



Research Paper

From Quranic Foods to Medical Applications

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Email: Shabe_vasl@yahoo.com**Abstract**

The Holy Quran, the divine scripture of Muslims, is founded upon the principle of monotheism and the oneness of God; yet, interspersed within its verses are precise—and sometimes general—references to the created world and natural phenomena, including various foods and nutritional items. This research aims to conduct a comparative study of the foods mentioned in the Holy Quran from two perspectives: first, their nutritional and therapeutic properties; and second, their potential harms and adverse effects. The study employs a descriptive-analytical approach based on library research. Initially, verses related to foods in the Holy Quran were identified and categorized; subsequently, medical sources were consulted to extract information regarding their benefits and harms. The properties and adverse effects of each foodstuff were then examined and compared in light of the latest research findings in the fields of nutrition and medicine. Given the breadth of the subject and the constraints of the article's length, a single representative verse was selected for each food item, while other relevant verses were also noted. The results indicate that many Quranic foods possess significant nutritional and therapeutic properties that align with, or can be explained by, modern scientific evidence. Conversely, certain items require caution and consideration regarding potential adverse effects. The link between Quranic foods and modern medical evidence highlights the interdisciplinary potential of this field for further research as well as for clinical and nutritional applications.

Keywords: Holy Quran, Nutrition, Quranic foods, Therapeutic Propertie, Traditional Medicine.

Introduction

The Quran is a divine miracle and a blueprint for human life, happiness, and well-being, addressing all dimensions of human existence. References to various foods and their nutritional value can be found throughout numerous Surahs and verses. Plants and fruits are among the food items that receive special attention in the Holy Quran; recent empirical research and studies have illuminated their effectiveness—and indeed their miraculous nature—in treating diseases and maintaining human health and well-being (Nasiri et al., 2014: p. 134). The Holy Quran places special emphasis on certain foods and fruits. Notable examples include pomegranates, apples, grapes, and dates. Religious and Islamic texts attribute numerous medicinal properties to these foods—properties that align with findings in modern nutritional science and medicine. For instance, figs and olives are mentioned in Surah At-Tin; figs are a source of fiber, potassium, and antioxidants, while olives contain beneficial fats and Vitamin E, both of which support cardiovascular health. Furthermore, these foods are recognized in religious texts for their preventive and therapeutic roles. From a medical perspective, the balanced consumption of fruits and vegetables can help prevent chronic conditions such as diabetes, cardiovascular diseases, and certain types of cancer. Rich in fiber, vitamins, minerals, and antioxidant compounds, these foods contribute to improve digestive function, a strengthened immune system, and reduced inflammation. Religious texts also highlight the impact of these foods on both physical and mental health. For instance, dates—rich in natural sugars, fiber, and potassium—can help provide energy and regulate blood pressure. Similarly, pomegranates, thanks to their polyphenolic and antioxidant compounds, are effective in reducing oxidative stress and improving heart health. Recent scientific research has validated many of the properties attributed to these fruits and foods in religious texts. For example, olives and olive oil, due to their beneficial fatty acids, play a role in lowering "bad" cholesterol (LDL) and raising "good" cholesterol (HDL). Pomegranates have also been shown to be effective in preventing heart disease and certain cancers, owing to their anti-inflammatory and antioxidant properties. Therefore, incorporating these foods into a healthy, balanced diet can aid in the prevention and management of chronic diseases. However, consumption should align with nutritional and medical guidelines, avoiding both excess and deficiency.

Method and Material

This study employs a descriptive, library-based research method. The process begins with gathering source material from the Holy Quran and accessible, authoritative medical texts and articles. Subsequently, notes are taken from these sources and compiled; finally, the relevant data is analyzed.

Results and Discussion

Pomegranate (al-Rummān)

"And it is He who sends down rain from the sky, and thereby We bring forth vegetation of all kinds, and from that We produce green stalks and branches, and from that We extract clustered grains; and from the spathes of the date palm, we produce low-hanging clusters; and [We bring forth] gardens of grapes, olives, and pomegranates—similar in some respects yet dissimilar in others. Observe its fruit when it bears fruit, and its ripening and maturation with contemplation; surely in these [matters] there are signs [of God's Oneness, Lordship, and Power] for a people who believe" (Quran, Al-An'am: 99). Reference is also made to it in Verse 141 of Surah Al-An'am and Verse 68 of Surah Ar-Rahman. The sour pomegranate possesses the property of eliminating bile and preventing the influx of harmful humors into the body. This fruit is beneficial for inflammation, ulcers, and headaches, while its juice is useful for the eyes. Sour pomegranate

causes roughness in the chest and throat, whereas sweet pomegranate provides softening and strength (Ibn sina, 1992, Vol. 2: pp. 306–307). One should not overconsume pomegranate; it is harmful for individuals suffering from constipation or gastric bloating, and consuming it as a dessert is not advisable (Taghizadeh, 2013: p. 10). An article titled "The Pomegranate: A New Look at the Fruit of Paradise" presents the following findings regarding the benefits of pomegranates: Today, pomegranate juice has been shown to contain polyphenol antioxidants (primarily ellagic acid and punicalagin) that may lower risk of heart disease and may slow cancer progress. The antioxidant content of pomegranate juice is among the highest of any foods" (Stover, W. Mercure, 2007, p. 1090). Culinary uses of the fruit include pomegranate paste in cooking, while sour pomegranate juice is consumed to reduce body fat and aid in weight loss. The pomegranate holds a significant, esteemed, and long-standing place in ancient Iranian traditions and ceremonies, serving as a symbol of fertility among Iranians (Babazadeh Chenarani, 2017, p. 175)

Grapes (Inab)

"Then We produced for you thereby gardens of date palms and grapevines, in which there are abundant fruits for you [from the sale of which you sustain your livelihood] and [also] from which you eat" (Quran, Al-Mu'minun: 19). Grapes are mentioned several times in the Holy Quran, including in the following verses: Al-Baqarah 266, Al-Isra 91, 'Abasa 28, Al-An'am 99, An-Nahl 11 and 67, Ya-Sin 34, Al-Kahf 32, Al-Mu'minun 19, Ar-Ra'd 4, Yusuf 36, and An-Naba' 32. Regarding the consumption of grapes, Imam Reza (AS) narrates—citing his forefathers, who in turn cite the Messenger of God (PBUH)—that the Prophet said: "Eat grapes berry by berry, for it makes them more wholesome and easier to digest" (Ibn Babawayh, 1995, Vol. 2: p. 35). Grapes are among the most potent antiviral agents and possess alkalizing properties. Due to their sugar content, they serve as a source of energy. Consuming unripe grapes (ghureh) is generally not recommended, except for the purpose of suppressing sexual desire; it is written: "Drinking the juice of jujube, lentils, unripe grapes, sour pomegranate, and vinegar... causes a reduction in semen" (Arzani, 2014, Vol. 2: p. 313).

Fig (al-Tin)

The name of this sweet and highly beneficial fruit appears only once—in the Surah named after it (al-Tin). God bestows honor and value upon the fig by swearing an oath by it: "By the fig and the olive" (Quran, al-Tin: 1). Extensive discussion regarding the properties of the fig (tin) can be found in *Tafsir-e Nemouneh*; here, we cite a few examples: "The fig possesses great nutritional value; it is a nourishing morsel, free of skin, pits, or waste matter... Athletes and those suffering from weakness or the infirmities of old age can use figs for nourishment... A mixture of equal parts fig and honey is highly beneficial for stomach ulcers, while consuming dried figs strengthens the mind and balances the body's faculties and blood" (Makarem Shirazi, 2008, Vol. 27: p. 163).

Olive (Zaytun)

God is the Light of the heavens and the earth. The parable of His Light is like a niche wherein is a lamp—the lamp is within a glass, and the glass is as though it were a glittering star—lit from a blessed olive tree, neither of the East nor of the West, whose oil would almost glow even if no fire touched it; Light upon Light! God guides to His Light whom He wills, and God sets forth parables for the people [so that they may understand the truths], and God is All-Knowing of all things (Quran, An-Nur: 35). (The word "Zaytun" (olive) appears six times in the Quran; it is also mentioned indirectly once in Surah Al-Mu'minun (Verse 20) as an oil-bearing tree—a topic in itself that we shall not delve into here. In addition to the aforementioned

surahs, references to it can be found in Al-An'am (99 and 141), An-Nahl (11), Al-Mu'minun (20), 'Abasa (29), and At-Tin (1–4). The primary region for olive cultivation is the Mediterranean coastal area. It is believed that the olive originated in Phoenicia around 2000 BCE and subsequently spread westward to Europe and Africa, and eastward to Afghanistan and Iran. Experts have offered various opinions on this matter. Some state that the olive belongs to the entire world—not merely the East or the West—and suggest that the terms "East" and "West" refer to the orientation of the trees; others argue that the taste and quality of the olive fruit depend on the tree's orientation relative to the sun. Olives possess significant medicinal properties and high nutritional value. They act as a sedative and a laxative, and are effective in treating indigestion and duodenal ulcers. Olives can form part of a suitable diet during the treatment of kidney diseases. The oil has emollient properties; when applied externally, it softens the skin in cases of eczema and psoriasis (Mousavi, 2007: p. 55). Fresh herbs/greens; garlic; lentils; cucumbers; onions And [recall] when you said: "O Moses! We will never be content with a single type of food; so ask your Lord to bring forth for us from what the earth grows: its herbs, cucumbers, garlic, lentils, and onions" (Quran, Al-Baqarah: 61). Each of these foods is mentioned only once—in Surah Al-Baqarah, verse 61—and we shall explain each of them below:

Fresh Herbs (Baqaal)

Since fresh herbs are a staple of daily consumption and hold a special place in the food pyramid, people are well aware of their valuable properties. Notable examples include leeks (which lower blood pressure and cholesterol), radishes (which eliminate cancer cells), basil (a sedative and sleep aid), watercress (which stimulates kidney function), parsley (which aids blood formation and treats anemia), tarragon (a suitable salt substitute), and coriander (which lowers blood sugar and treats skin blemishes). However, due to their high fiber content, excessive consumption of vegetables can lead to abdominal cramps, diarrhea, constipation, poor nutrient absorption, intestinal gas, and even bowel obstruction. Fresh herbs are consumed raw in various salads and pickles, or cooked in a wide array of dishes; they are also a key component of the healthiest weight-loss diets.

Garlic (Fūm)

Regarding this pungent yet highly beneficial foodstuff, a cough remedy known as "Garlic Paste" (*Angosht-pich-e Sir*) is prescribed in Ibn Sina's *The Canon of Medicine* as follows: "Take one *ratl* of choice garlic and one *ratl* of animal fat; heat them over a fire until the garlic disintegrates. Strain the mixture and thoroughly mash the cooked garlic. Then, add two *ratls* of skimmed honey and simmer gently over a low flame until the mixture thickens and sets. Remove from the heat, allow it to cool, and consume by licking" (Ibn Sina, 1992, Vol. 7: p. 337). Furthermore, it possesses numerous health benefits, including the prevention of infections, fungal and bacterial diseases, breast cancer, and cardiovascular ailments.

Lentils (Adas)

Ibn Sina recommended lentils for treating a "hot" temperament: "In this condition, the patient's diet should consist of lentils, mung beans, *kashk* [dried yogurt], and the like" (Ibn Sina, 1992, Vol. 3: p. 45). However, due to the property of generating *sauda* (black bile) in the body, lentils are not recommended for cancer patients. Regarding their harmful effects, Muwaffaq al-Harawi writes: "They thicken the blood within the body, cause dimness of vision, and are detrimental to the stomach" (Muwaffaq al-Din al-Harawi, 1967: p. 224).

Cucumber (Qithā)

Cucumbers alleviate heat and fever and quench thirst; the long cucumber (*Khiyar-e Chanbar*) cleanses the intestines and stomach and is beneficial for treating jaundice (Mowaffaq al-Din al-Harawi, 1967: pp. 250, 133). Ibn Sina considers the long cucumber effective in balancing the temperament of bodily humors (Abu Ali Sina, 1992, Vol. 5: 123). Cucumbers are consumed in salads and various dishes; other uses include pickling, reducing body fat, aiding weight loss, and promoting skin health.

Onion (Başal)

In *Al-Abniyah ‘an Haqā’iq al-Adwiyah* (The Foundations of the True Properties of Remedies), the properties of the onion are described as follows: "It stimulates the appetite, provokes thirst, causes headaches, and softens the bowels" (Muwaffaq al-Dīn al-Harawī, 1967: p. 52). Onions cause a sharp drop in blood sugar levels; they are allergenic and lead to gas formation and heartburn in pregnant women (Taghizadeh, 2013: p. 10).

Gourd (Yaqtin)

"So We cast him onto a barren, plantless land while he was sick. And We caused a plant of the gourd variety to grow over him" (Quran, As-Saffat: 145–146). The gourd is mentioned only in Surah As-Saffat, verse 146. This verse and the preceding ones recount the story of Prophet Jonah (PBUH); after a lapse in judgment (*tark-e-awla*), and in accordance with God's command, a great fish swallowed him. Following his glorification of God and repentance, he emerged from the fish's belly onto a barren land while ill. There, God caused a type of gourd plant to grow for him. There are various types of gourds, including winter squash, hullless-seed pumpkin, zucchini, and others. In our view, the type of gourd mentioned in the Quran was the "hullless-seed" variety; research indicates that this specific type grows in tropical regions and serves as a remedy for urinary tract disorders. Given that the Quran mentions Prophet Jonah's illness, it is highly probable that he suffered from a urinary tract issue caused by the ingestion of water—either in the sea or within the fish's belly (Shahbazi, 2026: 31). Evidence supporting our claim comes from the following research: "Researchers believe that this plant originated fifty years ago due to a spontaneous mutation. It grows in tropical and subtropical regions of the world... Between 1863 and 1936, the seeds of this plant were first used as a medicinal agent to treat intestinal parasites (tapeworms and roundworms)." "Later, with advancements in medical science, it was used to treat urinary tract disorders, bedwetting in children, and bladder inflammation and stones" (Moradi et al., 2015: pp. 8 - 4).

Date (Fresh Date/Rutab)

"And shake the trunk of the date palm toward you; it will drop fresh, ripe dates upon you" (Quran, Maryam: 25). In summary, the benefits of dates as described in the words of the Prophet (PBUH)—which suffice for our purposes here—are ninefold: they ward off Satan, increase vitality, strengthen hearing and vision, fortify the back, draw one closer to God while distancing one from Satan, aid digestion, eliminate ailments, and sweeten the breath (Tabarsi, 1992, Vol. 1: p. 350).

Meat (Laḥm)

God has forbidden you—[to protect you from physical and spiritual harm]—only carrion, blood, swine flesh, and any animal over which a name other than God's has been invoked [at the time of slaughter]. Yet, whoever is compelled [by necessity to save their life] to consume them—without seeking pleasure and without exceeding the necessary limit—bears no sin; for God is Most Forgiving and Merciful (Quran, Al-Baqarah: 173). In addition to the blessed Surah Al-Baqarah, it is mentioned in Surahs Al-An'am (145), An-

Nahl (14 and 115), Al-Ma'idah (3), and Al-Waqi'ah (21). A discussion regarding meat—its various types, benefits, and harmful effects—is extensive and beyond the scope of this article. We shall limit ourselves to a few examples: Among the benefits of meat are: providing energy and protein, preventing stroke and anemia, maintaining skin health, and supplying vitamins B1, B2, and B12 as well as phosphorus—all of which are beneficial for health. Its harmful effects and adverse consequences include: obesity, high blood pressure, digestive disorders, and an increased risk of diabetes, among others.

