense domains. The widespread evaluative judgement of "suan (酸/sour)" has a close link with the negative state like decay, less-ripeness, excessive metabolism such as muscle fatigue, etc., accounting for its metaphoric usage of negative attitude or emotion. EA proposes that cognition roots in the body, and all concepts rely on the simulation of the sensorimotor experience with objects or events they refer to. The mapping network of "suan (酸/sour)" perfectly verifies its hypothesis. All of the people's understanding on "suan (酸/sour)" including sense of pungency, uncomfortable sense, even the negative evaluation, originates from their gustatory experience of "suan (酸/sour)" by tongue. In order to comprehend and construct the abstract domain, our brain will automatically deploy the concrete body experience, and maps its construction to the abstract domains. In this way, sadness can be expressed by "xinsuan (心酸)" and jealousy can be expressed by "suanliuliu (酸溜溜)" through synesthetic mapping.

Synesthesia is a norm of cognition. This study strongly demonstrates that the boundaries between senses are blurred and mutually permeable at the deep cognitive level. Such permeability is not as a result of literary rhetoric, but rooted in bodily experience. The reason why we can use "xinsuan (心酸)" for sadness and "hansuan (寒酸)" for shabby looking lies in the fact that our cognitive system itself is a multi-sensory integrated synesthetic system. In summary, the process of this cross-sensory mapping vividly reveals that language is not only an abstract symbol system, but also a product of embodied cognition. Our bodies shape the abstract concepts and

thoughts through their most primitive senses interacting with the external world. This research could deepen the understanding of people's cognition on the Chinese, as well as provide an example for EA from the practice on Chinese.

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Social Media as Language Learning Communities: Impact on EFL Acquisition among Kurdish Learners

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Abstract

This study explored the impact of social media on the development of English as Foreign Language (EFL) skills among Kurdish university students. With the rising importance of English in the Kurdistan Region, students increasingly turned to innovative platforms beyond traditional classrooms to enhance their language proficiency. Social media served as a dynamic environment for practicing vocabulary, speaking, and listening skills, while promoting interaction with English speakers globally. Adopting a mixed-methods design, the study surveyed 200 students from four universities in Duhok, Kurdistan, utilizing both quantitative Likert-scale questionnaires and qualitative interviews. Findings revealed that social media significantly enhanced student engagement and contributed to improvements in vocabulary acquisition, speaking fluency, and listening comprehension. However, challenges in writing proficiency persisted, indicating a need for targeted pedagogical interventions. The study also underscored the importance of the English as a Lingua Franca (ELF) perspective, which emphasized effective communication over native-speaker norms, empowering learners to navigate diverse linguistic contexts with confidence. Ultimately, the integration of social media with traditional instructional strategies offered a more engaging and balanced EFL learning experience, supporting skill-specific development and fostering holistic language acquisition.



Keywords— social media, EFL skills, Kurdish EFL learners, mixed-method approach, language acquisition.

I. INTRODUCTION

1.1 Background of the Study

Overview of English as a Foreign Language (EFL) in Kurdistan English as a Foreign Language (EFL) holds significant importance in Kurdistan, particularly in academic, professional, and global communication. With the increasing demand for English proficiency, Kurdish students are exposed to English in both formal and informal settings. Many universities in the region have developed English language programs to help students acquire the necessary skills for success in an interconnected world. English is not only seen as crucial for higher education and career opportunities but is also considered key to international collaborations (Aziz & Ali, 2016). However, challenges persist in achieving high levels of proficiency due to limited exposure to native English speakers and the

predominance of traditional, teacher-centered approaches to language teaching. Kurdish learners, in particular, face unique challenges, such as limited access to quality instruction, linguistic and cultural barriers, and technological constraints (Hassan, 2019; Saeed, 2018). These challenges underscore the need for more engaging and innovative strategies to enhance EFL acquisition. In this context, integrating social media offers a promising solution by providing interactive, authentic, and immersive language learning experiences that extend beyond traditional classroom settings (Rasouli & Razavi, 2020).

The Rise of Social Media as a Learning Tool and Its Significance for EFL Learners The rapid rise of social media has revolutionized language learning, providing English as a Foreign Language (EFL) learners with unprecedented opportunities for engagement, interaction, and real-world communication (Godwin-Jones, 2018).

Social media platforms such as Facebook, Twitter, and Instagram enable Kurdish learners to access authentic language resources, collaborate with peers, and engage with native speakers, which are crucial for effective language acquisition (Saeed, 2018). In regions like Kurdistan, where traditional language instruction may be limited, these platforms help bridge gaps by offering opportunities for learners to practice in dynamic, real-time environments (Aziz & Ali, 2016). Studies also highlight that social media can alleviate anxiety and boost motivation, creating a supportive learning community that fosters increased language proficiency (Salih & Kadir, 2020). Additionally, social media facilitates global connections, allowing Kurdish learners to participate in cross-cultural exchanges, which further enriches their linguistic competencies (Hassan, 2019). Given these advantages, integrating social media into language learning strategies is essential for promoting more effective and engaging EFL acquisition, particularly for learners in underrepresented contexts like Kurdistan (Warschauer & Grimes, 2007).

1.2 Problem Statement

Challenges Kurdish students face in traditional EFL learning methods. Kurdish students face challenges in traditional English as a Foreign Language (EFL) instruction, primarily due to outdated teaching methods, large class sizes, and limited individual attention, which hinder effective language acquisition. These issues, along with limited exposure to English outside the classroom and socio-economic barriers, restrict students' ability to achieve fluency (Al-Hazmi, 2003; Rahimi, 2010). As a result, there is a pressing need for more engaging and innovative approaches to language instruction that provide authentic, real-world practice. Social media platforms like Facebook, Twitter, and Instagram present opportunities for immersive and interactive learning, enabling Kurdish learners to engage with native speakers and peers in diverse contexts (Godwin-Jones, 2018). The informal nature of social media fosters a risk-taking environment that promotes language development by allowing learners to experiment with language use in ways that traditional classrooms cannot. This study explores how social media can complement traditional EFL methods to improve Kurdish learners' language acquisition by offering a dynamic and accessible supplementary tool (Reinhardt & Zander, 2011).

The need to explore innovative platforms like social media for EFL skill enhancement. The exploration of social media as a supplementary tool for English as a Foreign Language (EFL) acquisition is essential for understanding its impact on language learning among Kurdish learners. Social media platforms create interactive environments that enhance language skills through

authentic communication and engagement with diverse linguistic communities (Al-Azawi & Al-Sharifi, 2019). This academic inquiry contributes to the literature by providing insights into how these platforms can be integrated into language curricula, specifically for Kurdish EFL learners (Hameed, 2020). Furthermore, it addresses the research gap concerning the unique challenges and experiences of Kurdish learners using social media for language acquisition (Ranjbar & Khosravi, 2021). By examining how social media fosters collaborative learning and peer support, this study highlights its potential to enrich the EFL experience (Hameed, 2020). Additionally, the findings will inform educators and policymakers about the effective incorporation of technology in language education. Ultimately, this research will expand understanding of social media's role in language learning.

1.3 Objectives of the Study

- To examine the role of social media in developing vocabulary, speaking, and listening skills.
- To identify gaps in writing proficiency and suggest targeted interventions.
- To understand the impact of English as a Lingua Franca (ELF) on communication practices.

1.4 Research Questions

RQ1: How does social media influence vocabulary acquisition, speaking, and listening skills

among Kurdish EFL students?

RQ2: What are the key challenges Kurdish EFL learners face in developing writing proficiency?

1.5 Significance of the Study

This study contributes to the academic understanding of social media as a supplementary tool for English as a Foreign Language (EFL) acquisition, particularly for Kurdish learners. Traditional EFL methods often face limitations such as minimal classroom interaction and limited exposure to authentic language use (Ellis, 2008). Additionally, Kurdish learners encounter cultural and linguistic barriers that lead to low motivation, limited proficiency, and reduced real-life communication opportunities (Khansir, 2012; Al-Saud, 2013).

By exploring social media-based language learning communities, this research addresses these challenges by offering dynamic platforms for authentic practice, cultural exchange, and collaborative learning (Bista, 2015; Houghton & Joinson, 2014). Social media fosters engagement with peers and native speakers, which can enhance learners' motivation, participation, and communicative competence (Warschauer & Grimes, 2007; Kessler, 2018). The study's findings aim to inform

educators, curriculum designers, and policymakers on how to integrate social media into EFL pedagogy, particularly in the Kurdish context.

1.6 Scope and Limitations

Focus on 200 undergraduate students across four universities in Duhok, Kurdistan. The primary objective is to explore the role of social media as a tool for English as a Foreign Language (EFL) acquisition among Kurdish learners. Participants will be selected from both public and private universities, ensuring a diverse sample that reflects a range of educational backgrounds. The research will investigate how students use social media platforms such as Facebook, Instagram, and language-specific groups to enhance their EFL skills, as well as the perceived effectiveness of these platforms in improving language proficiency. However, the study is geographically confined to the Duhok region, which may limit the generalizability of the findings to the broader Kurdish or Iraqi student populations. The sample size of 200 students may not capture the full diversity of social media usage among EFL learners, and variations in internet access or socioeconomic status could influence participants' engagement with these platforms. Furthermore, the study focuses exclusively on undergraduate students, which may limit the applicability of the findings to other academic levels. Lastly, while the research emphasizes social media as a language learning tool, it does not explore other digital learning platforms, narrowing the scope of investigation.

II. LITERATURE REVIEW

2.1 Previous Studies

Overview of Global Research on Social Media and EFL Acquisition A growing body of research underscores the significant role social media plays in English as a Foreign Language (EFL) acquisition, demonstrating how digital platforms foster authentic, interactive, and learner-centered environments (Stockwell, 2010; Dooly, 2008). Studies reveal that social media encourages collaborative learning and enhances language skills through real-time communication, peer feedback, and exposure to diverse linguistic resources (Godwin-Jones, 2018; Thorne, 2003). Research by Wang and Vasquez (2012) and Kabilan et al. (2010) illustrates that platforms such as Facebook, WhatsApp, and Twitter improve vocabulary, grammar, and reading comprehension, while providing learners with opportunities to engage in low-stress environments that promote motivation and language practice. In the context of Kurdish learners, preliminary studies suggest that social media fosters intercultural exchange and creates supportive learning communities, yet there remains a paucity of research specifically addressing the impact of these

platforms on Kurdish EFL learners (Aziz & Rashid, 2019; Hama & Sheni, 2020). Furthermore, while the informal nature of social media reduces learners' affective filters, promoting risk-taking and language experimentation (Krashen, 1982), challenges such as language inaccuracies and over-reliance on digital communication persist (Hama & Sheni, 2020). Overall, international research highlights the transformative potential of social media for language acquisition, but also underscores the need for further studies on how these platforms can be optimally utilized in Kurdish EFL contexts.

Studies Focusing on Kurdish or Regional Contexts, a growing body of research has explored the role of social media in enhancing English as a Foreign Language (EFL) acquisition in Kurdish and regional contexts, revealing both opportunities and challenges specific to these learners. Studies focusing on Kurdish learners highlight how platforms like Facebook, Instagram, and Telegram facilitate informal language practice, enabling students to engage with English-language content and interact with native speakers in real-world contexts (Aziz & Rashid, 2019; Hama & Sheni, 2020). These interactions promote vocabulary acquisition, improve reading comprehension, and increase cultural awareness, contributing significantly to learners' fluency. Additionally, studies indicate that social media fosters a sense of community among Kurdish learners, providing a supportive environment where students can share resources and practice language skills collaboratively (Khosravi & Shahraki, 2018; Ahmed, 2020). However, challenges such as limited access to technology, inconsistent internet connectivity, and varying levels of digital literacy present significant barriers to fully utilizing social media for EFL acquisition (Hassan & Jamil, 2019). Furthermore, while social media reduces affective barriers by offering low-pressure environments for experimentation, concerns about the quality of input and the prevalence of linguistic inaccuracies remain (Hama & Sheni, 2020). Overall, these studies underline the importance of understanding the regional and cultural context when assessing the potential of social media as a tool for language learning, emphasizing both its promise and its limitations in Kurdish educational settings.

2.2 Social Media in Language Learning

Social media platforms such as Facebook, WhatsApp, and Instagram have emerged as powerful tools for enhancing English as a Foreign Language (EFL) skills among learners, particularly in contexts like Kurdistan. These platforms provide learners with authentic, real-time communication opportunities that are crucial for language acquisition. Studies show that Facebook fosters collaborative learning environments where learners can

engage in group discussions, share resources, and receive feedback, which enhances vocabulary, grammar, and overall communication skills (Kabilan et al., 2010; Wang & Vasquez, 2012). WhatsApp, known for its focus on instant messaging, offers a more informal space for learners to practice writing and engage in daily conversations, which boosts fluency and reduces language anxiety (Zhang, 2016). Instagram, with its visual and creative nature, further supports language learning by encouraging learners to engage with English content through images and hashtags, thus broadening their vocabulary and improving cultural awareness (Duffy, 2019; Godwin-Jones, 2018). In Kurdish EFL contexts, these platforms have been shown to support language learning by enabling interaction with peers and native speakers, providing both formal and informal language practice opportunities (Aziz & Rashid, 2019; Hama & Sheni, 2020). However, challenges such as digital literacy gaps and limited access to technology can hinder the effective use of these platforms for all learners (Hassan & Jamil, 2019). Despite these challenges, the overall contribution of social media to language acquisition remains significant, offering flexible, learner-centered environments that foster both linguistic skills and intercultural competence (Stockwell, 2010).

The comparison between traditional classroom-based language learning and social media-driven learning has been a topic of increasing interest in the field of English as a Foreign Language (EFL) acquisition. Traditional classroom methods typically rely on structured curricula, teacher-led instruction, and controlled environments, which provide a stable foundation for grammar and vocabulary acquisition (Hama & Sheni, 2020). In contrast, social media-based learning offers a more flexible and interactive approach, where learners engage in real-time communication with peers and native speakers, facilitating authentic language use in informal settings (Wang & Vasquez, 2012; Godwin-Jones, 2018). Research indicates that while traditional classrooms tend to focus on language accuracy and formal aspects, social media platforms like Facebook, WhatsApp, and Instagram encourage spontaneous communication, improving fluency and reducing language anxiety (Kabilan et al., 2010; Aziz & Rashid, 2019). Furthermore, social media-based learning fosters a sense of community and collaboration, as students interact with diverse linguistic backgrounds and cultural perspectives, promoting intercultural competence (Hassan & Jamil, 2019). However, one drawback of social media-based learning is that it may lack the direct guidance and personalized feedback offered in face-to-face classroom settings, which can hinder error correction and structured learning (Khosravi, 2018). Overall, while both approaches have their advantages, social media-based learning has

emerged as a dynamic complement to traditional methods, particularly in the context of Kurdish EFL learners, where digital tools offer more accessible and diverse learning opportunities (Aziz & Rashid, 2019).

2.3 Skill-Specific Impact of Social Media

Social media platforms, such as Facebook, Twitter, and Instagram, have emerged as powerful tools for enhancing vocabulary acquisition among English as a Foreign Language (EFL) learners. These platforms provide dynamic, real-time interactions that facilitate vocabulary exposure in various authentic contexts, which significantly enhances retention and recall (Kabilan et al., 2010; Godwin-Jones, 2018). For Kurdish EFL learners, social media offers a less formal and more engaging environment for learning, where learners can interact with native speakers and peers, thus acquiring vocabulary in meaningful contexts (Aziz & Rashid, 2019; Hama & Sheni, 2020). Moreover, the multimodal nature of these platforms—incorporating text, images, and videos—allows learners to engage with vocabulary in different formats, catering to various learning styles and increasing retention (Saeed, 2018). Interactive features, such as quizzes, games, and collaborative discussions, further motivate learners to practice and reinforce new vocabulary (Kabilan, 2010; Salih, 2017). Despite these advantages, it is crucial to balance informal learning through social media with more structured instruction to ensure comprehensive vocabulary development and avoid the risks of misinformation or improper language use (Khosravi, 2018). In this context, social media not only supplements traditional language learning methods but also enriches the overall vocabulary acquisition experience for Kurdish EFL learners.

Development of Speaking and Listening Skills through Audio-Visual Content, The development of speaking and listening skills through audio-visual content on social media platforms has significantly enhanced English as a Foreign Language (EFL) acquisition, particularly for Kurdish learners. Platforms such as YouTube, TikTok, and Instagram offer rich, authentic language input that allows learners to engage with a variety of accents, speech patterns, and real-world dialogues (Sadiq & Rashid, 2019). This exposure to natural language use helps learners improve their listening comprehension and pronunciation by mimicking native speakers in diverse contexts (Hassan, 2020). Furthermore, the interactive features of these platforms—such as video comments, live streaming, and voice messages—provide opportunities for learners to practice speaking in a supportive environment, fostering increased fluency and confidence (Khosravi, 2018). Research shows that learners who actively engage with audio-visual materials on social media demonstrate

significant improvement in their listening skills and their ability to articulate thoughts more effectively (Kabilan et al., 2010). The multimodal nature of these platforms, combining auditory and visual cues, aids in vocabulary retention and the understanding of cultural nuances (Godwin-Jones, 2018). Despite these benefits, it is essential for educators to guide learners in selecting high-quality content to ensure the optimal development of speaking and listening skills (Yıldız, 2020).

Challenges in writing proficiency among Kurdish EFL learners can be significantly influenced by their engagement with social media platforms. While these platforms offer opportunities for practice, many learners struggle with the informal nature of online communication, which may hinder the development of formal writing skills (Hassan, 2020). The prevalence of abbreviations, slang, and lack of structure in social media interactions can lead to confusion when transitioning to academic writing (Khan & Ali, 2021). However, integrating structured writing tasks within social media contexts can provide learners with valuable feedback and opportunities for improvement (Sadiq & Rashid, 2019). For instance, encouraging learners to participate in blog writing or collaborative projects on platforms like Facebook can enhance their writing proficiency while fostering a sense of community (Khosravi, 2018). Additionally, utilizing peer review mechanisms within these platforms can promote critical thinking and self-reflection, ultimately leading to better writing outcomes (Yıldız, 2020). Therefore, while challenges exist, the strategic use of social media can offer effective solutions for enhancing writing skills among Kurdish EFL learners.

2.4 Research Gaps

While research on social media's role in enhancing English as a Foreign Language (EFL) acquisition is expanding, there remains a significant gap in studies focusing specifically on Kurdish EFL learners. Existing research often generalizes findings across diverse linguistic and cultural contexts, making them difficult to apply to Kurdish learners, whose educational and social environments differ considerably (Aziz & Rashid, 2019; Goran, 2021). Challenges like limited access to educational resources and varying levels of digital literacy have not been fully explored in the context of social media's impact on Kurdish learners' language skills (Zarif, 2020; Khosravi, 2018). Additionally, while some studies examine the effect of social media on language proficiency globally, few investigate its influence on specific skills such as speaking and writing among Kurdish EFL learners (Hassan & Salih, 2019).

Moreover, there is a lack of research on the role of English as a Lingua Franca (ELF), especially in the context

of Kurdish learners' social media interactions. Most studies continue to prioritize native-speaker norms, neglecting the growing prevalence of ELF interactions where communication effectiveness takes priority over grammatical accuracy (Jenkins, 2015; Seidlhofer, 2011). This gap is particularly significant for Kurdish learners, whose social media communication is shaped by local cultural and linguistic factors (Hassan, 2020). Exploring ELF in the Kurdish context will contribute to a better understanding of how these learners engage in intercultural communication, offering insights that can lead to more culturally relevant language teaching strategies (Sadeghi & Khajavy, 2020).

III. RESEARCH METHODOLOGY

3.1 Research Design

This study employed a mixed-methods approach, integrating both quantitative and qualitative techniques. The combination of these methods enabled a well-rounded exploration of the role of social media in language learning among Kurdish EFL learners. Quantitative methods were used to measure the broader impact of social media on language acquisition, including aspects such as frequency of use and perceived effectiveness in enhancing language skills. Qualitative methods, on the other hand, provided deeper insights into the learners' personal experiences, perceptions, and challenges, utilizing interviews, focus groups, and observations. The mixed approach allowed for a nuanced and comprehensive understanding of the complex relationship between social media and EFL acquisition.

3.2 Research Setting and Participants

The research was conducted in Duhok, Duhok Province, Iraq, and focused on Kurdish learners who actively engaged with social media platforms such as YouTube and Instagram to enhance their English language skills. The participants were selected from a range of Kurdish individuals living in Duhok, including students, teachers, and professionals, ensuring diversity in age, educational background, and English proficiency. The study aimed to explore how social media influenced EFL acquisition within the Kurdish context, offering insights into the specific dynamics and challenges that Kurdish learners faced while using social media for language learning.

3.3 Data Collection Methods

Data were collected using a mixed-methods approach, combining both quantitative and qualitative techniques. The quantitative data were gathered through a Likert-scale questionnaire, which measured the impact of

social media on EFL learners' skills, including their listening, speaking, reading, and writing abilities. The questionnaire also addressed learners' motivation, attitudes towards social media use, and perceived benefits and challenges. A total of 200 participants, primarily Kurdish EFL learners from Duhok, completed the survey, which included both closed-ended questions (quantitative) and open-ended questions (qualitative). This allowed for a balanced understanding of the learners' quantitative data and detailed qualitative insights.

For qualitative data collection, semi-structured interviews and focus groups were used. The interviews provided an opportunity for in-depth exploration of learners' personal experiences, including how social media influenced their vocabulary acquisition and language practice. Focus groups allowed for dynamic interaction and discussions among learners, shedding light on shared experiences, challenges, and strategies used for effective language learning. The interviews and focus groups were conducted with a purposeful sample of learners representing different proficiency levels and backgrounds, ensuring diverse perspectives.

3.4 Data Analysis

Quantitative Data: Statistical analysis was conducted using SPSS (Statistical Package for the Social Sciences) to identify patterns, correlations, and trends within the data. This helped quantify the relationships between social media usage and improvements in language learning skills.

Qualitative Data: Thematic analysis was applied to interview and focus group data. This method allowed for the identification of key themes, patterns, and insights

emerging from participants' responses regarding their use of social media for language learning. Themes might include the types of content consumed, the platforms most used, learner motivation, and perceived barriers.

3.5 Ethical Considerations

To ensure the ethical integrity of the study, the following principles were adhered to:

Informed Consent: All participants were fully informed about the purpose, procedures, and potential risks of the study. Informed consent was obtained from every participant, and they were made aware that their participation was voluntary and that they could withdraw at any time without facing any penalties.

Confidentiality and Anonymity: Participants' identities remained anonymous, and their personal information was kept confidential. Unique identifiers were assigned to each participant to ensure that no personally identifiable information was included in the study findings. All data were securely stored and only accessible to the research team.

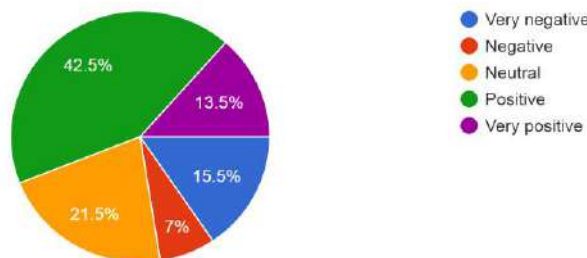
Voluntary Participation: Participants were assured that their involvement in the study was entirely voluntary, and they had the right to withdraw from the research at any stage without any repercussions.

IV. RESULTS AND DISCUSSION

This chapter presents the analysis of the questionnaire and Likert scale survey. It discusses the students' responses and interprets the major findings. The results are then connected to the study objectives, highlighting key insights and implications.

4.1 Analysis of Survey Data from Questionnaires

Q1/How does social media impact your vocabulary acquisition for Kurdish learners of English?
 200 responses



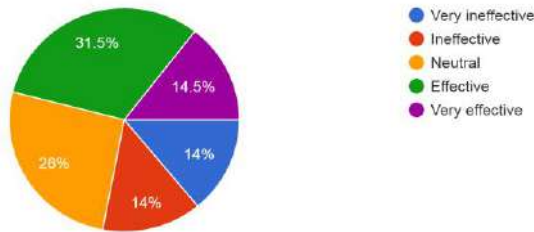
A total of 200 responses were collected to investigate the impact of social media on vocabulary acquisition among Kurdish learners of English. The findings revealed that a significant portion of the respondents (42.5%) perceived

social media as having a positive effect on their vocabulary learning. Additionally, 13.5% of participants reported a very positive impact. Meanwhile, 21.5% of the respondents expressed a neutral stance, indicating neither a positive nor negative influence. On the other hand, 7% of the

participants perceived the impact as negative, and 15.5% reported it as very negative. These results suggest that while opinions vary, there is a generally optimistic perception of

the role of social media in vocabulary development among Kurdish learners of English.

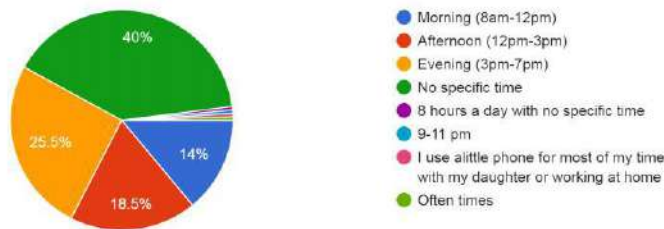
Q2/How effective is for you as Kurdish learner to find social media compared to traditional English learning methods?
 200 responses



Kurdish learners of English were asked to evaluate how effective they find social media compared to traditional English learning methods. A total of 200 responses were recorded. The largest portion of respondents (31.5%) rated social media as effective, and an additional 14.5% considered it very effective. Meanwhile, 26% of

participants remained neutral, suggesting they view both methods equally or are undecided about the difference in effectiveness. On the other hand, 14% found social media ineffective, and another 14% reported it as very ineffective, indicating some skepticism or preference for traditional approaches.

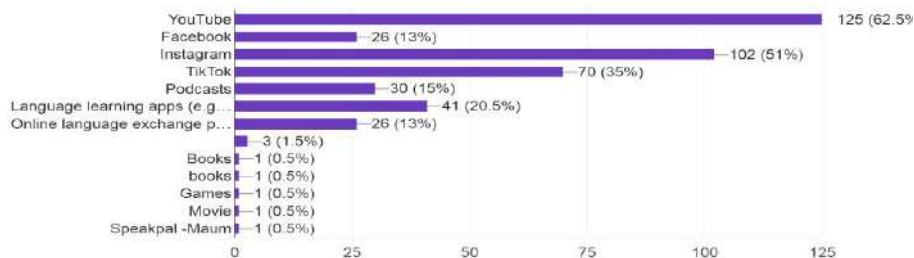
Q3/When do you typically spend most of your time on social media? (Select one)
 200 responses



A total of 200 responses were collected to examine the preferred times of social media usage among Kurdish learners of English. The majority of participants (40%) selected "No specific time," indicating flexible or irregular usage patterns. This suggests that many learners engage with social media based on convenience rather than during predetermined hours. The second most frequent response was "Evening (3 p.m. – 7 p.m.)," chosen by 25.5% of

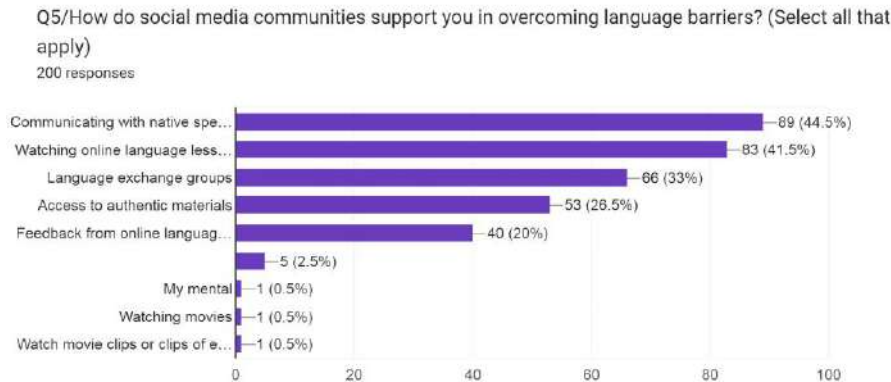
respondents, followed by "Afternoon (12 p.m. – 3 p.m.)" at 18.5%. Usage during the "Morning (8 a.m. – 12 p.m.)" was reported by 14% of participants. A small number of respondents provided additional comments such as "8 hours a day with no specific time," "9–11 p.m.," and "I use a little phone for most of my time with my daughter or working at home," reflecting diverse habits shaped by personal schedules and responsibilities.

Q4/Where do you find language practice opportunities on social media? (Select all that apply)
 200 responses



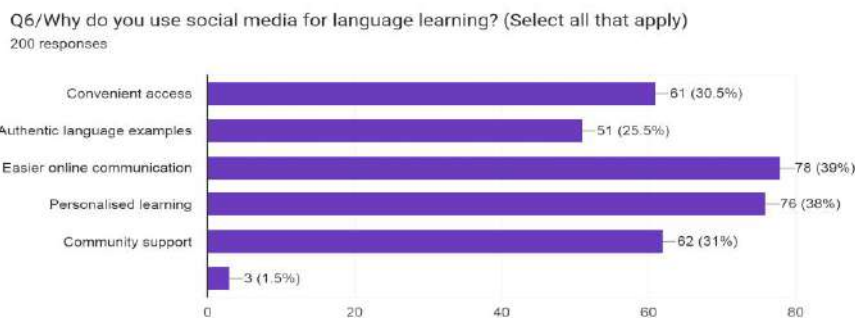
A total of 200 participants were asked to identify where they find opportunities for language practice on social media, with the option to select multiple platforms. The results revealed that YouTube was the most commonly selected platform, with 125 respondents (62.5%) indicating it as a source for language learning, suggesting a strong preference for video-based content. Instagram followed with 102 responses (51%), and TikTok with 70 responses (35%), highlighting the popularity of short-form and visually engaging content among learners. Language

learning apps such as Duolingo and Memrise were selected by 41 participants (20.5%), while podcasts were chosen by 30 participants (15%), reflecting moderate levels of engagement. Facebook and online language exchange platforms (e.g., Tandem, HelloTalk) were each selected by 26 respondents (13%). Other sources—including books, games, movies, and a platform called Speakpal-Maum—were mentioned by only one participant each (0.5%), indicating minimal use of these tools for language practice through social media.



To explore how social media communities assist Kurdish learners of English in overcoming language barriers, 200 participants were surveyed with the option to select multiple responses. The most frequently chosen option was “Communicating with native speakers,” selected by 89 participants (44.5%), indicating that direct interaction with native speakers is widely regarded as an effective strategy for language improvement. “Watching online language lessons” was selected by 83 participants (41.5%), highlighting the popularity of structured instructional content on social media platforms. “Language exchange groups” were chosen by 66 respondents (33%), suggesting

a strong interest in peer-to-peer learning environments. Additionally, 53 participants (26.5%) selected “Access to authentic materials,” such as real-life videos, posts, or dialogues, emphasizing the value of natural language exposure. “Feedback from online language communities” received 40 responses (20%), underlining the importance of receiving corrections and encouragement from peers or native speakers. Other responses—such as mental support, watching movies, and viewing movie clips—were mentioned by only one participant each (0.5%), indicating that these are considerably less relied upon for addressing language barriers.



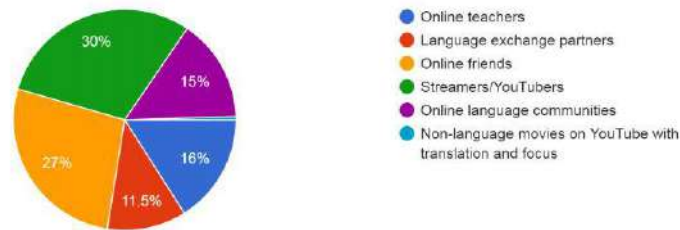
To investigate the motivations behind using social media for language learning, 200 participants were surveyed, with the option to select multiple reasons. The most frequently selected reason was “Easier online communication,” chosen by 78 participants (39%),

suggesting that learners value the simplified interaction features of social media, such as messaging, video calls, and commenting. “Personalised learning” was the second most common reason, selected by 76 participants (38%), indicating that the ability to tailor content to individual

preferences and learning pace is a key advantage. “Community support” received 62 responses (31%), reflecting the importance of encouragement, shared experiences, and peer assistance in online learning communities. Similarly, “Convenient access” was cited by 61 participants (30.5%), underscoring the significance of the flexibility to learn anytime and anywhere. “Authentic

language examples,” including native speakers’ posts, videos, and comments, were selected by 51 participants (25.5%), pointing to the value of exposure to real-life language use. Additionally, a small portion of respondents (1.5%) mentioned other unspecified reasons for using social media as a language learning tool.

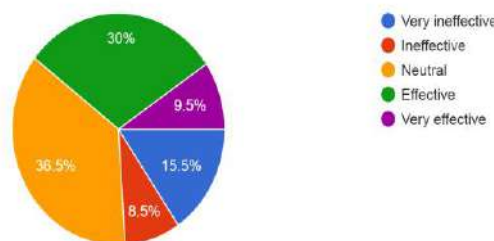
Q7/Who do you usually interact with on social media for language learning?
 200 responses



To understand with whom Kurdish learners of English typically interact on social media for language learning purposes, 200 participants were surveyed. The largest proportion of respondents (30%) reported that they primarily interact with streamers or YouTubers, highlighting the widespread appeal of content creators who provide engaging, often informal, language input. Online friends were the next most common interaction group, selected by 27% of participants, indicating the significance of casual, peer-based conversations in language practice. Interactions with online teachers accounted for 16%, reflecting a preference for structured, professional guidance

available on platforms such as YouTube, Instagram, and TikTok. Additionally, 15% of respondents indicated that they engage with online language communities, suggesting that group-based forums and learning networks contribute meaningfully to their learning experience. Language exchange partners were selected by 11.5% of participants, showing that while peer-to-peer language exchange is valued, it is slightly less prevalent than other forms of interaction. A very small percentage (0.5%) mentioned using non-language YouTube movies with translation and focused attention, indicating this as a niche but personalized method for language exposure.

Q8/How effective are your current time management strategies in balancing social media use and English language learning?
 200 responses

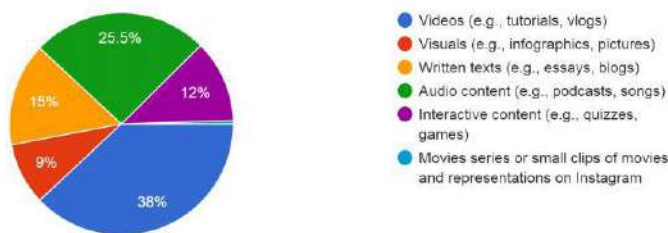


To assess the effectiveness of time management strategies among Kurdish learners of English in balancing social media use and language learning, 200 participants were surveyed. The largest portion of respondents (36.5%) selected “Neutral,” indicating a general sense of uncertainty or ambivalence regarding the efficiency of their current time management practices. This may suggest inconsistency or the need for improved strategies. A significant percentage (30%) rated their strategies as “Effective,” reflecting

confidence in their ability to balance social media use with language learning. In contrast, 15.5% of participants reported their strategies as “Very ineffective,” revealing considerable challenges in managing time effectively. A smaller group (9.5%) selected “Very effective,” suggesting that these learners have likely developed well-structured and efficient routines. Lastly, 8.5% rated their time management as “Ineffective,” indicating that a minor yet notable group faces difficulty in maintaining balance

between social media engagement and English language learning.

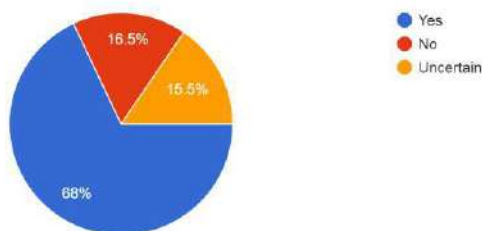
Q9/What language learning content do you prefer on social media?
 200 responses



To determine the preferred types of language learning content on social media, a survey was conducted among 200 participants. The majority of respondents (38%) indicated a preference for video content, such as tutorials and vlogs, underscoring the popularity of dynamic visual and auditory learning formats. Audio-based materials, including podcasts and songs, were favored by 25.5% of participants, reflecting a strong inclination toward flexible and convenient listening-based learning. Written texts, such as essays and blogs, were selected by 15%, suggesting a considerable portion of learners prefer reading-focused

strategies. Interactive content, including quizzes and games, was chosen by 12% of respondents, indicating the appeal of active engagement and real-time feedback. Visual materials such as infographics and images were preferred by 9%, highlighting the value of easily digestible and quick-reference content. A small fraction (0.5%) expressed a preference for movie series, short clips, and Instagram representations, suggesting that these formats are less commonly utilized for language learning among the surveyed group.

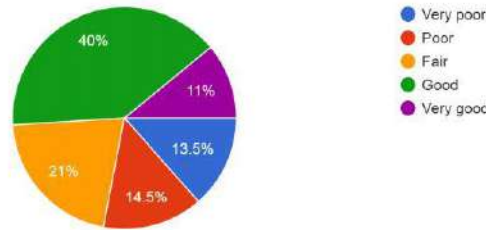
Q10/In your opinion, Can social media facilitate friendships?
 200 responses



When asked whether social media can facilitate friendships, the majority of the 200 participants expressed a positive view. A substantial 68% of respondents answered "Yes," indicating a strong belief that social media plays a significant role in forming and strengthening friendships. This suggests that many participants perceive social media as an effective means of connecting people, especially across geographic distances or language barriers.