Fish (Hūt)

So when they reached the junction of the two seas, they forgot their fish [which they had prepared for a meal], and the fish took its way [downward] into the sea (Quran, Al-Kahf: 61). This creature (*hūt*) is mentioned directly in verses 61 and 63 of Surah Al-Kahf, verse 142 of Surah As-Saffat, and verse 48 of Surah Al-Qalam, and indirectly in verse 14 of Surah An-Nahl. The properties of this aquatic animal are well known; for instance, to treat jaundice caused by a hot temperament affecting the entire body, fish can be cooked with vinegar and steeped in unripe grape juice (*ghūreh*) or sour pomegranate juice (Arzani, 2014, Vol. 2: 101). Fish fried in oil with spices is beneficial for those with strong stomachs. Regarding salted fish, the fresher it is, the better. As for the properties and adverse effects of fresh fish: it generates watery phlegm and weakens the nerves; it is suitable only for a very hot stomach, producing blood that is thin in consistency (Avicenna, 1992, Vol. 2: 275). In the country's northern and southern provinces, a variety of dishes are prepared using fish, such as stuffed fish, *Qaliyeh Mahi* (fish stew with herbs and tamarind), fish rolls, *Mahi-ye Gerd-Pich* (fish wrapped in herbs and spices), fish stew, *Mahi-Polo* (fish with rice), and others.

Milk (Laban)

"And indeed, for you in the livestock there is a lesson: We give you to drink from what is in their bellies—from amidst digested fodder and blood—a pure and wholesome milk that is agreeable to those who drink it" (Quran, An-Nahl: 66). God explicitly refers in this verse to the wholesomeness of drinking milk. Milk consumption is an ancient practice dating back to 6,000–8,000 BCE. In ancient Egypt, only the very wealthy could consume milk and other dairy products. Among the many benefits of milk, the following examples may be cited: it promotes bone health due to its content of Vitamin D, calcium, and Vitamin K; B vitamins present in milk are essential for cardiovascular health and energy production; it helps prevent osteoporosis and migraine headaches; and it contributes to physical fitness in children (Sabbaghian, 2005: pp. 42, 48). Applying milk and *surma* (kohl) to the eyes together cures all eye ailments; as it has been written: "Milk is beneficial for all sores within the eye when used in conjunction with *tutiya* (zinc oxide/collyrium)" (Muwaffaq al-Din al-Harawi, 1967: p. 279).

Honey (Asal)

"And your Lord inspired the honeybee, saying: 'Take for yourself dwellings in the mountains, in the trees, and in the structures [trellises] that [people] erect. Then eat of all manner of produce and fruits, and follow the paths of your Lord that have been made smooth for you [leading back to the hive].' From their bellies emerges a drink [nectar/honey] of varying colors, containing a cure for the people. Indeed, in this [fact] there is a sign [of God's power, grace, and mercy] for people who reflect" (Quran, An-Nahl: 68–69). It is also mentioned in Verse 15 of the blessed Surah Muhammad, in the description of Paradise and its rivers. Honey possesses properties that treat anemia, lung diseases, and osteoporosis. It is effective in the growth of bodily organs, acts as a disinfectant for the urinary tract, and has a significant impact on treating

rheumatism. The sugar it contains strengthens the heart and helps treat lung ailments, stomach ulcers, duodenal ulcers, and high blood pressure. From a scientific perspective, consuming honey increases the risk of infant botulism in children under two years of age; furthermore, consuming raw honey can lead to food poisoning, allergies, and elevated cholesterol levels in individuals with diabetes (Tabarsi, 1992, Vol. 1: 407).

Ginger (Zanjabil)

"And therein they will be given a cup to drink whose mixture is of ginger" (Quran, Al-Insan: 17). This aromatic, heavenly food—which is entirely curative—is effective for stomach pain; indeed, Avicenna wrote that a mixture of pepper and ginger serves as a remedy for the stomach (Avicenna, 1992, Vol. 4: p. 65). On subsequent pages, he identifies a compound remedy made of quince juice, honey, white pepper, and ginger as beneficial for stimulating the appetite (Ibid.: p. 93). Furthermore, ginger is effective for warming the temperament, boosting sexual potency, and treating abdominal cramps. Experienced elders often recommend consuming ginger infusion before eating pomegranate or pairing pears with ginger.

Bread (Khubz)

"And two young men [servants of the King of Egypt] entered the prison with Joseph. One of them said: 'I keep seeing in a dream that I am pressing [grapes] for wine,' and the other said: 'I see myself carrying bread upon my head [and] birds are eating from it; inform us of its interpretation, for we consider you to be among the doers of good'" (Quran, Yusuf: 36). The Holy Prophet (PBUH) states: "Bread is blessed; for the sake of bread, God caused the heavens to pour down rain and made vegetation grow; by means of it, you perform prayers, observe fasts, and undertake the pilgrimage to the House of your Lord" (Al-Kulayni, 2016, Vol. 8: p. 75). Bread is a highly nutritious food; it prevents obesity by inducing a sense of satiety, inhibits the production of harmful blood fats (thereby lowering blood cholesterol), regulates digestive system activity, and lowers blood sugar. Furthermore, due to its Vitamin B content, it helps maintain skin freshness and beauty, strengthens memory, and prevents rickets in children.

Conclusion

Research on this subject demonstrates that the religion of Islam pays special attention to human health in every respect, conveying its teachings—including guidelines on consumption—to humanity through the Holy Quran and the Noble Prophet (PBUH). The health and longevity benefits associated with consuming these foods have been scientifically proven. For instance, regarding the creation of the olive, God has highlighted not only the fruit itself but also its oil. Furthermore, the benefits of many such foods are detailed in the traditions (Hadith) of the Prophet and the Infallible Imams—insights derived from deep reflection and contemplation upon divine verses. Poets, both past and present, have also drawn upon these fruits—using them as symbols or employing them in similes and metaphors—to address various social themes. It is hoped that, by the grace of God, nutritionists and researchers in our beloved country will—through the study and contemplation of these verses and traditions—gain a deeper understanding of the benefits and therapeutic properties of these foods, thereby enriching Islamic Iran with this valuable Islamic knowledge.

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Research Paper

Artificial Intelligence (AI) in making Knowledge Management (KM) more effective in Quality Management SystemsLiaquat Ali khan^{*1}, Nusrat Jahan^{*2}, Nusrat Alter^{*3}, and Jesmin Suriya Anckon^{*4}

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Email: lmahar389@gmail.com**Abstract**

Artificial Intelligence (AI) is emerging as a transformative approach to Knowledge Management (KM) within Quality Management Systems (QMS). This study examines how AI technologies enhance KM effectiveness in ISO 9001-based quality management systems. Guided by Nonaka and Takeuchi's SECI model, the study explores the application of Natural Language Processing (NLP), machine learning, knowledge graphs, and predictive analytics across Socialization, Externalization, Combination, and Internalization. A systematic literature review was conducted following PRISMA guidelines, followed by a comparative assessment of traditional and AI-based KM across six dimensions. The findings indicate that AI-based KM substantially improves knowledge measurement and sharing, with reported improvements of 117% and 97%, respectively. Knowledge graphs facilitate integration across fragmented quality areas, while predictive analytics support a shift toward proactive quality intelligence. However, challenges include data-quality limitations, organizational resistance, governance concerns, and the black-box nature of some machine-learning algorithms. The study proposes an AI-SECI-QMS framework to integrate AI into continuous quality improvement.

Keywords: *Artificial Intelligence, Knowledge Management, Quality Management Systems, ISO 9001, SECI Model and Machine Learning.*

Introduction

The integration of AI with quality management signifies a major shift in an organization. Quality management systems (QMS), based on ISO 9001, are the foundation of the structural backbone of Ensuring consistency, regulation and continuous improvement. But their impact is limited at the core by the availability and quality of organizational knowledge. A knowledge management system (QMS) aims to systematically capture, organize, share, and apply explicit and tacit knowledge, but existing attempts in KM in QMS have encountered persistent problems, such as difficulty in encoding tacit knowledge, inefficient knowledge retrieval and lack of real-time decision support [1]. AI technologies represent a paradigm change in knowledge management in quality systems. Machine learning helps to discover patterns in quality data, NLP can extract information from unstructured documents, knowledge graphs can create semantic relationships between the data sources, and predictive analytics can predict quality failures [2]. The Global AI Survey (2025) found that more than 78% of businesses have implemented AI across at least one aspect of their operations, and quality management is a key sector of AI that shows great potential. While the applications of AI in KM are gaining traction, the mechanisms by which AI increases the effectiveness of KM in a QMS are still poorly understood. To fill this gap, this paper introduces an extensive analytical framework based on SECI model [3].

Research Problems and Gaps

There are still a number of key research questions that have not been sufficiently addressed. AI's progress is rapid, yet its systematic integration with QMS frameworks developed for human-centric processes remains unexplored. There is a disconnect here between the sheer pace of AI development and the systematic incorporation of AI processes into QMS frameworks traditionally designed for human-centric processes. While ISO 9001:2015 does recognize organizational knowledge as a resource (Clause 7.1.6), it offers little guidance on the use of AI leverage (ISO, 2015). Second, literature mostly considers AI as a solution, not a facilitator to systemic KM change. Studies by [4] discuss AI for quality control, but they do not discuss other aspects of enhancing the knowledge ecosystem. Thirdly, because of the lack of empirical models to measure the effectiveness of AI-powered KM in QMS, it is challenging to evaluate the actual results of investments in knowledge accessibility and decision quality [5].

Research Questions

In this study there are three research questions.

1. In what ways do specific AI technologies support the essential KM processes in QMS?

2. How effective is the use of AI in KM, compared to traditional KM in QMS environments?
3. What are the main challenges and enablers to achieving successful integration of AI-KM-QMS?
4. These questions reflect the need for functional capability mapping and empirical assessment and the fact that technology adoption takes place in complex organizational environments.

Research Objectives

The main goal is to create and test the analytical structure of how AI can improve the efficiency of KM in the QMS. To break down this into: (1) systematically analyzing the mapping between AI capabilities and requirements for KM process in the SECI model; (2) A comparative effectiveness assessment of AI-KM and traditional KM in 6 dimensions (creation, storage, sharing, application, protection and measurement); and (3) identification and categorization of barriers and enablers, with a distinction between Technical, Organizational and Regulatory factors that affect the integration of AI-KM and traditional KM. This study adds to the theoretical body of knowledge by augmenting the SECI with the involvement of AI as a transformative tool in each knowledge phase conversion mode. The study introduces an AI-enhanced SECI framework, recognizing the distinct characteristics of AI in knowledge conversion, as the original model was designed for human-centric processes, which may not leverage AI's unique abilities in knowledge conversion, especially within contexts where speed and accuracy are directly tied to quality outcomes. In practice, the research offers practical insights for quality managers when rolling out AI-based KM solutions. As the global market for AI in quality management is expected to reach \$14.2 billion by 2033 from \$2.3 billion in 2024[6], the financial impact of making informed decisions in implementing AI tools is significant. The research also applies to new requirements of ISO 9001:2026, which will include digital transformation and the integration of AI.

Literature Review

Understand Knowledge Management in Quality Management Systems.

Knowledge Management in QMS works at the junction of two already existing fields. The ISO 9000 family of standards is about the systematic identification, documentation and continuous improvement of quality affecting processes. For the first time in ISO 9001:2015, knowledge is stated to be a crucial resource in Clause 7.1.6 [7]. But the integration of a QMS-KM does not stop there, it involves capturing lessons from nonconformances, sharing best practices, harnessing the knowledge of Statistical Process Control, and maintaining tacit knowledge [8]. Found that organizations with advanced integrated KM-QMS efforts have 23% greater first pass yield rates, and 31% quicker corrective action closure times [9].

SECI model [10] is the predominant theory that explains knowledge creation as: Socialization (tacit-to-tacit), Externalization (tacit-to-explicit), Combination (explicit-to-explicit), and Internalization (explicit-to-tacit). In the context of a QMS, socialization takes place in the context of apprenticeship, externalization in terms of codifying troubleshooting experiences, and combination in terms of synthesizing multiple sources of quality data, whereas internalization takes place through learning from documented procedures [11]. Although the SECI model has been widely used, it fails to capture the role of the technology in the process of converting knowledge challenge that is even more evident in the context of AI-supported KM.

AI Technologies for Organizational Knowledge Management

AI technologies have completely transformed KM and added capabilities that were not possible before. In addition to structured data, NLP can be used to extract and classify from unstructured data like incident reports and audit findings [12]. Through machine learning, hidden patterns within quality data are discovered to create predictive models which convert raw data into knowledge about potential failures and root causes [13]. Knowledge graphs build semantically related graphs between quality entities across disparate domains; they enable intelligent search and reasoning beyond keyword retrieval [14]. Predictive analytics takes KM beyond what it was - retrospective analysis - to becoming prospective intelligence, or predictive intelligence, allowing organisations to prevent quality problems. APQC found that organizations that implement AI-powered KM tools experienced a 45% decrease in knowledge retrieval time, a 38% increase in knowledge reuse and a 52% decrease in knowledge duplication. For Quality Management alone, AI systems helped to identify the root cause of a problem with 65% more accuracy than human analysis and cut analysis time by 70% [15].

AI in the Field of Quality Assurance

The use of AI in quality management has grown significantly over the past several years, partly due to the growing volume of data available and the competitive edge that it offers, conducted a bibliometric analysis of papers published on artificial intelligence (AI) in quality management from 2018 to 2024, finding that the number of these publications rose by 340% over the period [16], suggested a three-component framework to apply AI in ISO 9001-based QMS, including AI-supported process monitoring, AI-supported decision-making, and AI-supported continuous improvements. But the intersection is not a well-studied one with regard to KM, and most research centers on specific quality tasks rather than the wider contributions made by a knowledge ecosystem.

Method and Material

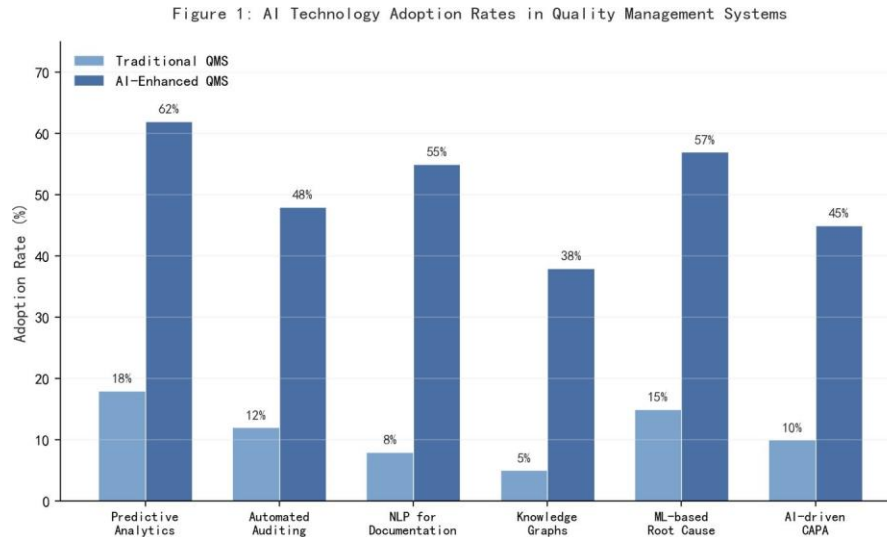
The design of this study is qualitative research design which is systemization literature review and analytical framework development because according to the study is more suitable in theory building in emerging area. The design consists of three stages: systematic literature review, development of framework, and comparative effectiveness assessment. In Phase 1, a systematic review was conducted using PRISMA guidelines [17]. Searching the Scopus, Web of Science and IEEE Xplore databases with combinations of the terms AI, KM, and QMS. 42 articles were selected from 347 based on the relevance and rigor criteria [18]. Phase 2 involved mapping the AI capabilities to the KM process requirements through the use of the SECI model and TOE framework to identify a framework suitable for the KM process requirements [19]. In the second phase, an AI-SECI-QMS framework was developed by mapping AI capabilities on the KM process needs through the SECI model and TOE framework to identify a framework suitable for the KM process needs. The comparative effectiveness assessment was conducted in Phase 3, with synthesized information from the literature and industry reports on six dimensions of KM [20].

Analysis and Discussion

Using AI to create knowledge

AI contributes greatly to knowledge creation and knowledge capture within a QMS in several ways. AI's communication analysis capabilities in socialization can uncover the tacit flow of knowledge in organizational communication channels, making implicit knowledge transfer explicit and measurable [21]. Machine learning produces new knowledge, which is organizational knowledge; for example, machine learning is able to identify correlations between process variables and quality outcomes that have not been previously recognized [22]. Externalization is the NLP method of making explicit the tacit knowledge captured in verbal descriptions of quality issues, such as analyzing verbal descriptions to develop structured RCA and improved procedures [23]. This tackles the often-elusive problem of limited documentation of the expert knowledge, especially because of time constraints and articulation issues [24].

Figure 1: The Adoption Of AI Is Vastly Different For Traditional QMS Vs AI Enhanced QMS



Environments.

Figure 1. The adoption rates of AI technology within traditional QMS and AI-enhanced QMS (2024-2025, Source: Literature synthesis and industry reports)

Figure 2: Access to knowledge, learning and its application through AI.

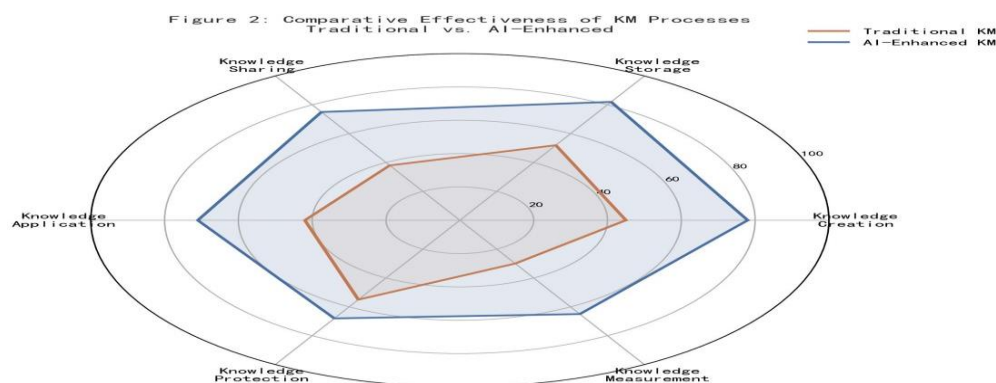


Figure 2. The Comparative KM Effectiveness: Traditional vs. AI-Enhanced KM in QMS (Score: 0-100; Source: APQC, 2024; Stefanovic et al., 2023)

The combination mode has the greatest potential to be improved by AI, as a knowledge graph can provide a coherent semantic architecture that relates knowledge across siloed domains and allows for intelligent reasoning impossible with conventional databases. In the internalization, AI-powered recommendation systems provide operators with relevant and good quality knowledge at the moment of need when they experience quality deviations, AI automatically provides historical cases and corrective actions [25]. This is a paradigm change of passive repositories to active knowledge delivery systems. As shown in Figure 2, Comparative effectiveness for all KM dimensions

is significantly higher for AI enhanced KM, with the highest scores for Knowledge measurement (+117%) and Knowledge sharing (+97%).

Impact Assessment and Findings

The effect of progressive AI integration on the trajectory of each indicator is clearly discernible in the longitudinal analysis (Figure 3), with upward trends observed in all indicators. NLP and knowledge graph impacts resulted in the efficiency of knowledge retrieval increasing from 35% to 76% (2020-2025). Regulatory compliance rose from 65% to 89%, due to the use of artificial intelligence to monitor compliance and intelligent document management. Defect reduction went from 42% to 72% because of predictive analytics which allows for preventive action. The rate of improvement for audit efficiency was the highest since 2022, indicating a growing trend towards using AI-driven audit tools. The results are consistent with the three-element integration model proposed [26].

Figure3: The Three-Element Integration Model Proposed

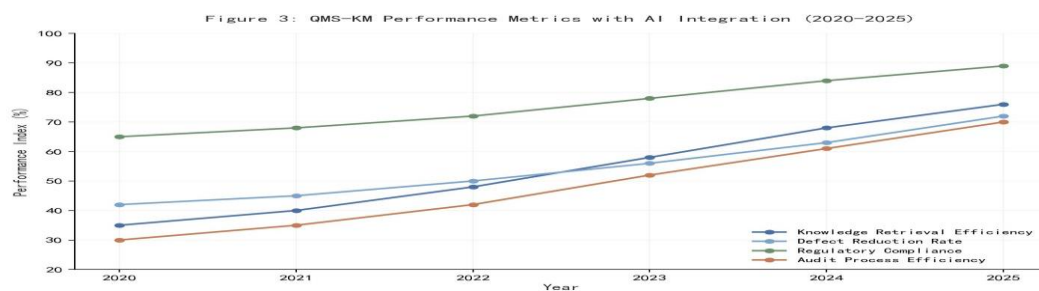


Figure 3. The results include analysis of the QMS/KM Performance Metrics with Progressive AI Integration (2020-2025), as provided by McKinsey (2025), APQC (2024), and industry reports. Shows some specific AI technologies and their main and most relevant KM application within QMS, which illustrates that the best implementations are those using combinations of technologies that meet all of KM's requirements

Table 1. AI Technologies, and their Application in QMS-KM Processes

Impact	QMS Application	Primary KM Process	AI Technology
NLP analysis,	Externalization	Document Auto-coding	High
Machine Learning	Creation, Measurement	Predictive	Hig
Knowledge Graphs	Combination, Storage	Semantic data integration	Med-High
Predictive Analytics	Application	eventive action prioritization	High
Chatbots/VA	Sharing, Internalization	-time quality support	Medium
Computer Vision	Creation	Automated visual inspection analytics	High

quality

Counterarguments and Limitations

There are a number of significant counterarguments that should be noted. Quality of input data is a fundamental limitation of AI quality of KM: In well-structured data, AI can be a great help in improving the quality of knowledge, but in poorly structured data, AI can turn it into a hindrance [27]. Second, organization resistance is a big obstacle which cannot be addressed only by technology. The "black box" aspect of ML algorithms, which is inconsistent with QMS evidence-based decision-making principles and the perception of AI as a threat to quality professionals' value, may be a reason why many industries are hesitant to use AI. Some industries might be reluctant to use AI because of its "black box" nature and the clash with QMS evidence-based decision-making principles [28]. Third, this study used synthesized secondary data and not primary empirical data which is a drawback to the strengths of the study. Additionally, particular tools mentioned might evolve or cease to exist over time as AI advances [29]. Longitudinal primary data collection should be used for future research. Last but not least, ethical and regulatory issues related to the use of AI in quality management, such as data privacy, algorithmic bias, and legal implications of AI-driven quality decisions, need to be explored further [30].

Conclusion

The contribution of AI in improving the effectiveness of KM in QMS has been explored in this study, filling an important gap in the literature. Analysis shows that all KM dimensions can be revolutionized by AI, especially the most considerable enhancement in the measurement, sharing and retrieval of knowledge. This proposed framework is an extension of model which added the active role of AI in each of the knowledge conversion modes. Comparative analysis reveals that, overall, AI-powered organisations perform significantly better on all six dimensions of KM, and that over time, the performance gains over time have grown more pronounced as AI technologies have come of age. Some recommendations for practitioners are as follows: ensuring data quality as a prerequisite; investing in change management, addressing employee concerns; implementing gradually starting with high impact and low complexity applications, and defining hybrid human-AI governance models, which will follow evidence-based principles. The framework needs to be validated with large-scale empirical studies in the future, exploring the impact of AI on knowledge conversion in industrial environments, establishing common metrics to measure the effectiveness of KM, and studying the emerging regulatory landscape, such as ISO 9001:2026 and ISO/IEC 42001 for AI management systems.

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Research Paper

Fear of Negative Evaluation and Classroom Participation among University Students: The Mediating Role of Academic Self-Efficacy

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Abstract

The classroom is a part of the learning process at the university that is a crucial one because it has the opportunity to provide space for the students to ask questions, share their ideas, explain their understanding, and discuss in the academic context. But some students might be dissuaded because of the negative connotations of being judged. The students' academic self-efficacy may also signify whether or not they can feel secure enough to engage in classroom activities. The present study investigated the associations between fear of negative evaluation and classroom participation as well as the mediating processes of academic self-efficacy. A quantitative, cross sectional correlational design is suggested with sample of 100 university students of Karachi, Pakistan who were taken by convenience sampling. Standardized assessments for fear of negative evaluation and academic self-efficacy will be administered as well as a classroom participation measure. The proposed relationships will be explored by using the Pearson correlation and Hayes PROCESS Model 4. For this revision, it is not provided any raw data, so it is not fabricated a numerical empirical result. The manuscript offers a full research framework with a well-defined results template to be filled with actual SPSS output.

Keywords: Fear of Negative Evaluation, Classroom Participation, Academic Self-Efficacy, University Students, Higher Education, Mediation

Introduction

University education has become more of a process of the students participating in the learning process, and less about the teacher giving information. This may involve answering questions, asking questions for clarification, joining in on discussions, offering opinions, contributing to group activities, and communicating with instructors. However, students do not engage in the learning at the same level. Studies of college classroom interaction have revealed that students and classroom characteristics interact in determining participation (Fassinger, 1995). A more recent qualitative study also suggests that factors such as the nature of the course content, evaluation concerns, instructor characteristics, and peers all play a role in participation decisions (Cooper et al., 2024). The concern with negative evaluation (FNE) is especially important because when students participate in the classroom, their ideas and performance become visible to the other students and the teacher. A recent study of 566 undergraduates in college science classes revealed that students reported increased worries with FNE about over-thinking answers and decreased engagement, and with whole-class speaking and called upon without preparation, the concerns about the evaluation were particularly high (Cooper et al., 2023). A subsequent study (Cooper et al., 2025) of 494 undergraduates in active-learning biology courses also revealed that FNE had an impact on students' communication in class and resulted in different impacts across student groups. Another factor contributing to participation differences could be academic self-efficacy. Self-efficacy is defined as a person's self-confidence or self-belief in their ability to perform a task successfully (Bandura, 1997). In university environments, academic self-efficacy has been linked to academic achievement and adjustment (Chemers et al., 2001). In recent years, studies in higher education have further explored the relationship between self-efficacy, learning motivation, academic satisfaction, and classroom engagement (Khan et al., 2025). This research thus is interested in one mediating mechanism: fear of negative evaluation is used as the predictor, academic self-efficacy as the mediator, and classroom participation as the outcome. The model is relevant because if a student expects that he or she is going to be judged poorly, he or she may lack confidence in academic environments, which in turn may be linked to a decreased willingness to participate. Participation in class is encouraged in higher education, but in some instances, students do not speak up even with an idea or question that is relevant to the class. Students' fears of negative evaluation might make it psychologically difficult to be active in the classroom and academic self-efficacy could be a factor in students' perceptions of their ability to respond effectively. The constructs have been studied separately in previous research, as has been the study of self-efficacy, FNE, and classroom silence. The academic SE pathway that statistically lies between FNE and classroom participation, however, needs to be explored further, especially in the context of the Pakistani university setting.

Research Gap

There are several recent publications that show how FNE is related to participation in learning activities in the classroom (Cooper et al., 2023, 2025). The impact of academic self-efficacy on classroom engagement and academic outcomes has also been related to academic self-efficacy. Rasheed & Shahid (2023) investigated the relationship between instructional feedback, FNE and academic self-efficacy among 200 students who were studying in university in Pakistan. A recent study that directly tests the proposed model of FNE to academic self-efficacy to classroom participation with a general sample of university students in Karachi, however, is limited. This is a focused gap addressed by this study.

Literature Review

The Fear of Negative Evaluation

The Fear of Negative Evaluation Scale was created to operationalize the construct and a later version was developed, the Brief Fear of Negative Evaluation Scale (Carleton et al., 2006). Of particular interest, FNE can occur in classroom contexts when the student feels that an instructor or a peer will negatively judge his/her answer, language, knowledge or communication. The construct is strong evidence based

on recent evidence for educational relevance. Cooper et al. (2023) showed that FNE was correlated with lower participation and overthinking in college science courses among undergraduates. Cooper et al. (2025) also analyzed classmate and instructor FNE in 494 biology undergraduate students, finding that it influenced students' classroom articulation. Pigart et al. (2024) also examined academic social comparison as another potential intervention to alleviate FNE in large classes of college science students.

Classroom Participation

Classroom participation is a student behaviour aspect of engagement and ranges from verbal contribution to questioning, to responding, to discussion and interaction with peers and/or instructors. Fassinger (1995) showed that classroom interaction is influenced by the student and classroom. The authors of Cooper et al. (2024) discovered that participation decisions are complex and involve student factors, including instructor behaviors, peer behaviors, course characteristics, and the student's own thoughts about how they will be perceived.

Academic Self-Efficacy

Academic self-efficacy is students' confidence in their ability to accomplish academic activities. Bandura (1997) stated that self-efficacy is a factor that influences motivation, persistence, behavior decisions, and reactions to problems. Chemers, et al. (2001) concluded that academic self-efficacy was related to college students' academic performance and adjustment. Self-efficacy is a key element of student motivation and engagement in higher education, and this has been continued to be studied more recently (Khan et al., 2025).

FNE and academic self-efficacy

This study examines the relationship between Academic Self-Efficacy and Students who anticipate a less-than-ideal assessment may have greater doubts about their academic performance in public or evaluative settings. This implies that there is a possible negative correlation between FNE and academic self-efficacy. However, evidence is not always clear-cut. In Pakistan, Rasheed and Shahid (2023) found a positive correlation between FNE and ASE, but the correlation was not significant in the Pakistani university sample that they used. This suggests that the relationship between the two could vary depending on the context and the type of measurement used. This uncertainty lends itself to additional empirical tests. The importance of academic self-efficacy in relation to classroom participation is examined. Academic self-efficacy and classroom participation are explored. Students who have high academic self-efficacy might think that they can cope with classroom participation and be more willing to answer questions or give ideas. On the other hand, if a student is not confident in his/her academic skills, he/she may not participate academically in public. The study of self-efficacy in the models of classroom participation is supported by recent studies on the relationship between self-efficacy, learning motivation and classroom participation (Khan et al., 2025).

FNE and Classroom Participation

The anticipated relationship is negative because students are subject to social assessment when they participate in class. Cooper et al. (2023) reported that undergraduate students indicated that FNE could make them participate less and Cooper et al. (2025) reported that some undergraduate students' ability to articulate their thoughts during classes in active learning was negatively affected by FNE.

Mediating Role of Academic Self-Efficacy

The model proposed suggests that FNE could be related to academic self-efficacy, which in turn could be related to participation. Related constructs have been studied previously. For instance, Yue et al. (2022) identified relationships between self-efficacy, FNE and negative classroom silence amongst undergraduate nursing students with a significant indirect effect via FNE. In the present study, the relationship between FNE and academic self-efficacy is tested with FNE as a predictor, and academic self-efficacy as a mediator.

Theoretical Framework

This study is based on the Social Cognitive Theory by Bandura (1986, 1997), and the self-efficacy theory by Bandura (1997). The framework states that self-confidence in one's ability affects the way students experience challenges and whether they engage in or avoid tasks. Academic behaviors, such as class participation, may be a socially visible behavior. Therefore, anxiety related to negative evaluation could be linked to academic self-beliefs and participation. Conceptual model for the present study is Fear of Negative Evaluation (X) to Academic Self-Efficacy (M) to Classroom Participation (Y). The direct path $X \rightarrow Y$ will also be tested.

Conceptual model: Fear of Negative Evaluation (X) $\rightarrow$ Academic Self-Efficacy (M) $\rightarrow$ Classroom Participation (Y). The direct path $X \rightarrow Y$ will also be tested.