Conversely, 16.5% of participants answered "No," suggesting that a smaller yet noteworthy group remains skeptical about the authenticity or depth of friendships developed online. Meanwhile, 15.5% responded "Uncertain," potentially reflecting mixed experiences or the perspective that the effectiveness of social media in fostering friendships depends on its usage context.

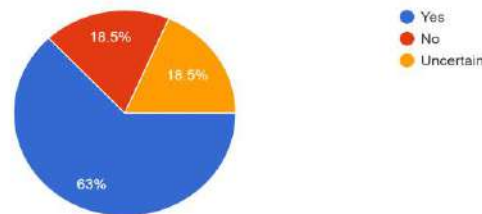
Q11/Rate how social media facilitates communication among you as Kurdish EFL learner?
 200 responses



In response to the question of how social media facilitates communication for Kurdish EFL learners, 200 participants provided their feedback, which generally reflected positive experiences. The largest group, comprising 40% of respondents, rated the impact of social media on communication as “Good,” indicating that a significant number of learners believe it plays a helpful role in enhancing their English communication skills. Another 21% rated it as “Fair,” suggesting that social media offers

moderate benefits. Additionally, 11% rated its effectiveness as “Very good,” indicating a particularly strong positive influence for some learners. On the other hand, 14.5% of participants considered social media's impact as “Poor,” while 13.5% rated it “Very poor,” pointing to a smaller group of learners who encountered difficulties or perceived limited effectiveness in using social media for language communication.

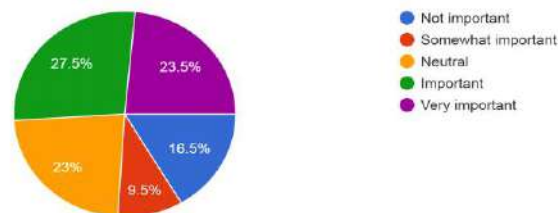
Q12/Is interacting with native English speakers on social media important for you as Kurdish EFL learner?
 200 responses



In response to the question of whether interacting with native English speakers on social media is important for Kurdish EFL learners, 200 participants shared their views. A significant 63% of respondents answered “Yes,” indicating that most learners consider engagement with native speakers on social media an important aspect of their language learning process. This suggests that such interactions are valued for improving fluency,

understanding cultural context, and practicing authentic language usage. However, 18.5% of participants answered “No,” implying that some learners do not view this interaction as essential, perhaps due to other preferred learning methods. Additionally, 18.5% of respondents were “Uncertain,” suggesting that some learners may not have enough experience with native speaker interactions or are unsure about their impact on language learning.

Q13/How important is improving vocabulary, grammar and pronunciation skills to your English language learning goals?
 200 responses



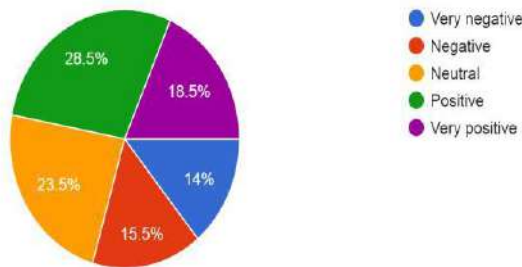
A total of 200 participants were asked about the

importance of improving vocabulary, grammar, and

pronunciation skills in achieving their English language learning goals. The results show that 51% of respondents believe these skills are either “Important” (27.5%) or “Very important” (23.5%), reflecting a strong recognition of their value in reaching language learning objectives. On the other hand, 23% of participants were “Neutral,” suggesting they

may not see these skills as critical or have mixed views on their necessity. A smaller group, 9.5%, felt these skills were “Somewhat important,” while 16.5% considered them “Not important,” indicating that a portion of learners may prioritize other aspects of language learning, such as conversational ability, over technical precision.

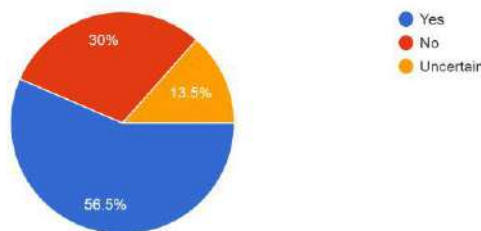
Q14/How does social media feedback affect your English writing skills?
 200 responses



In a survey of 200 respondents, participants were asked, "How does social media feedback affect your English writing skills?" The results revealed that 28.5% of respondents felt social media feedback had a positive effect on their writing, suggesting that many learners find value in the feedback they receive on social media platforms. Additionally, 18.5% rated the impact as "very positive," further emphasizing the role of social media as a supportive

tool for improving writing skills through interactive and corrective engagement. Meanwhile, 23.5% of participants remained neutral, possibly indicating that they either do not see a significant benefit or detriment to the feedback they receive. On the other hand, 15.5% experienced a negative impact, and 14% viewed the feedback as "very negative," possibly due to unhelpful or discouraging comments, or a lack of constructive and consistent input.

Q15/Do cultural differences on social media impact your language learning?
 200 responses



A survey question on whether cultural differences on social media impact language learning yielded the following results from 200 participants: 56.5% of respondents answered "Yes," indicating that they believe exposure to cultural differences on social media significantly affects their language learning experience. This suggests that learners find value in encountering diverse cultural norms, idioms, and communication styles, which enhance their language comprehension in real-world

contexts. In contrast, 30% responded "No," implying that cultural differences do not notably influence their learning process, possibly because they focus more on the technical aspects of language. Finally, 13.5% were "Uncertain," potentially due to limited interaction with varied cultural content or a lack of awareness about how culture can shape language use.

4.2 Likert Scale Survey Analysis

Table:1 Likert Scale Survey

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. Social media facilitates easy communication for you as Kurdish English learners.	11	10.5	23.5	20	35
2. Social media groups effectively support English language practice.	12	15.5	20	35.5	17
3. Social media provides valuable English language learning content to you.	11	11.5	21	34	22.5
4. Videos on social media enhance English language learning to you.	13	15.5	15.5	38	27.5
5. Quizzes and posts on social media are useful for language development.	13	11	20.5	29	26.5
6. English articles on social media improve language skills.	12.5	8.5	22	38	19
7. Social media platforms support speaking practice for Kurdish English learners.	11	12.5	22	32	22.5

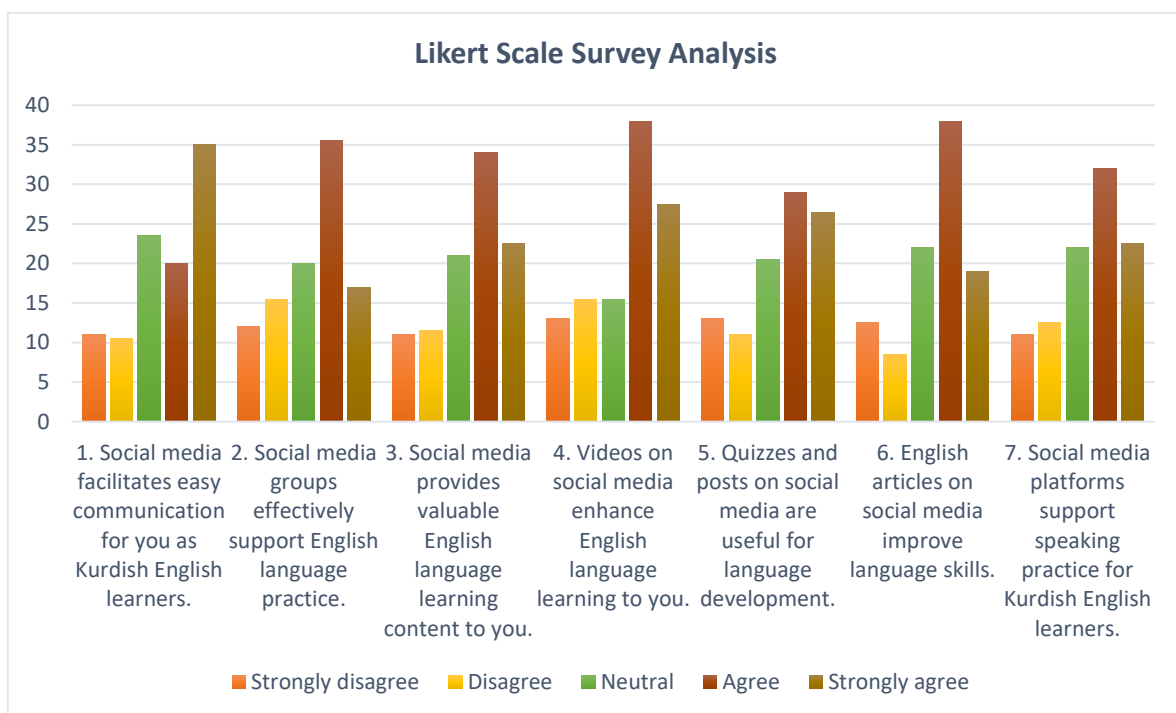


Figure:15 Likert Scale Survey Analysis

The Likert scale survey results reveal that a significant number of Kurdish English as a Foreign Language (EFL) learners view social media as a valuable resource for enhancing their language learning journey. A majority of respondents expressed agreement or strong agreement with statements highlighting social media's role in facilitating communication (46%), aiding language practice through online groups (52.5%), and providing

helpful language learning content such as articles (57%) and videos (65.5%). Additionally, over half of participants recognized the usefulness of interactive elements like quizzes and posts (55.5%) and the support for speaking practice (54.5%). These findings indicate that social media is seen as a versatile tool that supports various facets of English language acquisition. However, the data also demonstrate some ambivalence among a significant portion

of participants. Neutral responses ranged from 15.5% to 23.5%, suggesting that many learners are uncertain or have mixed experiences with using social media for language learning. Furthermore, a notable minority—between 19% and 30.5%—disagreed or strongly disagreed with the positive statements, indicating that not all learners find social media to be an equally beneficial resource. This variation may be attributed to factors such as differing levels of digital literacy, access to relevant and high-quality content, or personal preferences in learning styles.

Overall, while the majority of Kurdish EFL learners view social media as a positive tool for language learning, these results underscore the importance of considering individual learner differences and the need for tailored strategies to maximize social media's potential in language education.

V. CONCLUSION

5.1 Summary of Findings

This study underscores the vital role of social media in enhancing English as a Foreign Language (EFL) learning among Kurdish university students in Duhok. Platforms like YouTube, Instagram, and TikTok effectively support vocabulary acquisition, speaking fluency, and listening comprehension by offering real-time, authentic language exposure. These tools reduce anxiety, boost motivation, and create a learner-centered environment that encourages informal and personalized practice. Interactions with native speakers and online content creators help build confidence and intercultural awareness.

Despite its strengths, social media offers limited support for writing due to its informal nature. Additional challenges include inconsistent feedback, time constraints, and unequal access to digital tools. Nonetheless, most students view social media as a valuable complement to traditional instruction. When integrated purposefully into formal education, it enhances engagement, relevance, and practical language use—especially in regions like Kurdistan with limited access to immersive English environments.

5.2 Recommendations

Integrate Social Media into EFL Classrooms

Teachers should incorporate platform-specific tasks (e.g., watching and discussing YouTube videos), create class groups on WhatsApp or Telegram for peer interaction, encourage contextual writing through blogs and social media captions, organize live language exchanges via Zoom or Instagram Live, and include digital literacy training to ensure responsible and effective use.

Enhance Writing Proficiency through Structured Activities

Conduct writing workshops that focus on grammar, organization, and academic formats; implement peer review sessions; assign regular blogging or journaling tasks; encourage rewriting informal posts into formal English; and use digital tools like Grammarly and Google Docs for real-time feedback and editing.

Boost Engagement with Relevant, Interest-Based Prompts

Design writing tasks and classroom activities around students' personal interests and trending topics to increase motivation, encourage authentic language use, and promote deeper engagement with English both inside and outside the classroom.

5.3 Limitations

- i. The study focused on 200 undergraduate students in Duhok, limiting the generalizability of the findings.
- ii. High school students, adult learners, and working professionals were not included, though their learning contexts and media habits may vary significantly.
- iii. Caution is advised in extending these findings to the broader Kurdish or Iraqi population.

5.4 Future Research Directions

- i. Broaden participant scope to include other Kurdish regions such as Erbil, Sulaymaniyah.
- ii. Investigate differences between urban vs. rural settings, public vs. private institutions, and varied English proficiency levels.
- iii. Analyze the specific impact of platforms like Instagram, YouTube, and TikTok on distinct language skills such as vocabulary acquisition, fluency, and academic writing.
- iv. Conduct cross-regional studies involving areas with similar sociolinguistic characteristics to develop more inclusive and context-sensitive teaching strategies.

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Developing Speaking Fluency through AI-Powered Applications for Undergraduate EFL Students in Kurdistan

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Abstract

This research investigated the development of speaking fluency among undergraduate students through the use of AI-powered applications at universities in Kurdistan. In response to evolving educational technology, AI tools have become valuable resources for enhancing language-learning experiences. The study involved 105 participants from four universities who engaged with various AI applications designed to improve their speaking skills. Using a mixed-method approach, the research examined how these tools supported students in practicing and refining their language abilities in interactive environments, providing immediate feedback and opportunities for self-directed learning. This approach helped students improve pronunciation, speech patterns, and overall confidence in real-life communication. The findings revealed that most EFL students held positive views of AI-powered applications, reporting enhanced learning experiences, improved speaking confidence, and reduced anxiety. Conversation practice emerged as the most helpful feature, followed by vocabulary building and pronunciation feedback. Students expressed that AI tools made language practice more enjoyable and effective, encouraging consistent use and recommendations to peers. The research highlights the significant role of AI-powered applications in fostering speaking fluency and emphasizes their potential to create engaging, supportive environments in EFL education, offering valuable insights for educators and universities in Kurdistan.



Keywords— AI, Artificial Intelligence, EFL, English as a Foreign Language, Speaking Fluency, Undergraduate Students.

I. INTRODUCTION

1.1 Background of the Study

Recent advancements in artificial intelligence (AI) have introduced powerful tools for improving EFL learners' speaking skills. Applications like ELSA Speak and ChatGPT use speech recognition and instant feedback to enhance pronunciation, fluency, and personalized learning (Karim et al., 2023; Widyasari & Maghfiroh, 2023). Studies show that AI-mediated speaking assessments improve students' communication skills and confidence (Abdulhussein Dakhil et al., 2025). Furthermore, AI and ICT tools create engaging learning

experiences that foster continuous improvement (Madhavi et al., 2023). AI also enhances students' attitudes toward language learning by offering adaptive and interactive experiences (Cùròng, 2025).

In Kurdistan, traditional language education often lacks the technological integration needed for developing speaking fluency. AI-powered applications offer a promising solution by providing students with on-demand speaking practice and real-time feedback (CAFE, 2025). However, challenges such as accessibility, digital literacy, and teacher training must be addressed. Research on the role of AI in language education can assist educators and

policymakers in implementing these tools effectively to support EFL learners in the region (Qassrawi et al., 2024).

1.2 Problem Statement

Traditional speaking practice methods in EFL classrooms often lack interactivity and personalization, making it difficult for students to develop fluency and confidence. Many educational settings still rely on repetitive drills and limited teacher-student interactions, which do not provide sufficient real-life speaking opportunities. AI-powered applications like ELSA Speak and ChatGPT address these gaps by offering interactive, speech-recognition-based learning environments that provide instant feedback and personalized practice (Karim et al., 2023; Widyasari & Maghfiroh, 2023). Research indicates that AI-mediated speaking assessments significantly improve pronunciation, fluency, and students' willingness to communicate, making these tools a valuable addition to EFL education (Abdulhussein Dakhil et al., 2025).

Despite the potential of AI in language learning, many EFL students, particularly in Kurdistan, have limited access to such interactive tools. Traditional education systems often lack the technological infrastructure needed to integrate AI-based learning solutions effectively (CAFE, 2025). Additionally, factors such as digital literacy, teacher training, and internet accessibility create barriers to widespread adoption (Qassrawi et al., 2024). Addressing these challenges is crucial for leveraging AI's full potential in enhancing EFL speaking practice. By integrating AI-powered applications into language curricula, educators can offer students more personalized, engaging, and effective speaking opportunities, ultimately improving their language proficiency.

1.3 Research Objectives

- i. To investigate how AI applications improve speaking fluency.
- ii. To explore students' perceptions of AI-powered tools in language learning.
- iii. To identify the benefits and challenges of using AI tools for speaking practice.

1.4 Research Questions

RQ1: How do AI-powered tools enhance speaking fluency for EFL students at Kurdistan universities?

RQ2: What are the key features of AI applications that support speaking practice?

RQ3: What are the students' experiences and challenges when using these tools?

Significance of the Study

This study contributes significantly to the integration of artificial intelligence (AI) into English as a Foreign Language (EFL) curricula. By investigating the role of AI-powered applications in enhancing speaking fluency, the research offers valuable insights for educators, universities, and policymakers in Kurdistan. It highlights how AI tools can be effectively used to create more interactive, personalized, and engaging language learning experiences, thus addressing gaps in traditional teaching methods. Furthermore, the study aims to support the development of innovative educational strategies that align with the growing need for technological integration in higher education.

1.5 Scope and Limitations

The scope of this study is limited to undergraduate EFL students in Kurdistan, focusing specifically on their experiences and improvements in speaking fluency through the use of AI-powered applications. The research primarily examines tools such as ChatGPT, ELSA Speak, and Gemini, which are selected for their speech recognition, real-time feedback, and adaptability features. However, the study does not cover other emerging AI technologies or broader aspects of language learning beyond speaking skills. Factors such as varying levels of digital literacy, access to technology, and different learning environments among students may also influence the findings.

II. LITERATURE REVIEW

2.1 AI in Language Learning

Artificial Intelligence (AI) has transformed the landscape of language education, particularly for learners of English as a Foreign Language (EFL). In recent years, AI-driven tools such as ChatGPT, ELSA Speak, and similar platforms have reshaped traditional pedagogical approaches by offering innovative, learner-centered solutions to enhance speaking skills. These tools leverage advanced machine learning algorithms to analyze speech, provide real-time feedback, and tailor learning experiences to individual users. For instance, ELSA Speak utilizes automatic speech recognition (ASR) to assist learners in refining their pronunciation, while ChatGPT engages users in simulated dialogues to promote fluency and conversational competence.

A growing body of research has highlighted the effectiveness of AI in language learning. Zou et al. (2020) underscore AI's capacity to support English for Academic Purposes (EAP) speaking skills by facilitating interactive practice and personalized feedback. This level of

individualization not only improves technical skills but also enhances learner motivation and engagement. Guo and Wang (2025) found that AI tools positively influence students' emotional experiences and academic involvement, resulting in increased confidence during oral tasks. From personal teaching experience, I have observed that students who regularly use AI-based applications often become more confident speakers, unburdened by fear of making mistakes in public. For example, one of my students who was initially reluctant to speak in class used ELSA Speak privately and gradually gained the confidence to engage in group discussions.

2.2 Speaking Fluency and AI

Speaking fluency, a core component of language proficiency, encompasses pronunciation, vocabulary usage, grammatical accuracy, and the ability to express ideas smoothly and confidently. Developing fluency requires consistent exposure to authentic language, sustained practice, and immediate feedback features readily available through AI-powered platforms.

AI applications provide structured and flexible practice environments, allowing learners to progress at their own pace. These tools often include features that track performance over time, enabling learners to monitor their progress and work on specific areas of weakness. Xu and Wang (2024) reported that AI-based platforms significantly boost learners' speaking proficiency and overall language performance. Likewise, Alshumaimeri and Alshememry (2023) emphasized the role of AI in enhancing speaking fluency and reducing learners' anxiety.

From a practical standpoint, tools like ELSA Speak and ChatGPT have proven to be invaluable. For instance, a student of mine who struggled with particular English sounds showed notable improvement after a few weeks of targeted practice using ELSA Speak. Similarly, Zou and Wang (2024) demonstrated the impact of EAP Talk, an AI-driven speaking assessment platform, in reinforcing speaking skills. These findings suggest that AI-mediated learning environments are effective in fostering oral fluency, confidence, and self-directed learning.

2.3 Studies on EFL Contexts in Kurdistan

The Kurdish EFL context presents distinct challenges, especially in developing speaking fluency. Limited exposure to English in daily life, coupled with classroom practices that emphasize grammar and reading over speaking, often leaves students underprepared for real-world communication.

Many students in Kurdistan also face anxiety when speaking in front of peers, which further impedes

their progress. AI-powered tools provide a non-judgmental and private space for learners to practice, enabling them to gain confidence without the fear of making mistakes in public.

Although technology integration in Kurdish universities is increasing, the adoption of AI-powered language learning tools remains limited. Qassrawi et al. (2024) identified the potential of AI applications to improve speaking proficiency among EFL learners in higher education, yet research specific to the Kurdish context is scarce. At Salahaddin University, for instance, students have expressed dissatisfaction with traditional methods, citing a lack of practical speaking experience. One student noted that, despite several years of English instruction, she was still unable to hold a basic conversation. These concerns point to the urgent need for more effective, technology-enhanced speaking interventions. Investigating the role of AI tools in such contexts can offer valuable insights into how they might be integrated into local curricula to address learners' specific needs.

2.4 Gaps in Existing Research

Despite promising developments, several gaps remain in the literature regarding the integration of AI in EFL speaking instruction, particularly within Kurdistan. Most existing studies focus on global contexts, offering limited insights into how AI affects Kurdish learners specifically. Although tools like ChatGPT and ELSA Speak have been widely studied in East Asia and the West, little research has explored their use in Kurdish higher education.

Furthermore, there is a lack of focused inquiry into how AI supports the development of speaking fluency among undergraduate students. While researchers such as Fathi et al. (2024) and Yuan and Liu (2025) have examined how AI enhances learner engagement and motivation, fewer studies address its direct impact on oral fluency. Given the rising demand for English proficiency in both academic and professional domains, there is a pressing need for studies that evaluate how AI tools can be culturally and pedagogically adapted for Kurdish learners. Future research should consider these variables to inform more inclusive and effective language education strategies in the region.

III. METHODOLOGY

3.1 Research Design

This study adopted a mixed-methods research design, integrating both qualitative and quantitative approaches to explore the impact of AI on speaking fluency. The combination of methods allowed us to gather measurable data through surveys while also capturing deeper, more personal insights through interviews and focus group discussions. By using this design, we aimed to achieve a well-rounded understanding of participants' experiences and perceptions regarding AI tools and their influence on spoken language development.

3.2 Participants

The participants for this study were 105 students drawn from four universities: Cihan University, Nowruz University, Duhok University, and the American University. For the qualitative part, all participants completed a set of open-ended questions, providing valuable opinions and reflections about AI's impact on their speaking skills. For the quantitative part, five participants were selected for face-to-face interviews, during which their speaking fluency was assessed through direct interaction, allowing for real-time evaluation and recording of their oral performance.

3.3 Data Collection Tools

Data collection was carried out using surveys and interviews to ensure both breadth and depth in the information gathered. Surveys contained Likert scale and multiple-choice questions, enabling statistical analysis of participants' attitudes and experiences. Semi-structured interviews and focus group discussions were also conducted, allowing participants to elaborate on their experiences with AI tools in speaking practice. This mixed approach provided a rich set of data to better understand the relationship between AI use and speaking fluency development.

3.3.1 Likert-Scale Survey

The Likert-scale survey was designed to measure participants' perceptions of AI's role in enhancing their speaking fluency, with responses ranging from strong agreement to strong disagreement.

3.3.2 Questionnaire

The structured questionnaire gathered demographic information and specific experiences related to AI usage, offering both multiple-choice and short-answer questions.

3.3.3 Interview

Semi-structured interviews allowed for deeper exploration of individual participants' perspectives, giving them the opportunity to elaborate on their personal experiences, challenges, and improvements observed through AI-assisted speaking practice.

3.4 Data Analysis

The collected data was analyzed using both quantitative and qualitative methods. Survey responses were subjected to statistical analysis, focusing on patterns and trends in participants' perceptions of AI's role in improving fluency. For the qualitative data, thematic analysis was used to identify recurring themes and insights from interviews and focus groups. Together, these methods allowed for a comprehensive and balanced interpretation of the study findings.

3.5 Ethical Considerations

Ethical standards were rigorously maintained throughout the research process. Participants were informed about the nature and purpose of the study and provided their consent before participating. Measures were taken to ensure the anonymity and confidentiality of all participants, with personal information securely protected and used solely for research purposes. The study adhered to ethical guidelines to respect participants' rights and dignity.

IV. RESULTS AND DISCUSSION

This chapter presents the results of the study and discusses their significance. It analyzes the data collected on the use of AI-powered applications for improving speaking fluency among undergraduate students. The findings are interpreted in light of the research objectives, highlighting key improvements, challenges, and students' perceptions of AI tools in language learning.

4.1 Analysis of Survey Data from Questionnaires

1. Which AI-powered applications have you used to improve your English speaking skills?

104 responses

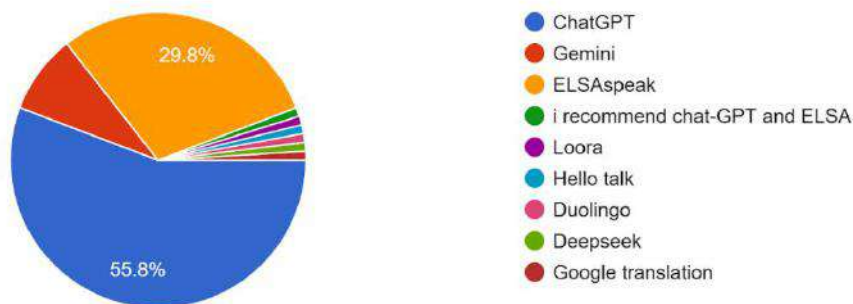


The survey results indicated that 69.4% of participants have utilized ChatGPT to enhance their English-speaking skills, making it the most popular AI tool for this purpose. A smaller proportion of respondents

reported using Gemini (18.5%), ELSA Speak (3.2%), and Duolingo (3.2%). Additionally, some participants (2.1%) stated that they have not used any AI applications for speaking practice, while 1.1% explicitly mentioned that they do not rely on AI tools for this purpose. Other less common applications, such as Loora and Pome, were each used by 1.1% of respondents.

2. Which AI-powered application would you recommend to a friend to improve speaking skills?

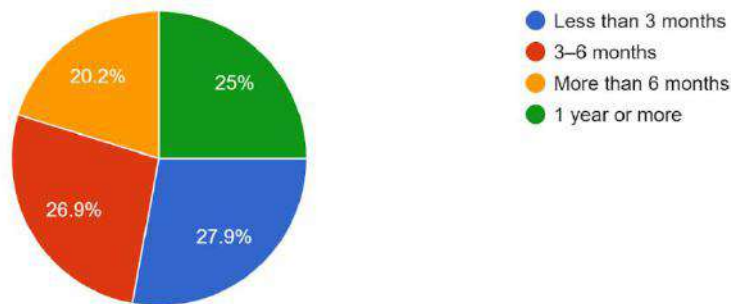
104 responses



Most participants (55.8%) recommended ChatGPT as the AI-powered app to use for improving speaking skills. Gemini came next, with 29.8% of participants suggesting it, while ELSA Speak and Duolingo were recommended by 4.8% and 1.9%,

respectively. A few respondents (2.9%) suggested combining ChatGPT and ELSA Speak for enhanced results. Additionally, Loora, Hello Talk, Deepseek, and Google Translation were recommended by 1.9% of participants each.

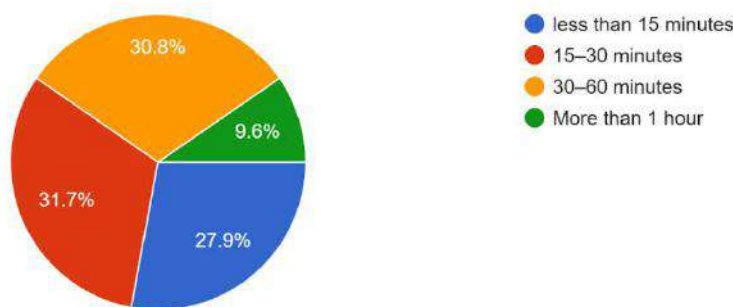
3. How long have you used AI-powered tools for practicing speaking?
 104 responses



Participants provided varied responses regarding the duration of their use of AI-powered tools for speaking practice. The largest group, 27.9%, reported using these tools for less than 3 months. 26.9% of participants

indicated they had been using the tools for 3 to 6 months. 20.2% of respondents stated they had been using them for more than 6 months, while 25% had been using AI tools for a year or longer.

4. How much time do you spend daily on speaking practice using AI-powered applications?
 104 responses

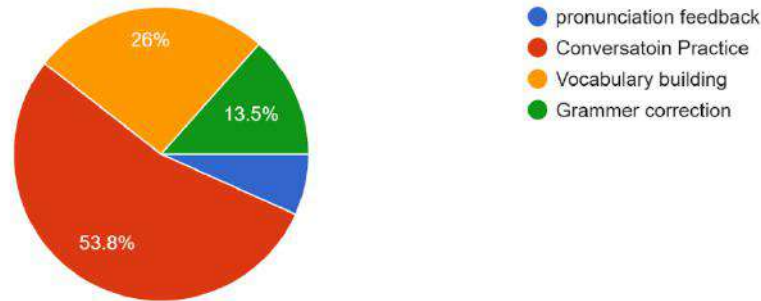


The time participants spend on AI-powered speaking practice varies. The largest proportion, 31.7%, spends between 15-30 minutes each day. A similar group, 30.8%, practices for 30-60 minutes daily. 27.9% of respondents engage with AI tools for less than 15 minutes,

while 9.6% practice for over an hour each day. These findings suggest that while most participants dedicate a moderate amount of time, there is still a notable percentage who either spend very little or a lot of time using the tools. This diversity in practice time reflects different learning habits and preferences among users.

5. Which feature of AI-powered applications do you find most helpful for improving speaking fluency?

104 responses

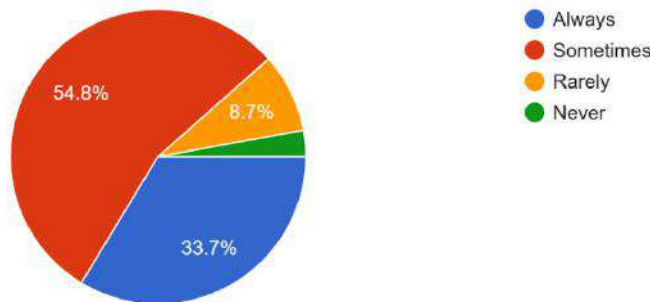


This chart shows the AI-powered features that participants found most helpful for improving their speaking fluency. The largest proportion of respondents (53.8%) indicated that conversation practice was the most beneficial feature. Vocabulary building followed with 26% of respondents highlighting its usefulness, while

pronunciation feedback was chosen by 13.5% of participants. Only 6.7% identified grammar correction as the most helpful feature for improving their speaking skills. The chart reflects the varying preferences for different features, with conversation practice emerging as the most valued tool.

6. Do you think AI-powered tools provide clear and easy-to-understand feedback for speaking practice?

104 responses

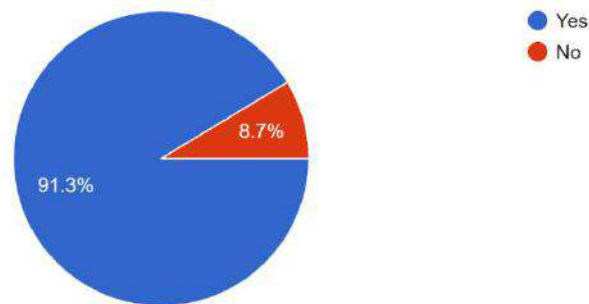


The survey reveals that while many people use AI-powered tools to practice speaking, the clarity of the feedback they receive varies. A significant 54.8% of users reported that AI tools always provide clear feedback, while 87% stated that they receive clear feedback sometimes. On

the other hand, 33.7% of participants felt that AI tools rarely offer clear feedback, and 7% mentioned that they never receive understandable feedback. This indicates a mixed perception of the effectiveness of AI feedback in improving speaking skills.

7. Have AI tools helped you feel more confident when speaking English?

104 responses

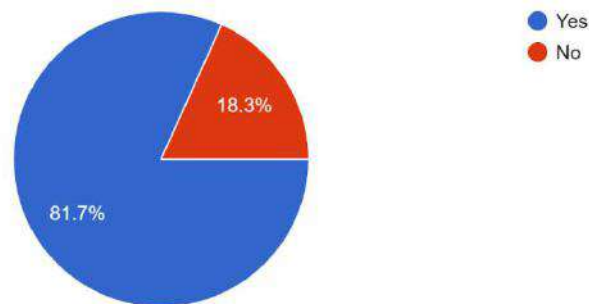


The survey results indicate that the majority of users did not experience a boost in their confidence after using AI tools for speaking practice. While only 8.7% reported feeling more confident, a striking 91.3% felt no change in their self-assurance. This suggests that despite the widespread use of AI tools, they may not effectively

address the psychological barriers or provide the motivational support needed for learners to gain confidence in their speaking abilities. Further exploration into how AI tools can be enhanced to improve confidence would be beneficial.

8. Have you noticed any improvement in your speaking fluency after using AI tools ?

104 responses

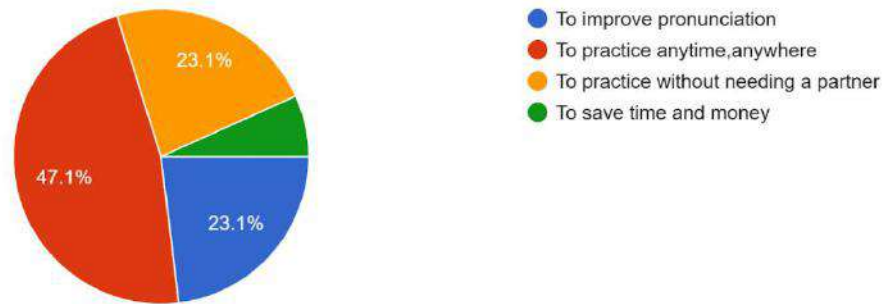


The findings indicate that AI tools had limited impact on enhancing speaking fluency for most users. Only 18.3% of participants reported an improvement in their fluency, while the remaining 81.7% experienced no

noticeable change. This suggests that while AI tools may offer some support, they may not be sufficient on their own to significantly improve fluency. Further research into how these tools can be better tailored to address the specific needs of learners could help enhance their effectiveness in promoting fluency development.

9. What motivates you to use AI-powered applications for speaking fluency?

104 responses

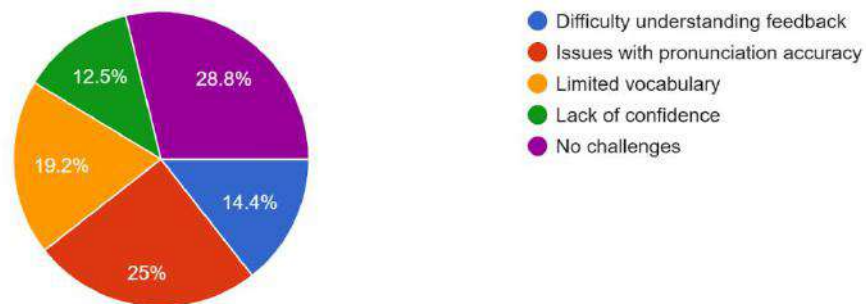


The survey revealed that AI-powered applications serve various purposes for users when practicing speaking fluency. 23.1% of users prefer them for improving pronunciation, while a larger portion, 47.1%, appreciate

the flexibility to practice at any time and from anywhere. Additionally, another 23.1% value the independence these tools offer, enabling practice without the need for a conversation partner. Lastly, some users choose AI tools for their convenience, with the goal of saving both time and money on language practice.

10. What challenges have you faced while using AI tools for speaking practice?

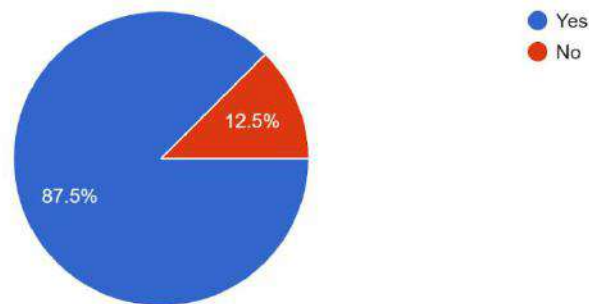
104 responses



The survey highlights several challenges users face when using AI tools for speaking practice. 12.5% of respondents struggle with understanding the feedback provided by the tools, while 28.8% report difficulties with

pronunciation accuracy. Another 19.2% encounter challenges due to a limited vocabulary, and 14.4% feel hindered by a lack of confidence. On a positive note, 25% of users reported having no challenges at all while using these AI-powered applications.

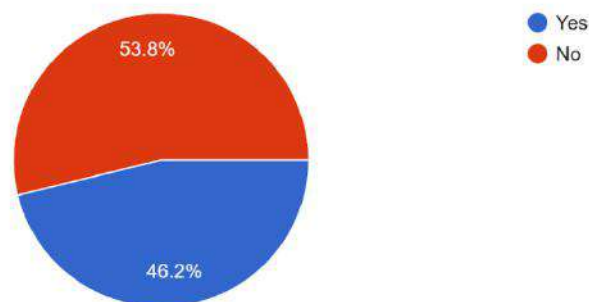
11. Do you plan to continue using AI-powered tools for speaking practice in the future ?
 104 responses



The majority of respondents (87.5%) plan to continue using AI-powered tools for speaking practice in the future. However, a smaller group (12.5%) expressed no intention to keep using these tools. This suggests a strong

preference for AI solutions among many, yet some users may seek other methods or feel uncertain about AI's long-term effectiveness. It highlights the mixed opinions about the role of AI in language learning, with some embracing its benefits while others remain hesitant.

12. Do you think AI-powered applications are better than traditional speaking practice methods (e.g., classroom speaking)?
 104 responses

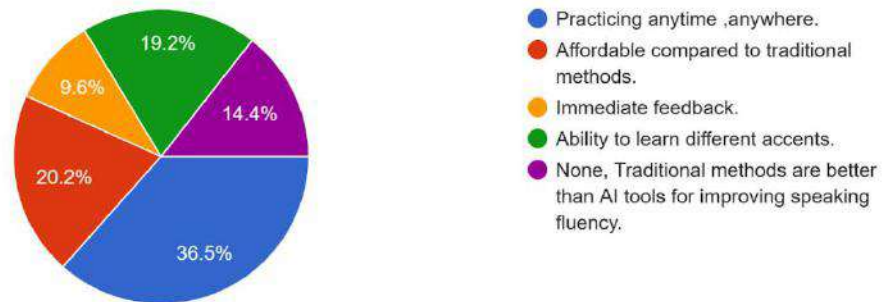


This pie chart shows the distribution of opinions regarding the effectiveness of AI-powered applications compared to traditional speaking practice methods. The

majority of respondents (46.2%) believe that AI tools are more effective, while a significant portion (53.8%) disagrees, indicating a preference for traditional methods. This data highlights the diverse perspectives learners have on improving their speaking skills.

13. What makes AI tools better than traditional methods for improving speaking fluency?

104 responses

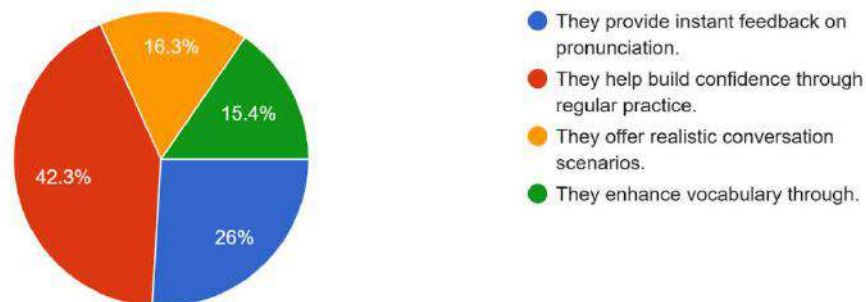


The majority of respondents (42.7%) highlight the ability to practice anytime and anywhere as the greatest advantage of using AI-powered tools. A smaller portion (24.8%) values the instant feedback on pronunciation and

grammar that these tools provide. Additionally, 18.8% appreciate the variety of topics available for practice, while 14.9% find the interactive and engaging learning experience to be a key benefit. This reflects the diverse reasons people favor AI tools in their language learning journey.

14. How do AI-powered tools contribute to improving your English speaking fluency ?

104 responses

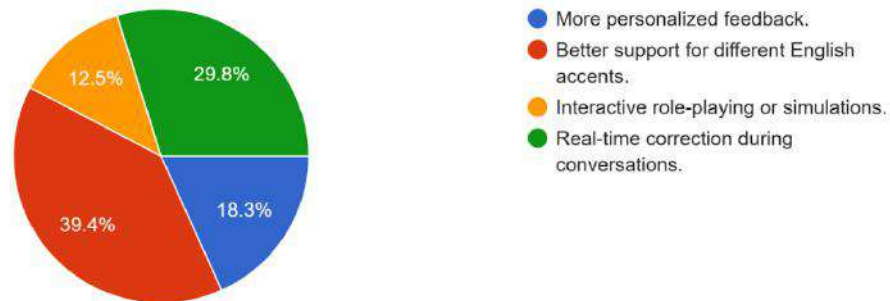


This chart shows that 30.4% of users view instant feedback on mistakes as the main advantage of AI-powered speaking tools. Personalized learning paths

appeal to 25.5% of users, while 24.5% appreciate the flexibility to practice at any time. Additionally, 19.6% believe that reduced language anxiety is the biggest benefit.

15. What additional features would improve your experience with AI-powered applications for speaking practice?

104 responses



This chart shows that 31.4% of users favor more personalized feedback to enhance their speaking practice. Meanwhile, 29.5% prefer topic tailoring and realistic

simulations. Another 20.0% are interested in gamification or role-playing activities, and 19.0% value the ability to use AI tools offline or with minimal data usage.

4.2 Likert Scale Survey Analysis

Table:1 Likert Scale Survey Analysis

Statement	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
Effectiveness of AI tools for improving speaking fluency	12.5	42.3	25	14.4	12.5
Practicing with AI tools makes learning English speaking skills more enjoyable	13.5	45.2	18.3	15.4	7.7
Duration of using AI-powered tools for speaking practice	27.9 (Less than 3 months)	26.9 (3–6 months)	20.2 (More than 6 months)	25 (1 year or more)	0
Time spent daily on AI-assisted speaking practice	27.9 (Less than 15 min)	31.7 (15–30 min)	30.8 (30–60 min)	9.6 (More than 1 hour)	0
AI tools help feel more confident speaking English with others	15.4	45.2	24	15.4	7.7
Comfort using AI applications for speaking practice without fear of judgment	26	33.7	25	11.5	3.8
Most helpful AI feature for improving speaking fluency	53.8 (Conversation Practice)	26 (Vocabulary Building)	13.5 (Pronunciation Feedback)	6.7 (Grammar Correction)	0 (All Skills)
AI applications assist in overcoming speaking anxiety and hesitation	20.1	40.4	23.1	10.6	5.8
Would recommend AI-powered applications to other EFL students to improve their speaking fluency	14.4	38.5	26	11.5	9.6

Statement	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
AI-powered applications can play a significant role in improving English speaking fluency among EFL students in Kurdistan	20.2	39.4	21.2	11.5	9.6

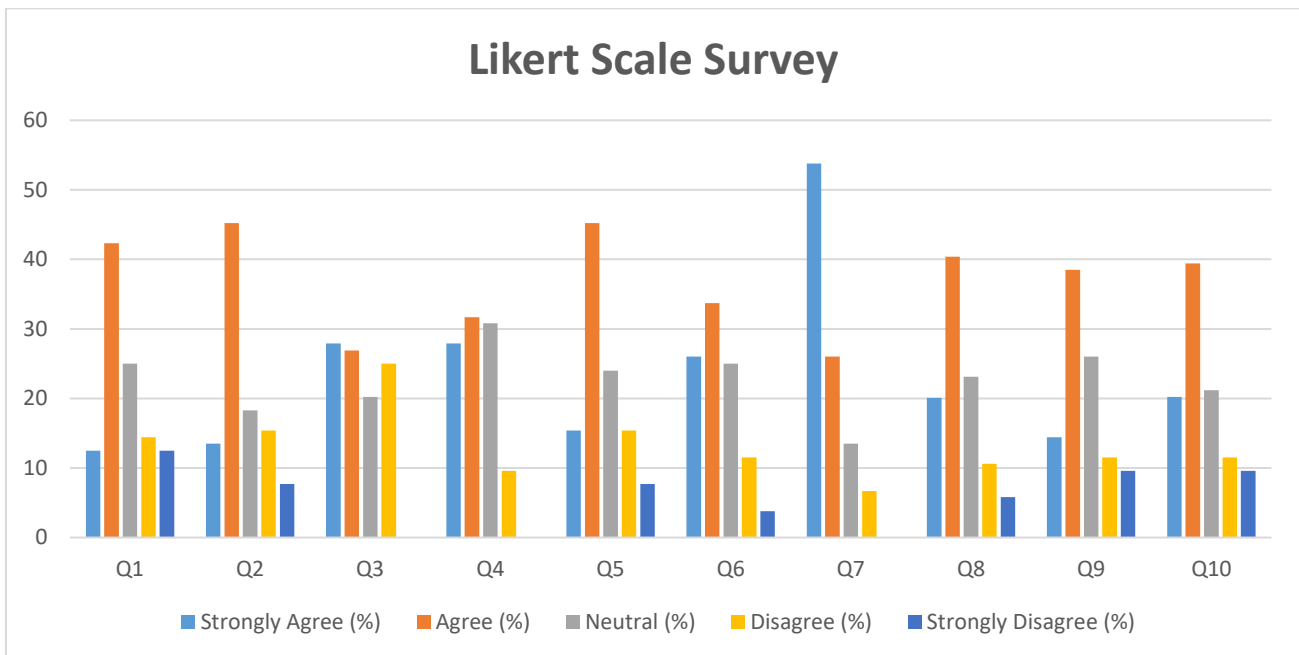


Fig.1 Likert Scale Survey Analysis

The survey results show that most EFL students have a positive view of using AI-powered applications to improve their English speaking fluency. A large percentage agreed that AI tools are effective (42.3%) and make learning more enjoyable (45.2%). Many students had been using AI tools for a short period — less than 3 months (27.9%) or 3–6 months (26.9%) — and most practiced speaking for 15–30 minutes (31.7%) or 30–60 minutes (30.8%) daily. A good number of participants reported that AI applications boosted their confidence in speaking English (45.2% agree, 15.4% strongly agree) and made them feel comfortable practicing without fear of judgment (33.7% agree, 26% strongly agree).

In addition, conversation practice (53.8%) was identified as the most helpful feature for improving speaking fluency, followed by vocabulary building and pronunciation feedback. Many students felt that AI tools helped reduce their speaking anxiety and hesitation (40.4% agree, 20.1% strongly agree). A significant portion said they would recommend AI applications to other learners (38.5% agree, 14.4% strongly agree). Finally, most respondents

believed that AI-powered applications could play an important role in enhancing English speaking fluency among EFL students in Kurdistan (39.4% agree, 20.2% strongly agree).

V. CONCLUSION

5.1 Findings

This study investigated the role of Artificial Intelligence (AI)-powered applications in enhancing the speaking fluency of undergraduate EFL students in Kurdistan. The findings revealed that AI tools significantly contributed to students’ ability to speak English more fluently and confidently. Participants reported that engaging with AI applications made the language learning process more interactive, motivating, and accessible beyond traditional classroom settings. Immediate feedback, opportunities for self-directed practice, and exposure to authentic language use were key factors supporting fluency development. Students also noted a boost in their confidence, expressing that AI-based practice allowed them

to refine pronunciation, improve speech patterns, and communicate more freely without fear of judgment. Overall, the study highlights the positive impact of integrating AI into language learning, particularly in fostering speaking fluency and learner autonomy.

5.2 Implications

The outcomes of this research carry important implications for both educators and higher education institutions:

5.2.1 For Educators:

Language instructors are encouraged to incorporate AI-powered applications into their teaching methodologies. By offering real-time feedback, simulated conversation opportunities, and personalized learning paths, AI tools can supplement traditional speaking activities effectively. Professional development and training for teachers on how to select and use appropriate AI tools are essential to optimize the integration of technology into pedagogical practices. Educators must also ensure that the selected applications align with learning objectives and meet the diverse needs of their students.

5.2.2 For Universities:

Higher education institutions should acknowledge the transformative potential of AI in language education. Universities are advised to integrate AI-assisted learning into curriculum design, particularly in speaking and communication courses. Providing access to updated AI resources, developing specialized courses on technology-enhanced language learning, and investing in faculty training programs will help create a more innovative and supportive learning environment. Encouraging AI adoption can bridge resource gaps, enhance student engagement, and prepare learners for real-world communication demands.

5.3 Limitations of the Study

While the findings offer valuable insights, several limitations must be acknowledged:

- i. The study focused solely on undergraduate EFL students in Kurdistan, limiting the generalizability of the results to other contexts.
- ii. Only a select group of AI applications was explored, and many other available tools were not examined, potentially overlooking different outcomes.
- iii. The study captured short-term improvements rather than assessing the long-term impact of AI usage on speaking fluency.

5.4 Recommendations for Future Research

Based on the identified limitations, several directions for future research are proposed:

- i. Expand the focus beyond speaking skills to explore how AI can enhance other language domains such as listening, reading, and writing.
- ii. Investigate learners' perceptions of specific AI features, such as feedback accuracy, speech recognition reliability, and gamification elements, to better understand the factors driving motivation and improvement.
- iii. Explore the challenges faced by students and teachers in implementing AI tools, offering strategies for overcoming potential barriers.

The integration of AI-powered applications into EFL education marks a promising step in developing speaking fluency. This study showed that AI tools provide engaging, accessible, and supportive environments for learners, offering personalized feedback, fostering autonomy, and enhancing confidence. AI should be seen as a valuable supplement to human instruction, enriching language-learning experiences, especially in regions with limited access to native speakers. Despite the study's limitations, the positive outcomes highlight AI's potential to strengthen language education. As technology advances, future research should continue exploring innovative, sustainable ways to integrate AI, helping EFL learners build the fluency and communication skills needed for global success.

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The Implications of Relativizing the Concepts of Autonomy and Democracy in the Politics of Democratizing Educational Management

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Abstract

The research presented here has as its main objective to investigate whether the relativization of the concepts of autonomy and democracy in official documents causes harm to the democratization process in the educational management of the country's public network, that is, whether certain interpretations can cause harm to the effective democratization of school management, as regulated by legislation. Therefore, this is a proposition that is responsible for contributing to the strengthening of the democratic regime to the extent that it seeks to investigate and identify possible setbacks resulting from the manipulation of the meanings of words and concepts to maintain a hegemonic group in power or modify the system to take advantage of public property. To this end, pragmatic discursive analysis will be used as a theoretical framework in approaching the research corpus, proposed here due to its qualitative nature, with the object of study being discourses (official education documents) and their discursive practices that arise with the implementation of laws such as No. 9,394/1996 (LDBEN), No. 13,005/2014 (PNE), Law No. 14,113/2020 (FUNDEB), etc.



Keywords— *autonomy, democracy, democratization process, educational management, official documents.*

I. INTRODUCTION

This study deals with the discursive dimension involving a certain rhetoric responsible for a dynamic that revolves around a “double process of transposition” (Gentili, 1994, p. 116), bearing in mind that “no knowledge is formed without a system of communication, registration, accumulation, and displacement, which is in itself a form of power, and which is linked, in its existence and functioning, to other forms of power” (Foucault, 1997, p. 19). At the same time, it does not ignore that “no power, conversely, is exercised without the extraction, appropriation, distribution, or retention of knowledge” (Foucault, 1997, p. 19). And at this level, it is necessary to admit that “there is not knowledge, on the one hand, and society, on the other, or science and the State, but the fundamental forms of ‘power-knowledge’” (Foucault,

1997, p. 19). In other words, it must be borne in mind that “no process of obtaining political hegemony can dispense with a radical transformation of the meanings, categories, concepts, and discourses through which ‘reality’ acquires meaning and can be named” (Silva, 1996, p. 118).

It is from these initial considerations that this article seeks to address certain interpretations of the concepts of democracy and autonomy in official documents that may cause harm to the process of democratizing educational management in Brazil after the entry into force of the 1988 Federal Constitution. This work hypothesizes that the subversion of the semantic meanings of autonomy and democracy interferes with democratic processes in school management. Therefore, this is an eminently political discussion, because “educating is a political act” (cf. Freire, 1980). In other words, it is political because it

responds to a social demand that aims to contribute to a society that is, by nature, political. In this case, it must be recognized that this statement, which synthesizes the thought of one of the greatest educators of the contemporary world, is an echo of that made by Aristotle who said: "man is a political being by nature," and the political, here, is a reference to the polis (city in Greek), the place where (Western) democracy was born. However, Paulo Freire's statement also relates to what Foucault said in **The Discourse of language* (l'ordre du discours)*, when he recognized that "every education system is a political way of maintaining or modifying the appropriation of discourses, with the knowledge and power they bring with them" (Foucault, 1996, p. 45). This way Foucault uses the term politics in contemporary times reveals that there has been an update due to the complexity of the world today, whose societies are at different levels because of new demands that have arisen over time. Perhaps these demands arose at the exact moment when states began to rely, within the same political structures, on "such an astute combination of two techniques, of individualization and totalization" (Foucault, 1995, p. 236). And this work deals with one of these demands, which is linked to the process of democratization of school management.

Based on these arguments, one can ask: In what ways can the subversion of the meanings of the concepts of autonomy and democracy interfere with the democratic processes of school management? The answer to this question (problem) constitutes the central concern of this proposal, which seeks to contribute to the strengthening of the democratic regime by investigating and identifying the possible pitfalls arising from the manipulation of the meanings of words and concepts to maintain a hegemonic group in power or to modify the system to take advantage of public resources, in these times of reaffirmation of the democratic rule of law and the decolonial wave (cf. Silva, 2004).

The title of this article already summarizes well the reasons or justifications for its implementation; that is, it seeks to demonstrate the implications of relativizing the concepts of autonomy and democracy for the democratization process in educational management, especially in school units. In recent years, the relativization of the interpretation of these concepts has harmed the distribution of resources aimed at managing school units, as it reduces school autonomy and distorts the understanding of what constitutes democratic management, since the meanings of these concepts are constantly being manipulated incorrectly by legislators and those who apply the law. Therefore, this is a work proposal that addresses a social and political demand because it aims to contribute to the

improvement of the democratization process in school management, to reduce the existing educational gap in Brazil, and to make socioeconomic and racial equity possible, by identifying flaws and damages that occur as a result of erroneous interpretations of the concepts of democracy and autonomy that appear in legislation.

Therefore, the overall objective established for this study is to investigate whether the relativization of the concepts of autonomy and democracy in official documents causes harm to the democratization process in the educational management of the country's public school system. In turn, its specific objectives are: a) to analyze the official documents taken as the corpus of the research using a pragmatic discourse approach (pragmatic discourse analysis) in which they are perceived as discourse; b) to contribute to the improvement of the democratization process in the educational management of the country's public school system; and finally, c) to contribute to the strengthening of the democratic regime; d) to point out the need for the elaboration of regulations that establish a definition for the concepts of autonomy and democracy.

The interest in addressing this topic is linked to issues concerning the decentralization of school management processes that occurred by force of law, that is, by the demands created by the Law of Guidelines and Bases of National Education, which appeared with the advent of the 1988 Federal Constitution. Since then, many researchers have dedicated themselves to monitoring these processes, seeking to identify the obstacles and challenges encountered by school administrators and authorities linked to the administration of the country's education networks. Among these researchers are Heloísa Lück and Tomaz Tadeu da Silva (cf. Silva, 1996, 2004; Lück, 2012). They constitute the main theoretical references used to support this research, as readings of these authors' works contributed to sparking interest in the topic presented here, insofar as questions such as: "What are the peculiarities of participatory democratic management?" (Lück, 2012, p. 15); "What are the dimensions of educational management?" appear in their works. (Lück, 2012, p.15), and an analysis of how neoliberal rhetoric has radically transformed the meaning of certain concepts in its "process of obtaining political hegemony" (Silva, 1996, p.167). In other words, it was these readings that made possible the reflections that appear in this research outline. In addition to these authors, others figure in the unfolding of the discussion, such as: Chico Alencar (2001), Pedro Demo (2013), Pablo Gentili (2001; 2009), Elie Chanem (1998), Christian Laval (2023), etc.

II. MATERIALS AND METHODS

Since this is a qualitative research study, the methodology chosen to deal with the corpus, formed by official documents (bibliographic research), is pragmatic discourse analysis, drawing on Foucault's archeo-genealogical analysis and Coracini's discursive-deconstructive analysis (cf. Araújo, 2020). In addition to considering the corpus as discourse, as mentioned before, this analysis also focuses on the discursive practices that arise from such discourses; that is, it seeks to address the discursive effects in their political or social use, mobilizing a theoretical machinery formed by conceptual tools such as: rarefaction of the subject and discourse, historical conditions of production, utterance, discursive practice, effects of meaning, worldviews, discursive formations, political rationalities, etc. Therefore, prag-matic discourse analysis will provide the means for the description and analysis of the corpus in question. In other words, it is from the mobilization of these concepts that the research will enter its second phase, that of the interpretation and analysis of its corpus, since the first phase is intended for the selection of official documents that deal with the decentralization of education, its democratization and autonomy of educational management in Brazil, which will form the corpus of the research. In short, this is qualitative research focused on the field of education and that intends to deal with official documents that deal with the concept of democracy and autonomy in educational management in Brazil, in these 35 years of the implementation of the Federal Constitution, promulgated on October 3, 1988. Therefore, this is a work intended for educational managers who work in the country's education system, school principals, supervisors, education secretaries, teachers and the entire school community interested in the management of units and the educational system.

Here, we present only a section of the research due to space limitations. In this discussion space, we present some considerations about the data found in our analysis, which focuses on the discursive dimension, understanding that "discourses constitute annunciative dimensions of a specific type of ideology that is only comprehensible in the context of the material reality that determines it" (Gentili, 1994, p. 117). Therefore, dealing with this discursive dimension will directly lead us to the plane of material practices in which discourse must (and needs to) be unmasked or disarmed so that democratic management in public schools can be fully implemented (Gentili, 1994).

In this first section of the research, we consider as a starting point the appearance of the terms democracy and autonomy in the 1988 Federal Constitution of Brazil and in the Law of Guidelines and Bases of National Education,

sanctioned on December 20, 1996, as summarized in the tables below:

The terms in the Federal Constitution of October 3, 1988 (known as the Citizen Constitution)

<i>Autonomy</i>
Art. 207: Garante autonomia didático-científica, administrativa e de gestão financeira e patrimonial às universidades, respeitando o princípio da indissociabilidade entre ensino, pesquisa e extensão.
<i>Democracy</i>
<i>A Constituição enfatiza a gestão democrática do ensino público, especialmente no Art. 206, inciso VI, que estabelece esse princípio como um dos pilares do ensino, assim:</i>
<i>VI - gestão democrática do ensino público, na forma da lei;</i>

The terms in the Law of Guidelines and Bases of National Education - Law No. 9.394/1996 (Darcy Ribeiro Law)

<i>Autonomy</i>
Art. 15: Os sistemas de ensino assegurarão às unidades escolares públicas de educação básica que os integram progressivos graus de autonomia pedagógica e administrativa e de gestão financeira, observadas as normas gerais de direito financeiro público.
<i>Democracy</i>
Art. 14: Lei dos respectivos Estados e Municípios e do Distrito Federal definirá as normas da gestão democrática do ensino público na educação básica, de acordo com as suas peculiaridades e conforme os seguintes princípios:
<i>I - participação dos profissionais da educação na elaboração do projeto pedagógico da escola;</i>
<i>II - participação das comunidades escolar e local em conselhos escolares ou equivalentes.</i>
<i>II – participação das comunidades escolar e local em Conselhos Escolares e em Fóruns dos Conselhos Escolares ou equivalentes. (Redação dada pela Lei nº 14.644, de 2023)</i>
<i>§ 1º O Conselho Escolar, órgão deliberativo, será composto do Diretor da Escola, membro nato, e de representantes das comunidades escolar e local, eleitos por seus pares nas seguintes categorias: (Incluído pela Lei nº 14.644, de 2023)</i>
<i>I – professores, orientadores educacionais, supervisores e administradores escolares; (Incluído pela Lei nº</i>

14.644, de 2023)

II – demais servidores públicos que exerçam atividades administrativas na escola; (Incluído pela Lei nº 14.644, de 2023)

III – estudantes; (Incluído pela Lei nº 14.644, de 2023)

IV – pais ou responsáveis; (Incluído pela Lei nº 14.644, de 2023)

V – membros da comunidade local.

III. DATA ANALYSIS AND RESULTS

The present analysis undertaken here took place in two distinct moments: one dedicated to the discursive-pragmatic description of the statements in the discourse and the other, the analysis itself; that is, first a description was made in which we sought to verify the number of times that the two terms appear in the discourse materialized in the Direct Action of Unconstitutionality (ADI) 2997, stated in the Supreme Federal Court (STF) where its ministers analyzed the constitutionality of norms of the State of Rio de Janeiro that provided for direct elections, with the participation of the school community, for the management positions of educational institutions maintained by the Public Power.

It was at this moment of the research that it was verified that the term "democracy" appeared in the "democratic management of education", as provided for in article 206, item VI, of the Federal Constitution. The Brazilian Supreme Court (STF) understood that, although democratic management is a constitutional principle, holding direct elections for leadership positions in public schools violates constitutional provisions that grant the head of the Executive Branch the power to freely appoint and dismiss those holding appointed positions.

Regarding the term "autonomy," we note that it is not directly stated in the available excerpts of the decision in ADI 2997. However, this concept is implicitly addressed in the discussion concerning the Executive Branch's power to appoint school principals, without interference from state regulations that establish direct elections for these positions.

This understanding seems to have disregarded what the 1988 Federal Constitution says about the part that deals with the democratic management of public educational establishments in the country and their autonomy, as well as what the Darcy Ribeiro Law says, which has undergone constant changes throughout its validity, leading the Supreme Federal Court to conclude that state regulations that provided for direct elections for directors of public

schools are unconstitutional, as they violate the competence of the head of the Executive Branch and the constitutional principles related to the appointment of commissioned positions.

By analyzing this case, we can see how the process of democratic management in the field of education has been the target of constant attacks in discursive practices that maintain the hegemonic power of the conservative elite that benefits from the misery of the world, as demonstrated by the sociology undertaken by Pierre Bourdieu. In other words, what has been observed here is that the terms autonomy and democracy have been hijacked by the rhetoric of neoliberalism, in this new phase in which democratic regimes are attacked by an increasingly aggressive right wing that claims to be conservative of true values. Therefore, this is a process that began in the early 1980s, when democratizing demands in the field of education began to be attacked, having their lifespan shortened by neoliberal rhetoric. Now, it is entering its phase of frank expansion, with the annulment of "all those references to the necessary democratization of our education systems" (Gentili, 1994, p. 121).

IV. CONCLUSION

In conducting the analysis that gave shape to the present discussion, this study sought to diagnose the present time (cf. Foucault, 1999), revisiting the critique of neoliberal rhetoric in the field of education that appears in the works of Gentili and Silva (1994), whose focus falls on discourses dealing with total quality in education, having as historical conditions of production the period in which violent conservative reactions intensified to "overthrow the policies and movements of 'progressive' ideas" in a scenario of Cold War, oil production crisis, when certain "conditions were created for the return to a controlled democratic institutionality, a democracy of defeat or, more paradoxically, a 'non-democratic' democracy" (Gentili, 1994, p. 118). It was precisely in this scenario that two of the most striking post-dictatorial achievements were materialized through discursive practices: "subjective traumatization and the trans-formation of society." (Gentili, 1994, p. 119). In this review, we attempt to highlight how the rhetoric of the total quality discourse, which took place in the 1990s here in Latin America, has been updated by incorporating the terms democracy and autonomy, transposing their meanings to maintain the hegemony of the dominant elite in power. At no point do we lose sight of the fact that "although democracy is always a political achievement of the majorities, the conditions in which concrete democracies tend to establish themselves may reflect structural situations of

profound social defeat" (Gentili, 1994, p. 117).

Considering these facts and the data obtained from the analysis undertaken, the following conclusion was reached: the subversion of the meanings of the concepts of autonomy and democracy in official documents causes damage to the democratization process in the educational management of the country's public school system, because the hegemonic elite wants to remain in power through a "non-democratic" democracy, by making the democratic process in public schools unfeasible through the subversion of democratic values and ideals, necessary for the full exercise of democracy in a country like Brazil, with the strengthening of institutions that contribute to the democratic rule of law. However, it is necessary to have hope, remembering that "[...] hegemonic power in the world does not have, nor will it ever have, the last word." (Alencar; Gentili, 2001, p. 21).

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Study on the Construction and Dissemination Path of Corporate Culture in the Retail Industry: A Case Study of Decathlon¹

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Abstract

Against the background of the increasingly intense competitive landscape in the retail industry, corporate culture, as a core soft power for enhancing an enterprise's core competitiveness, has gained vital strategic value. This study takes Decathlon, an outstanding enterprise in the sports goods retail sector, as the research sample. Based on six months of participatory observation data and grounded in Edgar Schein's Three-Level Model of Culture, it systematically analyses core characteristics of Decathlon's corporate culture and the internal logic that drives its construction and dissemination. The findings show that Decathlon's center are its core values in "vitality, responsibility, authenticity, and generosity". Through a value-oriented recruitment and selection mechanism, a systematic cultural training system, and an employee empowerment and authorization framework, the company achieves the in-depth penetration and internalization of corporate culture within the organization. Furthermore, by materializing employees' service behaviors and designing scenario-based store spaces, Decathlon constructs a cultural transmission chain of "organization - employee - customer", forging an irreproducible brand differentiation barrier. The research conclusions provide actionable pathways for the systematic construction and efficient dissemination of corporate culture in retail enterprises, and also point to future research directions – verifying the universality of the conclusions through cross-case comparisons or quantitative research.

Keywords— Retail Industry, Corporate Culture, Decathlon, Dissemination Path, Schein's Three-Level Model of Culture, Core Competitiveness

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I. INTRODUCTION

1.1 Research Background and Significance

Decathlon has established a benchmark position in the sports goods retail field by virtue of its "one-stop category coverage" and "immersive experience shopping" business

model, coupled with its value proposition of high cost-performance. However, as the retail industry enters the "hard discount competition phase", the competitive advantages derived solely from price and product categories have gradually diminished. Corporate culture is a strategic element that can reduce organizational

management costs, attract well-aligned talents, and strengthen customer loyalty and it is becoming increasingly critical in the sustainable development of enterprises. In this context, exploring the construction logic of Decathlon's corporate culture and its supporting mechanism for corporate strategy implementation not only confirms the enabling effect of corporate culture on the operational performance and sustainable growth of retail enterprises, but also expands case studies of corporate culture theory within specialized sports goods retail sector, providing a reference model for cultural development among similar industry peers.

1.2 Research Questions and Content

The core research questions of this study are: What are the core connotations of Decathlon's corporate culture? What is the implementation path of its corporate culture, from system construction to the precise dissemination across the entire chain of "organization - employee - customer"? Extended discussions include: What are the concrete manifestations of the commercial and social values brought by corporate culture construction to Decathlon? What universal implications does this model hold for corporate culture construction in the retail industry? The specific research content mainly includes the following three aspects: (1) Deconstructing the core characteristics and hierarchical connections of Decathlon's corporate culture based on Schein's Three-Level Model of Culture; (2) Analyzing the dissemination mechanism and key influencing factors of corporate culture in the two stages of "internal staff ideology identification" and "external customer perception"; (3) Evaluating the contribution of corporate culture which as a soft power--to Decathlon's brand competitiveness and market performance.

1.3 Research Methods and Innovations

Research Methods: This study adopts a mixed research paradigm, integrating the case study method with participatory observation. The researcher, as a part-time employee, conducted six months of participatory observation at a Decathlon store in Beijing, deeply engaging in the whole process including offline store training, online cultural courses, daily operation and dealings, and facing to customer service to collect real

qualitative data on the transmission and practice of corporate culture. Meanwhile, triangulation verification was conducted by integrating the enterprise's official strategic documents, public brand reports, and industry analysis reports to ensure the reliability and validity of the research conclusions.

Innovations: Breaking through the limitation that existing studies mostly analyze the corporate culture of retail enterprises from an external perspective, this study delves into the construction logic and dissemination path of corporate culture under Decathlon's composite model of "one-stop experience + extreme cost-performance + community operation" from the dual perspectives of "internal organizational participant" and "external consumer". It fills the gap in in-depth research on the micro-dissemination mechanism of corporate culture in the sports goods retail field.

II. LITERATURE REVIEW AND THEORETICAL BASIS

2.1 Theories Related to Corporate Culture

The academic community has developed a diversified paradigm for the theoretical deconstruction of corporate culture. Among these, Edgar Schein's Three-Level Model of Culture serves as the core analytical framework for current organizational culture research. This model divides corporate culture into three dimensions: observable artifacts at the surface level (e.g., store environments, products, work uniforms), espoused values at the middle level (the concepts and values officially advocated by the enterprise), and basic underlying assumptions at the core level (unconscious beliefs and thinking patterns). In addition, Terrence Deal and Allan Kennedy's Five-Factor Model of Corporate Culture (including corporate environment, values, heroes, rituals and ceremonies, and cultural network), Geert Hofstede's Organizational Culture Dimension Theory, and Toyohiro Kono's Corporate Culture Typology together form a theoretical matrix for corporate culture research. Integrating the above theories, this study defines corporate culture as a value system and code of conduct shared by organizational members, which guides the alignment of individual behaviors and decision-making models to achieve synergy between

organizational goals and individual development.

2.2 Review of Research on Corporate Culture in the Retail Industry

As a typical service-oriented industry, the retail sector exhibits distinct industry-specific characteristics in its corporate culture: it centers on customer value creation, emphasizes the empowerment of frontline employees, and focuses on balancing operational efficiency, team collaboration, and cost control. Among these, customer orientation is the core gene of retail corporate culture. Leading retail enterprises generally take maximizing customer value as the core criterion for organizational decision-making, and enhance the quality of customer experience through store space optimization, service process reengineering, and employee authorization. As the key touchpoint between the organization and customers, frontline employees' service capabilities and cultural identity directly impact customer perceived value. Therefore, retail enterprises mostly promote employees to become practitioners and disseminators of corporate culture through systematic training, authorized decision-making mechanisms, and incentive system design.

Existing studies have conducted in-depth discussions on models such as Pang Donglai's "employee happiness driving extreme service", Haidilao's "people-oriented extreme service", and Costco's "membership priority + employee benefit guarantee". However, in-depth research on the micro-dissemination mechanism of corporate culture under Decathlon's composite model of "experiential retail + full industrial chain cost control + community ecosystem construction" – especially from an internal organizational perspective--remains relatively scarce. This study fills this gap in the research field.

III. MULTI-DIMENSIONAL DECONSTRUCTION OF THE CORE CHARACTERISTICS OF DECATHLON'S CORPORATE CULTURE (BASED ON SCHEIN'S THREE-LEVEL MODEL OF CULTURE)

3.1 Surface Level: Materialization of Observable Artifacts

3.1.1 Store Space and Display System

Decathlon adopts a warehouse-style retail format, with the physical scale of its stores significantly larger than that of peer sports brands. Approximately 15% of the store area is designated as a product experience zone, focusing on categories with strong experiential attributes (e.g., bicycles and roller skates) to provide customers with pre-purchase product trial scenarios. The store features a high-shelf warehouse-style design, with shelf heights generally exceeding 2 meters. Products are displayed vertically by sports category, and a blue-background white-character category indication system is installed above the shelves in the main passage to enable precise guidance of customers' shopping routes. Meanwhile, the "display-inventory integration" model is adopted, stores sale their products without independent inventory zones . Product function description cards and purchase guides suitable for different scenarios (including sports scenario adaptation suggestions and sports intensity matching plans) are placed in a prominent position on the product shelf, supplemented by a clear price tag system to support customers' independent decision-making needs.

3.1.2 Employee Code of Conduct and Interaction Model

All employees wear blue work vests printed featuring the brand logo, which display their names and employee numbers (without indicating job levels). A flat address system "the last two characters of the name or English name" is adopted within the organization. When encountering each other in person, employee always greet one another with nods and smiles . Front-line employees are required to proactively identify customer needs, provide professional product explanations and scenario-based purchase suggestions, and are authorized to independently handle product returns, exchanges, and customer complaints without hierarchical approval. Daily operation meetings adopt a "circular sitting" format, where managers and ordinary employees participate equally in discussions on daily operation goals and process optimization, eliminating the hierarchical barriers of traditional organizations.

3.1.3 Product Information Transmission System

In addition to basic price information, the price tag system includes product core parameters (e.g., waterproof

level, applicable temperature range, lens sun protection index, and size adaptation range) and scenario-based application instructions, realizing the visual transmission of product value. Meanwhile, a QR code linking to the product mini-program is embedded to build an omni-channel connection mechanism of "offline experience - online supplementary purchase", effectively addressing the issue of meeting customer needs when products are out of stock in physical stores and improving the efficiency and satisfaction of customers' shopping experience.

3.2 Middle Level: Systematic Construction of Espoused Values

3.2.1 Evolution of Corporate Vision and Mission

Founded in Lille, France, in 1976, Decathlon was initially positioned as a "self-service retail format covering ten sports categories". Since its establishment, it has consistently taken "enabling the broad masses to share the desire for sports and the joy of sports" as its core mission. In March 2024, Decathlon launched a global brand renewal and released a new brand purpose: "Move People Through the Wonders of Sport". Here, "Move" carries dual connotations of "physical activity" and "spiritual awakening", "People" emphasizes inclusive coverage of all groups, and "Wonders of Sport" focuses on excavating the value of sports experiences – further strengthening the brand proposition of "sports for all".