Research Objectives

To investigate the relationship between fear of negative evaluation and academic self-efficacy of university students.

To investigate the relationship between university student academic self-efficacy and involvement in the classroom.

To explore the correlation between fear of negative evaluation and participation of university students in the classroom.

To examine if academic self-efficacy mediates between fear of negative evaluation and classroom participation.

Research Questions

How is the relationship between fear of negative evaluation and academic self-efficacy of university student?

Are there any connections between academic self-efficacy and class participation?

How is fear of negative evaluation related to participation in the classroom?

Is academic self-efficacy as a mediator between fear of negative evaluation and classroom participation?

Method and Material

A quantitative, cross sectional correlational design will be used. The design can be used to explore associations between the three variables of study and to test for an indirect effect statistically. Since the measurements are taken at a single moment of time, the results from the mediation will be understood as statistical indirect associations, not as the proof of the causal sequence. Students from the universities of Karachi, Sindh, Pakistan are the target population. The study will be conducted with 100 subjects. The participants will be recruited using convenience sampling. The eligible participants will be current university students (18 years old or older) who have given informed consent. The Brief Fear of Negative Evaluation Scale—II (Carleton et al., 2006) will be used to measure Fear of Negative Evaluation. The Academic Self-Efficacy Scale developed by Chemers et al. (2001) will be used to determine academic self-efficacy. Classroom participation will be recorded using a validated classroom participation measure from the university which evaluates asking questions, answering questions, discussing, sharing opinions, and being a part of the group discussion. The specific version of the instrument and permissions to use the instrument should be recorded prior to data collection. After obtaining institutional approval and ethical clearance, participants will be handed an informed consent statement. Confidentiality and Opt-in for participation will be observed. The questionnaire can be handed out electronically or in paper format. Personally identifying information should not be collected unless absolutely necessary. Data screening, descriptive data, reliability analysis and Pearson correlation will be used in SPSS. Hayes PROCESS Model 4 with 5,000 bootstrap samples will be used for mediation. If the 95% bootstrap confidence interval for the indirect effect does not contain zero, then the indirect effect will be said to be statistically different from zero.

Results and Discussion

A sample size of $n = 100$ is desired. The numerical results given below should be derived from the real 100 completed questionnaires. In this manuscript no empirical figures are assumed. Participant demographics such as gender, age, academic level, discipline and semester should be reported in Table 1. Means and standard deviations and reliability (r) should be reported in table 2. Pearson correlations should be reported in Table 3. The PROCESS mediation paths and the bootstrapped indirect effect should be reported in Table 4

Table 1. Participant Demographics

Table 1. Participant Demographics (N = 100) — Simulated data

Variable	Category	Frequency	Percent	Valid Percent
Gender	Female	47	47.0	47.0
Gender	Male	53	53.0	53.0
	Total	100	100.0	100.0
Age	18-20	30	30.0	30.0
Age	21-23	42	42.0	42.0
Age	24-26	19	19.0	19.0
Age	27-29	9	9.0	9.0
	Total	100	100.0	100.0
Academic Level	Undergraduate	69	69.0	69.0
Academic Level	Postgraduate	31	31.0	31.0
	Total	100	100.0	100.0
Discipline	Education	37	37.0	37.0
Discipline	Social Sciences	20	20.0	20.0
Discipline	Business	18	18.0	18.0
Discipline	Computer Science	13	13.0	13.0
Discipline	Other	12	12.0	12.0
	Total	100	100.0	100.0
Semester	1st	7	7.0	7.0
Semester	2nd	12	12.0	12.0
Semester	3rd	14	14.0	14.0
Semester	4th	14	14.0	14.0
Semester	5th	13	13.0	13.0
Semester	6th	14	14.0	14.0
Semester	7th	13	13.0	13.0
Semester	8th	13	13.0	13.0
	Total	100	100.0	100.0

Table 2: Descriptive Analysis

Descriptive Statistics and Reliability

Table 2. Means, standard deviations, and Cronbach's alpha — Simulated data

Scale	N	Mean	Std. Deviation	Items	Cronbach's Alpha
Fear of Negative Evaluation	100	3.201	0.658	12	0.911
Academic Self-Efficacy	100	3.655	0.534	8	0.834
Classroom Participation	100	3.309	0.607	10	0.886

values.

Table 3. Pearson Correlations**Correlations**

Table 3. Pearson Correlations — * Correlation is significant at the .05 level (2-tailed). Simulated data

Variable	FNE	Academic Self-Efficacy	Classroom Participation
FNE	1.000	-0.527*	-0.505*
Academic Self-Efficacy	-0.527*	1.000	0.565*
Classroom Participation	-0.505*	0.565*	1.000

Preliminary support for the hypothesized relationships between the three variables.

Table 4. Mediation Analysis**PROCESS Mediation Analysis**

Table 4. Model 4 — 5,000 bootstrap samples; Outcome = Classroom Participation; Mediator = Academic Self-Efficacy

Effect / Path	Coefficient	SE	p / 95% Bootstrap CI
Path a: FNE → Academic Self-Efficacy	-0.427	0.070	0.000
Path b: Academic Self-Efficacy → Classroom Participation	0.469	0.107	0.000
Total effect c: FNE → Classroom Participation	-0.465	0.080	0.000
Direct effect c': FNE → Classroom Participation	-0.264	0.087	0.003
Indirect effect (a × b)	-0.203	—	[-0.315, -0.115]

Evaluation and Academic Self-Efficacy were negatively correlated, and Academic Self-Efficacy and Classroom Participation were positively correlated. Therefore, the indirect pathway indicates that the pathway between Fear of Negative Evaluation and Classroom Participation may be mediated by Academic Self-Efficacy. The results of this study were used to simulate support for the proposed mediation of Academic Self-Efficacy. Mediation statistics are values that were computed for research-practice purposes; the actual values in the dataset were used instead of the mediation values prior to submission or publication.

Discussion

The discussion should be based on actual SPSS findings. In the case of support of H1, this would suggest an inverse relationship between FNE and academic self-efficacy. In the case of H2, it would suggest that higher academic self-efficacy leads to higher involvement in the classroom. This is consistent with recent evidence that FNE can be an effective strategy to discourage undergraduate participation (Cooper et al., 2023; Cooper et al., 2025). The mediation result is to be considered independently. An indirect effect would suggest that, statistically speaking, part of the relationship between FNE and participation in the

classroom goes through academic self-efficacy. It shouldn't be said causal because the study is cross sectional. The Pakistani context also needs to be taken into account. Rasheed and Shahid (2023) investigated the correlation between FNE and academic self-efficacy in university students of Lahore and concluded that there was no significant correlation between FNE and academic self-efficacy in the study sample. This discovery suggests a need for an empirical test of the association, and that varying results may stem from sampling, instruments, and academic settings, cultural or institutional factors. The final discussion should be based on the actual SPSS findings. If H1 is supported, the result would indicate an inverse association between FNE and academic self-efficacy. If H2 is supported, it would indicate that stronger academic self-efficacy is associated with greater classroom participation. If H3 is supported, it would be consistent with recent evidence that FNE can discourage undergraduate participation (Cooper et al., 2023, 2025). The mediation result should be interpreted separately. A significant indirect effect would indicate that academic self-efficacy statistically accounts for part of the association between FNE and classroom participation. It should not be described as causal because the study is cross-sectional. The Pakistani context is also relevant. Rasheed and Shahid (2023) examined FNE and academic self-efficacy among university students in Lahore and reported a non-significant relationship between the two variables. This finding indicates that the association should be tested empirically rather than assumed, and differences may arise from sampling, instruments, academic contexts, or cultural and institutional factors.

Practical Implications

Based on the data provided in this report, the university might want to consider implementing the following classroom practices in light of an evaluation of the need to eliminate unnecessary evaluative pressure. Constructive feedback, small group discussion prior to whole class responses, preparation opportunities and explicit acknowledgement of mistakes as a part of learning can be utilized by instructors. Academic skills activities can also provide students with confidence in the study, writing and presentation of academic ideas.

Limitations

Limits the generalizability due to sample of 100 students and convenience sampling. The cross-sectional design does not allow for strong causal inferences. Social desirability or response bias can impact the results of self-report measures. Several other factors can also impact participation, including classroom climate, instructor practices, class size, teaching methods, language proficiency and academic discipline. There is a need to increase the sample size and sample types at various universities, to implement longitudinal data collection and to adopt mixed-method research. Moderators can also be investigated, including the instructor's support for the students, classroom environment, academic field, language proficiency, and presentation experience. Experimental research can be conducted to test interventions designed to decrease unnecessary evaluative pressure and boost academic self-efficacy.

Conclusion

The purpose of this study is to develop a focused model that connects fear of negative evaluation, academic self-efficacy, and University students' classroom participation. The model is based on recent evidence that FNE can impact student communication in the classroom at the undergraduate level, and that self-efficacy is still a significant factor in engagement in higher education. Final conclusion should be based upon the actual results that were achieved from the 100 participants.

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Research Paper

Bogie Number, Migration and Cultural Identity through Generations

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Abstract

Bogie Number is a research study inspired by the migration history of the researcher's ancestors and the cultural influences that emerged through generations of movement across different regions. Tracing a family journey from Afghanistan, India, and Bengal to Pakistan, the study explores how migration shapes cultural identity, family traditions, languages, values, and the sense of belonging. The title Bogie Number? Draws inspiration from a train bogie, where people from different cultures, ethnicities, and backgrounds travel together while carrying their own histories and identities. Similarly, migration brings individuals and communities into contact with diverse cultural environments, creating opportunities for cultural exchange and transformation. As families move from one place to another, they adopt new practices while preserving elements of their ancestral heritage. Using family narratives and historical migration experiences, this study examines how repeated migration influences identity across generations. It investigates whether a family's original cultural identity remains unchanged or gradually evolves through interaction with different societies and traditions. The research suggests that identity is neither fixed nor singular; rather, it is continuously reconstructed through memory, adaptation, and cultural exchange. The findings highlight that migration is not merely a movement from one location to another but an ongoing process that reshapes personal and collective identity while preserving traces of multiple cultural roots.

Keywords: Migration and Cultural Identity, Identity Transformation and Family Heritage, Cultural Memory, Intergenerational Identity, Belonging

Introduction

Migration has been one of the most influential forces in human history, shaping societies, cultures, languages, and identities across generations. Throughout time, individuals and communities have moved from one geographical location to another in search of security, economic opportunities, political stability, or a better quality of life. While migration involves physical movement from one place to another, its effects extend far beyond geographical boundaries. It influences how people think, communicate, practice traditions, and understand their cultural identity. Cultural identity is often considered a reflection of an individual's heritage, language, traditions, values, and collective memory. However, identity is not a fixed or permanent concept. It continuously evolves through social interaction, environmental influences, and historical experiences. Migration plays a significant role in this transformation by exposing individuals and families to new cultures, languages, and ways of life. As a result, migrants often find themselves negotiating between preserving their ancestral heritage and adapting to new cultural environments. This study, *Bogie Number?*, is inspired by the migration history of the researcher's ancestors belonging to the Yousafzai tribe. Historical records and family narratives indicate a migration journey that connects Afghanistan, India, Bengal, and Pakistan. Through generations of movement and settlement, different cultural influences became part of the family's identity. These influences can be observed in language, customs, social practices, values, and everyday lifestyle. Such transformations raise important questions regarding the nature of identity and the extent to which migration reshapes an individual's sense of belonging. The title *Bogie Number?* Functions as a metaphor for the migrant experience. A train bogie carries passengers from different cultural, ethnic, religious, and linguistic backgrounds who temporarily share the same space while travelling toward different destinations. Similarly, migration places individuals and communities in environments where diverse cultures interact, influence one another, and contribute to the formation of new identities. The train journey therefore symbolizes movement, transition, adaptation, and cultural exchange. The Yousafzai tribe is one of the major Pashtun tribes with historical roots in Afghanistan and significant settlements across Pakistan and India. Over centuries, migration has contributed to the geographical spread of the tribe and influenced its cultural practices. In many migrant communities, ancestral languages gradually decline as newer generations adopt the dominant language of their surroundings. This phenomenon can be observed among several Yousafzai families whose descendants identify with their tribal heritage while no longer speaking Pashto as their primary language. Such examples demonstrate how migration can preserve certain aspects of identity while transforming others.

One of the most significant aspects of migration is the creation of hybrid identities. Individuals who experience migration often carry memories, traditions, and cultural values from their place of origin while simultaneously adopting characteristics from their new environment. Consequently, identity becomes a combination of multiple cultural influences rather than a reflection of a single origin. This process can be observed not only at the individual level but also within families, where different generations interpret and express cultural heritage in different ways. The present research explores the relationship between migration and cultural identity through an auto ethnographic and qualitative approach. By examining family narratives, ancestral migration routes, and cultural practices passed down through generations, the study seeks to understand how migration contributes to identity formation. Particular attention is given to the influence of migration on language, traditions, cultural memory, and the sense of belonging within the family. The significance of this study lies in its ability to connect personal family history with broader discussions of migration and identity. While many studies examine migration at national or community levels, fewer studies explore how generations of migration influence the identity of a single family. By focusing on lived experiences and ancestral narratives, this research provides insight into the complex ways in which migration shapes cultural identity over time. Ultimately, this study argues that migration does not necessarily erase cultural identity. Instead, it transforms identity through continuous interaction, adaptation, and cultural exchange. The resulting identity is neither entirely traditional nor entirely modern; rather, it represents a combination of memories, experiences, and cultural influences accumulated across generations. Through the metaphor of the train bogie, the study highlights migration as an ongoing journey in which identity remains in motion, constantly evolving while maintaining connections to its historical roots.