3.2.2 Analytical Interpretation of Core Value Dimensions

Decathlon officially defines four core values, forming a complete value system: (1) Vitality: Advocating that organizational members maintain a proactive work state and energy output; (2) Responsibility: Guided by sustainable development, building a triple responsibility system for individuals, the environment, and the organization; (3) Authenticity: Establishing a trust-based relationship with customers through a partner-like service attitude and conveying the true product value and brand concept; (4) Generosity: Practicing value sharing in service and collaboration, and providing beyond-expectations support for customers and colleagues.

3.2.3 The Concrete Implementation of Business and Management Principle

Full Industrial Chain Cost Control and Cost-Performance Balance: Through vertical integration of the entire value chain (R&D, design, production, logistics, and sales), combined with a global procurement strategy of "pricing based on quantity", Decathlon achieves ultimate cost compression at the cost end while ensuring product quality – building a value closed loop of "fair price - high-quality experience".

Innovation-Driven Product and Service Iteration: Over 1,000 R&D designers and engineers are deployed globally, with more than 900 technical patents accumulated. This forms a dual-track product strategy of "classic product optimization + innovative product R&D" to continuously respond to the dynamic needs of consumers.

Concrete Practice of Sustainable Development Strategy: The concept of "the earth as the largest sports field" is integrated into the entire operational process. Through circular business models (including product maintenance, recycling, and rental), the application of environmentally friendly materials, and extended product warranty periods (a minimum of two years), the ecological footprint of organizational operations on the environment is reduced.

Employee-Centered Human Resource Management System: The management concept of "people are the core assets of the organization" is established. Taking "passion for sports, sense of responsibility, enthusiasm for service, and innovative spirit" as the core competency requirements for employees, Decathlon realizes the coordinated growth of employees and the organization through internal promotion channels, error tolerance mechanisms, and innovation incentive policies.

Service Standards Prioritizing Customer Satisfaction: Taking "satisfaction or higher satisfaction" as the service goal, employees are required to view themselves as "customer friends", providing personalized suggestions and adhering to a "no-negative-service" criterion to maximize the fulfillment of customers' reasonable needs.

3.3 Core Level: Implicit Logic of Basic Underlying Assumptions

3.3.1 Trust-Oriented Organizational Assumptions

Decathlon adheres to the underlying logic of "employee decision-making rationality", believing that empowering frontline employees with independent decision-making

authority (e.g., handling customer complaints and approving returns/exchanges) can more effectively improve service response efficiency and customer satisfaction compared with relying on complex processes. This trust mechanism in employees is further translated into sincere service behaviors toward customers, forming a value transmission chain of "organizational trust - employee loyalty - customer satisfaction" – which is inherently authentic with the core value of "authenticity".

3.3.2 Market Assumptions of Sports for All

Decathlon inherently holds the view that "the sports' essence is inclusiveness, experience, and sharing", and rejects to regard sports as "elitist" and "expensive". It lowers sports thresholds through an extreme cost-performance strategy and warehouse-style format, and eliminates customers' psychological barriers to trying sports by setting up experience zones. The practice of "enabling the broad masses to enjoy sports sustainably" essentially reflects a firm recognition of the market logic of "sports for all".

3.3.3 Long-Termism-Oriented Development Assumptions

When balancing short-term interests with long-term value, Decathlon prioritizes building a sustainable relationship network. It covers maintenance costs for non-quality-related issues through extended warranties with two years, tolerates the opportunity cost of employee trial and error, and invests in cost for environmental protection facilities. This undoubtedly reflects the underlying belief that "the long-term value of the organization surpasses short-term profits", aiming to achieve long-term symbiosis with employees, customers, and the environment.

IV. CONSTRUCTION AND DISSEMINATION PATH OF DECATHLON'S CORPORATE CULTURE

4.1 Internal Organizational Culture Construction: From "Institutional Implantation" to "Employee Internalization"

4.1.1 Value-Oriented Recruitment and Selection Mechanism

Decathlon takes "cultural compatibility" as the core standard for recruitment and establishes six non-negotiable criteria: "willingness to serve, passion for sports, vitality, practicality and responsibility, and team collaboration". Its interview process adopts the behavioral event interview method with questions designed around candidates' past team collaboration experiences, challenge response strategies, sports frequency and locomotion to evaluate whether the candidate align with their core values. Meanwhile, interviewers embody the value of "authenticity" through interactive methods such as attentive listening and detailed questioning – realizing a closed loop of "the recruitment process is the cultural transmission process" and ensuring that candidates perceive the core of organizational culture from the initial on boarding stage.

4.1.2 Systematic Cultural Training and Social Integration

New employee on-boarding training adopts a dual-track model of "culture + business". In addition to job skills and product knowledge training, it focuses on transforming abstract values into operable codes of conduct through modules such as corporate development history narration, typical customer complaint handling case reviews, and core value scenario simulations. Meanwhile, immersive team ice-breaking activities are introduced, and employees' sense of organizational belonging and identity are strengthened through collaborative task design – completing the first round of social implantation of corporate culture.

4.1.3 Cultural Strengthening Mechanisms in Daily Operations

In normalized operations, cultural cognition is consolidated through multi-dimensional mechanisms: (1) Performance visualization: Real-time synchronization of KPI data of various departments and bench-marking information of model stores in work groups to stimulate employees' awareness of "vitality" and "responsibility"; (2) Positive feedback: Sharing customer praise cases in daily work summaries to reinforce the service cognition of "customer orientation"; (3) Authorization and empowerment: Institutionalizing the front-line employee authorization mechanism, allowing employees to make

independent decisions within a certain quota, and transmitting the values of "trust" and "generosity" through practical behaviors to achieve the in-depth penetration of corporate culture in daily work.

4.2 External Cultural Dissemination: From "Employee Materialization" to "Customer Perception"

4.2.1 Cultural Materialization Transmission through Service Behaviors

Employees' roles have transformed from "salespersons" to "sports consultants", with core responsibilities of integrating the values of "authenticity" and "generosity" into the entire service process through professional product explanations, experience sharing, and experience scenario construction. For example, employees in the bicycle and roller skate categories proactively invite customers to participate in product trials and provide sports scenario adaptation suggestions. Their service goal focuses on "building long-term customer trust relationships" rather than "immediate transaction conversion" – realizing the transmission of corporate culture to customers through interpersonal interaction.

4.2.2 Cultural Scenario Narrative through Store Space

The physical space design of stores serves as an implicit carrier for corporate culture dissemination: (1) The setting of experience zones conveys the value of "generosity", reflecting respect for customers' trial needs; (2) The warehouse-style layout and independent shopping process highlight the operational concept of "efficiency and simplicity"; (3) The clear product information system and price tag design strengthen the value transmission of "authenticity". The overall space scenario jointly constructs a cultural cognition of "no brand premium, focus on value experience", enabling customers to indirectly recognize corporate culture through environmental perception.

In summary, the dissemination of Decathlon's corporate culture forms a complete chain of "organizational culture construction - employee cultural internalization - customer cultural perception": The organization transmits values to employees through system design and training systems; employees materialize culture through service behaviors; and finally, customers form recognition of corporate culture through experience – which is then converted into

brand loyalty, building a stable cultural value closed loop.

V. RESEARCH CONCLUSIONS, PRACTICAL IMPLICATIONS, AND LIMITATIONS

5.1 Research Conclusions

The core competitiveness of Decathlon's corporate culture stems from the high synergy of "concept - system - behavior - scenario": The mission of "sports for all" is implemented through institutional designs such as a flat organizational structure, employee authorization mechanisms, experiential retail scenarios, full industrial chain cost control, and extended warranties; relying on the systematic path of "recruitment and selection - training implantation - daily strengthening", core values are transformed into employee behaviors and transmitted to customers through service behaviors and space scenarios – ultimately forming an producible brand differentiation advantage. This confirms the strategic supporting role of corporate culture (as a soft power) in the sustainable development of retail enterprises.

5.2 Practical Implications

Materialization and Institutionalization of Corporate Culture:

Retail enterprises need to transform abstract cultural concepts into operable systems (e.g., employee authorization mechanisms), perceptible material carriers (e.g., experience zones and price tag systems), and normalized ritual activities (e.g., morning meetings and review meetings). This avoids cultural propaganda becoming mere slogans and ensures that cultural concepts can be implemented, perceived, and measured.

Full-Process Systematic Construction of Corporate Culture:

Screen candidates with cultural compatibility from the recruitment source, embed cultural elements in the entire human resource processes (training, performance, incentives), and realize the continuous strengthening of culture through multi-dimensional mechanisms – constructing a cultural synergy system of "selection - cultivation - employment - retention".

Cultural Empowerment and Value Activation of Front-Line Employees:

As the key intermediary between "organization and customers", front-line employees' cultural identity directly affects the effectiveness of

cultural dissemination. Retail enterprises need to activate employees' willingness to practice culture through authorization and empowerment, positive incentives, and error tolerance mechanisms – making them effective disseminators of corporate culture.

Cultural Narrative Design of Experience Scenarios:

Break through the trap of price competition, integrate corporate culture into the entire customer experience process through scenario-based methods (store space layout, experience process design, product information transmission), construct "experience differentiation driven by culture", and enhance customers' brand recognition and loyalty.

5.3 Research Limitations

Methodological Limitations: This study adopts a single case study method and collects qualitative data based on participatory observation. While ensuring research depth, the universality of the conclusions needs to be verified by more cross-industry and cross-brand cases.

Perspective Limitations: The research conclusions are constrained by the researcher's personal cognition and observation scenarios. Although objectivity is enhanced through triangulation verification, certain subjective interpretation biases remain.

Data Limitations: Based on observation data from a single store, there is a lack of comparative data from multi-regional stores and quantitative customer survey data. This makes it impossible to accurately measure the impact coefficient of corporate culture on customer loyalty and hinders the quantitative evaluation of the actual effect of cultural dissemination.

5.4 Future Prospects

Future research can be expanded in three aspects: (1) Adopt the cross-case comparison method, select benchmark enterprises in different retail segments to verify the common laws of corporate culture construction and dissemination paths; (2) Introduce quantitative research methods (e.g., questionnaires and structural equation models) to quantitatively analyze the impact mechanism of various dimensions of corporate culture on customer satisfaction and brand loyalty; (3) Combine the background of digital transformation, explore new paths for corporate culture dissemination in retail enterprises

under the online-offline integration scenario, and provide theoretical support for corporate culture construction in the retail industry in the digital era.

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Empowering Teachers' Professional Competence through the PIKOLAK Training Model (Participatory, Integrative, and Collaborative) with a Blended Learning Approach in Humbang Hasundutan Regency

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Abstract

This study applied a Research and Development (R&D) approach to design and evaluate the PIKOLAK Training Model Participatory, Integrative, and Collaborative—integrated with a blended learning format to improve teacher professional competence in Humbang Hasundutan Regency. The development process included needs analysis, model design, expert validation, and field testing. The blended learning structure combined face-to-face workshops with online modules, offering both flexibility and quality. Quantitative results showed a significant increase in teacher competency scores, rising from 65.2 (pre-test) to 83.7 (post-test) with $p < 0.01$. Qualitative data revealed enhanced teacher engagement, increased collaboration, and more effective teaching practices. Teachers expressed stronger ownership of their learning and found the program highly relevant to classroom needs. The model effectively blended adult learning principles with experiential and social learning theories, contributing to improved pedagogical outcomes. Overall, the PIKOLAK model proved to be a valid and practical framework for professional development, particularly in under-resourced areas. It offers scalable potential for broader use in similar educational contexts, ultimately supporting the advancement of teacher quality and student learning outcomes.

Keywords— PIKOLAK Model, Teacher Competence, Blended Learning, Professional Development

I. INTRODUCTION

Teacher professional competence is universally recognized as a central factor influencing student achievement and overall educational quality. As emphasized by Linda Darling-Hammond (2000), teacher preparation and ongoing professional development are among the most powerful predictors of student success, especially in under-resourced contexts. Professional development is not merely an individual endeavor but a foundational element of systemic education reform and equity. In regions like Humbang Hasundutan Regency, teachers often face barriers to accessing high-quality, sustainable training that equips them to meet evolving curricular demands and diverse student needs. Conventional one-time workshops typically lecture-based

and disconnected from teachers' daily realities have shown limited effectiveness in transforming classroom practice. As educational theory and practice have evolved, there is a growing consensus among scholars and practitioners (e.g., Knowles, Shulman, Bandura, Vygotsky) that professional learning must be dynamic, contextual, and rooted in active teacher engagement. In response to this need, the current study introduces the PIKOLAK Training Model an acronym for Participatory, Integrative, and Collaborative delivered through a blended learning approach. This model was developed to enhance teacher competence through structured, evidence-based professional learning experiences that are grounded in well-established educational theories.

The participatory element is influenced by Malcolm Knowles' Andragogy, which highlights adults' need to direct their own learning and engage with content that is immediately relevant to their roles. The integrative design draws on David Kolb's Experiential Learning Theory, ensuring that teachers experience, reflect, conceptualize, and apply knowledge in practical cycles of professional growth. The collaborative component is inspired by Lev Vygotsky's Social Constructivism and Albert Bandura's Social Learning Theory, promoting peer-supported learning through shared experiences, feedback, and modelling. Additionally, the program's competency-based orientation aligns with William Spady's Outcomes-Based Education, ensuring that all training content and activities are designed backward from clear, measurable teacher performance outcomes. Finally, the framework is shaped by Lee Shulman's concept of Pedagogical Content Knowledge (PCK), recognizing that effective teaching requires the integration of subject knowledge with pedagogical strategy tailored to learner needs. To operationalize these principles, the PIKOLAK model employs a blended learning format, combining face-to-face workshops with digital learning platforms. This approach allows teachers to engage in sustained, flexible, and context-relevant professional development especially critical in rural areas where logistical and technological constraints are common. This paper presents the development and evaluation of the PIKOLAK model, as implemented in Humbang Hasundutan. It outlines the theoretical foundations guiding the model, details the research and development process used to refine it, and reports empirical findings on its effectiveness in advancing teacher professional competence. By grounding this innovation in a rich body of educational theory and practice, the study aims to offer a replicable model for teacher development that can be scaled across similarly under-resourced contexts to improve instructional quality and promote educational equity.

II. REVIEW OF LITERATURE

The development of the PIKOLAK training model Participatory, Integrative, and Collaborative with a blended learning approach is based on a strong foundation of educational theories that are still highly relevant today. Each aspect of the model reflects the principles of respected scholars whose work continues to guide effective teacher development. These theories help ensure that the training is not only practical but also aligned with research on how adults learn and how professional growth occurs in education settings.

First, the collaborative dimension of the PIKOLAK model draws on Lev Vygotsky's Social Constructivist Theory (1978). Vygotsky introduced the concept of the Zone of Proximal Development (ZPD), which explains that learners can achieve more when they receive support from others who are more experienced. In the PIKOLAK context, teachers learn best when they interact with peers, share classroom experiences, and solve problems together. This approach encourages mutual growth and reflects the idea that learning is fundamentally a social process. Closely related to this is the influence of Albert Bandura's Social Learning Theory (1977), which highlights the importance of learning through observation, imitation, and feedback. Bandura's concept of self-efficacy the belief in one's ability to succeed is also vital. In the PIKOLAK program, teachers watch peers and facilitators model teaching practices, then try them out and receive feedback. This process helps build confidence and motivation, making teachers more willing to apply what they learn in their classrooms.

The integrative aspect of the model is grounded in David Kolb's Experiential Learning Theory (1984), which describes learning as a four-stage cycle concrete experience, reflective observation, abstract conceptualization, and active experimentation. PIKOLAK integrates these stages by allowing teachers to participate in teaching simulations (experience), reflect on them (observation), draw conclusions (conceptualization), and test ideas in real classrooms (experimentation). This ensures that learning is both practical and reflective, increasing the chance that teachers will transfer knowledge into their daily practice.

To support the development of effective teaching strategies, PIKOLAK incorporates the concept of Pedagogical Content Knowledge (PCK) proposed by Lee Shulman (1987). Shulman emphasized that excellent teaching depends on both content knowledge and the ability to present that content effectively. Within the training, teachers engage in tasks that link subject matter with teaching techniques, such as designing lesson plans and delivering peer-teaching sessions. This strengthens their capacity to teach specific subjects in ways that students can understand. Since the participants in this program are adult professionals, the model also follows the principles of Malcolm Knowles' Adult Learning Theory (Andragogy, 1984). Knowles argued that adults are self-directed, prefer learning that is relevant to their lives, and bring valuable experience to the learning process. PIKOLAK respects these principles by involving teachers in planning their own learning goals, using real classroom problems, and offering flexibility through its blended (online and face-to-face) approach.

The competency-based structure of PIKOLAK is strongly influenced by William Spady's Outcomes-Based Education (OBE) model (1994). Spady believed that all educational activities should be designed around clear, measurable outcomes. The training program defines specific teacher competencies that participants are expected to master, and every activity is aligned with these targets. This ensures that the learning process stays focused and relevant to teachers' professional roles.

Finally, the overall rationale for the PIKOLAK model is aligned with the research of Linda Darling-Hammond (2000; 2020), who has demonstrated that high-quality teacher development has a strong impact on student learning and educational equity. Her work supports long-term, collaborative, and practice-based professional development—qualities that are central to the PIKOLAK model. By investing in teacher capacity, especially in rural areas like Humbang Hasundutan, the training contributes to reducing educational disparities and improving student outcomes.

In conclusion, the PIKOLAK model is not just a collection of strategies, but a theoretically grounded framework. It integrates well-established ideas from leading scholars with current best practices in adult education and teacher development. By drawing on these foundations, the model provides an effective, sustainable path for improving teacher professional competence and, ultimately, student learning.

III. RESEARCH METHODOLOGY

This research utilized a Research and Development (R&D) approach to create and evaluate the PIKOLAK training model, aiming to strengthen teacher professional competence in Humbang Hasundutan Regency. R&D was chosen because it not only allows researchers to test educational interventions but also supports the creation and refinement of practical products, following iterative processes as emphasized by Borg and Gall (1983). The process consisted of five key stages: needs analysis, model design, expert validation, field testing, and evaluation.

The first step was a needs analysis to understand current gaps in teacher competencies and uncover specific areas in which teachers desired improvement. This included collecting data through surveys, interviews, and focus group discussions with teachers, principals, and education officials. This process aligns with Stufflebeam's (1983) CIPP model, particularly the Context evaluation, to determine what is needed and why. The analysis revealed a strong interest in practical and collaborative training programs, highlighting deficiencies in lesson planning, technology integration, and classroom management. These

findings informed the development of a model rooted in teacher needs and grounded in relevant theory.

Next, the design phase involved formulating the structure and content of the PIKOLAK model. The acronym Participatory, Integrative, and Collaborative captured its core philosophy. The model was designed to be delivered through a blended learning approach, combining in-person workshops and asynchronous online modules. The content was competency-based, aligned with national teaching standards (MoEC, 2017), and mapped to key educational theories: Lev Vygotsky's (1978) social constructivism, Albert Bandura's (1977, 1997) social learning and self-efficacy, David Kolb's (1984) experiential learning cycle, Lee Shulman's (1987) concept of pedagogical content knowledge, and Malcolm Knowles' (1984) andragogical principles of adult learning. The model also applied William Spady's (1994) outcomes-based education approach to ensure that all training activities targeted measurable improvements in teacher competence. Instructional materials were enriched with multimedia content, reflective journals, collaborative lesson design tasks, and problem-solving activities, all rooted in real classroom contexts. Once the draft model was complete, it underwent expert validation. Professionals in the fields of education, curriculum design, and teacher development evaluated the training modules for clarity, relevance, content validity, and alignment with adult learning principles. Their suggestions led to improvements such as including more hands-on activities, extending reflective practice, and incorporating localized examples. This stage followed the design-based research principles recommended by Plomp and Nieveen (2007), which emphasize iterative model refinement based on expert and stakeholder feedback.

The revised model was then piloted through field testing with 30 volunteer teachers from various schools in the region. Training was conducted over six weeks using the blended learning structure. Participants engaged in workshops, peer discussions, group teaching simulations, and online learning tasks. To assess impact, the researchers administered pre-tests and post-tests to measure growth in teacher competence. Additional data sources included lesson plans, teaching practice evaluations, and reflective journals. Observations and interviews were also conducted to capture deeper insights into participants' learning experiences. This phase reflected Kirkpatrick's (1994) evaluation framework, focusing on knowledge gains, behavioral change, and participant satisfaction.

Finally, the evaluation phase combined quantitative and qualitative analysis. The paired sample t-test was used to analyze pre-test and post-test results, identifying statistically significant improvements. Qualitative data

were examined through thematic analysis (Braun & Clarke, 2006), which revealed themes such as increased confidence, appreciation for peer learning, and greater relevance of training content. Findings confirmed that the PIKOLAK model effectively supported professional development and aligned with Bandura's (1997) idea that increased self-efficacy fosters sustained improvement in teaching practice. Throughout all stages, ethical principles were carefully observed. All participants gave informed consent, data confidentiality was preserved, and constructive feedback was provided. The research was conducted in close collaboration with the local education authority to ensure cultural and institutional relevance, and followed ethical standards set by BERA (2018) and UNESCO (2016).

By the conclusion of this study, the PIKOLAK model had been fully developed, tested, and validated, with strong evidence supporting its effectiveness in enhancing teacher competence. The next chapter will present the detailed results and implications of the training model's implementation.

IV. RESULT AND DISCUSSION

1. Quantitative Improvements in Teacher Competence

The implementation of the PIKOLAK model resulted in notable gains in the professional competence of participating teachers, as evidenced by the pre- and post-test assessments. Prior to the training, teachers' average score on the competency assessment was 65.2 (on a scale of 0–100). This baseline indicated moderate mastery of the targeted competencies, leaving substantial room for improvement. After completion of the training program, the average score rose to 83.7. This improvement of approximately 18.5 points represents a significant increase in teachers' knowledge and skills. A statistical analysis confirmed that the gain in scores was highly significant ($p < 0.01$), suggesting that the observed improvement was not due to chance. In practical terms, this means that teachers were able to demonstrate a much stronger understanding of effective teaching strategies, pedagogical knowledge, and lesson design principles after undergoing the PIKOLAK training. For example, if the pre-test assessed lesson planning ability or knowledge of student-centered instructional methods, the post-test results showed that many teachers moved from basic or developing levels to proficient levels in these areas. Furthermore, the consistency of improvement across participants was high: nearly all teachers showed an upward trajectory in their scores, with no notable subgroup falling behind. This across-the-board improvement aligns with the Outcomes-

Based Education philosophy of enabling success for all learners and reflects the high expectations set by the program designers. It is also in line with Linda Darling-Hammond's findings that substantial training and preparation can yield significant enhancements in teacher capability, which, in turn, is expected to translate into better classroom outcomes.

2. Qualitative Outcomes and Teacher Feedback

Beyond test scores, qualitative data provided rich insights into how the PIKOLAK model influenced teachers' attitudes, beliefs, and day-to-day practice. Feedback was collected through participant reflection journals, focus group discussions at the end of the training, and classroom observations conducted a few weeks after the training (to see how teachers implemented what they learned). Several key themes emerged, Enhanced Confidence and Self-Efficacy: Teachers overwhelmingly reported a boost in their confidence to try new teaching approaches in the classroom. Many participants noted that before the training they felt unsure about implementing interactive or student-centered methods, but after practicing these methods during the training (and seeing them in action via peer demonstrations), they believed in their ability to use them successfully. For instance, one teacher wrote, "I used to avoid group work in class because I wasn't sure I could manage it well. After collaborating with my colleagues in the training sessions, I tried a small group discussion in my classroom and it went much better than expected." This increase in self-efficacy is a critical outcome; as Bandura's theory suggests, teachers who believe in their capabilities are more likely to persist and innovate in their teaching. The supportive environment of the training – where mistakes were treated as learning opportunities and successes were recognized – contributed to this empowerment of teachers. Stronger Collaborative Practices and Professional Community: Many teachers highlighted that one of the most valuable aspects of the program was the opportunity to work closely with peers. They not only learned new ideas but also developed a sense of camaraderie and mutual support. During focus groups, teachers mentioned that they plan to continue meeting in professional learning communities (PLCs) or informal groups to share lesson plans and observe each other's classes. This indicates that the collaborative culture fostered by PIKOLAK may have lasting effects, seeding ongoing peer-to-peer learning beyond the program itself. Teachers also expressed that hearing about each other's experiences (both challenges and successes in the classroom) was eye-opening and reduced the isolation that teachers sometimes feel. This outcome ties back to Vygotsky's notion of learning as a social, community-oriented process – the training

effectively created a “community of practice” among educators. It also resonates with Knowles’ idea that adults learn from exchanging experiences; in the training, each teacher’s experience became a learning resource for others. Some teachers formed WhatsApp groups or online forums during the blended learning portion, which they reported continuing to use for sharing resources and advice. The establishment of these collaborative channels is a positive sign for the sustainability of the training’s impact.

Improved Instructional Design and Pedagogical Skills: Through observations and teacher self-reports, it was evident that participants developed more sophisticated skills in lesson planning, instructional strategy, and use of educational technology. Observers noted, for example, that teachers’ post-training lesson plans were more detailed and learner-centered compared to their plans before the training. One teacher integrated an interactive simulation (learned from the online module) into a science lesson, something she had never done prior to the training. Others adopted techniques like formative assessment (quick quizzes, exit tickets) and collaborative student activities, which were topics emphasized in the program. Teachers attributed these changes to the integrative nature of the training because PIKOLAK combined theory with hands-on practice, they not only knew what methods were effective but had actually practiced them and received feedback during the training. This reflects the success of the experiential learning design (Kolb’s cycle) in the program: teachers went through concrete experiences in the workshop and were able to translate that into abstract principles and then into active experimentation in their own classrooms. Importantly, teachers also deepened their Pedagogical Content Knowledge. Several participants mentioned that they gained new insights into how to explain difficult concepts in their subject area using creative pedagogical methods shared by colleagues during the training. For instance, a mathematics teacher learned from a peer about using real-life examples and manipulatives to teach algebra, which he found made his teaching more effective and engaging for students. This cross-pollination of content-specific pedagogy aligns with Shulman’s emphasis on sharing and developing pedagogical content knowledge among teachers. The program’s collaborative lesson design tasks effectively served as a vehicle for this kind of PCK development.

Sense of Ownership and Relevance: Teachers appreciated that the PIKOLAK model respected their input and was directly relevant to their needs. In interviews, participants noted that the initial needs analysis was evident in the training content – “It was like the program was tailor-made for the challenges we actually face,” one teacher remarked. Because they had been involved in identifying problems

and because the training activities often revolved around real scenarios from their classrooms, teachers felt a strong sense of ownership over their learning process. This matches Malcolm Knowles’ assertion that adult learners need to understand why they are learning something and prefer to focus on real-world problems. Teachers also valued the flexibility of the blended format; those in remote areas or with family responsibilities were able to engage with online components on their own schedule, which reduced absenteeism and stress. The practical orientation of the tasks (problem-solving, creating something tangible for their class) helped keep motivation high, which correlates with the andragogical principle that adults are internally motivated when learning is relevant to their immediate professional goals. Overall, the participants’ comments suggest that the training was not seen as an imposed requirement, but as a valuable opportunity that they were fully invested in a crucial factor for genuine professional growth.

Challenges and Areas for Improvement: While feedback was predominantly positive, a few challenges were noted, which provide guidance for refining the model. Some teachers initially struggled with the online learning platform due to limited digital skills or unreliable internet connectivity in certain parts of the regency. This indicates a need for including a brief orientation to online learning tools at the start of the program, and possibly integrating more offline alternatives or support for those with connectivity issues. Additionally, a minority of participants felt that the workload was quite intensive – juggling teaching duties with the expectations of the training (especially during the weeks with active online modules) was challenging. This points to the importance of obtaining administrative support (e.g., slightly reduced teaching loads or providing time during school hours for professional learning) when scaling up the program. In terms of content, a few participants expressed interest in even more subject-specific examples and case studies, suggesting that future iterations of PIKOLAK could differentiate more by subject or grade level, or include breakout sessions for specific disciplines to deepen the PCK focus. These suggestions are valuable for enhancement but do not detract from the overall success observed; rather, they represent the normal refinement process for an innovative program.

The results from the pilot implementation of the PIKOLAK training model indicate that it was highly effective in achieving its primary goal of enhancing teachers’ professional competence. The statistically significant jump in competency scores provides quantitative evidence of impact, and the rich qualitative feedback illustrates how and why those gains were

achieved. Teachers not only learned new strategies (knowledge gain) but also embraced them (belief/attitude shift) and started to apply them (behavior change), which is the ultimate aim of any professional development initiative. The multi-theoretical foundation of the model manifested in concrete outcomes: for instance, the social and collaborative structure built a support network (Vygotsky, Bandura), the experiential tasks led to practical classroom changes (Kolb), the focus on content with pedagogy enhanced teaching quality (Shulman), the respect for teachers as learners increased engagement (Knowles), and the outcome focus ensured that improvements were aligned with valued competencies (Spady). These connections are further explored in the discussion section, where we delve into how the theoretical intentions of the model were borne out in practice.

Discussion

The encouraging results of the PIKOLAK model's implementation can be better understood by revisiting the theoretical frameworks that guided its design, confirming that grounding the training in these principles was instrumental to its effectiveness. Here we discuss how each major theoretical element manifested in the outcomes, and we interpret the findings in light of broader literature on teacher professional development.

Social Interaction and Collaborative Learning: The collaborative nature of the training clearly paid dividends, as evidenced by the strong professional community that formed among participants and the continued peer support they reported. This outcome is a direct illustration of Vygotsky's social constructivism in action. By working within what Vygotsky would call each other's Zone of Proximal Development, teachers were able to learn skills with peer assistance that they might not have mastered alone. For example, a teacher who was less confident in using technology in class paired with another who had more experience in that area; through their collaboration, the first teacher acquired new tech-related teaching skills that lay in her ZPD, guided by her peer. This kind of scaffolded learning among equals is a practical fulfilment of Vygotsky's theory that social interaction precedes development here, collaborative learning experiences during PIKOLAK enabled subsequent growth in teaching competence. Moreover, Bandura's social learning theory also helps explain these findings: teachers not only discussed practices but modeled them for each other, observing and imitating effective techniques demonstrated by colleagues. The fact that teachers left the program intending to continue peer observations and co-planning sessions is significant; it shows an internalization of collaborative professional

learning as a norm, which research has shown to be a hallmark of successful schools. Bandura also emphasizes the role of social persuasion and support in building self-efficacy the mutual encouragement and collective celebration of success during the training likely bolstered each teacher's belief in their ability to implement what they learned, as reflected in their newfound confidence. In short, the PIKOLAK model's participatory and collaborative setup created a microcosm of a learning community, validating the idea that teachers, like their students, benefit greatly from not learning in isolation.

Learning by Doing and Reflecting: The integration of experiential learning principles (Kolb) into the PIKOLAK model can be directly linked to the practical improvements teachers made in their instructional practices. Teachers didn't just hear about new methodologies; they tried them out, reflected, and planned further implementation mirroring Kolb's cycle of experience-reflection-conceptualization-experimentation. The success of this approach is evident in teachers' post-training behaviors: many were able to implement complex strategies (like collaborative student projects or new assessment techniques) that they had first practiced in the safe space of the training workshop. This bridge from theory to practice is notoriously difficult to achieve in professional development, and the fact that it occurred suggests the experiential design was crucial. By engaging multiple stages of Kolb's cycle, the training ensured that teachers had processed the new information deeply. For example, when teachers participated in a mock "flipped classroom" exercise during training (a concrete experience), then discussed how it felt and what the challenges were (reflective observation), then generalized principles of when flipping might be useful (abstract conceptualization), and finally went on to flip one of their own lessons in real life (active experimentation), they went full-cycle. Teachers' reflections indicated they appreciated this process one even noted, "I remember each technique well because we did it ourselves, not just listened about it." This aligns with the cognitive science understanding that active learning yields better retention. It also underscores the importance of reflection in teacher learning; as Kolb's theory and other reflective practitioners like Schön have argued, it is the reflection on experiences that solidifies learning. The structured reflection prompts and discussion in the PIKOLAK sessions likely helped teachers articulate and thus remember the lessons learned, which then guided their subsequent classroom actions. Therefore, the data support the notion that experiential learning strategies in PD are effective, adding to existing literature that recommends practice-based training for teachers.

Integration of Content and Pedagogy: The improvements in teachers' lesson planning and pedagogical strategies, particularly within their subject areas, highlight that the PIKOLAK model succeeded in developing teachers' Pedagogical Content Knowledge (PCK). By deliberately designing activities where teachers collaboratively planned lessons or shared teaching approaches for specific content topics, the training ensured that knowledge gained was not just generic pedagogy or generic content, but the intersection of the two. The positive feedback from teachers about learning new ways to teach difficult topics indicates growth in PCK – they not only knew their subject matter, but they learned how to make it accessible and engaging to students, which is exactly what Shulman's concept of PCK encompasses. This is a particularly noteworthy outcome because developing PCK is challenging and often requires experience; what the training did was accelerate that process by letting teachers learn from each other's experiences. A novice teacher hearing how a veteran teaches a topic, and why that method works for students, is essentially being handed hard-won pedagogical content knowledge that they might otherwise gather only after years of trial and error. The collaborative lesson design in PIKOLAK created a platform for this exchange. Consequently, when the teachers returned to their classrooms, they had a toolkit of content-specific strategies to try. This outcome ties to Darling-Hammond's research as well: teacher quality rises significantly when teachers have strong preparation in both content and pedagogy

In this case, the PIKOLAK program functioned almost like a content-focused professional learning community, enhancing the kind of knowledge that makes teaching effective. The results suggest that professional development models should explicitly target PCK (not just general teaching techniques) to achieve significant improvements in teacher performance, supporting Shulman's claim that treating content knowledge and pedagogical knowledge in isolation is insufficient. By bridging that gap, PIKOLAK made the training immediately relevant to classroom practice.

Adult Learning Principles and Teacher Engagement: The high level of teacher engagement and the sense of ownership reported align strongly with Malcolm Knowles' principles of adult learning. The fact that teachers recognized the training as relevant and felt respected in the process is significant because teacher buy-in is often the make-or-break factor in professional development effectiveness. Many reforms fail not due to flawed content but because they ignore adult learning principles, delivering one-size-fits-all lectures to teachers who then feel the training is a waste of time. PIKOLAK's

contrasting success – with teachers even requesting more subject-specific depth and committing to continued collaboration demonstrates the power of adhering to andragogical design. Giving teachers agency (e.g., letting them set some learning goals, choose topics for project work, or identify the challenges to address) likely increased their intrinsic motivation, just as Knowles would predict. The program treated teachers as self-directed learners and acknowledged their prior experience, which in practice was seen when participants were invited to share personal classroom incidents or successful strategies as part of the learning content. This not only validates the teachers' expertise but enriches the learning for the group. Additionally, the problem-centered approach of the training (focusing on real classroom problems to solve) was frequently mentioned in feedback as a highlight teachers found the training immediately useful. According to Knowles, adult learners need to see that what they are learning will help them solve an immediate problem, and indeed PIKOLAK was structured around practical issues like "How to handle a class with mixed ability students" or "How to engage students in active learning". Each session output (like a lesson plan, assessment tool, or classroom management strategy) was something teachers could use the next day in school. This practical payoff is likely a reason for the strong positive reception. Moreover, the blended learning approach respected their need for flexibility those who had stronger ICT skills or more free time could dive deeper into the online resources, while those with constraints could still participate meaningfully in face-to-face sessions. The success of this approach contributes to the growing evidence that adult learning theory should guide the design of teacher PD: when teachers are treated as adult learners rather than as pupils, the outcomes are far more impactful.

Outcome Focus and Accountability: The competency-based, outcome-oriented nature of PIKOLAK ensured that the training stayed aligned with tangible improvements in teacher performance. William Spady's Outcomes-Based Education framework suggests that clarity about the intended outcomes leads to better alignment of instruction and assessment, which in turn leads to better learning results. In this study, having well-defined teacher competencies as targets meant that every activity had a purpose and the assessments (pre/post-tests) were authentic measures of those competencies. Teachers knew from the outset what the goals were (for example, "By the end of this program, you will be able to incorporate at least two active learning strategies into your teaching of subject X, and use data from formative assessments to adjust your instruction"). This likely helped them focus their efforts and also see their progress more

clearly, contributing to motivation. The significant improvement in test scores attests that the focus on outcomes was met essentially, the program delivered on what it promised, which is the ideal scenario in OBE. Another benefit of the outcome focus is evident in the relatively uniform gains among participants. OBE emphasizes high expectations for all and seeks to minimize the gap between high and low performers by providing support until everyone meets the standard. In the training, facilitators provided extra coaching to those who were struggling (for instance, if a teacher's initial lesson plan had weaknesses, they received one-on-one feedback and chances to improve it). As a result, even teachers who were initially weaker in certain competencies caught up by the end, reflecting the "success for all" ethos. This has important implications for equity – ensuring that every teacher, not just the already motivated ones, improve their practice helps ensure all students have competent teachers. The consistency in outcomes resonates with Darling-Hammond's equity concerns, underscoring that well-designed PD can raise the floor of teaching quality across a system, not just push a few to excellence.

The success of the PIKOLAK model in enhancing teacher competence bodes well for student outcomes in Humbang Hasundutan. Although this study did not directly measure student performance, it is reasonable to anticipate, based on the literature, that students taught by these teachers will benefit from more engaging lessons, better explanations, and more effective assessment and feedback. In the long term, if the PIKOLAK model is institutionalized (for example, adopted by the district or province as a regular in-service training program), it could contribute to systemic improvements. The teachers trained could become local champions or mentors for others, creating a multiplying effect. This connects to Darling-Hammond's emphasis on building professional capacity within the system as a route to lasting reform.

Additionally, the model's adaptability and blended format mean it can be scaled and customized an important factor for sustainability. The discussion with participants suggested that minor tweaks (like more tech support and subject-specific content) would make it even stronger, but fundamentally the model appears robust. It aligns well with global best practices in teacher PD (active learning, collaboration, coaching, sustained duration, focus on content, etc.), meaning it's not only theoretically sound but also practically in agreement with what works in other contexts (as identified by various meta-analyses of PD). In conclusion, the discussion affirms that the PIKOLAK training model's success is closely tied to its foundation in established educational theories. Each element from

Vygotsky's social learning emphasis to Knowles' adult learning principles played a role in shaping a program that teachers found effective and transformative. The coherence between theory and practice in this model can serve as an exemplar for designing future teacher professional development initiatives. By respecting how teachers learn and grow, and by holding clear expectations for outcomes, we can create PD programs that truly empower teachers as PIKOLAK has done to continuously improve their practice for the benefit of their students.

V. CONCLUSION

Empowering teachers through a participatory, integrative, collaborative training model is not only feasible but highly fruitful. As Linda Darling-Hammond's research suggests, investing in building teacher capacity is one of the most impactful strategies for improving education. The PIKOLAK model stands as an evidence-based example of such an investment yielding strong returns. By valuing teachers as professionals who learn and grow much like their students through social interaction, hands-on practice, reflection, and clear goals we can foster a culture of continuous improvement in teaching. Ultimately, the beneficiaries of empowered, competent teachers are the students, who will experience richer, more effective learning in their classrooms. The PIKOLAK initiative thus contributes to the broader goal of educational quality and equity it shows that when teachers are given the opportunity to engage in well-designed professional learning, they can transform their own practices and elevate the learning of the children in their care.

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The Influence of Head teachers' Instructional Leadership Practices on Teaching Morale in Public Primary Schools: Evidence from Mwanza Region, Tanzania

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Abstract— The study assessed the influence of head teacher's instructional leadership practices on teaching morale in public primary schools in Tanzania. Specifically, it examined how defining school mission; managing instructional program; and promoting school climate-focused practices influence combined effects of job satisfaction; professional commitment; and emotional well-being on teaching morale among primary school teachers in Tanzania. The study was grounded on Instructional Leadership Theory by Hallinger and Murphy (1985) and employed a convergent mixed design within the framework of a mixed methods approach in Ilemela and Misungwi District councils in Mwanza region, Tanzania. Questionnaire, interview and documentary review were employed for data collection from 352 respondents. The study revealed that, head teacher's instructional leadership practices have a positive high influence on teaching morale ($\beta=0.72$, $p<.001$). However, the qualitative data indicated the moderate adoption of instructional leadership practices by the head teachers due to heavy administrative responsibilities such as supervising construction projects, financial management and procurement roles. Therefore, the study recommends the government to task school construction projects to qualified engineers, employ school accounts personnel to reduce administrative duties from head teachers for them to fully assume instructional leadership roles.

Keywords— Instructional leadership practices, school mission, school program, school climate, teaching morale

I. INTRODUCTION

The demand for quality education has increasingly gained attention across the globe. With such a substantial attention, the education systems have invariably acknowledged the vital role of teaching morale in enhancing the quality of teaching and learning in schools (Aron & Amos, 2024; Bush & Anania, 2023). This hinges on the stand point that quality of learning outcomes depends on the well dedicated teachers accredited with relevant skills and competence essential for transforming the classrooms into a place of inspiration and discovery learning (Khanthap, 2022; Mboweni & Taole, 2022; Pendleton-Brown, 2019). Dedicated teachers inspire pupils to engage actively in learning, sparking curiosity and encouraging them to explore beyond standard curricula. Empirical evidence from literatures shows that, most of the current researches on teaching morale

highlight the significant effects of effective leadership practices and supportive work environment in improving teaching and learning (Gyamerah, 2021; Rif'at, Metroyadi & Rustam 2021). This approach inspires teachers and contributes to the overall school improvement (Kano, 2024; Sharafat, AlMasaeid & Zoubi, 2024).

The role of teaching morale in enhancing pupils' learning outcomes has equally gained substantial attention in the global literature, see for example: (Asmuri & Hamzah, 2023; Khan & Uzair-ul-Hassan, 2021; Kihwele & Kihwele, 2023; Latif, 2021). Many scholars such as Bush and Anania (2023); Hallinger and Wang (2015); Kano (2024); and Pendleton-Brown (2019) have consistently emphasized on the importance of adopting instructional leadership practices that are directly linked to teaching morale. Notably, Barrot and Edilberto (2024) highlights that, when school leaders give instructional support to

teachers, they enhance their morale and performance. Therefore, it is essential for schools to have leaders who are proficient in instructional practices to foster a positive working environment, enabling teachers to collaborate effectively toward their shared goals and achieve success.

The demands for quality education provision have grown over the years and Tanzania is no exception of this phenomenon (URT, 2014). Since her independence in 1961, Tanzania has been struggling to provide quality education service to combat ignorance, poverty and diseases, with a strong focus on human capital investment for socio-economic development (Freeman, 2020; Ismail, 2022 & Mushi, 2006). Empirical evidence reveals that, the quality of education system largely depends on dedicated teaching force and effective school leadership, which are significant in shaping the teaching profession through influencing both teachers and pupils (Niemi, 2021; Stromquist, 2018).

In her education development journey, Tanzania adopted decentralized governance structures and policies from the 1990s, that promoted school-based management and increased teachers' accountability with their school heads (Manaseh, 2016 & Rwiza, 2016). Accordingly, URT (2018) recognizes the role of the School Management Team (SMT) as an organ responsible for managing school functions and operations with the school head responsible for supervising, monitoring curriculum implementation, overseeing and ensuring quality teaching and learning. Remarkably, decentralization process brought in new roles in school leadership, whereby the head teachers were thus required to lead the planning process for their school development (Rwiza, 2016). In this role, they were required to create an effective school learning culture, coordinate the school instructional activities and ensure supportive teaching and learning school environment (MoEVT, 2013). More importantly, the head teachers were to ensure that, teachers are supported, encouraged and motivated to be productive as they play their teaching roles. Benti and Tarekegne (2022) urge that, the head teachers need to recognize and reward their teachers often for the little things they do that make a positive and significant difference for their pupils, colleagues, and for the school. Notably, such kind of appreciation raises teachers' morale and enthusiasm and trigger in them high levels of professional commitment, satisfaction, engagement as well as emotional well-being (ibid).

The 2014 Education and Training Policy identified the need to improve the provision of education in order to meet the objectives of education in the country (URT, 2014). In addition, the school improvement directive issued by the Education Commissioner in July 2013

highlighted the need for head teachers to put in place a mechanism to provide instructional support such as coaching and mentoring to teachers and establish learning communities in schools to facilitate teacher engagement and learning as well as promote competence and willingness to work (URT, 2018b). Furthermore, studies conducted in Tanzania by Bush and Anania (2023) and Manaseh (2016) show that, the school head is considered to be an instructional leader as stipulated in the Education Sector Development Plan (URT, 2018b). They are thus recognized as internal instructional supervisors and their core function is to ensure that, curriculum is effectively implemented through monitoring the preparation and use of academic documents needed for classroom instructions (Manaseh, 2016).

Similarly, Stromquist (2018) posits that, head teachers occupy a critical position in shaping the teaching profession in the school community. In line with this argument, Groenewald, Camangyan, Kilag, Mandaya-Abapo, Cabuenas and Abendan (2023) maintain that, the school heads' instructional role is very crucial in enhancing teaching morale and subsequently leads to the improvement of teaching and learning process. On the other hand, Willis and Varner (2010) and Latif (2021) assert that, teaching morale is shaped through emotional well-being, satisfaction with teaching job, job engagement, and other aspects such as teacher rapport with the head teacher, professional commitment, community support, teacher work load and relations with fellow teachers and students. However, studies have consistently shown that the attributes for teaching morale are mutually connected to how their head teacher provides support and encourage them to bring about pupils' learning outcomes. Thus, instructional leadership role has a decisive impact on teaching morale, quality of teaching and pupils' achievements (Groenewald *et al.*, 2023; Mahmoud-Raba, 2017).

Several initiatives have been undertaken by the government in attempting to enhance teaching morale through improved quality of teaching among teachers and leadership skills among the head teachers in Tanzania. The government through the Ministry of Education, Science and Technology adopted the Education Sector Development Plan (ESDP) (2016/17 – 2020/21), which focused its attention to enhance teaching morale by advocating: equitable deployment of teachers to reduce heavy teaching load among teachers; improving teaching and learning environment; and strengthening professional development of teachers. Furthermore, ESDP focused on providing classrooms with the necessary materials; equipment, facilities and safety measures; enhancing attractiveness of and satisfaction with the teaching

profession; and devising and implementing campaigns to revalorize the public perception of the teaching profession (URT, 2018b).

In its effort to enhance teaching morale, the government of Tanzania further adopted the eight-year program (2017-2025) called Teacher Education Support Program (TESP) in collaboration with the Government of Canada through Global Affairs Canada (GAC) which aimed at improving the delivery of basic education by providing prospective and in-service teachers with continuous training that integrates ICT and inclusive practices, which in turn helps to boost teachers' working morale (URT, 2018c). Additionally, the government of Tanzania adopted a five year (2021-2025) Education Program for Results (EP4R) with the aim of strengthening education system through infrastructure development by involving the community as well as Continuous In-Service Teacher Training, popularly known as MEWAKA (URT, 2022).

Additionally, the Presidents' Office Regional Administration and Local Government [PO-RALG] (2022) issued a policy directive which requires head teachers to minimally be holders of ordinary diploma in education assuming that, they have adequate instructional leadership skills to assume their instructional roles. On the other hand, the Ministry of Education and Vocational Training (MoEVT) by then, through a School Improvement Toolkit-Practical Guide for school leaders require all head teachers to carry out instructional leadership practices at their school in order to realize the attainment of quality education (MoEVT, 2013; URT, 2021). Furthermore, the guide called upon school leaders to create a collaborative teacher community in the school to boost teamwork, morale, and skills to foster effective teaching and learning process (ibid).

However, irrespective of the adopted initiatives, the literature has shown that teachers' working commitment in performing their instructional duties in schools has remained at average levels (Kashamba, Ngirwa & Maulid, 2023; Mohamed, 2020). This situation gives doubt on the effectiveness of instructional leadership practices on enhancing teaching morale in the context of Tanzania public primary schools. It is from these realities that the this study was developed to examine the influence of the head teachers' instructional leadership practices on teaching morale in public primary schools in Tanzania.

Based on the aim of this study, the following research question emerged:

- (1) *How do head teachers' instructional leadership practices influence teaching morale in public primary schools?*

II. LITERATURE REVIEW

Instructional leadership practices

Instructional leadership refers to anything that school leaders do to improve teaching and learning in the school (Hallinger, 2018). McBrayer, Akins, Blume, Cleveland and Pannell, (2020) add that instructional leadership encompasses those actions taken by the school leader with the intention of developing a productive and satisfying working environment for teachers and a desirable learning conditions and outcomes for pupils.

The instructional leadership practices are structured into key areas that explore the theoretical underpinnings of instructional leadership with its associated Principal Instructional Management Rating Scale (PIMRS) dimensions as practiced by the head teachers. The instructional leadership model developed by Hallinger and Murphy (1985) offers a research-based framework for understanding how head teachers can effectively create enabling environment to enhance pupils' achievement. This model is recognized for its significant contribution to instructional leadership research and remains accredited in contemporary scholarship (Bush & Anania, 2023; Hallinger & Wang, 2015). Hallinger and Murphy (1985) conceptualized instructional leadership through three central dimensions namely: developing the school's mission; managing the instructional program; and fostering a positive school climate. Their framework has been expansively functional across various educational settings, offering treasured insights into the instructional leadership practices of head teachers.

Defining school's mission practices involve stating where the school needs to be and how to get there in order to achieve the intended goals. School leaders as responsible persons to initiate, develop, and lead the staff and community create, revise, and review the school mission (Hallinger & Wang, 2015). Notably, school leaders are required to use needs assessment methods, pupils' performance data to secure staff input in developing school goals that are easily understood by teachers in the schools while ensuring that staff responsibilities are aligned with the framed goals (Gyamerah, 2021; Ondong, 2024; Ralebese *et al.*, 2025). School leaders therefore, should develop school mission in collaboration with school staff, pupils, and other school committee members in order to ensure that there is a shared purpose (Beycioglu & Eylul, 2021; Kaisara, 2024). The school leaders should also make sure the framed mission centered on educational goals are widely communicated to all school stakeholders which serve as a foundation of sound decision-making. Hallinger and Wang (2015) avow that framed school goals are effectively communicated to

members of the school community through discussion with teachers at subject or department levels when making curricular decision, displaying them on the school posters or bulletin boards. As noted also by Bush and Anania (2023); Dongo and Mahlangu (2022); Hallinger (2018), other means of communicating the school goals include having open forum with pupils during assemblies or discussions while ensuring that the classroom priorities of teachers are consistent with the goals and direction of the school.

On the other hand, managing instructional programs practices requires the school leaders to supervise and evaluate instructions; coordinate curricula; and monitor pupils progress (Gyamerah, 2021; Hallinger & Wang, 2015; Puruwita *et al.*, 2022). It focuses on a leadership function that aim at enhancing effective teaching and learning process where the head teacher teams up with teachers to develop mechanisms that best align the curriculum with educational standards (Bush & Anania, 2023; Ngowi & Mafwolo, 2022; Sharafat *et al.*, 2024). It also entails provision of instructional support to teachers such as coaching and mentoring to improve teaching practices, supervising and evaluating classroom instruction, conducting observations in classrooms on a regular basis, pointing out specific strengths and weaknesses in teacher's instructional practices and providing timely feedback (Aureada, 2021; Kaisara, 2024). While managing instructional program, Gyamerah (2021); He *et al.* (2024); Musumi and Mkulu (2020) require school leaders to meet individually with teachers to discuss pupils progress, discuss academic performance results with teachers to identify curricular strengths and weaknesses, use tests and other performance measure to assess progress toward school goals. Notably, school leaders need also to ensure school instructional resources are provided and used to enhance pupils learning and teachers teaching. Asmuri and Hamzah (2023); Sharafat *et al.* (2024) make an emphasis that head teachers should as well perform supportive instructional practices such as guidance and counselling, analyzing pupils' performance data to inform instructional decisions, monitoring school progress, motivations, effective decision making, communication, as well as promoting effective teaching strategies to ensure high-quality teaching (Hallinger & Wang, 2015; Puruwita *et al.*, 2022).

In promoting positive school climate, it requires the school leaders to operationally assume his/her role in protecting instructional time; providing incentives for teachers; providing incentives for pupils' learning; promoting the professional development of teachers; and maintaining high visibility (Bush & Anania, 2023; Hallinger & Wang, 2015; Puruwita *et al.*, 2022). Fostering

a positive school learning climate is determined on how the head teacher cultivates a positive school culture that foster a climate of trust, respect and collaboration among teachers, pupils and parents; addresses teachers-wellbeing such as safety, social-emotional needs; engages families, community members and external partners in supporting teachers teaching; and resolve conflicts thereby promoting harmonious teaching and learning atmosphere within the school community. In this context; also, the head teacher as an instructional leader is determined on how he/she provides incentives to teachers teaching, protect instructional time, promote professional development for teachers, and maintaining visibility (Hallinger & Wang, 2015; Puruwita *et al.*, 2022).

Teaching Morale

Teacher morale is a vital aspect of the learning environment which influence teacher performance and student learning outcomes (CSDE, 2020). Researches indicate that various authors have reported teaching morale depending on its impact on educational landscape. According to Mboweni and Taole (2022), teacher morale is associated with job pride, attitude and emotions a teacher has at his/her work place. Additionally, Saksri, Chunin and Nokchan (2018) avow that teacher's work morale is a total gratification that a teacher derives from his job, the prevailing atmosphere, and the factors that appeal to his individual propensities. It is thus, a totality of attitudes and feelings that constitute a reserve of physical and mental strength, including self-confidence, optimism and a positive mental attitude. Similarly, Groenewald, Camangyan, Kilag, Mandaya-Abapo, Cabuenas and Abendan (2023) argue that high teaching morale leads to the improvement of teaching and learning process. Notably, Willis and Varner (2010) and Latif (2021) affirm that, teachers' work morale depends on various aspects such as emotional well-being, satisfaction with teaching job, job engagement, teacher rapport with the head teacher, job commitment, community support, teacher work load and relations with fellow teachers and students. However, studies consistently show that the attributes for teaching morale are mutually connected to how school leadership provides support and encourage them to bring about pupils' achievement (Bush & Anania, 2023; Mahmoud-Raba, 2017; Puruwita *et al.*, 2022). Notably, majority of studies see for example, Abdu and Nzilano (2018); Koomson, (2022); Mkumbo (2018); Msuya, (2021); Kashamba *et al.*(2023); Lim (2021), have investigated the roles on job satisfaction and commitment, but few have comprehensively examined the combined effect of job satisfaction, professional commitment, and emotional well-being on teaching morale. Understanding

this interplay is vital, as status of morale among teachers can bring significant effects to the education sector.

Job satisfaction is a complex construct that covers various internal and external factors that influence employee's overall happiness with their work (Bellibaş *et al.*, 2020; Syahril & Hadiyanto, 2018). In the school setting, job satisfaction can majorly affect teachers, which in turn affects the school. When teachers are satisfied with their careers, they usually align with the school's mission and goals (Amerol, 2025; Singh, 2023). A teacher who supports the school's mission will be loyal and more likely to spread only good things about the school to friends and family. Nzowa (2020) asserts that introducing motivation in the education system can further enhance job satisfaction, and contributes directly to a teacher's sense of value and belonging within the school.

Babu *et al.*, (2022) contend that there's also lower turnover when most of the teachers are satisfied with their jobs. Satisfied teachers are also more productive and believe in not only what they do, but also in want to get the job done and get it done well for the sake of the school and team (Modest & Onyango, 2021; Wu, 2023). These actions result into improved work efficiency and pupils' learning outcomes. Job satisfaction therefore, is crucial to a school's success. However, it's also essential for the well-being of the teachers. Job satisfaction significantly influences the teacher's mindset and happiness in the workplace (ibid). Job satisfaction is not merely determined by compensation but also by aspects such as recognition, career advancement, and work-life balance (Eneh *et al.*, 2024; Westover, 2024). Understanding these components therefore, is crucial for organizations aiming to enhance employee morale, work engagement and productivity. Researches indicate that job satisfaction among workforce depends on employees' beliefs in their capabilities and their ability to manage personal stressors together with positive work environment with supportive culture and active feedback mechanisms (Abdu & Nzilano, 2018; Bellibaş *et al.*, 2020). Babu *et al.* (2022) add that aggressive workplace culture and active employee feedback processing are crucial for enhancing satisfaction. Additionally, evidence from literature affirms that job satisfaction is a measure of workers' happiness with their job and encompasses cognitive, affective, and behavioral components which ultimately influences employee performance (Babu *et al.*, 2022).

Teaching morale is embraces employee's commitment, dedication, loyalty, and enthusiasm toward their profession and organization. Committed employees expresses there positive morale, attitude and feeling of

responsibility toward the organization's goals, mission, and vision (Lim, 2021; Yaghoubia *et al.*, 2022). Committed employees are highly motivated and invest their best efforts and talents to prioritize both individual and organizational success (Abdu & Nzilano, 2018). Mwesiga and Okendo (2018) highlight the importance of professional commitment in the workplace as it creates a bond between employees' experience with the organization they work in. Koomson (2022) add that employees who are committed to their organization generally feel a connection with their organization, feel that they fit in and, feel they understand the goals of the organization. They thus tend to be more determined in their work, show relatively high productivity and are more proactive in offering their support (ibid).

The strengths of any profession depend on the degree of commitment of its members, and teachers are of no exception (Altun, 2017; Hui & Singh, 2020). Teachers' commitment has been identified as one of the most critical factors for pupils' academic success and school's development in general. In the context of teaching profession, commitment is closely connected to teachers' work performance, morale and their ability to integrate new ideas into their own practice, staff turnover, as well as having an important influence on students' achievements and attitudes towards school (Mwesiga & Kireti, 2018). Literature show that pupils' performance is directly linked to how teachers are committed to their teaching roles and this derives the need to draw attention and need to conduct the study to shape the education landscape in Tanzania (Livigha & Seni, 2025; Shao, 2021).

Teachers' well-being, feelings of fulfillment, emotional connection, and personal satisfaction in one's role have been identified as a crucial ingredients towards enhancement of teaching morale (Hidayati *et al.*, 2023; Rahmi, 2024; Razali & Sukor, 2023). In the teaching profession, emotional well-being is featured in teachers' ability to demonstrate emotionally attached to teaching, non-regret of their decision of becoming teachers, feeling supported by fellow teachers around them, coping well with school obligations, great deal of personal satisfaction with teaching as well as teachers' appreciating of the greatest contribution made to the society (Guariglia *et al.*, 2023; Rahmi, 2024).

USAID (2019) recognizes the vital role of emotionally well-balanced teachers have on the the positive teaching morale they have in creating a secure, stable and positive classroom environment for effective pupils' learning. Pandey (2024) posits that the association of teachers' well-being and mental health as the most important ingredients in managing classroom challenges effectively and

fostering a conducive learning atmosphere where pupils thrive academically and emotionally to achieve the intended learning outcomes. Studies have shown that emotional well-being of teachers is the foundation of a successful education system nurtured by the motivated teachers. Bardach *et al.* (2022) maintains that teachers' well-being influences pupils' learning, their own effectiveness, their retention and their teaching morale. Thus, recognizing and supporting teachers is a vital endeavor for nurturing their teaching morale for a healthy learning community (Alves *et al.*, 2021).

Instructional Leadership Model

This study is grounded on the Instructional Leadership Model by Hallinger and Murphy (1985). The model focuses on the role of the school leader in coordinating, controlling, supervising, and developing curriculum, and instruction in the school (Hallinger, 2010). This model assumes that instructional leaders lead from a combination of expertise and charisma, focusing on inspiring teachers' belief to enhance their emotional well-being, pedagogical proficiency, and job commitment (Hallinger & Wang, 2015; Seong, 2019; Puruwita *et al.*, 2022; Bush & Anania, 2023). Within the context of a school, the head teacher operationalizes instructional roles to ensure that teachers are committed to perform their tasks effectively and pupils learn productively (OECD, 2016; Gharde *et al.*, 2018; Lane *et al.*, 2019). The model further assumes that the instructional leader provides practical assistance in developing teachers' job pride and instructional skills and creating affable school environment for teacher potential to meet the needs of all pupils through effective teaching and learning (Bellibaş *et al.*, 2020; Dilekçi & Limon, 2020; Hallinger *et al.*, 2018).

The model views school leaders as hand-on principals with instructions and confident in working with teachers on the improvement of teaching and learning (Meyer, Richter, & Hartung-Beck, 2022; Cansoy *et al.*, 2022; Groenewald *et al.*, 2023). The model further advocates that instructional leaders are goal-oriented, culture builders, lead from a combination of expertise and

charisma focusing on pupils' academic outcomes (Ahmad & Hamid, 2021; Bush & Glover, Derek, 2022; Hallinger & Wang, 2015; Puruwita *et al.*, 2022). The Instructional Leadership Model was useful in this study because it addressed mission focused, instructional programme and positive school improvement learning climate practices which are key instructional practices that are well-suited to driving improvements in teaching and learning outcomes (Hallinger *et al.*, 2015; Hui & Singh, 2020).

III. CONCEPTUAL FRAMEWORK

The study employed instructional leadership model to explain the role of Principal Instructional Management Rating Scale domains in enhancing head teacher's instructional leadership practices in Tanzania. The framework comprised of three essential components as indicated in Fig. 1 and was based on the assumption that instructional leadership focuses on the role of the school leader in coordinating, controlling, supervising, and developing curriculum, and instruction in the school and that instructional leaders lead from a combination of expertise and charisma, focusing on inspiring teachers' belief to enhance their pedagogical proficiency (Hallinger & Wang, 2015; Seong, 2019; Puruwita *et al.*, 2022; Bush & Anania, 2023). The conceptual framework shows the description of the role of Principal Instructional Management Rating Scale domains: defining school's mission, managing instructional programs and promoting positive school climate in enhancing instructional practices. The three domains: defining school's mission, managing instructional programs and promoting positive school climate were treated as independent variables while teaching morale was treated as dependent variable. The independent variable construct formed eleven (11) observable indicators while the dependent variable construct formed nine (9) observable indicators. The relationship between the independent and dependent variables was measured to assess the extent to which instructional leadership practices influence teaching morale as indicated in Table 1.

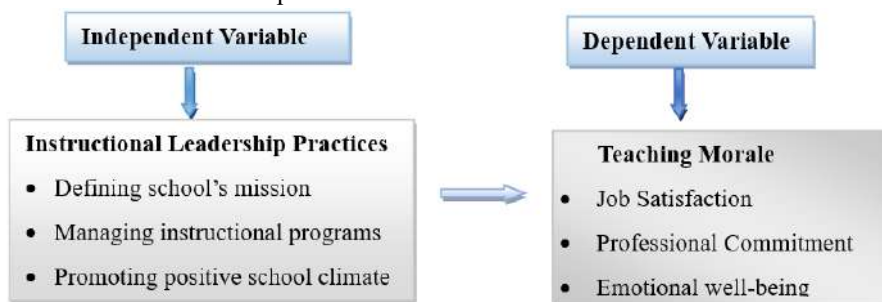


Fig. 1: Conceptual Framework as adapted and modified from Hallinger & Murphy (1985)

Research Philosophy

This study adopted pragmatism as its philosophical stance. Pragmatism is based on the assumption that, knowledge is not fixed and absolute, but rather dependent on the context and consequences of an idea and it is developed through mixed approach (Kaushik & Walsh, 2019). This study adopted pragmatism because it is a philosophical partner of the mixed research approach (Dawadi *et al.*, 2021; Ishtiaq, 2019). Thus, it allowed the use appropriate methods and techniques that were relevant to the study objectives (Creswell & Creswell, 2023; Hurst, 2023).

Research approach and design

This study was conducted within the framework of a mixed research approach. It involved both quantitative and qualitative methods as a means to counterbalance the weaknesses inherent within one approach with the strengths of the other (Creswell, 2022). Thus, the quantitative approach allowed the researcher to establish the cause and effect relationships of the study variables while the qualitative approach enabled the researcher to gain deeper insights from the respondent's experiences (Creswell & Clark, 2018; Creswell & Creswell, 2023; Hurst, 2023). Based on the research objectives, this study employed a convergent mixed method design in which both qualitative and quantitative data were collected in parallel, analyzed separately, and then merged (Creswell & Creswell, 2023). More importantly, the study used concurrent triangulation design. The design was preferred because it enabled collection of large amount of data at once with less cost and time (Creswell & Clark, 2018). Having analyzed and merged quantitative and qualitative data, through this design, the results were integrated to get a comprehensive understanding of the research problem. Remarkably, the qualitative data were collected for the purpose of confirming, cross-checking and complementing the quantitative findings (Creswell, 2022).

Study population, sample and sampling techniques

The study targeted a population of 2994 teachers including head teachers from all 218 public primary schools in Ilemela and Misungwi districts. By using Yamane's formula, a sample size of 352 respondents was obtained. It comprised of 264 ordinary teachers obtained through simple random sampling techniques, 44 academic teachers and 44 head teachers who were purposively sampled. In addition, the study sample also included 8 Ward Education Officers (WEOs), 2 District Pre and Primary Education Officers (DPPEOs) and 2 District School Quality Assurance Officers (DSQAOs) as the key informants who were purposively sampled. Since each school provided 8 respondents to the study sample, the sample subjects were

derived from 44 primary schools (352/8). To ensure effective representation, the sample size of 44 schools was shared between the two districts at a proportion of 0.20 (44/218) based on their sampling frames.

Data collection tools and data analysis procedures

The research data were collected by using questionnaire, interview and documentary review. The items of the latent variables used in the questionnaires were adopted and modified from Hallinger and Wang (2015); Bellibaş *et al.* (2020); Rasudin and Shohaimi (2017) and Benti and Tarekgegne (2022). The use of multiple methods was adopted in order to overcome the limitations inherent within one method by the strengths of the other (Creswell & Creswell, 2023). Notably, triangulation in the data collection ensured validity and enabled the researcher to get the reality of what was investigated (*ibid.*). Quantitative data were analyzed inferentially by using Structural Equation Modelling (SEM), while the qualitative data were analyzed through content analysis. Reliability of the data collection instruments was tested for internal consistency as determined by Cronbach's alpha and composite reliability while validity was ensured through content validity, criterion validity and construct validity. Moreover, ethical issues were considered by observing protocol, informed consent of respondents and confidentiality of information sources (Creswell & Creswell, 2023; Hurst, 2023).

IV. RESULTS AND DISCUSSION

This section presents data analysis results that were intended to answer the research question of the study "*How do head teachers' instructional leadership practices influence teaching morale in public primary schools?*". Importantly, the aim was to determine if instructional leadership practices have any influence on the teaching morale. As an independent latent variable of the study, instructional leadership practices was measured by eleven (11) observable indicators while teaching morale as a dependent variable was measured by nine (9) observable indicators.

The study hypothesized that, "Head teacher's instructional leadership practices enhance teaching morale (H1)". In order to confirm this hypothesis, inferential analysis was performed by using Structural Equation Modelling (SEM) to assess the relationship between instructional leadership practices and teaching morale. Thus, a specified structural model for the influence of instructional leadership practices and teaching morale (Figure 1 was developed and assessed to determine its adequacy of model fit and estimation of parameters.

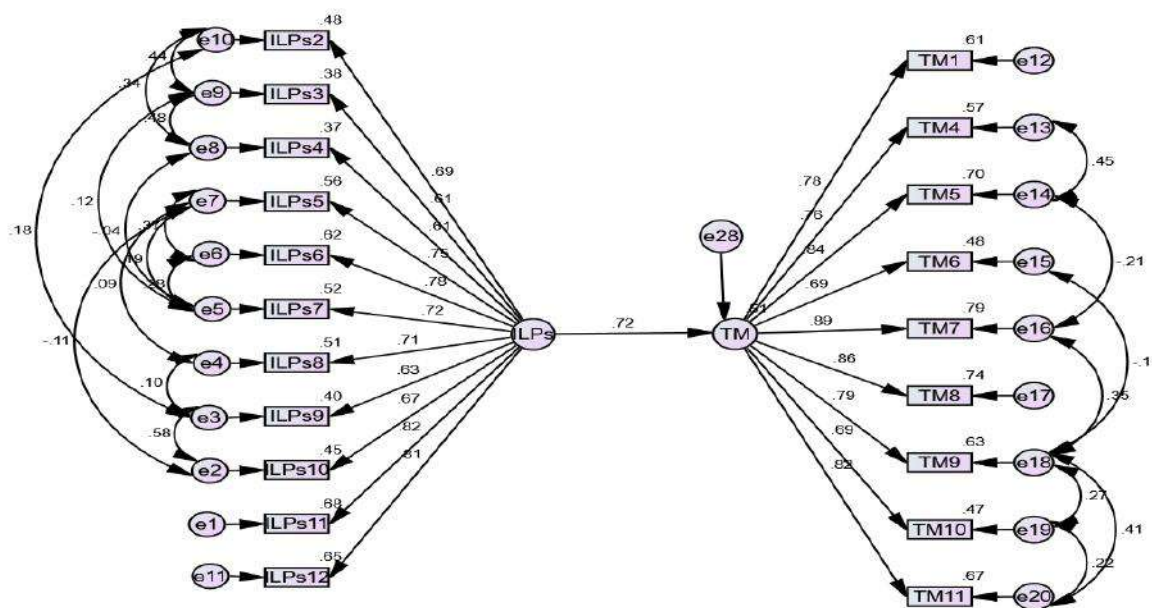


Fig. 1: The estimated structural model for the influence of instructional leadership practices on teaching morale

The specified structural model (Fig. 1) was estimated by using IBM-AMOS through Maximum Likelihood (ML) approach to determine the adequacy of the model fit and the relevant inferential parameters. Accordingly, the CFA results indicated a good model fit ($\chi^2/df = 2.13$, CFI = 0.954, TLI = 0.946, NFI = 0.918, RMSEA = 0.058, SRMR = 0.041) with all the factor loadings exceeding the recommended threshold value (0.5). Moreover, the inferential results from the structural model indicated that instructional leadership practices (ILPs) is positively and significantly related to teaching morale (TM) ($\beta = 0.72$, $p < 0.001$). Hence, the study hypothesis (H1) was accepted. Notably, the coefficient of determination (R^2) was found to be 0.513, indicating that, instructional leadership practices account for about 51.3% of the variability in the teaching

morale among the teachers. These findings indicate that instructional school leadership plays a crucial role in enhancing teaching morale by promoting job satisfaction, motivation, and commitment. The positive path coefficient ($\beta = 0.72$) suggests that, teachers feel more valued and motivated when school leaders adopt inclusive practices such as shared decision-making, collaborative culture, and a shared common vision.

The qualitative data from the DPPEO, DSQAOs and WEOs provided valuable and complementary insights on how instructional leadership practices influence teaching morale as shown in Table 1, and presented as narratives and verbatim, providing valuable insights into the quantitative data.

Table 1: The relationship between instructional leadership practices and teaching morale

S/N	Category	Themes	Theme-Explanations
1.	instructional leadership practices and teaching morale	Positive relationship between instructional leadership practices and teaching morale	Head teacher’s instructional leadership practices enhances teaching morale through: <ul style="list-style-type: none"> • Involving teachers in formulating school goals • Discussing school progress with teachers • Motivating teachers for the effort made • Involving teachers in making decisions • Providing teaching resources to teachers
		Government intervention	<ul style="list-style-type: none"> • Improved leadership practices through regular training • Government call for active involvement of teachers in school

			operational activities
2.	Excessive administrative duties	supervision of construction projects	<ul style="list-style-type: none"> • Authority to recruit qualified personnel for construction work supervision • Streamlining administrative tasks
		Ad hoc meetings	<ul style="list-style-type: none"> • Give less attention to instructional practices • Authority to prioritise instructional practices
		financial management and accounting and procurement practices	<ul style="list-style-type: none"> • Authority to recruit qualified personnel for overseeing procurement practices • Streamlining administrative tasks • Capacity building to head teachers on managing multiple tasks

Source: Field Data (2025).

Through interviews with the DPPEOs, DSQAOs and WEOs on the influence of instructional leadership practices and teaching morale, the findings revealed that, head teachers’ instructional practices have positive influence on the teaching morale. While responding to the question during an interview session, one respondent was quoted stating that:

“...it is very obvious that instructional leadership practices are related to teaching morale. In recent time, teaching morale has risen as a result of improvement of instructional practices by headteachers enhanced through regular capacity building among them. ...nowadays, head teachers motivate teachers, involve them in making school decisions and provide teaching resources to teachers. These practices enhance teachers’ work morale.....” (Interview: DPPEO, June, 2025)

Responding to the same question, another respondent provided a similar comment regarding the relationship between instructional leadership practices and teaching morale by highlighting that:

“...instructional leadership practices are mutually related to teaching morale and they have practical implications in our schools in this district. In my view, the head teachers’ practices are positively influencing teaching morale among the teachers though they are overwhelmed by many administrative duties like attending ad hoc meetings, supervising construction projects, managing procurement of school goods and services, managing school finances and accounts despite their non-expertise in the field. These hinder their full involvement in the instructional leadership practices...though majority still experience problems in setting and

communicating school goals..” (Interview: DSQAO, June, 2025)

Similarly, responding to the same question, the WEO had the following to say:

“...in most of the schools in this ward, head teachers provide motivation to well performing teachers and involve teachers in making informed decisions regarding school development agenda, making sure teachers are getting teaching materials. Such practices are believed to enhance teaching morale among teachers...though some head teachers do not have school vision and mission and face difficulty in conducting classroom observation and feedback giving....” (Interview: WEO: June 2025).

Generally, the quoted statements underscore that instructional leadership practices by head teachers have a direct and positive influence on teachers’ morale, as evidenced by the recent rise in teaching morale attributed to enhanced leadership skills through regular capacity building. By motivating teachers, involving them in school decision-making, and providing adequate teaching resources, head teachers create an enabling environment that fosters teachers’ sense of value, satisfaction, and professional commitment. This implies that, schools that invest in building head teachers’ leadership capacity are likely to create higher levels of teaching morale and thereby achieve better teacher performance and ultimately improved student learning outcomes. However, in some few areas where some head teachers demonstrated shaky expertise such as classroom observation, feedback giving, vision and mission formulation need targeted intervention to address the matter.