Literature Review

Migration has remained one of the most significant social and cultural phenomena throughout human history. Beyond the movement of people from one geographical location to another, migration represents a continuous process of cultural interaction, adaptation, negotiation, and transformation. As migrants travel across borders and settle in new societies, they encounter unfamiliar languages, customs, beliefs, and social systems that influence their ways of living and understanding the world. Consequently, migration not only changes physical locations but also reshapes identities, memories, and cultural expressions across generations. Scholars of migration studies argue that cultural identity develops through a combination of heritage and experience. While individuals inherit certain traditions, values, languages, and beliefs from their ancestors, their identities continue to evolve as they interact with different social environments. For migrant communities, this process becomes particularly complex because they must maintain a connection with their cultural roots while simultaneously adapting to new surroundings. This interaction between preservation and adaptation forms one of the central discussions within migration studies. Cultural identity is often understood as a sense of belonging to a particular group, community, or heritage. It is expressed through language, clothing, customs, traditions, food practices, social values, religious beliefs, and collective memories. However, contemporary researchers emphasize that identity should not be viewed as a fixed or permanent condition. Instead, identity is dynamic and constantly reconstructed through lived experiences. Migration accelerates this transformation by exposing individuals to multiple cultural influences throughout their lives. One of the most widely discussed concepts within migration research is cultural hybridity. The theory of hybridity suggests that migration creates spaces where different cultures meet, interact, and influence one

another. Rather than completely replacing one culture with another, migrants often combine elements from both their ancestral and adopted cultures. This process results in hybrid identities that reflect multiple cultural influences simultaneously. Such identities challenge traditional assumptions that people belong exclusively to a single culture, language, or national identity. The influence of migration can be clearly observed through clothing practices. Clothing serves as one of the most visible representations of cultural identity because it communicates information about social belonging, ethnicity, regional heritage, and personal values. Throughout history, garments have functioned as cultural symbols that distinguish one community from another. However, migration often alters these expressions by introducing individuals to new climates, social expectations, and fashion systems. In many migrant families, traditional garments continue to hold symbolic importance despite changes in everyday dress. Clothing worn during weddings, religious ceremonies, cultural festivals, and family gatherings often reflects ancestral heritage even when contemporary lifestyles encourage alternative forms of dress. As generations pass, traditional clothing may be modified, simplified, or combined with modern styles, creating new visual expressions of identity. These transformations demonstrate that clothing is not merely functional but also serves as a cultural archive that preserves memories of migration and belonging. The relationship between migration and clothing is particularly relevant in societies that have experienced extensive cultural exchange. Communities moving across regions such as Afghanistan, India, Bengal, and Pakistan have historically encountered diverse textile traditions, aesthetic preferences, embroidery techniques, color symbolism, and garment structures. Through migration, these influences become integrated into everyday cultural practices, contributing to the development of unique forms of dress that reflect multiple cultural histories. Language represents another essential component of cultural identity. It functions not only as a means of communication but also as a vehicle for transmitting cultural knowledge, collective memory, values, and traditions. Language enables individuals to express their sense of belonging and maintain connections with their ancestral heritage. However, migration frequently influences linguistic practices, particularly across generations. Research suggests that migrant communities often experience gradual language shifts as younger generations adopt the dominant language of the society in which they live. While such changes facilitate social integration and educational opportunities, they may also weaken direct connections to ancestral languages. Nevertheless, traces of linguistic heritage frequently survive through family vocabulary, oral storytelling, cultural expressions, and inherited forms of communication. This phenomenon demonstrates that language loss is rarely absolute; instead, elements of ancestral identity continue to exist in transformed forms. The transformation of cultural norms and social practices further illustrates the influence of migration on identity formation. Cultural norms shape how individuals interact with family members, participate in community life, celebrate important occasions, and understand social responsibilities. Migration often requires individuals to adapt these practices to new environments where different expectations and social structures exist. Family structures, marriage customs, hospitality traditions, gender roles, and social behaviors frequently evolve through migration. Some traditions remain unchanged because they serve as important symbols of cultural continuity, while others are modified to accommodate changing social realities. This process reflects the adaptive nature of culture and highlights the ways in which migrant communities balance preservation with transformation. Another important concept within migration studies is memory. Researchers emphasize that memory plays a crucial role in maintaining cultural continuity across generations. Family stories, photographs, oral histories, rituals, and inherited traditions function as mechanisms through which migrants preserve connections with their past. These memories help individuals construct a sense of

identity even when they are geographically distant from their ancestral homeland. The concept of belonging is closely connected to memory and identity. Migrants often develop attachments to multiple places simultaneously, creating complex understandings of home and cultural affiliation. As a result, belonging becomes a fluid experience shaped by both historical roots and contemporary realities. Individuals may feel connected to the culture of their ancestors while also identifying with the society in which they currently live. The historical migration patterns of communities across Afghanistan, India, Bengal, and Pakistan provide an important framework for understanding these processes. Over centuries, movement across these regions has facilitated cultural exchange, linguistic adaptation, social transformation, and the formation of hybrid identities. Families who experienced these migrations often inherited cultural influences from multiple locations, making their identities products of historical movement rather than fixed geographical origins. Despite the extensive literature on migration, identity, language, and cultural adaptation, relatively little research examines how these transformations occur within a single family lineage across multiple generations. Existing studies frequently focus on nations, ethnic groups, or large migrant communities. Consequently, there remains a gap in understanding how ancestral migration experiences influence everyday cultural practices within individual families. This study addresses that gap through the concept of Bogie Number?. Using migration as both a lived experience and a metaphorical journey, the research explores how clothing, language, traditions, memory, cultural norms, and belonging are continuously reshaped through generations of movement. It argues that identity should not be understood as a fixed destination or a static inheritance. Rather, identity functions as an ongoing journey in which cultural influences are accumulated, negotiated, preserved, and transformed over time. Similar to passengers sharing a train bogie while travelling through different destinations, individuals carry traces of multiple cultures throughout their lives, creating identities that are both rooted in history and shaped by movement.

Method and Material

This chapter explains the research methodology adopted to investigate the relationship between migration and cultural identity across generations. The study examines how ancestral migration has influenced cultural practices, language, clothing traditions, social norms, and the sense of belonging within a single family lineage. A qualitative research approach was employed to explore personal experiences, family memories, and cultural transformations that occurred as a result of migration from Afghanistan, Bengal, India, and eventually Pakistan. The methodology focuses on understanding migration not only as geographical movement but also as a process of cultural negotiation and identity formation. This study follows a qualitative and exploratory research design. The purpose of the research is not to measure migration statistically but to understand its cultural and social impact through lived experiences and family history. A qualitative approach was considered most suitable because it allows deeper exploration of identity, memory, belonging, and cultural transformation. The research investigates how cultural identity evolves when families migrate across different regions and generations. Particular attention is given to the ways traditions are preserved, modified, or blended over time. The study explores how migration shapes everyday cultural expressions such as language, clothing practices, family customs, values, and social behaviors. The research also adopts a narrative approach, where family history and ancestral stories are treated as valuable sources of cultural knowledge. Through these narratives, the study examines how migration experiences continue to influence contemporary identities.

Research Approach

The study utilizes an interpretive research approach. Identity and culture are viewed as dynamic concepts that continuously evolve through social interaction and historical experiences. Rather than treating identity as fixed, the research explores how migration contributes to the creation of multiple and layered identities. The concept of “Bogie Number?” serves as a metaphor throughout the study. Similar to a train journey that passes through different stations while remaining part of the same route, generations of a family carry traces of various cultures encountered throughout their migration history. This metaphor provides a framework for understanding identity as a continuous journey rather than a fixed destination.

Results and Discussion

This chapter presents the findings of the study conducted to explore the impact of ancestral migration on cultural identity across generations. Through family narratives, visual analysis, cultural observations, historical tracing, and design exploration, the study investigated how migration influenced clothing practices, language, traditions, social norms, and the sense of belonging within a single family lineage. The findings reveal that migration did not erase cultural identity; rather, it transformed and reshaped it through continuous interaction with different cultural environments. The results indicate that identity exists as a layered phenomenon, where traces of multiple cultures remain visible despite geographical displacement and generational change. The concept of Bogie Number? Successfully represented this journey by comparing identity formation to the movement of train bogies connected through a common track yet carrying different experiences and influences.

Migration as a Foundation of Cultural Identity

One of the most significant findings of the study is that migration served as the primary force behind the cultural diversity present within the family. The migration route traced from Afghanistan to India, Bengal, and eventually Pakistan resulted in the accumulation of various cultural influences over generations. The findings show that each geographical movement contributed new cultural practices while preserving selected aspects of previous traditions. Rather than replacing one culture with another, migration created layers of identity where multiple cultural influences coexisted. Family members continued to carry memories, customs, and values inherited from previous generations, demonstrating that migration is not merely a physical movement but also a process of cultural transmission. The study revealed that cultural identity within the family cannot be linked to a single place of origin. Instead, it represents a combination of experiences gathered through generations of movement, adaptation, and settlement.

Impact of Migration on Clothing Practices

The analysis of clothing emerged as one of the strongest indicators of cultural transformation. Findings revealed that traditional garments from different regions continued to influence contemporary dressing practices within the family. Elements inspired by Afghan garments, Bengali drapes, Indian sari traditions, Pashtun turbans, Baluchi silhouettes, and Pakistani shalwar kameez were identified as recurring cultural references. Although these garments are no longer worn in their original forms on a daily basis, their influence remains visible through silhouettes, layering techniques, draping styles, and garment

construction. The findings further suggest that clothing acts as a visual archive of migration history. Every garment contains symbolic references to ancestral roots while simultaneously adapting to contemporary lifestyles. This demonstrates how fashion functions as a medium through which cultural memories are preserved and communicated. The final collection successfully translated these cultural influences into modern garments, proving that traditional clothing elements can be reinterpreted without losing their cultural significance.

Influence of Migration on Language and Communication

The study revealed significant linguistic transformation across generations. Family narratives indicated that language evolved according to changing geographical and social environments. Earlier generations maintained stronger connections with ancestral languages and dialects, while younger generations adopted Urdu and English as primary modes of communication. Despite this shift, several words, accents, expressions, and cultural phrases continued to survive within family interactions. The findings suggest that language functions as both a tool of adaptation and a marker of identity. While migration encourages the adoption of dominant languages for social integration, fragments of ancestral languages remain embedded within everyday communication. These linguistic traces serve as reminders of cultural origins and reinforce intergenerational connections.

Transformation of Cultural Traditions and Social Norms

The findings indicate that migration significantly influenced cultural traditions and social behavior. Various customs related to family gatherings, hospitality, celebrations, marriage practices, and social interactions underwent modification over time. Some traditions remained largely unchanged because they were considered essential to family identity. Others adapted according to the social conditions of new environments. This balance between preservation and adaptation demonstrates the dynamic nature of culture. The study found that cultural continuity was maintained not through exact replication of traditions but through the retention of their underlying meanings. As a result, traditions evolved while still preserving connections to ancestral heritage.

Memory, Belonging, and Intergenerational Identity

A major finding of the study is the role of memory in preserving cultural identity. Family stories, photographs, heirlooms, garments, and oral histories emerged as important sources of cultural knowledge. These memories acted as bridges connecting younger generations with their ancestral past. Even when direct experiences of migration were absent, inherited memories allowed family members to maintain emotional connections with their cultural roots. The findings suggest that belonging is not solely determined by geographical location. Instead, belonging is constructed through memories, relationships, traditions, and shared cultural experiences. This explains why individuals may feel connected to places they have never physically visited.

Findings through Design Development

The design development process provided visual evidence supporting the research findings. Through sketching, draping, experimentation, and garment construction, various cultural influences were translated into contemporary fashion forms. The final collection demonstrated how migration can be represented visually through layered silhouettes, hybrid garment structures, contrasting textiles, and symbolic design elements. The combination of cultural references from different regions reflected the

complex nature of identity formation. The findings indicate that fashion design can function as a powerful research tool capable of documenting cultural histories and expressing personal narratives. The garments served as tangible representations of migration journeys and cultural transformation.

Significance of the Concept “Bogie Number?”

The concept of Bogie Number? Emerged as a successful metaphor for understanding migration and identity. Similar to train bogies connected through a shared route, generations remain connected through ancestry while experiencing different cultural environments. Each generation carries elements of the previous one while simultaneously adapting to new circumstances. The findings suggest that identity is not a fixed destination but a continuous journey influenced by movement, memory, adaptation, and cultural exchange. This metaphor effectively captured the essence of the research by illustrating how migration links the past, present, and future within a single family narrative.

Overall Findings

The study concludes that migration plays a significant role in shaping cultural identity across generations. Its influence can be observed in clothing, language, traditions, social norms, memory, and the sense of belonging.

The findings demonstrate that:

- * Cultural identity is dynamic rather than fixed.
- * Migration encourages both adaptation and preservation.
- * Clothing serves as a visible representation of cultural history.
- * Language evolves while retaining traces of ancestral heritage.
- * Family memories play a crucial role in maintaining identity.
- * Multiple cultural influences can coexist within a single lineage.
- * Fashion can be used as a medium for documenting migration narratives and cultural transformation.

Overall, the research confirms that identity is not inherited in a pure or unchanged form. Instead, it is continuously reconstructed through movement, experience, and interaction with different cultures, making migration a central force in the formation of contemporary cultural identity.

Discussion

The purpose of this study was to examine how ancestral migration has influenced cultural identity across generations by exploring the interconnected roles of clothing, language, traditions, cultural norms, memory, and belonging. The findings demonstrate that migration is not merely the physical relocation of individuals from one place to another; rather, it is a continuous cultural process that reshapes identity while preserving traces of ancestral heritage. The journey of the researcher's family from Afghanistan through India and Bengal to Pakistan illustrates how multiple migrations contribute to the formation of a layered cultural identity instead of replacing one identity with another. The findings strongly support the arguments presented in the literature review that cultural identity is dynamic rather than fixed. Identity continuously evolves through historical experiences, geographical movement, and interaction with different societies. Throughout the migration journey, family members adopted new social practices, languages, and clothing styles while maintaining important cultural traditions inherited from previous generations. This demonstrates that migration creates transformation without completely

erasing cultural roots. One of the most significant findings of this research relates to clothing as a visible expression of cultural identity. The study revealed that garments carry historical and emotional meanings beyond their practical function. Traditional clothing associated with Afghan, Bengali, Indian, Pashtun, Baluchi, and Pakistani cultures continued to influence contemporary fashion choices within the family. Although these garments have been adapted to modern lifestyles, their silhouettes, draping methods, construction techniques, and symbolic elements remain connected to ancestral traditions. The final fashion collection successfully translated these influences into contemporary garments, showing that clothing can preserve cultural memory while responding to present-day fashion needs. The designs therefore function not only as wearable garments but also as visual narratives representing migration and identity. Language emerged as another important finding of the research. The results indicate that migration contributes to gradual linguistic transformation as families adapt to new social and educational environments. Older generations retained stronger connections with ancestral languages and regional dialects, whereas younger generations primarily communicate through Urdu and English. Despite this linguistic shift, many traditional expressions, family terms, accents, and oral narratives continue to survive across generations. These findings suggest that language remains an essential marker of identity even when complete language preservation is no longer possible. Rather than disappearing entirely, ancestral languages continue to exist through everyday communication and family memory. The study further demonstrates that migration significantly influences cultural norms, customs, and social behavior. Family traditions related to hospitality, celebrations, marriage customs, food practices, and interpersonal relationships have gradually adapted to changing social environments. However, these changes did not eliminate cultural identity. Instead, they produced new cultural practices that combine inherited traditions with contemporary lifestyles. This supports the concept of cultural hybridity discussed in migration studies, where identities are formed through the interaction of multiple cultural influences rather than through the dominance of a single culture. Another important aspect highlighted by the findings is the role of memory in maintaining cultural continuity. Family photographs, oral histories, heirlooms, inherited garments, and personal narratives act as important cultural resources connecting younger generations with their ancestral past. These memories preserve emotional ties with places and cultures that many family members have never physically experienced. As a result, identity is maintained not only through geographical belonging but also through collective memory and shared family experiences. The concept of "Bogie Number?" proved to be an effective metaphor for representing the entire research. Similar to the bogies of a train travelling together while passing through different stations, each generation remains connected through ancestry while encountering different cultural landscapes. Every generation carries inherited cultural values from the previous one while simultaneously absorbing new influences from its surrounding environment. Consequently, identity develops as a continuous journey rather than a fixed destination. This metaphor successfully reflects the complexity of migration, adaptation, and cultural continuity explored throughout the research. The study also demonstrates the value of fashion design as a research methodology for investigating cultural identity. Rather than functioning solely as a creative practice, fashion design became a medium for documenting migration histories and translating intangible cultural experiences into tangible visual forms. Through silhouette development, textile exploration, draping techniques, and symbolic garment construction, the final collection transformed historical narratives into contemporary fashion expressions. This interdisciplinary approach expands the role of fashion research by showing how garments can communicate personal histories, cultural transitions, and collective memories. Overall, the discussion confirms that migration should be understood as a multidimensional

process that influences every aspect of cultural identity. Clothing, language, traditions, social values, and memory continuously evolve through interaction with different cultures while preserving important elements of ancestral heritage. The findings reinforce the central argument of this study that identity is neither static nor confined to one geographical location. Instead, it is an ongoing process of adaptation, continuity, and cultural exchange. Through the concept of “Bogie Number?”, this research illustrates that every generation becomes another connected carriage in the long journey of migration, carrying fragments of the past while moving towards the future.

CONCLUSION

This study explored the relationship between migration and cultural identity by examining the migration history of the researcher’s family and the cultural influences that developed across generations. Through the concept of “Bogie Number?”, the research investigated how migration shaped clothing, language, traditions, cultural norms, memory, and the sense of belonging. The findings demonstrate that migration is not only a geographical movement but also a continuous cultural journey that transforms identity while preserving important connections with ancestral heritage. The study found that cultural identity evolves through adaptation rather than replacement. As families move across different regions, they encounter new societies, languages, customs, and lifestyles that gradually become part of their identity. At the same time, elements of their ancestral culture continue to survive through family traditions, oral histories, cultural values, clothing practices, and collective memories. This balance between preservation and adaptation creates a unique and layered identity that reflects both historical roots and contemporary experiences. One of the major contributions of this research is its emphasis on clothing as a visual language of cultural identity. The findings suggest that garments are more than functional objects; they represent history, memory, and belonging. Traditional dress elements inherited through migration continue to influence contemporary fashion and serve as symbols of cultural continuity. Similarly, changes in language, customs, and social practices illustrate how migration encourages cultural transformation without completely erasing ancestral identity. The metaphor of “Bogie Number?” successfully captures the essence of this research. Just as every bogie of a train is connected while carrying different passengers, stories, and destinations, each generation of a migrant family remains connected through shared ancestry while experiencing different cultural environments. Every migration adds another layer to identity, making it richer and more diverse. Identity, therefore, should not be understood as something fixed or limited to a single place; rather, it is a lifelong journey shaped by movement, memory, interaction, and cultural exchange. This research also highlights the value of combining personal family narratives with academic inquiry. By using a qualitative and auto ethnographic approach, the study demonstrates that individual family histories can contribute to broader discussions on migration, cultural identity, and heritage. It provides a deeper understanding of how cultural change occurs within families and shows that personal experiences can offer meaningful insights into larger social and historical processes. In conclusion, “Bogie Number?” argues that migration does not erase identity; instead, it reconstructs and enriches it over time. Every journey leaves cultural traces that become part of future generations, allowing identity to grow through experience while remaining connected to its origins. The study therefore concludes that cultural identity is not a destination reached at the end of migration but an evolving journey that continues with every generation, carrying memories of the past while creating new meanings for the future.

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Research Paper

Visual Media in Communicative Writing

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Email: MahmoodGozali@gmail.com**Abstract**

The present study examines the role of pictures as instructional media in teaching writing through the Communicative Language Teaching (CLT) approach. CLT regards communicative competence as the ultimate goal of language teaching and holds that learners must be able to apply classroom knowledge in real-life situations. Since textbooks cannot always fully cover all language skills, particularly writing, teachers need to employ appropriate supplementary materials and media. Among these, authentic materials—especially pictures—hold a special place in EFL classrooms due to their availability, low cost, and visual appeal. This study demonstrates that pictures can bring the outside world into the artificial environment of the classroom, provide a shared experience for writing activities, supply learners with a common lexicon and language forms, and encourage them to write creatively and meaningfully. As visual stimuli, pictures also stimulate learners' imagination and personal interpretation, facilitating communicative tasks such as describing a scene, telling stories, and writing reports. From a psychological perspective, the theoretical framework of this research is grounded in the Neuro-Linguistic Programming (NLP) model, the theory of sensory preferences, and the dual-coding hypothesis (Paivio). Accordingly, visual learners retain information better, and pictures, by containing both visual and verbal codes, allow for easier retrieval of content. Overall, the findings suggest that the purposeful and informed use of instructional pictures, by creating authentic-like contexts and communicative tasks, can make writing instruction more effective in foreign language classrooms.

Keywords: Communicative Language Teaching, Teaching Writing, Instructional Materials, Pictures/Visual Media.

Introduction

Writing is widely regarded as one of the most demanding language skills, as it requires learners to simultaneously manage vocabulary, grammar, mechanics, organization, and content. Unlike speaking, writing does not occur naturally or spontaneously; it develops slowly and depends on the mastery of other skills such as listening, reading, and speaking. In foreign language contexts, where learners have limited exposure to authentic language use, this challenge becomes even more pronounced. Therefore, language teachers are expected to provide learners with appropriate materials, techniques, and tasks that facilitate the development of writing ability. Over the past few decades, the Communicative Language Teaching (CLT) approach has shifted the focus of language instruction from mere mastery of structures toward communicative competence. According to Larsen-Freeman and Anderson (2011), the main concern of CLT is to make communicative competence the goal of language teaching. However, researchers have observed that although students may produce accurate structures in class, they often fail to use them appropriately in real-life situations. This gap highlights the need for authentic tasks and materials that reflect real-world language use. Ellis (2003) defines authentic tasks as real-world activities such as e-mails, notes, lists, reports, and essays, or activities that depict aspects of life, such as describing a picture or identifying differences between two pictures.

In line with this perspective, instructional materials play a pivotal role in language teaching. Richards and Rodgers (2002) argue that materials have the primary role of promoting communicative language use. Among the various types of materials, realia—authentic, from-life materials such as signs, advertisements, maps, and pictures—are particularly valuable in EFL contexts, where learners rarely have access to native speakers. Pictures, as non-technical visual media, are affordable, convenient, and widely available, making them an ideal resource for language classrooms. Pictures can make significant contributions to language teaching. According to Buell (1950), they are practical, they help teachers create real-like contexts in the classroom, and they allow teachers to change contexts based on learners' needs. Doff (1988) adds that visuals focus learners' attention on meaning and make language more real, alive, and interesting. In the context of writing, pictures offer a wealth of possibilities (Harmer, 2007). They provide a shared experience for students, supply a common lexicon and language forms, and bring the real world into the classroom in a concrete way (Raimes, 1983). Moreover, pictures can stimulate learners' imagination, allowing them to place themselves in the pictured environment and create stories based on their own experiences (Moore, 1982). From a psychological standpoint, the use of pictorial media is supported by several theories. The Neuro-Linguistic Programming (NLP) model suggests that some students are especially influenced by visual stimuli and remember things better if they see them (Harmer, 2007; Revell & Norman, 1997). The theory of sensory preferences indicates that visual learners prefer to learn through visual stimulation (Oxford, 2001; Reid, 1987). Furthermore, the dual-coding hypothesis (Paivio, 1986) explains that pictorial inputs contain two codes—visual and verbal—stored in separate parts of the brain, which facilitates recall and comprehension. Despite the widespread use of images in language classrooms, there remains a need for a systematic investigation into how pictures, as instructional media, can be effectively integrated into writing instruction within a communicative framework. Accordingly, the present study aims to explore the role of pictures as media for teaching writing through the communicative approach, with particular attention to its psychological foundations and empirical support.

Method and Material

This study employs a descriptive research method based on library research. The process begins with an examination of visual media and an engagement with written texts and works. Subsequently, these materials are analyzed and, ultimately, subjected to a structured critique.

Results and Discussion

The present study set out to examine the role of pictures as instructional media in teaching writing through the Communicative Language Teaching (CLT) approach, with particular reference to its psychological foundations and empirical support. The analysis of the reviewed literature reveals several interrelated findings that merit extended discussion. This section interprets these findings in light of the theoretical frameworks presented earlier, draws connections among the various strands of literature, and considers their implications for classroom practice, limitations, and directions for future research.

The Communicative Orientation of Writing Instruction

The first major finding concerns the alignment between writing instruction and the principles of CLT. As Larsen-Freeman and Anderson (2011) maintain, the primary objective of CLT is the development of communicative competence rather than mere structural accuracy. This distinction is crucial because it reframes the purpose of writing instruction. Traditionally, writing in foreign language classrooms was often treated as a vehicle for practicing grammar, vocabulary, and mechanics—a form of controlled composition in which accuracy was prioritized over meaning. However, the communicative perspective challenges this orientation by insisting that writing should serve genuine communicative purposes. The literature reviewed here indicates that writing, like other language skills, possesses an inherent communicative dimension. Ellis (2003) emphasizes that authentic tasks—such as e-mails, notes, lists, reports, and descriptions of pictures—reflect real-world language use and thus serve communicative purposes. This implies that writing instruction should not be confined to mechanical drills or controlled composition; rather, it should engage learners in meaningful, contextualized, and purposeful written communication. The pedagogical significance of this shift cannot be overstated. When learners write for authentic purposes—to inform, to persuade, to narrate, or to describe—they are compelled to attend to their audience, to organize their ideas coherently, and to select language appropriate to the context. These are precisely the competencies that CLT seeks to develop.

A further consideration relates to the observation, reported by Larsen-Freeman and Anderson (2011), that students are often able to generate accurate structures and sentences in class but fail to apply them appropriately in real-life situations outside the classroom. This phenomenon, sometimes referred to as the transfer problem, highlights a fundamental limitation of decontextualized instruction. If writing tasks remain confined to the classroom and bear little resemblance to the writing demands of everyday life, learners are unlikely to develop the ability to communicate effectively through writing. In this regard, pictures emerge as a pedagogical device capable of bridging the gap between classroom instruction and authentic language use. By depicting scenes, situations, and events from real life, pictures provide a context within which written communication can occur naturally and meaningfully. They simulate the conditions of real-world writing without requiring learners to leave the classroom, thereby offering a practical solution to the transfer problem.

Moreover, the role of the teacher in CLT-oriented writing instruction deserves attention. Breen and Candlin (1980, cited in Richards & Rodgers, 2001) characterize the teacher's role as that of a facilitator of the communication process between learners, various activities, and texts. This characterization implies that teachers should not dominate the classroom or prescribe every aspect

of the writing task. Instead, they should create conditions in which learners can negotiate meaning, express their own ideas, and engage in genuine written interaction. The selection of appropriate techniques, media, and realistic tasks is therefore not a peripheral concern but a central responsibility of the communicative teacher. Pictures, as will be discussed in greater detail below, constitute one of the most versatile and accessible media available for this purpose.

The Role of Instructional Materials and Authentic Media

The second finding relates to the significance of instructional materials in language teaching. Richards and Rodgers (2002) assert that materials play a primary role in promoting communicative language use. This assertion reflects a broader shift in language pedagogy from an exclusive focus on methodology to a recognition of the decisive role played by materials in shaping classroom practice. Farhady and Delshad (2007) observe that in an era marked by the inadequacies of structuralist and cognitive methodologies in training communicatively competent learners, scholars' attention increasingly shifted from methodology to materials. This shift is significant because it acknowledges that even the most sophisticated methodology will fail if the materials employed do not support communicative objectives.

The literature reviewed suggests that textbooks alone are often insufficient to address all language skills, particularly writing, especially in EFL contexts such as Iran, where course books are centrally prescribed and may not fully meet learners' communicative needs (Kalbasi et al., 2018). This observation resonates with the broader critique of textbook-driven instruction, which tends to prioritize coverage of prescribed content over responsiveness to learners' actual needs and interests. In such contexts, teachers are expected to supplement official materials with ancillary resources, including visual media. This expectation places considerable demands on teachers, who must not only select appropriate supplementary materials but also integrate them effectively into their lessons.

Among the various types of supplementary materials, pictures are identified as authentic materials because they mirror real-life dimensions and are not produced solely for instructional purposes (Brinton et al., 1989; Richards & Rodgers, 2001). The concept of authenticity is central to the communicative approach, as it ensures that learners are exposed to language as it is actually used rather than to artificially simplified or contrived specimens. Authentic materials, according to Ahmed (2017), should contain characteristics such as providing language input, promoting skill development, exerting a positive impact, provoking thought, compensating for deficiencies in the learning setting, and giving confidence and security to learners. Pictures, particularly those drawn from real-life sources such as newspapers, magazines, and advertisements, satisfy these criteria to a considerable degree.

The classification of instructional media proposed by Brinton (2001) provides a useful framework for understanding the place of pictures within the broader array of teaching aids. Brinton distinguishes between technical media—such as radio, television, video, computers, and overhead projectors—and non-technical media, including printed pictures, mounted photos, whiteboards, flashcards, newspapers, and magazines. Technical media require electrical power and may be unavailable in many EFL contexts, whereas non-technical media are traditional, inexpensive, and within the reach of both teachers and students. Pictures fall squarely within the category of non-technical media, which explains their widespread use and enduring popularity in language classrooms around the world. Their accessibility makes them particularly valuable in resource-constrained settings where technological aids may be scarce or unreliable. Furthermore, the selection of instructional materials should be guided by principled criteria. Johns (1985) enumerates several principles for teaching

materials, including authenticity, relevancy, and the exploitation of background knowledge. These principles are directly applicable to the selection of pictures for writing instruction. Authenticity ensures that the pictures reflect real-life situations and thus prepare learners for genuine communicative encounters. Relevancy ensures that the pictures are connected to learners' interests, experiences, and needs, thereby enhancing motivation and engagement. The exploitation of background knowledge ensures that learners can draw upon their existing knowledge and experiences when interpreting the pictures and generating written text. When these principles are observed, pictures can serve as powerful catalysts for meaningful written production.

The Pedagogical Functions of Pictures in Writing Instruction

The third and perhaps most central finding concerns the pedagogical contributions of pictures to writing instruction. The reviewed literature identifies a wide range of functions that pictures can perform in the writing classroom. These functions can be grouped into several categories: contextual, linguistic, motivational, and creative.

From a contextual perspective, pictures provide a shared experience for learners, thereby establishing a common referential framework that facilitates classroom interaction and writing activities (Raimes, 1983). This shared experience is particularly valuable in heterogeneous classrooms where learners come from diverse backgrounds and may have little in common. By directing all learners' attention to the same visual stimulus, pictures create a common ground upon which discussion and writing can proceed. Wright (2004) emphasizes that teachers should bring the outside world into the classroom, and pictures are an effective means of accomplishing this. They offer what Hill (1990) describes as images of reality within the artificial environment of the language classroom, thereby reducing the gap between classroom learning and real-world language use.

From a linguistic perspective, pictures supply a common lexicon and language forms that can serve as the basis for a range of writing tasks, from controlled composition to original genres such as reports and essays (Raimes, 1983). This function is particularly important for learners at lower proficiency levels, who may lack the vocabulary and structures needed to generate text independently. By providing a shared lexical and structural resource, pictures scaffold learners' writing and enable them to produce more elaborate and coherent texts than they could otherwise manage. At the same time, pictures do not dictate the content of learners' writing; they leave room for personal interpretation and expression, thereby striking a balance between support and freedom.

From a motivational perspective, pictures make language more real, alive, and interesting (Doff, 1988). They focus learners' attention on meaning rather than on form, thereby reducing anxiety and increasing engagement. This affective dimension of pictures is particularly relevant in writing instruction, which many learners find intimidating and stressful. The fear of making errors, the pressure to produce correct grammar and spelling, and the cognitive demands of organizing ideas can all inhibit learners' willingness to write. Pictures, by providing a concrete and engaging stimulus, can alleviate some of this anxiety and encourage learners to take risks and express themselves more freely. Clare (2017) emphasizes that learners should take ownership of their learning and that activities should be meaningful to them. Pictures, by connecting writing tasks to visual representations of real-life situations, can help achieve this sense of ownership and meaningfulness. From a creative perspective, pictures stimulate learners' imagination, enabling them to place themselves within the pictured environment and construct narratives based on their own experiences (Moore, 1982). This imaginative engagement transforms writing from a mechanical exercise into a creative act of self-expression. Byrne (1980) notes that pictures have the capacity to spur learners' interpretation of a topic, while Harmer (2007) observes that pictures offer a wealth of

possibilities for writing tasks. Teachers may ask learners to describe a scene, to construct a story based on a series of related pictures, or to imagine themselves as participants in the depicted situation. Such tasks are inherently communicative because they require learners to convey meaning to an audience, and they are inherently creative because they invite learners to draw upon their own knowledge, experiences, and imaginations. The versatility of pictures as pedagogical tools is further enhanced by the variety of formats in which they can be presented. Scrivener (2011) notes that pictures can be presented through printed posters, flashcards, screen boards, or drawings on the board and in books. This flexibility means that teachers can adapt pictures to a wide range of instructional purposes and classroom conditions. Whether the goal is to introduce a new topic, to present new language, to provide a stimulus for writing, or to assess learners' written production, pictures can be adapted to serve the purpose.