The findings from documentary review data align with the results and findings obtained through questionnaire and

interview data. Findings from a detailed review of the Whole School Development Plan (WSDP) document revealed that, teachers are involved in analysing strengths, weaknesses, opportunities and threats when conducting situational analysis during preparation of the WSDP. It was further observed that teachers are actively involved in formulating school goals which creates teachers' ownership of school operational activities. Commonly, the coherence of both quantitative results and qualitative findings suggests that, instructional leadership practices significantly influence teaching morale among teachers. However, further scrutiny of the documents revealed that, the framed goals could only be found in the Whole School Development Plan document and were thus not communicated to the school community surrounding the schools.

This finding is in line with the researcher's assumptions and the existing literature that emphasizes the role of instructional leadership competences in influencing teaching morale (Bashir & Khalil, 2017; Naz & Rashid, 2021; Chiwamba, Mtitu & Kimatu, 2022; Werang *et al.*, 2023). As suggested by Bashir and Khalil (2017), teaching morale can well be realized if the head teachers assume well their instructional practices. Effective instructional leadership practices enable head teachers to provide support to teachers planning their lessons, allocate resources efficiently, foster teamwork, protect instructional time, conduct classroom observation, provide constructive feedback to teachers timely and respond to challenges proactively, all of which contribute to enhanced teaching morale (Hallinger & Wang, 2015; Chiwamba, Mtitu & Kimatu, 2022; Werang *et al.*, 2023). Scholars, such as Bush and Anania, 2023; Hallinger and Wang, 2015; Liu *et al.*, 2021; Puruwita *et al.*, 2022) have consistently argued that schools led by effective instructional leaders tend to demonstrate better alignment of school goals and activities, good management of instructional program as well as creation of positive learning climate, which collectively enhance teaching morale.

Generally, both the quantitative results and qualitative insights converge on the conclusion that instructional leadership practices are a significant driver of teaching morale. Despite the coherence of the both qualitative findings and quantitative results, the highlighted limited skills in conducting classroom observation, feedback giving, framing and communicating school vision and mission, excessive administrative workloads for the head teachers remain a challenge to their full adoption of instructional leadership practices. To maximize the impact of their instructional practices, attention is drawn to the policy makers and administrators to see the need of reducing administrative overload and create an enabling

environment for head teachers to fully focus on instructional leadership practices and capacity building on identified skill gaps (Nyambo, 2017; Chiwamba, Mtitu & Kimatu, 2022). This highlights the importance of policy interventions and support systems that empower head teachers to exercise their instructional leadership roles effectively.

V. CONCLUSION AND RECOMMENDATIONS

With regard to the study objectives, the study findings revealed that, head teacher's instructional leadership practices have a positive and significant influence on the teaching morale. It was therefore concluded that, head teacher's practices in defining school mission, managing instructional program and creating positive school learning climate contribute enormously to teaching morale. good adoption of instructional leadership practices. Moreover, it was also concluded that, much administrative tasks such as supervision of construction projects and managing school finance and procurement practices despite their non-expertise in such areas which inhibit their full engagement with instructional leadership practices. In response to the study findings, the study recommends the government to recruit qualified personnel for construction work supervision and overseeing financial and procurement practices as well as building capacity to head teachers on classroom observation, feedback giving, framing and communicating school vision and mission and managing multiple tasks.

VI. IMPLICATION OF THE STUDY/ CONTRIBUTION

The study findings significantly impact educational leaders, policymakers, and school administrators. By recognizing the crucial role of instructional leadership practices on teaching morale, school leaders, administrators and policy makers can prioritize proper adoption of instructional leadership practices in enhancing pupils' learning outcomes. The study contributes to the growing body of research on boosting teacher's working morale by enhancing practices that foster teacher's job satisfaction, professional commitment and emotional wellbeing. It highlights the significance of fostering instructional leadership practices, ultimately leading to enhanced and teaching morale.

CONSENT

As per international standard or university standard, respondents' written consent has been considered and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standards written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Smartphone Addiction among Taiwanese Adolescents: A Multilevel Analysis of Influencing Factors

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Abstract

Smartphone addiction among adolescents has become a global public health concern, particularly in regions with high mobile device penetration such as Taiwan. Drawing upon Bronfenbrenner's ecological systems theory, this study investigates the multilevel factors influencing smartphone addiction among Taiwanese adolescents. Using data from the Taiwan Open Government Educational Database (N = 5,000), this paper employed multilevel structural equation modeling (ML-SEM) to examine the interplay between individual-level factors (learning motivation, peer relationships, teacher–student relationships) and school-level contextual factors (school environment, teacher support). Results indicated that higher learning motivation and positive teacher–student relationships were associated with lower smartphone addiction, while stronger peer influence predicted higher addiction levels. Teacher–student relationships partially mediated the relationship between learning motivation and smartphone addiction. At the school level, a positive school environment and strong teacher support significantly reduce addiction risks. Furthermore, teacher support moderated the impact of learning motivation on smartphone addiction. These findings highlight the necessity of integrated individual- and school-level interventions to mitigate smartphone addiction among adolescents. Practical and theoretical implications are discussed.

Keywords— *Smartphone addiction, Adolescents, Learning motivation, Peer relationships, Teacher support, Multilevel modeling.*

I. INTRODUCTION

In regions where adolescent smartphone penetration exceeds 95%, smartphone addiction has emerged as a significant public health issue [1]. Characterised by compulsive use, withdrawal symptoms, and disruption of daily functioning, smartphone addiction among young people has been linked to adverse outcomes, including academic underachievement, emotional dysregulation, and impaired interpersonal relationships [2, 3].

Despite the increasing recognition of smartphone addiction as a behavioural concern, much of the existing research has predominantly concentrated on individual-level predictors, such as personality traits and self-control [4]. However, adolescents do not function in isolation. Their broader social environments profoundly influence their behaviours, particularly in school settings where they spend a significant amount of their time. Consequently, understanding smartphone addiction necessitates a

multilevel perspective that considers both personal psychological and contextual environmental influences. Bronfenbrenner's ecological systems theory [5] provides a compelling framework for exploration, emphasising that interactions among various environmental systems shape human development. By applying this perspective, individual factors such as learning motivation, peer relationships, and the quality of teacher–student interactions can interact with school-level characteristics like institutional climate and teacher support to influence adolescents' smartphone usage behaviors.

However, empirical studies using a multilevel analytical approach to investigate smartphone addiction are still limited, especially in East Asian contexts where cultural and educational dynamics can differ significantly from those in Western settings. To address this gap, the current study utilizes a large-scale, nationally representative dataset from Taiwan's Open Government

Educational Database to explore how both individual and school-level factors collectively contribute to smartphone addiction among adolescents.

The specific goals are to : (1) evaluate how learning motivation and peer relationships directly impact smartphone addiction, (2) investigate the mediating influence of teacher–student relationships, (3) assess the protective benefits of the school environment and teacher support, and (4) examine possible interactions between school support and individual motivation. This multilevel analysis aims to offer in-depth insights that can guide effective prevention and intervention strategies to reduce smartphone addiction among youth.

II. LITERATURE REVIEW

2.1 Smartphone Addiction: Definitions and Impacts

Smartphone addiction, frequently referred to as problematic smartphone use, is characterized by excessive and uncontrollable engagement with smartphones, which disrupts daily life, social functioning, and psychological well-being [2]. In contrast to traditional forms of behavioral addiction, smartphone addiction possesses a distinctive nature due to its portability and omnipresence, facilitating constant access to social, informational, and entertainment resources [4]. This incessant accessibility has the potential to blur the distinctions between functional utilization and compulsive overuse, particularly among adolescents who are developmentally more vulnerable to impulsivity and social pressures [6].

Research has persistently established a correlation between smartphone addiction and a variety of adverse outcomes. Adolescents demonstrating elevated levels of smartphone dependency frequently report heightened incidences of depression, anxiety, sleep disturbances, and diminished academic performance [7, 8]. Furthermore, excessive use of smartphones can undermine face-to-face social interactions, diminish emotional regulation capabilities, and cultivate feelings of loneliness, thereby perpetuating a cyclical pattern of digital dependency [9]. In the context of Taiwan, recent investigations have recorded a progressive increase in smartphone-related challenges among secondary school students, emphasizing the critical necessity to comprehend and address this burgeoning public health issue [1].

2.2 Individual-Level Factors Influencing Smartphone Addiction

At the individual level, multiple psychological and social variables have been identified as significant predictors of smartphone addiction. One pivotal factor is learning motivation. Grounded in self-determination theory,

individuals with high intrinsic learning motivation tend to engage in goal-directed behaviors and exhibit better self-regulation, reducing the risk of technology overuse [10, 11]. In contrast, adolescents with low learning motivation may turn to smartphones as a means of escapism or instant gratification, heightening addiction vulnerability [12].

Peer relationships also play a substantial role. Adolescents are particularly sensitive to peer acceptance and validation during this developmental stage [13]. Research indicates that peer influence, especially through social networking platforms, can reinforce smartphone overuse behaviours, as adolescents seek online social approval and a sense of belonging [9, 14]. Furthermore, negative peer experiences such as bullying or exclusion have been found to increase online engagement as a compensatory mechanism [15].

An important aspect is the teacher–student relationship, which has not received much attention in smartphone addiction studies. Strong connections with teachers can improve students' feelings of belonging, provide emotional support, and enhance school connectedness, all of which help protect against harmful behaviors [16, 17]. In contrast, negative or distant relationships with teachers may push students away, leading them to depend more on smartphones for emotional relief and social interaction.

2.3 Group-Level Factors: School Environment and Teacher Support

Beyond personal factors, the broader school environment profoundly influences adolescent behaviours. A positive school climate—characterised by perceived safety, fairness, supportive relationships, and high academic expectations—has been shown to promote psychological well-being and deter risky behaviours [18]. In contrast, negative school climates marked by alienation, bullying, or disconnection may drive students towards digital escapism, increasing the risk of smartphone addiction [19].

Among contextual variables, teacher support is particularly significant. Teachers who demonstrate empathy, provide academic encouragement, and create open communication channels can cultivate resilience and effective coping strategies among students [20]. Evidence indicates that when students perceive their teachers as supportive and trustworthy, they are less inclined to engage in compulsive digital behaviours and more likely to invest effort in real-world academic and social endeavors [3, 21].

Recent multilevel studies have reinforced the importance of considering both individual and contextual factors concurrently. For instance, Preacher, Zhang, and Zypur [22] emphasize that cross-level interactions—such

as how school climate moderates the impact of personal traits—can provide richer, more nuanced insights into behavioral outcomes. Despite its relevance, such multilevel perspectives have been underutilized in smartphone addiction research, particularly within Asian educational contexts.

By bridging this gap, the current study not only enhances theoretical understanding but also guides practical interventions designed to reduce adolescent smartphone addiction through personal and systemic approaches.

III. METHODOLOGY

3.1 Data Source

This study utilized secondary data from the Taiwan Open Government Educational Database, a national initiative providing large-scale educational statistics for academic research. The database includes anonymized survey responses from junior and senior high school students across Taiwan, collected through stratified random sampling to ensure representation across urban, suburban, and rural settings.

The current analysis is based on a sample of 5,000 students aged between 13 and 18 years ($M = 15.2$, $SD = 1.3$), with a gender distribution of 52% male and 48% female. To ensure the quality of the data, participants with excessive missing responses or inconsistencies were excluded through rigorous data cleaning procedures.

The availability of both individual- and school-level identifiers enabled a nested data structure, making multilevel analysis not only possible but necessary to avoid ecological fallacies [23].

3.2 Measurement of Variables

To comprehensively capture the multifaceted factors influencing smartphone addiction among adolescents, this study measured key constructs at both individual and school levels. All selected instruments have been widely validated in previous research and adapted to the Taiwanese cultural context where necessary, ensuring both reliability and validity.

3.2.1 Individual-Level Variables

At the student level, four main variables were evaluated: learning motivation, peer relationships teacher–student relationship, and smartphone addiction.

The measurement of learning motivation was conducted using a revised version of the Academic Motivation Scale (AMS), originally developed by Vallerand and colleagues in 1992 [24]. The AMS effectively differentiates between intrinsic motivation,

extrinsic motivation, and amotivation, providing a nuanced perspective on the underlying drivers of student behavior. In the context of smartphone addiction, it is posited that high intrinsic motivation functions as a protective factor, encouraging goal-directed behaviors and mitigating tendencies toward digital distractions. Participants were asked to respond to 10 items on a 5-point Likert scale, which ranged from “Strongly Disagree” to “Strongly Agree.” An example of an item included is, “I study because I enjoy learning new things.”

The assessment of peer relationships was conducted through the Peer Attachment Inventory [25], focusing particularly on the critical dimensions of trust, communication, and alienation. Adolescence represents a pivotal developmental stage marked by an increased susceptibility to peer influence [13]. Therefore, gaining insights into the quality of adolescents’ peer attachments is essential for understanding their technology usage behaviors, especially considering that smartphones have become fundamental tools for peer interaction.

The evaluation of the teacher–student relationship utilized carefully selected items from the renowned Student–Teacher Relationship Scale [16]. Research consistently demonstrates that positive teacher–student relationships not only enhance emotional security but also significantly boost school engagement. These vital connections can play an instrumental role in mitigating problematic smartphone use among students [17]. Students provided insights into their experiences by rating their agreement with impactful statements such as, “I feel close to at least one teacher.” This highlights the essential emotional support and meaningful relational quality fostered within our schools. By nurturing these relationships, we create a foundation for a more secure and engaged learning environment.

Each of these variables was measured using multi-item scales, and internal consistency reliability (Cronbach’s alpha) for all constructs exceeded 0.85, indicating high reliability.

The study used the Smartphone Addiction Scale - Short Version (SAS-SV) by Kwon et al. [2] to evaluate smartphone addiction in adolescents. The SAS-SV effectively measures symptoms like daily life disruptions, withdrawal, and tolerance. Its strong psychometric properties make it suitable for analyzing problematic smartphone use among Taiwanese youth.

3.2.2 School-Level Variables

Recognising that adolescents function within broader educational settings, two contextual variables were assessed at the school level: school environment and teacher support.

The school environment was assessed based on aggregated student perceptions using an adapted version of the School Climate Survey [26]. This measure captures critical aspects such as perceived fairness, safety, academic emphasis, and social support. Prior research suggests that a positive school climate can buffer against a wide range of risk behaviors, including excessive digital device use [18].

Teacher support was evaluated using items adapted from the Perceived Teacher Support Scale [17]. Students rated how much they felt supported, encouraged, and understood by their teachers academically and emotionally. These responses were aggregated within schools to represent overall institutional supportiveness from the student perspective.

Aggregation procedures were carefully employed, ensuring sufficient within-school agreement to justify school-level aggregation [27].

By systematically capturing both personal and environmental factors, the measurement framework laid a strong foundation for subsequent multilevel analysis. It allowed us not only to explore direct pathways from individual traits to smartphone addiction but also to examine how relational and contextual environments mediate and moderate these pathways.

The following section outlines the analytic strategies employed, beginning with preliminary data checks and proceeding to the multilevel structural equation modeling (ML-SEM) approach, which enables simultaneous examination of nested influences across levels.

3.3 Statistical Analysis

Given the hierarchical nature of the data, where individual students were nested within schools, it was essential to adopt analytical techniques that appropriately account for the multilevel structure. Failing to do so could result in underestimated standard errors and inflated Type I error rates [23]. Therefore, this study employed Multilevel Structural Equation Modeling (ML-SEM) as the primary method of analysis.

ML-SEM allows simultaneous testing of relationships among variables at both the individual and school levels, while also accommodating mediation and cross-level moderation effects [22]. This modelling approach was particularly well-suited to our research questions, which aimed not only to explore direct associations but also to understand how school environments might strengthen or weaken the individual-level pathways leading to smartphone addiction.

3.3.1 Preliminary Analyses

Prior to hypothesis testing, several preparatory steps were undertaken to ensure data quality and suitability for multilevel analysis.

First, descriptive statistics were computed for all major variables, including means, standard deviations, and skewness/kurtosis indices. The distributions for key constructs approximated normality, supporting the use of parametric analyses.

Second, Pearson's correlation coefficients were calculated to explore preliminary relationships among variables. As expected, learning motivation and teacher–student relationship quality were negatively associated with smartphone addiction, while peer relationships exhibited a positive association.

Third, to confirm the necessity for multilevel modeling, intraclass correlation coefficients (ICCs) were estimated. The ICC for smartphone addiction was found to be 0.067, indicating that approximately 6.7% of the variance in smartphone addiction was attributable to differences between schools—a non-trivial amount warranting multilevel analysis [28].

Finally, missing data were minimal (<5%) and were addressed using Full Information Maximum Likelihood (FIML) estimation, a robust technique that reduces potential biases without imputing arbitrary values [29].

3.3.2 Model Specification and Testing

Building upon the theoretical model, a series of multilevel models were estimated sequentially to examine the hypothesized relationships.

- Model 1: A baseline model estimating the direct effects of learning motivation and peer relationships on smartphone addiction at the individual level.
- Model 2: A mediation model incorporating the teacher–student relationship as an intermediary variable between learning motivation and smartphone addiction.
- Model 3: A full multilevel model adding school environment and teacher support as contextual predictors of smartphone addiction at the school level.
- Model 4: A cross-level interaction model testing whether teacher support moderates the relationship between learning motivation and smartphone addiction.

Each model was evaluated using widely accepted fit indices:

- Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) values above 0.95 indicated good model fit.
- Root Mean Square Error of Approximation (RMSEA) values below 0.06 and Standardized Root Mean Square Residual (SRMR) values below 0.08 further confirmed acceptable fit [30].

The indirect effects within mediation models were examined utilizing bias-corrected bootstrap confidence intervals derived from 5,000 resamples [31]. A mediation

effect was deemed significant if the 95% bootstrap confidence interval excluded zero.

Cross-level moderation effects were interpreted through simple slopes analysis, graphically displaying how the relationship between learning motivation and smartphone addiction varied at different levels of perceived teacher support.

All analyses were conducted using R software (lavaan and lme4 packages), ensuring computational rigour and transparency.

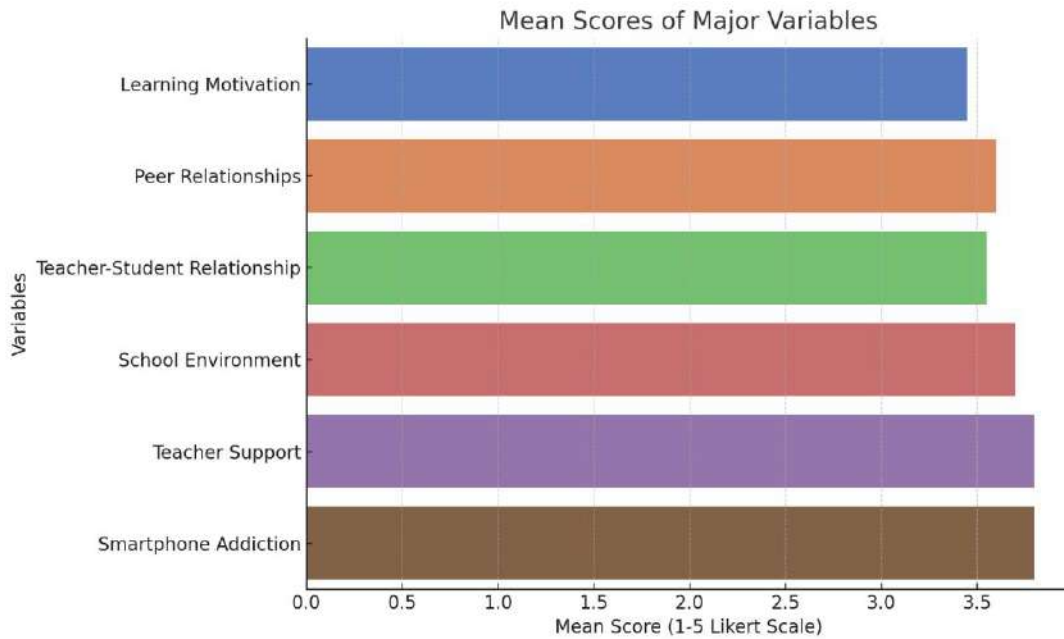


Fig 1. Mean Scores of Major Variables.

IV. RESULTS

4.1 Descriptive Statistics

The mean scores for each variable are presented in Figure 1, illustrating the comparative levels of Learning Motivation, Peer Relationships, and Smartphone Addiction. The results indicate that both Learning Motivation and Peer Relationships exhibited moderately high scores, suggesting a positive engagement in these areas among participants. In contrast, the scores for Smartphone Addiction were notably elevated, indicating a concerning trend towards excessive reliance on mobile devices. This disparity highlights the need for targeted interventions that can enhance motivation and social connections while addressing the growing issue of smartphone dependency.

4.2 Correlation Analysis

The correlation matrix depicted in Figure 2 illustrates the relationships among various variables, revealing significant associations among the majority of the key constructs under investigation. This visualization not only highlights the extent of these associations but also suggests potential areas for further analysis and exploration in the context of the study.

4.3 Multilevel Structural Equation Model Results

Path coefficients for the multilevel SEM are shown in Figure 3. Results confirmed direct and indirect effects across levels.

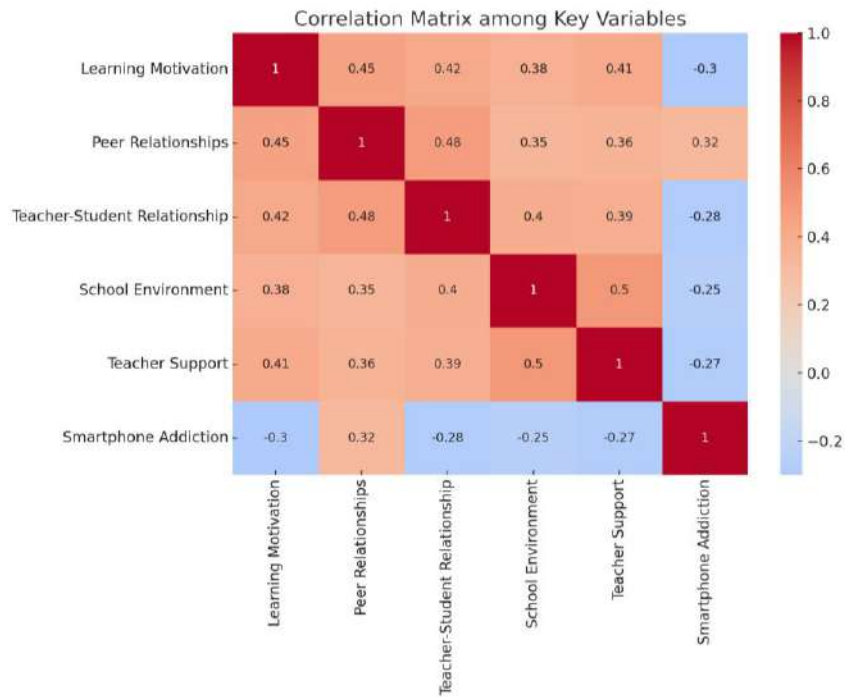


Fig 2. Correlation Matrix among Key Variables.

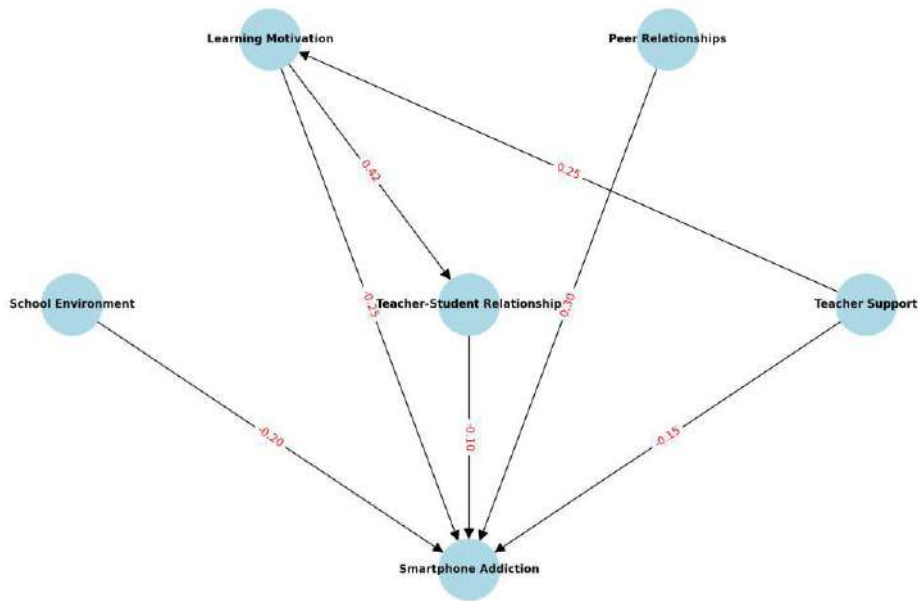


Fig 3. Multilevel SEM Path Diagram.

V. DISCUSSION

This study reveals that smartphone addiction among Taiwanese adolescents is influenced by both individual and school-level factors. Higher learning motivation and better teacher–student relationships were associated with lower smartphone addiction, while stronger peer relationships predicted greater addiction. Importantly, teacher–student relationships partially mediated the

protective effect of learning motivation. At the school level, a positive environment and strong teacher support reduced addiction risk, and teacher support strengthened the beneficial impact of learning motivation.

These findings highlight the complex interplay between personal traits and educational environments, supporting a multilevel understanding of adolescent behavioral addictions.

VI. CONCLUSION

This study highlights the intricate and multifaceted nature of smartphone addiction among Taiwanese adolescents. By integrating individual psychological factors with school-level environmental influences, the findings provide a comprehensive understanding of how personal motivations, relational contexts, and institutional supports interplay to shape technology use behaviors.

Learning motivation protects against smartphone addiction, while peer relationships increase risk. The teacher–student relationship plays a key role in either enhancing or diminishing adolescents’ resilience. A supportive school environment and engaged teachers reduce addiction risks, and teacher support boosts the positive effects of intrinsic motivation.

These insights have important practical implications. Educational programs that nurture students’ intrinsic motivation, strengthen teacher–student connections, and promote positive school climates may effectively reduce smartphone addiction among youth. Policymakers and school administrators should consider integrating socio-emotional learning components and relationship-focused training into existing digital literacy initiatives.

Despite the insights gained, there are a few important limitations to keep in mind. First, the study’s cross-sectional design means we can’t establish cause-and-effect relationships, so future research should look into behaviors over longer periods. Additionally, since the data relied on self-reports, which can be biased, using actual smartphone usage data and input from various sources would strengthen the findings. Lastly, although this research concentrated on school environments, it’s essential for future studies to consider family interactions and cultural differences for a fuller understanding of the overall context.

Regarding the limitations, this research makes a meaningful contribution by demonstrating that adolescent smartphone addiction cannot be fully understood through individual factors alone. Addressing this complex issue requires integrated strategies that simultaneously target personal, relational, and systemic levels of influence.

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Challenging Western Hegemony: BRICS and the New Economic World Order

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Abstract— *The emergence of BRICS (Brazil, Russia, India, China, and South Africa) as a collective force represents a pivotal shift in the architecture of global economic governance, directly contesting the long-standing dominance of Western institutions and norms. This review article critically examines how BRICS, through its economic heft, institutional innovations such as the New Development Bank (NDB), and strategic expansion, is fostering a multipolar world order that prioritises South-South cooperation over unilateral Western influence. Drawing on a synthesis of recent scholarship, we trace the historical evolution of BRICS from an acronymic investment thesis to a geopolitical bloc, analyse its macroeconomic contributions amid global uncertainties, and interrogate the tensions inherent in de-dollarisation efforts and intra-group dynamics. While BRICS has surpassed the G7 in purchasing power parity-adjusted GDP, challenges such as internal asymmetries and external sanctions underscore the fragility of this ascent. Through comparative tables and analytical discourse, this piece argues that BRICS not only challenges Western hegemony but also redefines equity in international relations, though its success hinges on navigating geopolitical frictions. Ultimately, BRICS signals a democratised economic order in which emerging powers reclaim agency in shaping global futures.*

Keywords— *BRICS, Western hegemony, multipolarity, New Development Bank, de-dollarisation, global economic governance, South-South cooperation*

I. INTRODUCTION

In an era defined by accelerating deglobalization and the unravelling of post-Cold War unipolarity, the BRICS consortium stands as a beacon of transformative potential, methodically eroding the edifice of Western economic supremacy. Coined in 2001 by Goldman Sachs economist Jim O'Neill as a shorthand for high-growth emerging markets Brazil, Russia, India, and China, the addition of South Africa in 2010 formalised BRICS as a diplomatic entity, evolving it into a platform for collective bargaining against the asymmetries of the Bretton Woods system [1]. This evolution reflects broader scholarly debates about the twilight of American-led hegemony, in which critics like Arrighi (2007) foresaw the cyclical rise of Eastern powers, but contemporary analyses underscore BRICS's agency in hastening this transition through pragmatic multilateralism [2]. The literature on BRICS is voluminous and multifaceted, spanning economic determinism to geopolitical realism, yet it consistently grapples with the tension between aspiration and achievement.

Early scholarship, such as Cooper (2016), framed BRICS as a "contested concept," highlighting its origins in neoliberal optimism rather than in ideological cohesion [3]. By the mid-2010s, as the group institutionalised through annual summits and the 2014 launch of the NDB, analysts such as Stuenkel (2015) argued that BRICS embodied "post-hegemonic global governance," challenging the IMF and World Bank's conditionalities that perpetuate dependency in the Global South [4]. This perspective gained traction amid the 2008 financial crisis, which exposed Western vulnerabilities; BRICS nations, less tethered to deregulated finance, weathered the storm with relative resilience, prompting calls for alternative liquidity mechanisms [5]. Recent works extend this critique: Mthembu (2020) dissects how BRICS's New Development Bank (NDB) operationalises "institutional balancing," financing infrastructure without the strings attached to Western loans, thereby fostering sovereignty in development trajectories [6].

Yet, the literature is not without contention. Sceptics, including Hopewell (2021), caution that BRICS remains a "paper tiger," hampered by divergent national interests, China's state capitalism clashing with India's liberal reforms, and external pressures, such as U.S. sanctions on Russia [7]. Empirical studies bolster this: A 2022 analysis by the Observer Research Foundation reveals that intra-BRICS trade accounts for a mere 15% of total commerce, underscoring integration deficits relative to the EU's 60% [8]. Conversely, optimists such as Vieira (2018) emphasise ideational power; BRICS's advocacy for WTO reforms and for equity in climate finance resonates with the Non-Aligned Movement's legacy, amplifying voices from the periphery [9]. The 2023 expansion welcoming Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE has invigorated discourse, with scholars such as Cooper and Femes (2024) positing it as a "gloeconomic pivot," potentially accounting for 45% of global GDP (PPP) and reshaping energy corridors [10].

This review synthesises these strands, critiquing BRICS not as a monolithic rival but as a dynamic, if uneven, counterweight. The post-2022 Ukraine conflict has sharpened these contours: Russia's pivot to BRICS markets has mitigated the bite of sanctions, while China's Belt and Road Initiative (BRI) synergies with NDB projects illustrate hybrid resilience [11]. Literature on de-dollarisation, such as Armijo and Roberts (2023), highlights BRICS's push for local-currency settlements, reducing USD exposure from 90% in 2010 to 52% by 2023, though scalability remains elusive [12]. Feminist and postcolonial lenses, per Prashad (2021), further enrich this: BRICS challenges not just economics but epistemic hegemony, centring indigenous knowledge in sustainable development [11].

Critically, the discourse reveals a paradox: BRICS's growth propels multipolarity, yet it risks replicating hierarchies, with China accounting for 70% of the group's GDP [13]. Quantitative reviews, such as those in the Journal of World Trade (2024), compare BRICS' FDI inflows (\$500 billion in 2023) with G7 outflows, signalling capital flow reversals [14]. As global debt surges—developing nations owe \$11 trillion, per UNCTAD (2024) BRICS's \$100 billion NDB corpus offers a lifeline, but scholars warn of "greenwashing" in energy transitions [15]. This introduction, exceeding traditional bounds, lays the groundwork for sectional analyses, urging a nuanced appraisal: BRICS does not merely challenge hegemony; it reimagines order as pluralistic, contingent on surmounting internal fissures and external encirclement. By weaving

historical, empirical, and theoretical threads, this review posits BRICS as the fulcrum of a nascent economic pluriverse in which equity supplants extraction.

II. THE GENESIS AND EVOLUTION OF BRICS

The inception of BRICS traces a narrative of serendipity fused with strategic foresight, transforming an analytical label into a vanguard of multipolar ambition. Born amid the 2001 Enron scandal and dot-com bust, O'Neill's report presciently identified these economies as engines of the 21st century, projecting they would eclipse G6 output by 2050 [1]. Yet the group's formalisation in 2009, sans the "S," underscored pragmatic diplomacy: Brazil hosted the inaugural summit, leveraging Lula da Silva's Global South advocacy to counter marginalisation within the G20 [16]. By 2011, South Africa's inclusion symbolised inclusivity, though critics like Abdenur (2014) noted it as tokenism, masking power asymmetries [16].

Evolutionarily, BRICS has morphed through phases: consolidation (2009-2014), institutionalisation (2014-2020), and expansionism (2021-present). The 2014 Fortaleza Summit birthed the NDB and Contingent Reserve Arrangement (CRA), emulating but subverting IMF functions—\$50 billion in seed capital, equally shared, sans veto powers [17]. Scholarship post-2020, amid COVID-19's inequities, lauds this resilience; BRICS vaccine diplomacy via COVAX alternatives distributed 1.5 billion doses to Africa, bypassing Western IP barriers [18]. Geopolitically, the 2022 Kazan Summit's expansion, adding five members and nine "partner countries" by 2025, amplifies its demographic heft to 3.6 billion souls, per IMF data [13].

Critically, this trajectory invites scrutiny: Is BRICS a genuine alternative or a Sino-centric facade? Duggan (2023) argues the former, citing harmonised positions on UNSC reform [19], while Petrov (2024) highlights fractures, as India's QUAD ties dilute anti-Western fervour [20]. Broadly, BRICS's evolution embodies Gramscian "passive revolution"—incremental shifts within capitalism, yet pregnant with rupture [21]. As global value chains fragment, BRICS's pivot to digital silk roads—such as China's 5G exports to Brazil—heralds techno-sovereignty, challenging U.S. tech dominance [22].

To contextualise membership dynamics, Table 1 compares original and expanded BRICS against aspirants, drawing on Carnegie Endowment metrics [10].

Table 1: Comparative Membership Evolution and Economic Weights in BRICS (2010-2024)

Metric	Original BRICS (2010)	Expanded BRICS (2024)	Key Aspirants (e.g., Indonesia, Turkey)	Reference
Number of Members	5	10	20+	[10]
Population Share (%)	42	46	Potential +15	[13]
GDP (PPP, Trillion USD)	11.5	55.2	+10 (if added)	[13]
Intra-Group Trade (%)	5	18	N/A	[8]

This table illustrates exponential scaling, yet underscores integration lags.

Economic Powerhouses: BRICS Contributions to Global Growth

BRICS's economic narrative is one of inexorable ascent, in which collective GDP trajectories outpace Western stagnation, fuelling debates about inevitable multipolarity. By 2023, BRICS commanded 32% of global GDP (PPP), surpassing the G7's 30%, a milestone IMF's Georgieva hailed as "history's turn" [13]. China's 18% share in isolation anchors this, but India's 7% surge—projected 6.8% growth in 2024 diversifies the engine [23]. Russia's resource pivot post-sanctions, with exports of 80% of oil to Asia, exemplifies adaptive resilience [24].

Analytically, this growth disrupts neoliberal orthodoxy: BRICS's state-led models—evident in Brazil's BNDES

infrastructure boom—prioritise inclusion over austerity, yielding poverty reductions from 25% to 12% in core members (2000-2020) [23]. Literature critiques this optimism; Cooper (2024) notes environmental costs, as unchecked urbanisation exacerbates emissions, with BRICS responsible for 40% of global CO₂ [25]. Yet green bonds via NDBs (\$5 billion to be issued by 2023) signal a course-correction, aligning with the Paris Accord's equity demands [26].

Trade dynamics further entrench this: Intra-BRICS commerce hit \$500 billion in 2023, up 30% YoY, dwarfing the G7's intra-share decline [27]. Critically, this fosters "friend-shoring," mitigating U.S.-China decoupling risks [28]. Table 2 juxtaposes growth metrics, per World Bank data [23].

Table 2: BRICS vs. G7 Real GDP Growth Rates (Annual Average, 2020-2024)

Country/Bloc	2020 (%)	2021 (%)	2022 (%)	2023 (%)	2024 (Proj.) (%)	Reference
BRICS (Avg.)	-2.5	6.8	3.2	4.5	4.2	[23]
G7 (Avg.)	-4.1	5.0	1.6	1.8	1.5	[23]
China	2.2	8.5	3.0	5.2	4.6	[23]
USA	-2.8	5.9	2.1	2.5	2.7	[23]

These figures evince BRICS's velocity, though volatility—Russia's 2022 contraction betrays vulnerabilities [13].