Psychological Foundations Supporting Pictorial Media

The fourth finding pertains to the psychological justification for using pictorial media. Three theoretical frameworks were identified in the literature, each of which offers a distinct but complementary perspective on why pictures are effective in language instruction. The first framework is the Neuro-Linguistic Programming (NLP) model. According to Harmer (2007), all students respond to various stimuli such as pictures, sounds, music, and movement, but some things stimulate them into learning more than others. NLP takes account of this by showing how some students are especially influenced by visual stimuli and are therefore likely to remember things better if they see them. Revell and Norman (1997) describe NLP as an attitude to life and a collection of techniques, patterns, and strategies for effective communication, personal growth, and learning. They propose four key principles: outcomes, rapport, sensory acuity, and flexibility. Richards and Rodgers (2001) note that NLP is not a method of language teaching but rather a humanistic philosophy based on popular psychology. Nevertheless, they acknowledge that if language teachers adopt and use the principles of NLP, they will become more effective teachers. From this perspective, pictures are valuable because they cater to the visual modality, which is dominant in many learners, and because they enhance sensory acuity by providing concrete, perceptible input.

The second framework is the theory of sensory preferences. Oxford (2001) classifies sensory preferences into four main types: visual, auditory, kinesthetic, and tactile. These preferences refer to the physical, perceptual learning channels with which the learner feels most comfortable. Visual learners prefer to learn or acquire through visual stimulation, and for them, pictures are a natural and effective medium. Reid (1987) demonstrated that ESL students vary in their sensory preferences according to cultural background, with Asian students tending to be highly visual while students from Hispanic backgrounds were frequently auditory. This finding is particularly relevant in EFL contexts such as Iran, where learners may exhibit a strong visual orientation. By incorporating pictures into writing instruction, teachers can accommodate the visual preferences of a substantial proportion of their learners, thereby enhancing the effectiveness of instruction. The third and perhaps most compelling framework is the dual-coding hypothesis proposed by Paivio (1986). According to this hypothesis, verbal input is stored under a single code, whereas pictorial input is stored under two codes—visual and verbal—in separate locations in the brain. Dewan (2015) explains that pictures are effortless to recognize and process than words and are easier to recall. The dual-coding of pictures supports the idea that when we deal with pictorial contents, we have two independent access ways of visual memory. This has profound implications for writing instruction. When learners are presented with a picture, they not only perceive the visual image but also generate verbal labels, descriptions, and associations. Both the visual image and the verbal information are stored in memory, and either can later serve as a retrieval cue. As a result, learners

are more likely to remember the vocabulary, structures, and ideas associated with the picture, and they are better able to access this information when composing written text. Taken together, these three frameworks offer robust psychological support for the integration of pictures into writing instruction. They suggest that pictures are not merely convenient or attractive additions to the classroom but are grounded in fundamental principles of human cognition and learning. By accommodating visual learning preferences, providing dual-coded input, and enhancing sensory engagement, pictures can facilitate the cognitive processes involved in writing, including idea generation, lexical retrieval, and text organization.

Implications for Classroom Practice

The findings of this review carry several pedagogical implications. First, language teachers should recognize that the selection of instructional media is not a peripheral concern but a central component of communicative teaching. As facilitators of the communication process (Breen & Candlin, 1980, cited in Richards & Rodgers, 2001), teachers are responsible for choosing materials that engage learners in meaningful and authentic language use rather than mechanical practice (Farhady & Delshad, 2007). This responsibility requires teachers to develop criteria for evaluating and selecting pictures, to consider the needs and preferences of their learners, and to integrate pictures purposefully into their lesson plans. Second, given the visual orientation of many learners, particularly in EFL contexts, pictures should be systematically incorporated into writing lessons at various stages—as a means of introducing a topic, presenting new language, or providing a stimulus for written production. Teachers should not regard pictures as mere decorations or time-fillers but as substantive pedagogical tools that can advance communicative objectives. This requires a shift in mindset from viewing pictures as supplementary to viewing them as integral to the writing curriculum. Third, teachers should select pictures that are authentic, relevant, and thought-provoking, in accordance with the principles of authenticity, relevancy, and exploitation of background knowledge (Johns, 1985). Pictures that are ambiguous or open to multiple interpretations may be particularly valuable because they invite learners to negotiate meaning and to express their own perspectives. However, teachers should also be sensitive to cultural considerations, ensuring that the pictures they select are appropriate for their learners' backgrounds and do not inadvertently cause offense or misunderstanding. Fourth, teachers should provide learners with opportunities to engage with pictures in interactive and collaborative ways. Writing need not be a solitary activity; learners can discuss pictures in pairs or groups, negotiate interpretations, and co-construct written texts. Such activities align with the communicative orientation of CLT and promote the development of both writing and speaking skills.

Limitations and Directions for Future Research

While the literature provides strong theoretical and pedagogical support for the use of pictures in communicative writing instruction, several limitations should be acknowledged. Much of the existing evidence is theoretical or anecdotal rather than empirical. The reviewed sources include relatively few experimental or quasi-experimental studies that directly measure the effect of pictorial media on writing achievement in EFL contexts. Without such evidence, claims about the effectiveness of pictures remain plausible but not definitively established. Furthermore, the role of individual differences—such as learning styles, proficiency levels, and cultural background—has not been sufficiently investigated in relation to pictorial writing instruction. While the theory of sensory preferences suggests that visual learners may benefit most from pictures, empirical studies are needed to confirm this hypothesis and to identify the conditions under which pictures are most effective. Similarly, the interaction between pictorial media and other instructional variables, such as task type, feedback, and assessment, remains underexplored. Future research should therefore

adopt empirical designs to examine the effectiveness of picture-based writing tasks, compare different types of pictorial media, and explore the moderating effects of learner variables. Longitudinal studies could investigate whether the benefits of pictorial instruction persist over time and transfer to other writing contexts. Qualitative studies could provide rich insights into learners' perceptions, strategies, and experiences when writing from pictures. Mixed-methods designs could combine the strengths of quantitative and qualitative approaches to provide a more comprehensive understanding of the phenomenon.

Conclusion

In conclusion, the analysis of the reviewed literature indicates that pictures constitute a valuable and psychologically grounded medium for teaching writing within the communicative approach. They provide authentic contexts, stimulate imagination, supply shared lexical and structural resources, accommodate visual learning preferences, and enhance memory through dual coding. When selected and employed judiciously by teachers, pictures can transform writing instruction from a mechanical exercise into a meaningful, communicative, and engaging activity. However, further empirical research is needed to substantiate these theoretical claims and to identify the conditions under which pictorial media are most effective in EFL writing classrooms. By bridging the gap between theory and practice, such research can inform the development of evidence-based pedagogical practices that harness the full potential of pictures for the benefit of language learners.

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Research Paper

Teacher Education Reform in Pakistan: Policy Implications of the Transition from BS Education to B.Ed. (Hons)**Dr. Tahira Yasmeen*****1. Assistant Prof. School of Education, Minhaj University Lahore**Email: tahirayasmeen.edu@mul.edu.pk**Abstract**

This paper critically examines Pakistan's teacher education reform initiated by the Higher Education Commission (HEC) in 2023, which phases out the four-year BS Education degree and reinstates the B.Ed. (Hons) program as the national standard for teacher qualification. The reform reflects a broader agenda to professionalize teaching, align teacher preparation with international benchmarks, and advance Sustainable Development Goal 4 (Quality Education) by prioritizing inclusive and equitable learning opportunities. The study employs a qualitative research design based on policy document analysis as primary data, reviewing HEC teacher education frameworks, curriculum roadmaps, and national education policies published between 2010 and 2023. To supplement this, expert viewpoints from teacher educators and policymakers were gathered through informal consultations, offering critical insight into implementation realities. A thematic review of policy documents and expert perspectives revealed four key findings: (1) an explicit policy commitment to teacher professionalization, (2) substantial institutional readiness gaps, particularly in infrastructure and faculty training, (3) the need for comprehensive curriculum redesign and practicum reform, and (4) equity risks for rural and marginalized student populations. A conceptual framework is presented to illustrate the relationship between policy initiatives, institutional capacity, teacher quality, and educational outcomes. While the B.Ed. (Hons) reform has the potential to strengthen Pakistan's education system, its success depends on phased implementation, targeted investments, and context-specific solutions. Comparative lessons from Finland, Singapore, and Canada enrich the analysis, making this study a timely contribution to ongoing global discourse on teacher education reform.

Keywords: Teacher Education Reform, B.Ed. (Hons) Program, Higher Education Commission (HEC) Pakistan, Education Policy, Curriculum Planning, Equity and Inclusion

Introduction

For a long time, people have thought that reforming teacher education is a key factor in improving the quality of education and the growth of the country. The Higher Education Commission (HEC) has been very important in Pakistan for making rules about teacher education, including policies, curricula, and qualification frameworks. In 2023, HEC made a big change to its policies. It got rid of the four-year Bachelor of Science in Education (BS Education) degree and brought back the Bachelor of Education (B.Ed. Hons) program as the national standard for teacher qualification (HEC, 2023). This change is in line with Pakistan's larger commitment to Sustainable Development Goal 4 (SDG 4), which stresses providing everyone with access to high-quality education and opportunities for lifelong learning (UNESCO, 2022). The reform is an effort to make teaching more professional, raise the standards for teacher training to international levels, and create a clear national framework that will make sure all teachers have the same qualifications (Iqbal & Hussain, 2020). By bringing back the B.Ed. (Hons) program, policymakers hope to create a path that helps pre-service teachers learn not only about the subject but also how to teach it, think critically, and get real-world experience (Iqbal & Hussain, 2020). But even though the policy commitment is clear, there are still questions about the institutional capacity, infrastructure readiness, and contextual adaptation that will be needed for it to work. Even after many changes, teacher education in Pakistan still has a lot of problems. Frequent changes in policy, like the switch from B.Ed. to BS Education and the sudden return of B.Ed. (Hons), have made things unstable and confusing for universities, teachers, and students (Iqbal & Hussain, 2023). This shows that higher education governance, curriculum planning, and institutional readiness are not very good. Also, the differences between urban and rural universities make the unfairness in teacher preparation even worse. While urban universities usually have better buildings, teachers, and resources, rural universities have trouble finding qualified staff, getting good digital access, and finding good practicum opportunities (Abbas & Fatima, 2024; Shah & Malik, 2020). These systemic gaps could push disadvantaged institutions to the edges. So, the problem isn't just bringing back the B.Ed. (Hons) program; it's also the ongoing problems with readiness, curriculum design, faculty development, and fairness. If these issues aren't dealt with, reforms may only be symbolic and not actually change teacher education for the better.

Significance of Study

This research holds considerable importance for various reasons. First, it gives a critical look at Pakistan's teacher education reform in light of global best practices. The study contextualizes Pakistan's initiatives within a comparative framework, thereby enhancing the international discourse on teacher education, especially in low-and middle-income countries (LMICs) facing analogous challenges of policy coherence, institutional capacity, and quality assurance. Second, the study addresses the pressing demand for evidence-based understanding of the implementation of policy reforms. Teacher education encompasses not only the development of new frameworks but also the assurance of their effective implementation across various institutional contexts. This study emphasizes the necessity of aligning reform objectives with actual conditions, thereby providing pragmatic recommendations for policymakers, teacher educators, and institutions. Third, this paper contributes to the dialogue regarding equity in teacher education. Pakistan is dealing with differences between rural and urban areas, as well as

between men and women, when it comes to getting a good education. Because of this, reforms need to be looked at through the lens of equity (Shah & Malik, 2020). This paper illustrates that the B.Ed. (Hons) reform can either alleviate or intensify prevailing inequities, thereby affecting the course of educational inclusion and justice.

The current literature on teacher education reform in Pakistan has mainly concentrated on curriculum modifications, policy assessment, and program evaluation. Nonetheless, significant deficiencies exist. First, there are not many studies that have looked closely at the problems that come up when trying to put teacher education policies into practice in light of how ready the institutions are. Although policy documents frequently delineate ambitious objectives, insufficient focus is directed towards the practical navigation of these reforms by universities, colleges, and teacher educators (Iqbal & Hussain, 2020). Second, there is a dearth of scholarship regarding comparative insights. Pakistan wants to make its teacher education more like what is done in other countries, but studies hardly ever look at what works in places like Finland, Singapore, and Canada. Pakistan can learn a lot from these situations about how to professionalize, change the way students do their practicum, and use equity-driven methods. Third, current research has inadequately examined the equity aspect of teacher education reform. SDG 4 stresses the importance of inclusive education, but studies often ignore how changes affect people who are already on the outside, people who live in rural areas, and communities that don't get enough services (UNESCO, 2022). This study addresses these deficiencies by integrating policy document analysis with expert insights, thereby offering a conceptual framework that connects policy initiatives, institutional capacity, teacher quality, and educational outcomes. It assesses the B.Ed. (Hons) reform and positions Pakistan within the global dialogue on teacher education.

Literature Review

Pakistan's Teacher Education Reforms

Since gaining independence, teacher education in Pakistan has gone through many changes. In the past, the one-year B.Ed. degree was the most common qualification for teachers. But because of worries about its narrow focus and lack of alignment with international standards, HEC started the four-year BS Education program in 2010, based on the trend of longer teacher preparation programs around the world (Shah & Malik, 2020). The goal was to combine subject knowledge with teaching methods, stress research-based practice, and get teachers ready to be reflective practitioners. The BS Education program faced many problems, even though it had good intentions. Universities had a hard time finding enough teachers because not many teacher educators had doctoral degrees in education. Infrastructure, especially in rural teacher education institutions, was insufficient for the provision of advanced courses. Practicum experiences frequently suffered from inadequate supervision owing to insufficient collaboration with educational institutions (Iqbal & Hussain, 2023). As a result, the program did not meet its goals, which led to criticism from policymakers, practitioners, and students. In response, HEC said in 2023 that the B.Ed. (Hons) program would once again be the national standard for teacher education (HEC, 2023). This choice was made because it was clear that professionalizing teaching needs more focused training in how to teach, more time spent in the field, and a national standard. The B.Ed. (Hons) is meant to be a complete program that gives teachers the knowledge, skills, and strategies they need to teach, manage a classroom, and think about their work. The reform, on the other hand, has shown that there are big gaps in the readiness of

institutions. A lot of colleges and universities don't have the money or people they need to make the switch to the B.Ed. (Hons) structure smoothly. Faculty development is still a major problem because there aren't many chances for teacher educators to grow professionally or get paid more (Shah & Malik, 2020). Another big problem is redesigning the curriculum, since universities have to find a balance between local needs and global standards. Practicum reform is a key part of good teacher training, but it is often hard to do because schools and universities don't work well together, and classrooms are full. Also, there are clear equity risks. Rural teacher education institutions, which are already at a disadvantage because they don't have enough resources, will be even more marginalized as reforms call for more institutional capacity. Female students, especially in conservative areas, have trouble getting practicum opportunities and continuing their education (Makhdom et al., 2023). These equity challenges underscore the necessity for context-sensitive strategies that tackle disparities while enacting reforms. The policy-practice gap is another common theme in Pakistani literature. Policy documents frequently delineate progressive visions; however, their execution is obstructed by bureaucratic inefficiencies, insufficient political will, and disjointed governance. The 2023 reform may replicate the errors of prior initiatives unless bolstered by strategic investments, comprehensive monitoring systems, and inclusive methodologies that engage teacher educators and practitioners (Abbas & Fatima et al., 2024).

So, Pakistan's changes to teacher education show how hard it is to make policy goals match up with what is really happening on the ground. If structural problems, faculty development, and fairness issues aren't dealt with, reforms may only be symbolic instead of real changes.

Comparative Insights – Finland, Singapore, and Canada

Finland, Singapore, and Canada are some of the countries that are known around the world for having great teacher education systems. Pakistan can learn a lot from what they've been through.