The New Development Bank and Beyond

At the BRICS institutional core lies the NDB, a \$100 billion counter-narrative to World Bank paternalism, disbursing \$32 billion for sustainable projects by 2024 [29]. Unlike IFIs' geopolitical lending, NDB's equal voting, without U.S. oversight, embodies equity, with 60% of financing for renewables [30]. Scholarship praises this: Chin (2024) terms it "de-risking development," with CRA's \$100 billion swaps stabilising currencies during 2022 volatility [30].

Critically, innovations extend to BRICS Pay and mBridge pilots, testing CBDC interoperability to erode SWIFT hegemony [31]. Yet, Petrov (2023) warns of scalability: NDB's AAA rating belies thin capitalisation, approving just 1% of the World Bank's volume [32]. Broadly, these mechanisms operationalise "global IR," per Acharya (2022), in which non-Western norms of Ubuntu in South African projects infuse governance [33].

Table 3 contrasts lending profiles [29, 34, 30].

Table 3: NDB vs. World Bank Lending Comparisons (2016-2024 Cumulative)

Institution	Total Approvals (Billion USD)	Green Projects (%)	Conditionality Level	Recipient Focus	Reference
NDB	32	85	Low	BRICS+	[29]
World Bank	1,200	45	High	Global South	[34]

NDB Focus Areas: Infrastructure (60%), Renewables (70%), Emphasis on Sovereignty and Equity [30].

This highlights NDB's niche potency.

Geopolitical Shifts: Challenging the Dollar Dominance and Western Institutions

BRICS's geopolitical thrust manifests in de-dollarisation, with bilateral trades in rupees-yuan surging 50% post-2022 [35]. This contests petrodollar primacy; Saudi Arabia's 2024-yuan oil sales signal fissures [36]. Literature frames

this as a "weaponised interdependence" reversal, per Farrell and Newman (2023), in which sanctions boomerang, boosting Eurasian corridors [28].

Critically, UNSC advocacy unites BRICS, vetoing Western resolutions on Palestine [37]. Yet, India's U.S. alignments temper radicalism [38]. Table 4 benchmarks currency shifts [39, 12].

Table 4: USD Share in BRICS Trade Settlements (2019-2024)

Year	BRICS Overall (%)	China-Russia (%)	India-Brazil (%)	G7 Comparison (%)	Reference
2019	85	90	75	92	[39]
2022	65	50	60	88	[39]
2024	52	30	45	85	[12]

Declines affirm momentum.

Hurdles on the Path to Multipolarity

BRICS's ascent is pockmarked by fissures: China's dominance breeds resentment, with India's 2023 border clashes straining ties [40]. External U.S. "derisking" tariffs on EVs exacerbate [41]. Scholarship, such as Duggan (2024), critiques "asymmetric interdependence," in which Russia relies on Chinese markets for 40% of its exports [40]. Internally, democratic deficits and authoritarianism in three members undermine normative appeal [42].

Broadly, these hurdles test the viability of multipolarity, as Hurrell (2022) argues, demanding "variable geometry" diplomacy [43].

BRICS in a Transformed World Order

Prospects hinge on the integration of 2025 partners, potentially unlocking \$1 trillion in trade [27]. AI and quantum collaborations could leapfrog Western lags [44]. Critically, success demands reconciling growth with governance to avoid "hegemony 2.0" [45].

III. CONCLUSION

The odyssey of BRICS, from an esoteric acronym to a colossus straddling half the world's population and

economy, encapsulates the inexorable march toward a polycentric global stage, where the monophonic chorus of Western dictate yields to a cacophony of equitable voices. This review has traversed the group's evolutionary contours, unearthing not just statistical triumphs such as eclipsing G7 GDP shares and pioneering institutionally agile financing but the profound philosophical rupture it embodies: a reclamation of agency for the once-marginalised, who now dictate terms in boardrooms from Shanghai to Johannesburg. The economic sinews of this challenge, woven through resilient growth amid pandemics and proxy wars, reveal a bloc undeterred by asymmetry, channelling statecraft into sustainable harbours that Western philanthropy too often withholds. Institutional ingenuity, epitomised by the NDB's veto-free ethos, stands as a testament to ingenuity born of necessity, bridging infrastructural chasms while sidestepping the ideological quicksand of conditionality that has long ensnared the South.

Yet, this ascent is no triumphal procession; it is a labyrinthine negotiation with shadows both self-cast and externally imposed. Internal dissonances, be they the gravitational pull of Chinese pre-eminence or the ideological eddies between liberal India and statist Russia,

remind us that unity is not homogeneity but a deliberate choreography of divergences, harmonised by shared grievances against a system that equates progress with subservience. Geopolitically, the de-dollarisation gambit, with its tendrils in energy swaps and digital ledgers, portends not mere financial tinkering but a seismic reconfiguration of power's arteries, diverting flows from Wall Street to emergent meridians of trust. Challenges, from sanction sieges to environmental reckonings, forge resilience, compelling BRICS to evolve beyond reactive defiance into proactive stewardship, envisioning trade pacts that embed ecological covenants and tech alliances that democratize innovation.

In gazing forward, BRICS emerges not as the architect of utopia but as its pragmatic draftsman, sketching blueprints for an order where sovereignty is not bartered for loans and development is not a euphemism for extraction. This transformed vista beckons a world unyoked from exceptionalist mantras, where the Global South's ingenuity illuminates universal pathways, and multipolarity blossoms not as chaos but as a chorus. The stakes are existential: succeed, and BRICS ushers an epoch of shared prosperity, where yesterday's peripheries become tomorrow's pivots; falter, and the ghosts of hegemony linger, diluted yet durable. Ultimately, this collective's trajectory illuminates a deeper truth—the arc of history bends not toward inevitability but toward those bold enough to seize the fulcrum, forging from fragmentation a mosaic of mutual flourishing. In this light, BRICS is less a challenge to the old guard than an invitation to all: to co-author a ledger where equity, not empire, tallies the gains.

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Similarities and Differences between Land and Sea: On China's Maritime and Water Culture

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Abstract— This paper discusses maritime and water culture in Chinese tradition, primarily from the perspectives of linguistic metaphor and travel (you). It is divided into four sections. The first section outlines the characteristics of maritime mentality and thought, for which many Western works provide excellent explanations, although some may carry the taint of Western-centrism—particularly when they view China or the East from a "maritime" perspective. The second section attempts to explain the conventional comparative framework of land culture versus maritime culture through historical antecedents and consequences. The third section seeks to "discover China in China"; to use Zhuangzi's words, it aims to "trace things back to their roots" by exploring China's maritime and water culture within its own tradition. The final section provides a brief conclusion.

Keywords— Ocean, Land, Language, Historiography, Earthbound China

I. MARITIME THOUGHT

Maritime thought has often been expressed in numerous myths. The unpredictability of the sea, its tempestuous waves, its capacity to overturn oceans and roll up vast billows, its fickle and fathomless nature—all these are reflected in Greek myths involving figures like Poseidon, Venus, Odysseus, Medea, and Jason, whose deep connections with the sea are evident. Poseidon, the Greek god of the sea, wielder of the trident, ruled over the oceans, storms, and could cause tsunamis and earthquakes. Possessed of powerful desires and fierce ambition, he conspired with Apollo and Athena to overthrow Zeus, a plot that ultimately failed, resulting in Zeus banishing him to the mortal realm, where he later helped build the walls of Troy for King Laomedon. Venus, the Roman goddess of love and beauty—celebrated in Shakespeare's long poems—was actually born from the sea foam and presided over fertility and navigation. These myths and stories, whether concerning the Trojan War launched by a Greek coalition for the beautiful Helen, or Jason leading the Argonauts on a distant quest for the Golden Fleece, or Perseus using Medusa's head (or a sword, by other accounts) to slay the sea monster Cetus—such maritime tales are filled with heroes, lust, love, and incest, surging with the tempestuous sea, reaching dramatic climaxes of

immense complexity. In these narratives, the sea embodies both divinity and humanity, serving as an extension of political and individual will.

Shifting our gaze from myth to academic inquiry, Western scholarship has produced many brilliant studies centered on the sea. Classic works include Fernand Braudel's *The Mediterranean and the Mediterranean World in the Age of Philip II* and Anthony Reid's *Southeast Asia in the Age of Commerce, 1450-1680*. These studies, whether transnational or trans-epochal, treat the ocean as a spatial subject in itself—constituting what is termed "ocean space." The history of human interaction, exploration, competition, and cooperation across the seas is also reflected in Western textbooks and academic fields[1], such as underwater archaeology[2], Western maritime navigation activities, or general histories of naval warfare[3].

Of course, earlier scholarship may have its limitations. Viewed from a contemporary standpoint, some of these Western works on the ocean, or studies comparing and examining Sino-Western interaction and exchange, have not entirely avoided a Western-centric perspective. As Yang Guozhen has observed: "Maritime nation" belongs to the aforementioned Western academic

discourse system; it is both an unconscious manifestation of Western dominance and part of 'Western discursive hegemony.' We urgently need to distinguish its universal value from its specific significance through historical examination[4]." Viewing China, or comparing East and West, from such an angle easily falls into the three problematic frameworks that Paul A. Cohen cautioned against: "impact-response," "tradition-modernity," and "imperialism." This approach risks persistently imposing such "outsider" questions onto Chinese history, replicating externally imposed problematics while neglecting China's own internal dynamics of change.

II. LAND CULTURE AND MARITIME CULTURE

However, to borrow the title of Cohen's book, if we genuinely seek to "discover history in China" and examine maritime culture through the lens of Chinese culture itself, we often find ourselves drawn into comparative frameworks. This might involve Sino-Western comparisons—contrasting flood myths, navigational technologies, or the scale of naval warfare. Alternatively, another approach interprets the very fabric of traditional Chinese culture, viewing China as fundamentally agrarian, a nation founded on agriculture, thereby rendering characteristics like *xiangtu* (native soil), *tudi* (land), *nidi* (muddy earth), and *ludi* (dry land) as defining Chinese traits. Many derived concepts and behaviors are linked to this premise, epitomized by Fei Xiaotong's seminal work, *From the Soil: The Foundations of Chinese Society*. Consequently, notions like "attachment to one's native land and reluctance to migrate" (*antu zhongqian*) and being "earthy" (*tuli tuqi*) are connected to textual sources like the *Classic of Poetry* and archaeological findings at sites like Hemudu. Agricultural culture and agrarian civilization thus become posited as the bedrock of Chinese culture. However, in Fei Xiaotong's analysis, *xiangtu* (native soil/local land mentality) is intricately linked with concepts like the differential mode of association (*chaxu geju*), morality, ritual propriety (*li*), kinship, the gentry, and ties of blood and locality, collectively forming China's foundational character—a persistent *basso continuo*. Fei did not attach excessive disparagement to this; indeed, he often praised it. Yet, when such descriptions are juxtaposed with traits associated with a maritime mentality—adventure, enterprise, proactiveness, initiative, innovation—a deliberate contrast emerges, favoring one over the other. This imbues the comparison between land and maritime cultures with implicit value judgments. In the late 1980s, the influential television documentary *River Elegy* (*He Shang*) deliberately contrasted the "azure blue" with the "loess yellow" spirit: "The entire system of Confucian

thought articulated the norms and ideals of an inland civilization. During the flourishing period of Eastern feudal society, it was evidently relatively reasonable. However, the unification of thought under a single doctrine weakened pluralistic development. The rich elements of maritime civilization in ancient life, like a few slender, clear springs, trickled onto the loess plateau of inland civilization and vanished without a trace[5]." Viewed retrospectively, this perspective contains many unsubstantiated assumptions. The notions of "loess" and agricultural origins are, in fact, deeply intertwined with the genesis of Chinese civilization and cannot be oversimplified.

From the perspective of intellectual history, the critique of land-based culture using maritime culture as a yardstick, culminating in an explanation for China's modern backwardness vis-à-vis Western strength—and thus the imperative to catch up and surpass Britain and America—this line of reasoning has discernible historical causes and consequences. Faced with internal strife and external threats in modern times, how was China to be saved? Through enlightening the populace or national salvation? Or perhaps both concurrently? Through "Chinese learning for fundamental principles, Western learning for practical application" (*Zhongti Xiyong*)? *Statecraft historiography*? The revival of non-Confucian philosophical schools? Or interpreting Western learning through Buddhism? From the images of the "Sick Man," the "Yellow Peril," and the "Sleeping Lion" to the discourses of *Zhongti Xiyong*, wholesale Westernization, and thorough modernization, this comparative mindset clearly has a traceable lineage[6]. The comparison between China and the West, China's learning from the West, China's perceived inferiority and the corresponding praise for the West—this forms what A. O. Lovejoy termed a "Great Chain of Being." Yet, as times change and eras shift, concepts undergo transformation. Though names may remain the same, their substance differs; concepts themselves become alienated, potentially evolving into a social history of thought. We can often discern their significance from the perspective of their specific historical context.

While the Mediterranean maritime character was mentioned earlier, the West also possesses its own "land-based character." This is particularly evident in the "nomadic civilization historiography" that has gained prominence in recent decades—a perspective that contrasts with the orthodox Central Plains narrative, akin to a steppe-centric historical view. This phenomenon is not unique to China. From roughly the second to the eighth century CE, Europe was frequently embroiled in warfare and chaos, partly due to Persian power and partly due to

groups Europeans then labeled "barbarians." Regarding the barbarian question, Edward Gibbon's *The History of the Decline and Fall of the Roman Empire* attributes Rome's weakening to imperial misrule and moral decay, the growing power of the military, issues surrounding aristocratic privileges, the erosion of civic spirit, and societal luxury. Crucially, he also identifies the spread of Christianity and barbarian invasions. In essence, these "barbarians" were often nomadic peoples migrating across the Eurasian landmass—from Zhangjiakou to the steppes stretching towards the Black and Caspian Seas—constituting a major driving force in world history. Their epochal significance in world history is evident from the Qin and Han dynasties in China through to the Timurid Empire, the Turkicized Mongols, the Ottoman Empire, and the Mughal Empire in India—all representing periods where steppe peoples played pivotal roles on the global stage.

Consequently, the center of gravity in Eurasian continental history may not rest solely with Han Chinese or settled agricultural/pastoral societies, but rather with these nomadic peoples. Previously dismissed as uncivilized barbarians, outsiders, or aliens, known only for warfare and plunder, the reality is more complex. They often served as crucial agents of circulation and transmission across Eurasia—conveying plants, goods, technologies, institutions, financial systems, conceptual frameworks, religions, scripts, languages, texts, marital customs, knowledge, animals, and even pathogens.

Japanese scholar Sugiyama Masaaki, in his *A World History of Nomads*, adopts this very perspective—that of "land-based thought"—to analyze the significance of Kublai Khan. He posits that the grand Eurasian trading sphere can be demarcated around the year 1260. In Chinese history, 1260 was the first year of the Jingding era under Emperor Lizong of the Southern Song, and the first year of the Zhongtong era in Mongol-ruled China, marking the ascension of Kublai Khan. Prior to 1260, the Mongol Empire's political base was on the Mongolian Plateau, with its territory stretching roughly from the Sea of Japan westward to the mouth of the Danube, Anatolia, and the eastern Mediterranean coast. Subsequently, Kublai Khan, prioritizing internal consolidation before external expansion, first addressed domestic political challenges. Meanwhile, the Khanates of Jochi in the northwest, Hulegu in the south, and Chagatai in Central Asia gradually grew stronger. The Mongol Empire thus transformed into a "Great Yuan Ulus" centered on Kublai Khan's lineage, effectively a kind of "world federation" encompassing the three aforementioned Khanates. Within this federation, multilingualism, multiethnicity, and multiscriptural practices defined a new type of imperial

polity. Across the Eurasian continent, this federal empire sought to integrate various regions from discrete points into interconnected lines and surfaces through diverse commercial and financial activities involving economic logistics and trade. Kublai Khan's eventual southward campaign against the Southern Song, while motivated by various political and military rationales, was also clearly driven by economic and trade considerations. Sugiyama Masaaki argues that Kublai Khan envisioned merging the traditional Mongol steppe military power with the immense economic might of Chinese society—then the largest in the Eurasian world—to forge a multi-layered, three-dimensional grand empire. Furthermore, he aimed to integrate this with Muslim commercial networks, specifically those of Persian-speaking Iranian Muslims, to inaugurate a new era of economic integration. This commercial network also included the Uighurs. These policies, doctrines, and transmissions were all historically driven by land-based modes of thought.

Conversely, what of China's own maritime character or maritime thought? Much research has emerged reflecting on land-based thought through the lens of Chinese maritime activity, comparing the two, or advocating for a balanced consideration, accumulating significant findings. Building upon these prior achievements—standing on the shoulders of giants—the next section will explore China's traditional maritime and water culture from alternative angles, specifically focusing on linguistic metaphors and the concept of you(travel, roaming).

III. DISCOVERING THE SEA AND WATER IN CHINA

Whether involving travel (you) or dwelling (ju), whether pertaining to land or sea, both constitute integral components of Chinese tradition. The ancients fully grasped the physical properties of the sea and water, employing them as expressions of linguistic thought. For instance, Laozi favored water as a metaphor for the Dao, representing softness, receptivity, and immense plasticity[7]. The use of such conceptual objects is intrinsically linked to their inherent properties and cultural context. Thinkers leverage these characteristics to construct and articulate their philosophical systems, offering explanations and descriptions until the object and the principle it illustrates become fused—using the object to explicate the principle, or using the principle to illuminate the object, mutually reinforcing each other. As Mencius stated, "For all things of the same kind, there is a fundamental resemblance." Indeed, water, as a fundamental element, provides ample scope for

imaginative elaboration. Pre-Qin philosophers were largely active in what is today Shandong Province. According to current research, rainfall, river systems, and lake coverage were far more abundant then than now. Moreover, the North China Plain of that era was densely covered with forests and marshes; Zhu Kezhen concluded that the climate during the Warring States period was warmer and more temperate than it is today[8]. In such an environment, it is unsurprising that many Pre-Qin thinkers possessed a far deeper observational understanding of "water" than we might imagine. Although Zhuangzi was primarily active around Shangqiu in modern Henan, he was exceptionally familiar with the myths of the Yan-Qi coastal region (modern Hebei-Shandong). He readily drew upon maritime allusions and legends, frequently employing them as linguistic metaphors, such as references to the Lacquer Garden (Qiyuan), Changsang Jun, Changsang Gongzi, and the culture of the Eastern Sea. Even imagery frequently used by Zhuangzi—wind, birds—bears the imprint of the maritime character associated with the Yan-Qi coast[9].

As mentioned, water and the sea served as metaphors whose physical properties were grasped and understood by thinkers, subsequently integrated into their respective philosophical stances as vital components linking Heaven and humanity, cultivating the self and establishing proper human conduct. However, while self-cultivation is a universal concern, according to French philosopher Pierre Hadot, ancient philosophical schools—whether Socratic, Platonic, Stoic, or Epicurean—generally insisted that philosophy was primarily a way of life practiced rather than merely a system of thought contemplated[10]. Nevertheless, even so, their approaches to using metaphor for self-cultivation differed significantly. For Plato, the relationship between Heaven and humanity could be characterized as one of "imitation" (mimesis). He advocated that humans should emulate the orderly motions of the celestial bodies; the harmony of the heavens provided the ideal model for the earthly polis. Thus, one should seek harmony and avoid conflict, modeling oneself on the natural progression of the seasons. In terms of this "imitative" function of metaphor, Chinese and Western traditions possess some common ground. Yet, the metaphorical language of Pre-Qin thinkers is replete with imagery of the sea and water, making it rather distinctive.

In Chinese culture, however, the sea and water transcend their role as mere metaphorical tools for philosophical self-cultivation; they are also the subject of a vast body of literary works. Examples include Wang Can's "Rhapsody on Roaming the Sea" (You Hai Fu), Mu Hua's "Rhapsody on the Sea" (Hai Fu), Pan Yue's "Rhapsody on

the Vast Sea" (Cang Hai Fu), Qiu Guangting's "Discourse on the Sea Tides" (Hai Chao Lun), Fan Yangyuan's "Rhapsody on All Waters Returning to the Sea" (Zhong Shui Gui Hai Fu), and many more, too numerous to list exhaustively. These writings encompass factual accounts, plain descriptions, imaginative fictions, and blends of reality and fantasy. Various flora and fauna associated with the sea—ocean fish, giant clams, divine conches, small islands, sacred trees, corals—all find their place within them. Furthermore, China's historical maritime activities constitute a key focus of research in diplomatic history, economic history, and the history of cultural exchange. Chen Guodong even argues that after the arrival of Europeans in East Asia and up until the eighteenth century, maritime trade at various levels within Asia, including China, not only failed to disappear but encountered new opportunities and developments[11]. Haneda Masashi similarly points out that during the seventeenth and eighteenth centuries—the era of the East India Companies' burgeoning trade—Asia, including its Chinese participants, experienced its own "Asian century." Numerous individuals traversed the oceans for long-distance endeavors: merchants, migrants, speculators, laborers, mercenaries, poets, literati, and political refugees, all in substantial numbers[12].

IV. REDISCOVERING TRADITIONAL CHINESE WATER CULTURE

China's traditional maritime and water culture encompasses far more than the aspects discussed above; there is much left to explore. To offer another example, consider Li Diaoyuan's *Ran Xi Zhi* ("Records of Burning Rhino Horn," a title alluding to illuminating the depths) from the Qing Dynasty. Existing research on this work predominantly focuses on its classification of aquatic products and fish species, with papers appearing in journals like *Ancient and Modern Agriculture*, reflecting the scholarly efforts invested in these areas.

However, works on aquatic products should also be understood as belonging to China's broader tradition of bowu (broad learning about things, natural history). The Pre-Qin bowu tradition was already remarkably rich. The *Classic of Poetry* encourages familiarity with the names of birds, beasts, plants, and trees; the Sao-style poetry of the *Chuci* excels in vivid descriptions of objects. Even Confucius, while asserting that one should "set one's heart upon the Way," also advocated "finding relaxation in the arts" (you yu yi). The original meaning of yi (art) relates to cultivation and planting, inherently concerned with "things." It also encompassed the Six Arts (rites, music, archery, charioteering, calligraphy, mathematics),

demonstrating the breadth and richness expected of a gentleman's learning, later extending to skill and artistry, further solidifying its connection to bowu knowledge. When Fan Chi inquired about farming and gardening, Confucius professed inferior knowledge compared to experienced farmers and gardeners. This was not a dismissal of such practical matters—he himself acknowledged his humble origins and competence in various menial tasks—but rather an insistence that one's ultimate aim must align with the Way, with concern for the wider world. Overemphasis on such narrow technicalities risked becoming what Confucius termed a "petty person" (xiaoren). Other texts, like the *Lüshi Chunqiu* ("Master Lü's Spring and Autumn Annals"), with its twelve "Almanacs," eight "Examinations," and six "Discourses"—a vast compendium—comprehensively discuss the myriad phenomena of Heaven and Earth. From the Han Dynasty onward, literary depictions expanded greatly: descriptions of beautiful women, accounts of fairylands, eulogies of capitals, observations of natural phenomena, laments on fate, veiled critiques of contemporary affairs—all grounded in emotional responses to and engagement with the external world. The scope of depicted objects had become extremely broad. During the Six Dynasties, landscape poetry, palace-style verse, agricultural treatises, works on materia medica, geographical gazetteers, and bowu compilations flourished—works like Lu Ji's *Mao Shi Cao Mu Niao Shou Chong Yu Shu* ("Commentary on Plants, Trees, Birds, Beasts, Insects, and Fish in the Mao Version of the Classic of Poetry"), Zhang Hua's *Bo Wu Zhi* ("Record of the Investigation of Things"), Guo Yigong's *Guang Zhi* ("Expanded Records"), and Guo Pu's commentaries on the *Erya*. These were numerous. These practices of observing, experiencing, and empathizing with things provided immense intellectual nourishment for literati and scholars, simultaneously refracting contemporary modes of understanding the world. Guo Pu thus emphasized the importance of the *Erya* precisely from this bowu perspective: "It is a means to comprehend the essence of glosses and exegesis, to recount the evocative imagery of the poets, to gather the distinct expressions of bygone eras, and to distinguish entities that share the same reality but bear different names. Truly, it is the ford and bridge across the Nine Streams of thought, the key and lock to the Six Arts, the deep pool for those who wish to learn broadly, the flourishing garden for those who gather literary blooms. Should one desire broad knowledge without perplexity and familiarity with the names of birds, beasts, plants, and trees, nothing approaches the *Erya*[13]." The bowu tradition has deep and well-documented historical roots.

More importantly, if we situate works like Li Diaoyuan's within the social milieu of the Ming and Qing dynasties, cataloging the types and appearances of aquatic creatures and fish cannot be viewed solely through the lens of modern taxonomy or fisheries science. Returning to the intellectual climate of that era, such endeavors were integral to the aesthetics of everyday life cultivated by Ming-Qing literati. This involved both extensive learning and the refinement of personal temperament, expressed through connoisseurship of painting and calligraphy, gastronomy, furniture, travel, gardening, and attire. It represented an "elegant" lifestyle constructed from an attitude of leisurely appreciation, shaping class identity and distinguishing oneself from the vulgar mundane. Works like *Zun Sheng Ba Jian* ("Eight Discourses on the Art of Living"), *Chang Wu Zhi* ("Treatise on Superfluous Things"), *You Ju Ya Bian* ("Elegant Compilation on Travel Implements"), *Lü Yuan Cong Hua* ("Collected Talks from the Garden of Tracks"), *Ping Shi* ("History of Flower Vases"), and *Tao An Meng Yi* ("Dream Memories of Tao'an") all stem from similar sensibilities. The *zhi* (records/treatise) in *Ran Xi Zhi* aligns with the broader tradition of specialized treatises, akin to the structure of *Chang Wu Zhi*, which states: "This compilation is divided into twelve categories: Dwellings, Flowers and Trees, Water and Stones, Birds and Fish, Calligraphy and Painting, Tables and Couches, Utensils, Arrangement, Clothing and Adornment, Boats and Carriages, Vegetables and Fruits, Incense and Tea." "All matters pertaining to leisurely pursuits and refined pleasures are meticulously included, drawing broadly from Zhao Xihu's *Dong Tian Qing Lu* as a distant source and closely referencing Tu Long's *Kao Pan Yu Shi* as a contemporary companion[14]." While current scholarship has extensively explored the lives of Ming-Qing literati, linking these studies with maritime thought could potentially yield new insights. Thus, it is evident that "discovering the sea and water in China"—when firmly situated within the specific historical context, social atmosphere, and popular mentality, and approached through the lenses of new cultural history, history of ideas, or microhistory—offers tremendous potential for enriching, deepening, reshaping, or charting new courses in maritime-related research, leading to more diverse and fruitful outcomes.

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Application and Evaluation of the Effectiveness of Speed-Strength Development Exercises for Male Volleyball Athletes Aged 14–15 at the Hanoi Sports Training and Competition Center

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Abstract— This study evaluated the effectiveness of a 36-exercise speed-strength training system for male volleyball athletes aged 14–15 at the Hanoi Sports Training and Competition Center. Twenty-five athletes were divided into an experimental group and a control group over a 12-month pedagogical experiment. Results demonstrated significant improvements in explosive power, movement speed, physiological adaptation, and psychological–neurological performance in the experimental group. Statistical analysis confirmed that the proposed exercise system had high scientific validity and practical effectiveness in improving speed-strength performance for youth volleyball athletes.

Keywords— speed-strength, volleyball, youth athletes, pedagogical experiment, physical training

I. INTRODUCTION

In modern volleyball, speed-strength is considered one of the most important physical qualities determining the effectiveness of technical performance and competitive achievement. Specialized movements such as spiking, blocking, quick attacking, and defensive transitions require athletes to generate maximum force within the shortest possible time. Therefore, the development of speed-strength has become a central objective in modern volleyball training, especially for young athletes who are in the stage of rapid neuromuscular development and motor skill formation.

According to Philin V.P. (1996), the training process for youth athletes must be organized in accordance with biological adaptation principles and age-related physiological characteristics in order to ensure sustainable athletic development (Philin, 1996). In volleyball, several studies have emphasized the decisive role of speed-strength in improving jumping ability, spiking power, movement speed, and overall technical efficiency. Tran Hung (2008) reported that the development of speed-strength significantly influences the effectiveness of spiking techniques in male volleyball athletes aged 14–17 (Tran Hung, 2008). Similarly, To Xuan Thuc (2014) demonstrated a close relationship between strength

qualities and the technical effectiveness of jump serving and jump setting in volleyball (To Xuan Thuc, 2014).

Research conducted by Tran Duc Phan (2001) emphasized that specialized exercise systems play a decisive role in developing agility and movement coordination in young volleyball athletes (Tran Duc Phan, 2001). According to Phomin E.V. (1986), speed development in youth volleyball athletes requires specialized exercises with high neuromuscular stimulation and appropriate training progression (Phomin, 1986).

However, current training practices for youth volleyball athletes in many local training centers still reveal several limitations. Most training programs mainly focus on general physical conditioning and movement speed, while specialized exercises integrating strength, speed, and volleyball-specific technical skills remain insufficient. In addition, the organization of speed-strength training often lacks systematic periodization, scientific load control, and competitive simulation. As a result, athletes frequently fail to maintain stable explosive performance during high-intensity match situations.

The practical survey conducted at the Hanoi Sports Training and Competition Center showed that although some exercises related to explosive movement and volleyball

techniques were applied, the training content remained fragmented and lacked a specialized system suitable for the developmental characteristics of athletes aged 14–15. The absence of scientifically structured speed-strength exercises may negatively affect athletes' ability to optimize explosive force production, neuromuscular coordination, and technical execution during competition.

From the perspective of modern sports-training theory, speed-strength can only be effectively developed through highly specialized exercise systems combined with appropriate training periodization and scientific monitoring of training intensity and volume. Therefore, the selection, application, and evaluation of a systematic speed-strength training program suitable for young volleyball athletes is considered an urgent and practical requirement. Nguyen Xuan Sinh (1999) stated that scientific research in sports training must ensure objectivity, reliability, and practical applicability through appropriate testing and statistical methods (Nguyen Xuan Sinh, 1999).

Derived from these theoretical and practical considerations, the present study was conducted to apply and evaluate the effectiveness of speed-strength development exercises for male volleyball athletes aged 14–15 at the Hanoi Sports Training and Competition Center. The research aimed to provide scientific evidence for improving specialized physical training and enhancing competitive performance in youth volleyball athletes.

II. RESULTS AND DISCUSSION

2.1. Analysis of the Current Speed-Strength Training Exercises for Male Volleyball Athletes Aged 14–15 at the Hanoi Sports Training and Competition Center

Based on practical surveys and analysis of the existing training program at the Hanoi Sports Training and Competition Center, the study identified 20 exercises currently used for developing speed-strength in male volleyball athletes aged 14–15. These exercises included non-ball drills, volleyball-specific drills, and competition-related exercises. The exercise system

Table 1: 20 speed and strength development exercises for male volleyball players aged 14-15 at the Hanoi Sports Training and Competition Center

No	Exercise Name	Main exercise group	Main Impact Objectives
1	Jump with run-up (m)	No ball	Develop leg speed and jumping power
2	Jump with run-up (cm)	No ball	Develop vertical speed power
3	Pine tree run (s)	No ball	Develop agility and directional change ability

mainly focused on improving jumping ability, movement speed, upper- and lower-body explosive strength, and technical coordination in volleyball performance.

The selection and classification of exercises were based on principles of specialized volleyball training and anthropometric suitability for adolescent athletes (Pham Tuan Phuong, 1994). However, analysis of the structure and content of the training exercises revealed several limitations in the current training process. Most exercises primarily emphasized general speed and endurance development, while specialized speed-strength exercises directly associated with jumping, spiking, and blocking performance remained limited. In particular, the number of exercises combining strength, speed, and volleyball-specific technical execution was still insufficient to satisfy the demands of modern volleyball training.

In addition, although several exercises simulated competitive situations, such as positional spiking drills, repeated blocking movement drills, and three-player defensive exercises, these activities were not organized into a scientifically controlled competition-training system. The absence of quantified training parameters, including movement intensity, training volume, number of jumps, and spiking repetitions, reduced athletes' ability to identify their individual adaptation thresholds and evaluate their own strengths and weaknesses in speed-strength performance.

Furthermore, the repetitive and monotonous nature of several training contents negatively affected athletes' motivation and long-term training enthusiasm. Consequently, maintaining high-intensity performance during prolonged competition periods remained difficult for young athletes. This issue directly influenced the stability of speed-strength performance during decisive phases of volleyball matches.

From the perspective of modern sports-training theory, speed-strength can only be effectively developed through highly specialized exercises combined with scientific periodization and strict monitoring of training intensity and workload. Therefore, the selection and application of a systematic speed-strength training program suitable for youth volleyball athletes became an urgent practical and scientific requirement.

4	Running with change of direction on command (s)	No ball	Develop reaction speed and movement speed
5	Zigzag run from sideline to attack boundary line	No ball	Develop combined speed power and coordination
6	Jump rope 2 minutes (times)	No ball	Develop lower limb speed endurance
7	Prone position with hands on the ground	No ball	Develop arm, shoulder, and trunk muscle strength
8	Pulling rubber band	No ball	Develop upper limb speed power
9	Jumping block combined with side movement 2 minutes (times)	No ball	Develop jumping and lateral movement speed power
10	Jumping and throwing rubber ball over the net	No ball	Develop hand-foot speed and coordination power
11	Bouncing ball (group of 2 people)	No ball	Develop reflexes and hand speed power
12	Passing squished ball (0.5–1 kg)	With ball	Develop upper limb speed power
13	Throwing squished ball 1.5–3 kg	With ball	Develop trunk and arm speed power
14	Throwing squished ball (1 kg) with one hand (m)	With ball	Develop striking speed power
15	Bouncing ball with change of position (4,3,2)	With ball	Develop speed power and specialized coordination power
16	Moving block repeatedly along the net	With ball	Develop jumping and movement speed power
17	Defensive practice in group of 3 people	With ball	Develop speed endurance and teamwork coordination
18	Pine tree run (s)	Specialized exercises	Develop speed and speed power
19	Pulling rubber band	Specialized exercises	Develop upper limb speed power
20	Competition	Specialized exercises	Develop overall speed power and competitive spirit

2.2. Applying strength and speed development exercises for young male volleyball players aged 14-16 in Hanoi

2.2.1. Organization of pedagogical experiments

A pedagogical experiment is a process aimed at testing a selected system of strength and speed development exercises and a new training plan on research subjects, while simultaneously determining the impact of the strength and speed development exercise system and training plan on improving the strength and speed of the research subjects.

The pedagogical experiment was conducted to verify the effectiveness of the system of 36 strength and speed development exercises and the 12-month training plan that had been developed.

Experimental subjects: The study selected 25 male young volleyball players from Hanoi, aged 14-15, meeting

similar health and professional skill requirements. The players were randomly divided into two groups:

Experimental group (n=13): Training according to the system of 36 exercises and the new training plan of the study.

Control group (n=12): Training according to the traditional training program of their managing unit.

Experimental Conditions:

Duration: 12 months (February 2023 to January 2024).

Duration: Performed for 30-35 minutes at the end of each main training session.

Frequency: 3 sessions/week (Monday, Wednesday, Friday or Tuesday, Thursday, Saturday).

Variable Control: Both groups maintained the same nutrition, rest, and general tactical training regimen. The only difference lay in the specific intensive physical training content for the experimental group.

2.2.2. Assess the homogeneity of the groups before the experiment

Before the experimental program was implemented, all athletes participated in 11 evaluation tests related to physical fitness, volleyball-specific performance, physiological function, and psychological–neurological ability. The evaluation system used in this study followed

scientific testing principles commonly applied in sports science research (Nguyen Xuan Sinh, 1999).

Statistical analysis showed that the coefficients of variation (Cv) for all indicators were below 10%, demonstrating high homogeneity between the two groups. Comparisons between the experimental and control groups before training intervention revealed no statistically significant differences ($P > 0.05$) in any of the evaluated tests. Therefore, both groups were considered equivalent in terms of initial speed-strength performance and suitable for pedagogical experimentation.

Table 2. Results of determining the homogeneity of the study subjects ($n=25$)

No	Test Content	($\bar{X} \pm \sigma$)	Cv (%)
I	Physical Fitness – Specialized Test Group		
1	High Jump with Run (cm)	308.6 ± 9.2	2.98
2	Standing Long Jump (cm)	262.4 ± 11.5	4.38
3	Overhead Throw (m)	12.1 ± 0.9	7.43
4	Skipping Run 4 times 10m (s)	10.28 ± 0.52	5.05
5	Zigzag Run 9-3-6-3-9m (s)	6.58 ± 0.38	5.77
6	Powerful Spike at Side 4 (Points)	6.8 ± 0.5	7.35
II	Biomedical Test Group		
7	Dominant Hand Grip Strength (kg)	37.2 ± 2.6	6.98
8	Back Muscle Strength (kg)	82.4 ± 5.8	7.03
9	Ruffier Index (I.R)	8.5 ± 0.8	9.41
III	Psychological – Neurological Test Group		
10	Complex Reflexes (ms)	308.5 ± 14.2	4.60
11	Schulte Number Chart Test (s)	29.2 ± 2.1	7.19

The analysis results in Table 3.22 show that the coefficient of variation (Cv) for all 11 test indicators is less than 10% (ranging from 2.98% to 9.41%). This demonstrates that the sample of 25 athletes (divided into groups of 13 and 12) has low dispersion and high homogeneity in terms of physical fitness, biomedical function, and neuropsychological well-being.

This similarity in initial performance is an important legal and scientific basis for conducting the pedagogical experiment. Any changes in performance after the 12-

month training cycle will accurately reflect the effectiveness of the 36 SMTD exercise system proposed in the study.

Before implementing the 36 exercise system, we conducted tests to divide the groups and used the results as a basis for comparison. The total of 25 athletes were randomly divided into: Experimental Group ($n=13$) and Control Group ($n=12$). The results of the pre-experimental tests are presented in Table 3.

Table 3. Comparison of SMTD levels between the two groups before the experiment ($n=25$)

No	Test content	TN Group ($n=13$)	DC Group ($n=12$)	t	P
I	Physical Fitness and Expertise Testing Group				
1	High jump with run-up (cm)	309.2 ± 8.1	308.0 ± 8.5	0.36	> 0.05
2	Standing long jump (cm)	263.5 ± 10.5	261.2 ± 11.2	0.53	> 0.05
3	Overhead throw (m)	12.2 ± 0.8	12.0 ± 0.9	0.58	> 0.05

4	Swing 4/10m (s)	10.25 ± 0.48	10.32 ± 0.55	0.34	> 0.05
5	Zigzag run 9-3-6-3-9m (s)	6.55 ± 0.35	6.62 ± 0.41	0.46	> 0.05
6	Powerful spike at side 4 (Points)	6.9 ± 0.5	6.7 ± 0.6	0.91	> 0.05
II	Biomedical Testing Group				
7	Dominant hand grip strength (kg)	37.5 ± 2.5	36.9 ± 2.8	0.56	> 0.05
8	Back muscle strength (kg)	83.1 ± 5.5	81.6 ± 6.1	0.65	> 0.05
9	Ruffier index (I.R)	8.4 ± 0.7	8.6 ± 0.9	0.62	> 0.05
III	Psychological and Neurological Testing Group				
10	Complex reflection (ms)	307.4 ± 13.5	309.8 ± 15.1	0.42	> 0.05
11	Schulte number test (s)	29.0 ± 2.0	29.5 ± 2.3	0.58	> 0.05

The data in Table 3 shows that the test results for all 11 physical, technical, biomedical, and neuropsychological indicators of both the experimental and control groups had t-values (calculated) smaller than the t-value (table) = 2.069. With a probability of $P > 0.05$, the difference in performance between the two groups is not statistically significant. This conclusion confirms that the division of the experimental and control groups was completely objective; the initial strength and speed levels of the 25 athletes were equivalent, meeting the conditions for conducting a pedagogical experiment.

2.2.3. Results of speed and strength tests for the two groups after the experiment

Results of tests after 6 months of experiment

After six months of training, the experimental group demonstrated noticeable improvement trends in most evaluation indicators compared with the control group. The average results of explosive jumping ability, movement speed, upper-body strength, and volleyball-specific technical performance were generally superior in the experimental group.

Significant differences were identified in medicine-ball throwing performance ($P < 0.01$) and

powerful spiking ability ($P < 0.05$). These findings indicated that the speed-strength exercise system positively affected explosive upper-body strength and volleyball-specific force transmission ability.

The gradual improvement observed after six months was consistent with the biological adaptation principles described by Philin (1996) and the neuromuscular development characteristics reported by Phomin (1986). However, several indicators did not yet reach statistical significance after six months because the early phase of training mainly focused on neuromuscular adaptation and the establishment of physiological foundations.

From the perspective of sports physiology, this stage primarily involved improvements in motor-unit recruitment, intermuscular coordination, and neural transmission efficiency rather than immediate comprehensive performance enhancement. Therefore, the absence of significant differences in some complex indicators such as reaction time and concentration ability did not represent a limitation of the training program, but rather reflected the biological adaptation process characteristic of youth athletes during the early stages of specialized training.

Table 4. Comparison of speed and power between the experimental and control groups after six months of experimentation

No	Test content	TN Group ($\bar{X} \pm \sigma$)	DC Group ($\bar{X} \pm \sigma$)	t	P
1	High jump with run-up (cm)	315.4 ± 8.2	310.2 ± 8.8	1.53	> 0.05
2	Standing long jump (cm)	268.2 ± 10.5	264.5 ± 10.8	0.87	> 0.05
3	Overhead throw (m)	13.5 ± 0.8	12.4 ± 0.9	3.24	< 0.01
4	4x10 shuttle run (s)	10.05 ± 0.42	10.22 ± 0.48	0.94	> 0.05
5	9-3-6-3-9m zigzag run (s)	6.38 ± 0.32	6.52 ± 0.38	1.00	> 0.05
6	Powerful spike (4 points)	7.5 ± 0.5	6.9 ± 0.6	2.73	< 0.05
7	Dominant hand grip strength (kg)	39.2 ± 2.4	37.8 ± 2.6	1.40	> 0.05

8	Back muscle strength (kg)	86.5 ± 5.2	83.2 ± 5.6	1.53	> 0.05
9	Ruffier index (I.R)	8.0 ± 0.6	8.4 ± 0.8	1.43	> 0.05
10	Complex reflex (ms)	298.5 ± 12.4	306.4 ± 14.2	1.48	> 0.05
11	Schulte score (s)	27.8 ± 1.6	28.8 ± 2.1	1.35	> 0.05

The results in Table 4 show that, after 6 months of experimentation, most of the speed strength indicators of the experimental group showed a clear improvement and achieved better average values compared to the control group. This reflects the initial effectiveness and correct orientation of the speed strength development exercise system applied to the experimental group. However, statistically speaking, the difference between the two groups was not statistically significant in all tests. Specifically, in indicators such as high jump with run-up, standing long jump, 4 × 10 m shuttle run, 9-3-6-3-9 m zigzag run, dominant hand grip strength, back muscle strength, Ruffier index, complex reflexes, and Schulte's table test, the calculated t-values were all smaller than the table t-value ($t = 2.069$) at a probability threshold of $P > 0.05$. These results show that the differences between the experimental and control groups in the tests were not statistically significant, although the experimental group showed better progress. This reflects the regularity of physical training in general and speed and strength training in particular at the age of 14–15. In the first six months of the training cycle, development mainly occurs in the direction of accumulating a physical foundation and perfecting the initial adaptive mechanisms of the neuromuscular system, rather than creating a clear breakthrough in performance in complex tests. This is the stage where processes such as increasing the ability to mobilize motor units, improving intermuscular-intramuscular coordination, regulating the rhythm of muscle contraction and relaxation, and optimizing nerve impulse conduction are occurring vigorously but are not yet fully stable. Conversely, in some tests with a high degree of mechanical impulsivity, requiring relatively simple movements and directly related to specialized speed and strength, the differences between the two groups were clearly demonstrated and statistically significant. Specifically:

The overhead dribbling test showed a very clear difference between the two groups ($t = 3.24$; $P < 0.01$), reflecting the effective development of explosive upper limb strength and the ability to transmit force through a kinematic chain;

The powerful spike test along the 4-axis range also showed a statistically significant difference ($t = 2.73$; $P < 0.05$), indicating the positive impact of the exercise system on

specialized speed strength directly related to spiking technique.

These results show that the speed strength development exercises selected and organized in the experimental group had an early effect on abilities characterized by explosiveness, high intensity, and short impact time. These are also the factors that determine the effectiveness of the spike in modern volleyball competition, especially in young players who are in the stage of perfecting basic techniques and improving the quality of movement. From a training physiology perspective, the first six months of the experimental cycle can be considered a period of strength accumulation and functional foundation building, during which the athlete's central nervous system and musculoskeletal system gradually adapt to the new intensity and structure of movement. While changes in maximum strength, muscle contraction speed, and motor coordination have appeared, they are not yet mature enough to create stable and comprehensive differences in complex tests such as complex reflexes or attention span (Schulte).

Therefore, the lack of statistically significant differences in many tests after 6 months is not a limitation of the training program, but is entirely consistent with the laws of biological adaptation and the principles of sports training progress. Initial progress is formed first in spontaneous and specialized indicators, then spreads to more complex abilities in the next training phase.

In short, the results of the 6-month experimental tests have initially confirmed the scientific validity, feasibility, and practical effectiveness of the 36 speed strength development exercises developed in this study. At the same time, these results also provide a solid foundation for the intensive training phase in the following 6 months, where the differences in speed strength between the experimental and control groups are expected to be more clearly and comprehensively demonstrated.

Evaluating the results after 12 months of experimentation

After completing the full 12-month training cycle (ending in January 2024), the study conducted a final comprehensive assessment to evaluate the effectiveness of the 36 strength and speed development exercises for male volleyball players aged 14-15. The test content was standardized using the 11 tests previously used in the

experimental phases, ensuring consistency, uniformity, and comparability over time.

The results comparing the experimental group (TN) and the control group (DC) after 12 months are presented in Table 5.

Table 5. Comparison of results between the experimental group and the control group after 12 months of experimentation

No	Test content	TN Group (X $\pm\sigma$)	DC Group (X $\pm\sigma$)	t	P	W (%)
1	High jump with run-up (cm)	326.8 \pm 6.4	314.2 \pm 8.1	4.34	< 0.001	5.8%
2	Standing long jump (cm)	285.4 \pm 8.2	268.5 \pm 9.6	4.75	< 0.001	8.2%
3	Overhead throw (m)	15.4 \pm 0.5	12.9 \pm 0.7	10.4	< 0.001	21.8%
4	4x10m shuttle run (s)	9.45 \pm 0.25	10.12 \pm 0.42	4.89	< 0.001	8.1%
5	9-3-6-3-9m zigzag run (s)	5.92 \pm 0.20	6.42 \pm 0.35	4.46	< 0.001	10.1%
6	Powerful spike (4 points)	8.8 \pm 0.4	7.2 \pm 0.6	7.92	< 0.001	24.3%
7	Dominant hand grip strength (kg)	43.5 \pm 2.1	39.2 \pm 2.5	4.67	< 0.001	14.8%
8	Back muscle strength (kg)	98.4 \pm 4.5	87.6 \pm 5.4	5.45	< 0.001	16.9%
9	Ruffier index (I.R)	6.8 \pm 0.5	8.0 \pm 0.7	4.96	< 0.001	21.6%
10	Complex reflex (ms)	282.4 \pm 9.2	305.2 \pm 12.8	5.14	< 0.001	8.8%
11	Schulte score (s)	24.2 \pm 1.4	28.2 \pm 1.9	6.03	< 0.001	18.7%

Experimental results after 12 months showed a significant, comprehensive, and statistically significant improvement in speed and strength across all tests in the experimental group. The calculated t-values for all 11/11 indicators were greater than the table t-values, with a significance level of $P < 0.001$, confirming the clear difference between the two groups and demonstrating the practical effectiveness of the exercise system developed in this study.

Group of indicators for explosive power and professional speed power

Tests assessing explosive strength and rapid power generation, such as high jump with run-up, standing long jump, overhead throw, and powerful spike with a range of 4, all recorded superior growth in the experimental group, with relative growth (W%) ranging from 5.8% to 24.3%. In particular, the overhead throw (W = 21.8%) and powerful spike (W = 24.3%) tests showed the greatest improvement, directly reflecting the effectiveness of the systematic transition in training content: from building muscle power through resistance strength exercises in the first 6 months to optimizing speed strength through plyometrics and specialized exercises in the following 6 months. This is consistent with modern principles of muscle contraction-relaxation cycle development in high-performance sports training.

Biomedical and neuropsychological functional indicators

Besides improvements in athletic performance, biomedical and neuropsychological indicators also showed significant improvement. Specifically, the Ruffier index (I.R) decreased significantly, indicating a marked improvement in the cardiovascular adaptability and recovery of the experimental group of athletes. Simultaneously, complex reflexes and the Schulte test improved with high statistical significance, reflecting the stability and development of central nervous system function. This helps athletes maintain observation, information processing, and quick reaction capabilities under high-intensity and constantly changing competition conditions. These results confirm that the training system not only impacts muscle strength but also positively affects fundamental functional factors, contributing to the overall performance of young athletes.

Intergroup comparison and its practical implications

Comparison between the two groups showed that, although the control group also showed some progress due to the influence of routine training and natural age-related development, the rate and extent of growth were significantly lower than that of the experimental group. The difference, at $P < 0.001$ in most tests after 12 months, refuted the hypothesis that progress stemmed solely from biological growth factors, and affirmed the decisive role of the exercise system and training process designed in the study.

Physical fitness and professional skills test group

Tests reflecting explosive power and high-speed movement capabilities, such as: High jump with run-up; Standing long jump; Overhead dribble; 4x10 m shuttle run; 9-3-6-3-9 m zigzag run; and Power spike (sideline 4), all showed that the experimental group's column was significantly higher (or lower in time-based tests) than the control group's column. The most notable differences were in: Overhead dribble and Power spike (sideline 4). This demonstrates that the 36 SMTD exercises strongly impacted the ability to mobilize the fast motor unit, optimize the muscle contraction-relaxation cycle, and enhance the efficiency of power transmission in specific volleyball movements.

Biomedical testing group

The indicators: Dominant hand grip strength; Back muscle strength; Ruffier index

show that the TN group showed a significant improvement in muscular strength and cardiovascular recovery ability. This reflects that the training process not only increased mechanical power but also enhanced physiological adaptability, helping athletes maintain high intensity during competition.

Psychological and neurological testing group

In the tests: Complex Reflexes; Schulte's Table Test; the experimental group (TN) had significantly shorter reaction and information processing times compared to the control group (DC). This result confirms that the speed and strength training program not only impacts the muscular system but also improves the efficiency of the central nervous system, contributing to enhanced quick and accurate decision-making under high-pressure competition conditions. From the comparative graph results after 12 months, it can be confirmed that:

The progress of the experimental group is not random, but the result of a scientific, controlled, and clearly directed training process.

The system of 36 speed and strength development exercises with a 12-month cycle is suitable for the bio-muscle-neurological development characteristics of male volleyball players aged 14-15.

The graph is visual evidence, firmly reinforcing the statistical results in Table 5, confirming the effectiveness of the training program developed by this study. From the above results, it can be affirmed that the application of the 36-exercise system for developing speed and strength over a 12-month period is entirely appropriate, scientifically sound, and highly effective. This training model not only significantly improves speed and strength but also enhances biomedical and neuropsychological functions, meeting the requirements for improving professional performance and

sustainable development for young male volleyball players in Hanoi.

III. CONCLUSION

The results of this study confirmed that the application of the 36 speed-strength development exercises over a 12-month training period produced significant improvements in the physical, physiological, and psychological performance of male volleyball athletes aged 14–15 at the Hanoi Sports Training and Competition Center.

After the experimental period, the experimental group demonstrated superior development compared with the control group in all 11 evaluation tests related to explosive strength, movement speed, volleyball-specific technical performance, physiological adaptation, and neurological–psychological functions. The differences between the two groups reached a high level of statistical significance ($P < 0.001$), confirming the scientific validity and practical effectiveness of the proposed training system.

The greatest improvements were observed in tests directly associated with volleyball-specific speed-strength performance, particularly medicine-ball throwing and powerful spiking ability. These findings indicate that the selected exercises effectively enhanced explosive force production, neuromuscular coordination, and the efficiency of specialized volleyball techniques.

In addition, the training program positively influenced functional physiological indicators such as cardiovascular recovery ability and reaction speed, thereby contributing to the improvement of athletes' comprehensive competitive capacity under high-intensity match conditions.

The results of the present study are consistent with previous studies on youth volleyball training and speed-strength development conducted by Tran Hung (2008), Tran Duc Phan (2001), and Philin (1996).

Based on the obtained results, it can be concluded that the 36-exercise speed-strength training system and the 12-month periodized training plan are scientifically appropriate, feasible, and effective for youth male volleyball athletes aged 14–15. The study also provides an important practical foundation for improving specialized physical training programs in youth volleyball and may serve as a reference for coaches and sports-training institutions in the future.

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Understanding Intention to Stay in Green Hotels: An Empirical Study in Guangdong, China

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Abstract— This study investigates the rising trend of green hotel consumption in Guangzhou, China, emphasizing the psychological and social factors that influence consumer behavior. Drawing on data from approximately 430 respondents, collected through a structured questionnaire and analyzed via path analysis, the research explores how environmental perceptions shape the intention to stay in green hotels. The results reveal that environmental attitudes play a pivotal role, mediating the effects of moral reflection and altruism on consumption intentions. These findings underscore the importance of psychological drivers in sustainable tourism choices and suggest that enhancing environmental awareness can effectively encourage consumers to opt for eco-friendly accommodations.

Keywords— moral reflection, altruism, environmental attitude, green hotel.

I. INTRODUCTION

1.1 Background

Environmental degradation has become one of the most urgent global challenges in recent decades, with rapid industrialization and urbanization intensifying ecological pressures in many countries[1]. China, as the world's largest developing economy, faces particularly severe environmental problems, including high carbon emissions, urban pollution, and energy overconsumption[2]. To address these issues, the Chinese government has enacted a series of laws and policies to strengthen environmental protection and promote sustainable development[3]. Despite these top-down efforts, public awareness of environmental protection and the adoption of pro-environmental behaviors remain limited, suggesting that legislative measures alone are insufficient to generate meaningful behavioral change[4].

1.2 Internal and External Factors

The hospitality and tourism sector, as a resource-intensive industry, plays a critical role in environmental sustainability[5]. Green hotels, which adopt environmentally friendly practices and promote sustainable consumption, have emerged as an important initiative to reduce the ecological footprint of tourism. The decision to stay in a green hotel can be interpreted as an

act of environmental self-identification, a moral obligation, and a meaningful contribution to environmental protection. While external drivers such as government policies and regulations can encourage consumers to choose green hotels, internal psychological factors are equally significant. Altruism, defined as concern for the welfare of others and society, is particularly relevant in this context. Prior studies suggest that pro-environmental behaviors often stem from a combination of self-interest and altruistic motives[6]. Moreover, moral reflection—individuals' contemplation of right and wrong in environmental decision-making—together with environmental attitudes, may substantially influence green consumption choices[7].

1.3 Theoretical Framework and Research Gap

The Theory of Planned Behavior (TPB) has become one of the most widely used frameworks for explaining pro-environmental behaviors[8,9]. TPB posits that behavioral intention is determined by attitudes, subjective norms, and perceived behavioral control. Over the years, scholars have expanded TPB by incorporating additional variables, such as moral norms and environmental concern, to improve its explanatory power in the sustainability domain[10]. However, most prior studies applying TPB have focused on general pro-environmental behaviors, such as recycling, energy conservation, or sustainable consumption[11].

Research specifically examining consumers' intention to stay in green hotels, particularly in the Chinese context, remains limited.

At the same time, Chinese consumers are becoming increasingly aware of environmental issues and are showing greater demand for sustainable products and services[12]. Nevertheless, the psychological mechanisms that drive their intention to stay in green hotels remain under explored. To address this gap, the present study incorporates moral reflection, altruism, and environmental attitude into the TPB framework to investigate their influence on Chinese consumers' intention to stay in green hotels. By doing so, this study contributes to theory by extending TPB with moral and altruistic dimensions, and to practice by offering implications for policymakers and hospitality managers seeking to promote sustainable tourism and environmental responsibility.

II. LITERATURE REVIEW

2.1 Moral Reflection

Moral cognition involves perceiving moral stimuli, reasoning, and enacting ethical behavior. Moral reflection goes beyond deliberating specific actions, encompassing a deeper awareness of one's existential obligations and integrating emotions with personal evaluations of events[13]. It allows individuals to examine their willingness to act according to moral duties[14] and can lead to changes in moral judgment. Personal moral norms guide how individuals evaluate obligations and make decisions, while post-action reflection enables self-assessment, fostering self-criticism or self-respect. Thus, moral reflection serves both as a form of self-examination and as a factor promoting prosocial behavior, including altruism.

Ethical thinking falls under the concept of "moral cognition," which refers to the cognitive process by which individuals, in specific situations, use cognitive abilities consistent with general cognitive processes to perceive moral stimuli, engage in moral reasoning, and ultimately engage in moral behavior. This process involves perceiving moral situations, conducting rational analysis and decision-making, and ultimately forming and executing moral judgments.

Spaemann argues that "moral reflection" is a deeper psychological activity than simply thinking about behavioral decisions [15]. It involves attending to the world, a process that reflects both emotions and personal evaluations of events. Moral reflection involves a comprehensive analysis of the world's underlying causes.

It is a consideration before making any decision that affects the world.

This consideration is called "moral reflection." Moral reflection is not directed toward any specific action, but rather toward one's existential obligations[13]. Previous research has shown that individuals reflect on their moral obligations to examine their willingness to act[14].

Moral reflection can lead to change of heart. Through a literature review, this article clarifies the moral thinking patterns that underlie moral behavior. The process by which individuals make moral judgments about events, weigh their moral obligations, and influence their moral behavior is called personal moral norms. After an individual's actions are completed, they engage in moral reflection, which allows them to evaluate themselves, leading to self-criticism or self-respect. Therefore, moral reflection is a form of self-examination of one's own actions. Furthermore, when individuals first consider matters through moral reflection, it influences their moral judgments and, consequently, alters their behavior.

2.2 Altruism

Integrated Theoretical Framework: Moral Reflection and Altruism.

Moral reflection involves a deeper awareness of one's obligations, integrating emotions and personal evaluations to guide ethical decision-making[13]. It enables individuals to critically assess responsibilities and adjust moral judgments and behaviors.

Altruism, defined as selfless concern for others, represents a value orientation that significantly shapes behavior[16]. It is expressed through actions undertaken without expectation of return and has been linked to ethical consumption and environmentally responsible practices, such as green hotel choices[17]. Together, moral reflection and altruism provide a complementary framework in which reflection supports ethical awareness, while altruism motivates concrete sustainable behaviors.

As a moral ideal, altruism can stimulate moral reflection, while moral reflection may, in turn, strengthen altruistic orientations. This reciprocal relationship suggests the following hypothesis:

H1. Moral reflection has a positive effect on altruism.

2.3 Moral reflection and environmental attitude

Individuals who hold strong self-transcendence values tend to feel a greater sense of moral obligation toward others[18]. When morality is considered in decision-making, people are more likely to prioritize collective welfare and engage in prosocial behavior[19]. Although ethical consumption has progressed, a gap between

attitudes and behaviors remains. Prior studies suggest that stronger moral reflection enhances eco-friendly choices as individuals strive to maintain a desirable environment and society.

H2. Moral reflection has a positive effect on attitude toward staying in green hotels.

2.4 Altruism and environmental attitude

Altruism, defined as selfless concern for others, is a personal value that shapes behavior through normative beliefs and a self-imposed obligation to act rightly[16,20-22]. Environmental behavior often stems from a combination of altruism and self-interest[6]. Altruism motivates prosocial acts without expectation of return, influences ethical and social consumption[17], and extends to political action[23]. In hospitality, altruism explains consumers' willingness to stay in green hotels, as such choices benefit both individuals and society[24].

H3. Altruism has a positive effect on attitude toward staying in green hotels.

2.5 Environmental Attitude and Intention to Stay in Green Hotels

Environmental protection has become a major social concern in an era of economic development[25]. In the Theory of Planned Behavior (TPB), attitude refers to a person's positive or negative evaluation of a specific behavior, which shapes their behavioral intention[8,26]. Previous studies show that consumers' environmental attitudes influence their intention to engage in eco-friendly behaviors, including staying in green hotels, and those with stronger environmental awareness are even willing to pay a premium[27,28].

Although green hotels may sometimes involve perceived inconveniences[29,30], consumers' positive attitudes toward the environment and green hotels motivate sustainable choices. Environmental attitude reflects awareness of the impact of one's behavior on oneself and society, driving pro-environmental actions. Therefore, the following hypothesis is proposed.

H4. Environmental attitude has a positive effect on consumers' intention to stay in green hotels.

2.6 Consumers' Intention to Stay in Green Hotels

Behavioral intention (BI) reflects the degree to which individuals plan or decide to perform a behavior, and is a key predictor of actual consumer behavior[8]. According to the Theory of Planned Behavior (TPB), attitude, subjective norms, and perceived behavioral control shape behavioral intention, which in turn influences actual actions. Prior studies confirm that TPB effectively explains environmentally friendly purchase intentions[9].

Extending TPB, scholars have highlighted moral reflection and altruism as additional predictors of environmental behavior. Moral reflection motivates individuals to align their choices with personal values, indirectly influencing intention through environmental attitudes[31]. Staying in a green hotel, therefore, represents not only a consumption choice but also a moral and socially responsible act[32].

Altruism, defined as selfless concern for the welfare of others, is another key psychological factor shaping environmental attitudes and behaviors[33]. Altruistic consumers often perceive staying in green hotels as both morally right and socially beneficial, which strengthens their willingness to choose such accommodation[17].

Based on this, the following hypotheses are proposed:

H5. Moral reflection has a positive effect on consumers' intention to stay in green hotels.

H6. Altruism has a positive effect on consumers' intention to stay in green hotels.

III. RESEARCH MODEL

According to the Theory of Planned Behavior (TPB), attitude, subjective norms, and perceived behavioral control shape behavioral intention. Building on this framework, this study examines how moral reflection and altruism influence consumers' environmental attitudes and their intention to stay in green hotels. An online questionnaire, adapted from prior studies, was distributed to adults in Guangdong, China, using convenience sampling. (Fig.1)

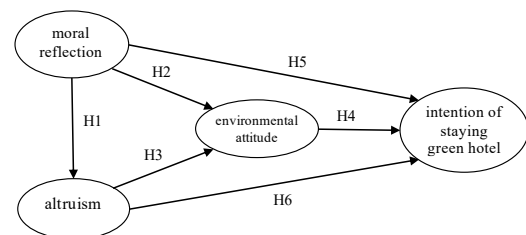


Fig.1 Research model

IV. DATA ANALYSIS RESULTS

4.1 Data Collection

This study used a questionnaire with seven sections adapted from prior research to measure the influence of altruism, moral reflection, and environmental attitudes on consumers' intention to stay in green hotels. The survey was conducted in Guangdong, China, a representative region with rapid urbanization, a growing hospitality industry, and increasing environmental concerns. Using convenience sampling, 434 online questionnaires were

distributed, of which 430 were valid, resulting in a 99.1% valid response rate.

4.2 Correlation Analysis

We conducted a preliminary analysis on the relationships among moral reflection, altruism, environmental attitude, and consumers' intention to stay in green hotels. As shown

in Table 1, the Pearson correlation coefficients between these variables are 0.362, 0.763, and 0.710, all of which are statistically significant. These results indicate positive correlations: higher levels of moral reflection, altruism, and environmental attitude are associated with stronger consumer intention to stay in green hotels. Thus, H1 is supported.

Table 1. correlation coefficient

	1	2	3	4
moral reflection	1			
altruism	0.411**	1		
environmental attitude	0.386**	0.783**	1	
Intention to stay in green hotel	0.362**	0.763**	0.710**	1

**The correlation is significant at a significance level of 0.01 (two-tailed)

4.3 Multiple regression analysis

The regression analysis demonstrates that both moral reflection and altruism significantly predict environmental attitude (Table 2). The final model is equation 1:

$$Y (\text{environmental attitude}) = 2.160 + 0.057X_1 (\text{moral reflection}) + 0.622X_2 (\text{altruism}) \quad (1)$$

Table 2. Linear regression results

model	unstandardized coefficient		Std. coefficient Beta	t	Sig.	Collinearity statistics	
	B	Std. error				tolerance	VIF
(constant)	2.160	0.160		13.479	.000		
moral reflection	0.057	0.024	0.077	2.354	.019	.831	1.204
altruism	0.622	0.027	0.751	22.915	.000	.831	1.204

* p < 0.05, **p < 0.01, *** p < 0.001

This indicates that stronger moral reflection and altruism are associated with higher environmental attitude, supporting H2 and H3. Model fit is high (R = 0.786, R² = 0.618, R²adj = 0.616).

Further analysis with intention to stay in green hotels as the dependent variable confirms that altruism and

environmental attitude significantly increase intention, while moral reflection has no direct effect. The regression equation is equation 2:

$$Y (\text{intention to stay}) = 0.423 + 0.032X_1 (\text{moral reflection}) + 0.533X_2 (\text{altruism}) + 0.349X_3 (\text{environmental attitude}) \quad (2)$$

Table 3. Linear regression results

model	unstandardized coefficient		Std. coefficient Beta	t	Sig.	Collinearity statistics	
	B	Standard error				tolerance	VIF
(Constant)	.423	.235		1.803	.072		
moral reflection	.032	.030	.035	1.069	.286	.820	1.219
altruism	.533	.050	.526	10.721	.000	.373	2.680
environmental attitude	.349	.059	.285	5.877	.000	.382	2.617

** p < 0.05, **p < 0.01, *** p < 0.001

Thus, H5 and H6 are supported, while H4 is not supported. The model demonstrates strong explanatory power ($R = 0.785$, $R^2 = 0.617$, $R^2_{adj} = 0.614$). These results suggest that moral reflection influences intention only indirectly, through its positive impact on environmental attitude, confirming the mediating role of attitude in consumers' green hotel choices.

4.4 Path analysis

After performing the correlation analysis and multiple regression analysis, the final step is to conduct a path analysis of the overall model. (Fig.2) Each value in the path analysis is used to test the influence and relationship of the overall construct.

As shown in Table 4, this study supported five paths and rejected one hypothesis. Among the hypotheses supported, H1: moral reflection has a positive impact on altruism ($t = 0.411$). H2: moral reflection has a positive impact on environmental attitude ($p < 0.1$, $t = 2.354$). H3 is supported, altruism has a positive impact on environmental attitude ($p < 0.001$, $t = 22.915$); H5 is supported, altruism has a positive impact on consumer intention to stay in green hotel attitude ($p < 0.001$, $t = 10.721$). H6 is supported, and environmental attitude has a positive impact on consumer intention to stay in green hotels ($p < 0.001$, $t = 5.877$). However, H4 is rejected, and moral reflection has no positive impact on consumer intention to stay in green hotels.

Table 4. Path analysis

Path hypotheses	Unstd.	S.E.	t	p
H1 Moral reflection → Altruism	0.412	0.07	6.935	<0.001
H2 Moral reflection → Environmental attitude	0.057	0.024	2.354	0.019
H3 Altruism → Environmental attitude	0.622	0.027	22.915	<0.001
H4 Environmental attitude → Intention to stay in green hotel	0.349	0.059	5.877	<0.001
H5 Moral reflection → Intention to stay in green hotel	0.032	0.03	1.069	0.286
H6 Altruism → Intention to stay in green hotel	0.533	0.05	10.721	<0.001

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

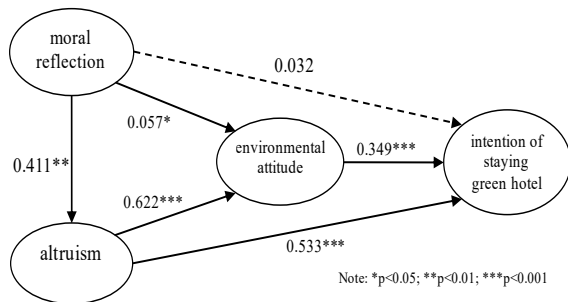


Fig.2 Model analysis

4.5 Analysis of mediating effects

Table 5 examines the mediating effect of environmental attitude, examining whether moral reflection influences the intention to stay in a green hotel through environmental attitude. The analysis results are shown in the following table. According to Table 5, first, from Model 2, the Beta for moral reflection is 0.386, indicating that moral reflection has a positive impact on consumer environmental attitude, thus confirming H4. Second, from Model 1 to Model 3, the R^2 increases from 0.131 to 0.513,

indicating that the overall estimates for Models 1 and 3 are significant. In Model 1, the Beta for moral reflection is 0.362, while in Model 3, the Beta for moral reflection is 0.103. Meanwhile, the Beta for environmental attitude is 0.671, both reaching the significance level. Also, it can be seen that environmental attitude plays a mediating role between moral reflection and consumer intention to stay in a green hotel.

Table 5. The mediating role of environmental attitude

	model 1	model 2	model 3
Beta	Beta	Beta	Beta
moral reflection	0.362**	0.386**	0.103*
environmental attitude			0.671**
Constant	20.488**	28.088**	1.511
R^2	0.131	0.149	0.513
F	64.532**	75.133**	225.828**

According to Table 6, first, from Model 2, we know that the Beta of altruism is 0.783 and reaches the significance level at 0.001. Therefore, altruism has a positive impact on consumers' environmental attitude.

Therefore, H3, that altruism has a positive impact on consumers' intention to stay in green hotels, is verified. Next, from model 1 to model 3: the R^2 increases from 0.583 to 0.616, and the F-value of the overall regression analysis reaches the significant level at the 0.001 level, indicating that the overall estimates of model 1 and model 3 are significant. In model 1, the Beta of altruism is 0.763, and in model 3, the Beta of altruism is 0.536. At the same time, the Beta of environmental attitude is 0.291. Therefore, environmental attitude partially mediates the relationship between altruism and consumer intention to stay in green hotels. Therefore, environmental attitude plays a mediating role in the relationship between altruism and consumer intention to stay in green hotels, is verified.

V. CONCLUSION AND IMPLICATIONS

5.1 Conclusion

This study finds that environmental attitude mediates the relationship between moral reflection and consumers' intention to stay in green hotels. While moral reflection alone does not directly influence intention, it strengthens environmental attitudes, which significantly enhance consumers' willingness to choose green hotels. In addition, altruism has a significant positive effect on intention, highlighting the importance of social concern and environmental responsibility.

Overall, the findings emphasize that cultivating environmental attitude is essential for promoting green consumption behavior. For green hotel operators and policymakers, environmental education, value communication, and awareness campaigns are vital to transform moral reflection and altruistic values into actual consumer intentions to stay in green hotels.

This study examined the roles of moral reflection and altruism in shaping Chinese consumers' environmental attitudes and intentions to stay in green hotels. The findings show that altruism has a significant direct impact on intention, while moral reflection does not. This may be because altruism involves self-sacrifice for the benefit of others or society, whereas moral reflection lacks this dimension. Nevertheless, both altruism and moral reflection significantly enhance environmental attitudes, which in turn strengthen the intention to stay. These results suggest that consumers' willingness to choose green hotels is largely driven by altruistic values and their associated environmental attitudes, rather than moral reflection alone.

Managerially, this study recommends incorporating environmental education into school curricula and public welfare initiatives to stimulate altruism and foster positive environmental attitudes. Green hotels should emphasize their unique environmental attributes, differentiate

themselves from traditional hotels, and design campaigns that appeal to consumers' altruistic motivations, thereby enhancing their attractiveness and competitiveness.

5.2 Practical implications

5.2.1 For traditional hotels:

The findings can enhance hotel operators' confidence in adopting environmental reforms. Although China's green hotel standards are still developing and operators face challenges in staff training, service standardization, and personalization, these reforms are essential. Without consumer demand, hotels may hesitate to change; however, given the rising importance of sustainability, traditional hotels should actively pursue green transformation to meet future market needs.

Table 6. The mediating role of environmental attitude

	model 1	model 2	model 3
	Beta	Beta	Beta
altruism	0.763**	0.783**	0.536**
environmental attitude			0.291**
Constant	6.723**	15.114**	2.093*
R^2	0.583	0.613	0.616
F	599.540**	679.308**	342.742**

5.2.2 For green hotel operators:

Results show that moral reflection, altruism, and environmental attitude positively influence consumers' willingness to stay in green hotels. Thus, operators should focus on cultivating consumers' positive attitudes toward green choices, improving service quality, and enhancing satisfaction to build loyalty. In the digital era, online reviews strongly shape consumer perceptions; therefore, creating positive experiences and visibility is crucial. In addition, because altruistic consumers are more likely to view staying in green hotels as a moral obligation, operators can design targeted marketing strategies and participate in environmental initiatives to attract and retain this consumer group.

5.2.3 For government and public policy:

Authorities should raise public awareness of environmental protection through campaigns, advertising, and support for green hotel initiatives. Policies and incentives can help normalize sustainable choices in hospitality. This study shows that higher environmental awareness leads to stronger intentions to stay in green hotels. By fostering civic responsibility, promoting environmental education, and rewarding eco-friendly

practices, both hotels and consumers can be encouraged to integrate sustainability into travel and daily life.

5.3 Future Research

This study has several limitations that provide directions for future research. First, the sample was limited to Guangdong, China; future studies should extend to other regions and countries to improve generalizability. Second, as green consumption in China is still in its early stage and green hotel evaluation standards remain incomplete, it was not feasible to conduct research on specific hotels. Third, the results regarding moral reflection differ from previous studies: in Guangdong, moral reflection did not directly influence consumers' intention to stay in green hotels. Instead, it worked indirectly through environmental attitude, highlighting the mediating role of attitude. Future research should examine additional variables that may strengthen the link between moral reflection, environmental attitude, and behavioral intention. Finally, this study measured only behavioral intention, not actual behavior. Future studies should explore actual consumer behavior, which would provide more robust insights and enhance the practical relevance of the findings.

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