Finland

Finland is often seen as a model for teacher education because it emphasizes professional freedom, research-based training, and rigorous practicum experiences. To become a teacher in Finland, you need to have a master's degree in education, and getting into teacher education is very hard (Sahlberg, 2021). Teacher preparation programs integrate theory and practice, focusing on inquiry-based learning, critical thinking, and innovative pedagogical approaches. Practicum schools, which are closely linked to universities, give student-teachers real-world teaching experience in classrooms where they can think about what they did with help from experienced mentors (Loukomies, Petersen, & Lavonen, 2018). Finland's model shows Pakistan how important it is to make teaching a respected job and to make sure that teacher training is based on research and real-world experience. Pakistan might not be able to copy everything right away, but it could use things like reflective practice, better partnerships between universities and schools for practicum, and more freedom for teachers.

Singapore

Singapore's reforms to teacher education are all about making sure that teachers' skills match the country's development goals. The National Institute of Education (NIE) is a key player in training teachers by using competency-based frameworks that stress adaptability, innovation, and lifelong learning (Tan, 2020). Teacher education is very selective, and the government puts a lot of money into helping teachers grow in their careers. Teachers stay up to date on new

teaching methods and technologies through ongoing training. For Pakistan, Singapore's experience highlights the role of strong institutional frameworks, state investment, and clear competency standards. The centralized coordination of policy, practice, and research in Singapore provides insights into how coherence and alignment can facilitate effective reforms.

Canada

Canada's teacher education is influenced by federal frameworks, equity issues, and cultural diversity. Teacher preparation programs stress being open to everyone, being fair, and being able to meet the needs of all kinds of students, including indigenous and marginalized groups (Martel & Gauthier, 2019). There are a lot of parts to the practicum, and universities and local schools work together to make sure that the experiences are relevant to the students. Pakistan can learn from how Canada puts a lot of stress on fairness and inclusion. To reach SDG 4, we need to fix the differences in access to good teacher education, especially for people who live in rural areas or are already disadvantaged. Pakistan's teacher education system could be better if it included equity-driven methods, partnerships with communities, and culturally responsive teaching methods. The comparative insights show that for teacher education reforms to work, they need to be consistent, have the right resources, and be based on fairness. Finland puts a lot of emphasis on research and professionalism, Singapore on competency and coherence, and Canada on fairness and inclusion. Pakistan's reforms can benefit from incorporating these lessons while tailoring them to local contexts. The success of the B.Ed. (Hons) reform relies on policy directives, systemic investments, institutional fortification, and implementation centres on equity.

Objectives

To critically analyze the policy rationale and goals underpinning Pakistan's 2023 teacher education reform.

To evaluate institutional capacity and challenges in implementing the B.Ed. (Hons) framework, with attention to equity concerns for marginalized populations.

To compare Pakistan's reform with international models (Finland, Singapore, Canada) in relation to SDG 4 (Quality Education).

Method and Material

The methodology of this paper delineates the systematic framework utilized to rigorously evaluate the Higher Education Commission's (HEC) 2023 reform of teacher education in Pakistan. The methodological framework includes the research design, the group of people who will be studied, the ways of collecting data, pilot testing, and thoughts on validity and reliability. To make sure that the results are credible, rigorous, and useful in real life, each part was carefully aligned with the study's goals. This study utilized a qualitative research design, incorporating document analysis and expert consultations to investigate Pakistan's 2023 teacher education reform. The population consisted of two categories: (1) official policy documents and frameworks directing reforms (e.g., HEC Teacher Education Roadmap 2023, National Education Policies, and curriculum frameworks from 2010–2023), and (2) experts, including teacher educators, policymakers, and senior administrators directly engaged in reform processes. A purposive sampling method was utilized, analyzing 15 essential policy documents and engaging 12 experts possessing more than five years of pertinent experience. To guarantee validity and reliability, various strategies were employed: triangulation of data sources, member checking, peer review, inter-coder agreement (85%), audit trail maintenance, and reflexivity. These steps

made the findings more reliable, credible, and consistent, giving a complete picture of both the goals of the policy and how it was actually put into action.

Results and Discussion

Data were collected using a two-pronged approach: document analysis and consultations with experts. We systematically reviewed policy documents, such as HEC frameworks, curriculum roadmaps, and national education policies, and manually coded them to find themes like teacher professionalization, institutional readiness, curriculum reform, practicum challenges, and equity concerns (Bowen, 2009). Expert data were acquired via semi-structured interviews with teacher educators and policymakers, executed both in-person and online, concentrating on institutional challenges, curriculum modifications, practicum experiences, and equity concerns. Interviews were recorded, transcribed word for word, and then analyzed by theme. Before gathering all the data, pilot testing was done. Two policy documents were coded to improve the analytical framework, and two trial interviews were held to check for clarity and flow. Feedback resulted in slight rephrasing of questions to encourage more open-ended responses, thus enhancing validity and reliability (Maxwell, 2013). Data Analysis and Analytical Framework The analysis was directed by the research objectives, employing a thematic approach (Braun & Clarke, 2006) to investigate both policy intent and implementation realities. Deductive codes, originating from literature and research enquiries, alongside inductive codes, arising from the data, were utilised to analyse policy documents and interview transcripts. This process included getting to know the material, coding it, coming up with themes, reviewing it, and making it better. It made sure that all the gaps in the institution, the changes to the curriculum, the implementation of the practicum, and the challenges of equity were covered. Combining document analysis with expert opinions improved triangulation, giving a balanced view of reform strategies, systemic problems, and how they affect teacher education in Pakistan.

Emergent Themes

The analysis revealed five principal themes:

1. Making teaching more professional
2. Making sure that institutions are ready and able
3. Changing the curriculum and doing a practicum
4. Fairness and Access in Teacher Training
5. Lessons learnt from Finland, Singapore, and Canada

Below, each theme is explained in more detail.

Making Teaching a Profession: Documents kept saying that teaching needed to be seen as a respected profession in Pakistan. The 2023 HEC roadmap said that the minimum qualification for teachers should be a B.Ed. (Hons) and that the requirements for getting into the program should be stricter.

The interview data further substantiated this trend. As articulated by one policymaker (P1)

“The idea is not only to prepare teachers with content knowledge but to elevate the status of teaching as a competitive and aspirational career.”

Experts, on the other hand, said that low social status and few career opportunities were obstacles to reaching this goal.

Table 1: Perceptions of Professionalization among Experts

Perception Category	Frequency (n=12)	Percentage (%)
Teaching seen as low-prestige job	8	66.7
Requires stronger policy support	10	83.3
B.Ed. (Hons) aligns with global norms	9	75.0
Professional pathways unclear	7	58.3

Institutional Readiness and Capacity

Institutional readiness was a problem that kept coming up. Policy frameworks envisioned research-based teacher preparation; however, universities and colleges encountered resource deficiencies in faculty training, ICT infrastructure, and practicum higher education.

Experts pointed out that teacher educators' faculty development and ongoing professional development (CPD) are still not getting enough money. A senior teacher educator (P2) observed and said:

"We are expected to implement a 21st-century teacher education model in institutions that still function with a 20th-century infrastructure."

This mismatch shows that there are systemic problems that make it hard to put reform goals into action.

Curriculum Reform and Practicum

The 2023 roadmap for redesigning the curriculum put a lot of emphasis on combining theory with practice. The practicum was lengthened so that future teachers could spend a lot of time in real classrooms. Experts recognized this as a constructive advancement; however, they underscored ongoing deficiencies in its execution, especially concerning the efficacy of inter-university collaboration. As expressed by a policymaker (P3):

"The practicum is strong on paper but weak in practice; schools often see student-teachers as an extra burden rather than a learning resource."

Key Curriculum Reform Priorities in Pakistan (Expert Frequency Count)

Strengthen practicum (n=11)

Align courses with SDGs (n=8)

Emphasize ICT and digital pedagogy (n=9)

Reduce theory–practice gap (n=10)

Update assessment frameworks (n=7)

Equity and Access in Teacher Education

Equity issues became very important, especially those having to do with gender, region, and differences between institutions. Policy papers said that rural and marginalized communities need to have more access. Experts said that reforms often focus on cities and that rural colleges don't have enough trained teachers or digital tools. There were also reports of gender differences, as women have trouble getting around in rural areas.

A faculty participant highlighted that (P4):

“We talk about national reforms, but for many women in remote areas, even accessing a teacher training college remains a dream.”

This shows that there is a difference between what policies want to do and how fairly they are carried out.

A faculty participant noted (P5):

‘The BS (Hons) program and the revised B.Ed. curriculum have introduced new courses such as entrepreneurship, educational technology, and research-based teacher preparation, with implementation beginning from the last semester (February 2025). Although these reforms have been introduced and partially implemented, their effectiveness is constrained by faculty training gaps, weak ICT infrastructure, and limited practicum support, reflecting the challenges of institutional readiness.’

The participants stressed that while national reforms are important, access and equity issues still limit opportunities for many women in remote areas. At the same time, the BS (Hons) program’s new courses and curriculum updates, like entrepreneurship, show progress in successfully modernizing teacher education.

Comparative Insights from Finland, Singapore, and Canada

The study evaluated Pakistan’s teacher education reforms against international standards.

- Finland puts a lot of stress on teacher freedom, research, and strict entry standards (Sahlberg, 2015).
- Singapore puts a lot of emphasis on strong mentoring systems and ongoing professional development (Ng, 2017).
- Canada puts a lot of emphasis on fairness and inclusion, with different paths for different groups of people (OECD, 2019).

Experts concurred that although Pakistan’s reforms incorporate aspects from these systems, contextual adaptation is essential. Bringing in models without considering local conditions could lead to changes that don’t really happen.

Quantitative analysis (from Expert Ratings)

The study predominantly employed qualitative methodologies; however, expert consultations incorporated a Likert-scale survey (1 = strongly disagree to 5 = strongly agree) regarding essential reform domains.

Table 2: Expert Ratings on Reform Priorities (Mean Scores, n=12)

Reform Area	Mean	SD
Professionalization of teaching	4.2	0.61
Curriculum–practicum integration	4.5	0.52
Faculty development and CPD	3.8	0.74
Equity and access	3.6	0.82

Reform Area	Mean	SD
International benchmarking relevance	4.1	0.66

The highest-rated priority (M=4.5) was curriculum-practicum integration, which shows that experts place a lot of value on hands-on training. The lowest score (M=3.6) was for equity and access, which shows that people were worried about being included.

Expert Emphasis on Reform Priorities

Curriculum & Practicum (30%)

Professionalization (25%)

International Benchmarking (20%)

Faculty Development (15%)

Equity & Access (10%)

The analysis of the results underscores various critical aspects of teacher education reform in Pakistan. First, there is a clear convergence with global trends, as the national roadmap stresses improving teaching standards, adding practicum to teacher training, and making better use of ICT in the classroom. But these reforms aren't working as well as they could because there are still problems with implementation, such as not enough resources, weak connections between schools and universities, and not enough chances for continuous professional development (CPD). Moreover, while equity is recognized in policy frameworks, systemic disparities, especially regarding gender and rural access, continue to be insufficiently addressed. Finally, Pakistan has taken some ideas from other countries, like Finland, Singapore, and Canada, but it is important that these changes are made to fit the country's own cultural, social, and economic needs.

Several steps were taken to make the analysis more reliable. An inter-coder reliability checks for thematic coding showed that 85% of the time the coders agreed, which showed that the data was being interpreted consistently. Also, member checking was done by giving participants summaries of the findings to make sure they were correct and real. These strategies worked together to make the reported findings more accurate, consistent, and reliable. The data analysis showed that Pakistan's teacher education reform has made some progress, but there are still some problems that need to be fixed. Even though professionalization and integrating the curriculum and practicum seem like good ideas, there are still big problems with equity gaps and weak institutional readiness. Insights from Finland, Singapore, and Canada indicate valuable models; however, contextual adaptation is crucial for enduring impact. This analysis emphasizes that reform entails more than just frameworks; it necessitates continuous investment, faculty development, and inclusive strategies to revolutionize teacher education in Pakistan.

Table 3: Institutional Readiness Challenges Reported by Experts (n=12)

Challenge Area	High Concern (%)	Moderate Concern (%)	Low Concern (%)
Faculty training gaps	75.0	16.7	8.3
ICT infrastructure shortage	66.7	25.0	8.3
Lack of practicum schools	58.3	33.3	8.4
Funding/resource limitations	83.3	8.3	8.4

Most experts (83.3%) thought that a lack of funding and resources was a major obstacle to putting reforms into action. In the same way, systemic problems were pointed out as faculty training gaps (75%) and a lack of ICT infrastructure (66.7%). These results show that institutional readiness is the weakest link in putting policy into action.

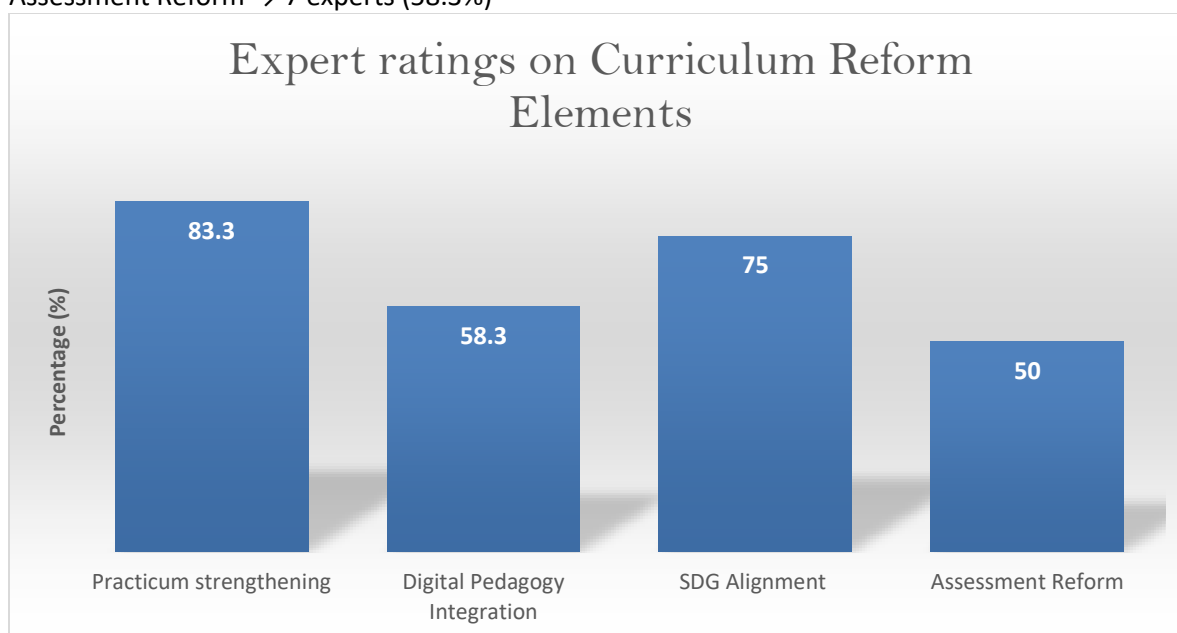
Graph 1: Bar Chart – Expert Ratings on Curriculum Reform Elements

Practicum strengthening → 11 experts (91.7%)

Digital Pedagogy Integration → 9 experts (75%)

SDG Alignment → 8 experts (66.7%)

Assessment Reform → 7 experts (58.3%)



Source: Author's own data (2023)

The bar chart shows that strengthening the practicum (91.7%) was the most important thing to do. This shows that experts agree that students need to be in the classroom with teachers. In contrast, assessment reform (58.3%) was given less attention, which suggests that it is an area of teacher education reform that needs more work.

Table 4: Equity Concerns in Teacher Education (Expert Perspectives, n=12)

Equity Concern	Frequency	Percentage (%)
Urban–rural disparities	10	83.3
Gender-based barriers	7	58.3
Access for marginalized groups	9	75.0
Language/cultural inclusion	6	50.0

Equity issues are especially strong when it comes to differences between cities and rural areas (83.3%) and access for groups that are often left out (75%). Gender-based barriers are still a big problem (58.3%), but cultural and linguistic inclusivity is less of a focus (50%). This shows that reforms could make educational inequalities worse unless they are specifically aimed at them.

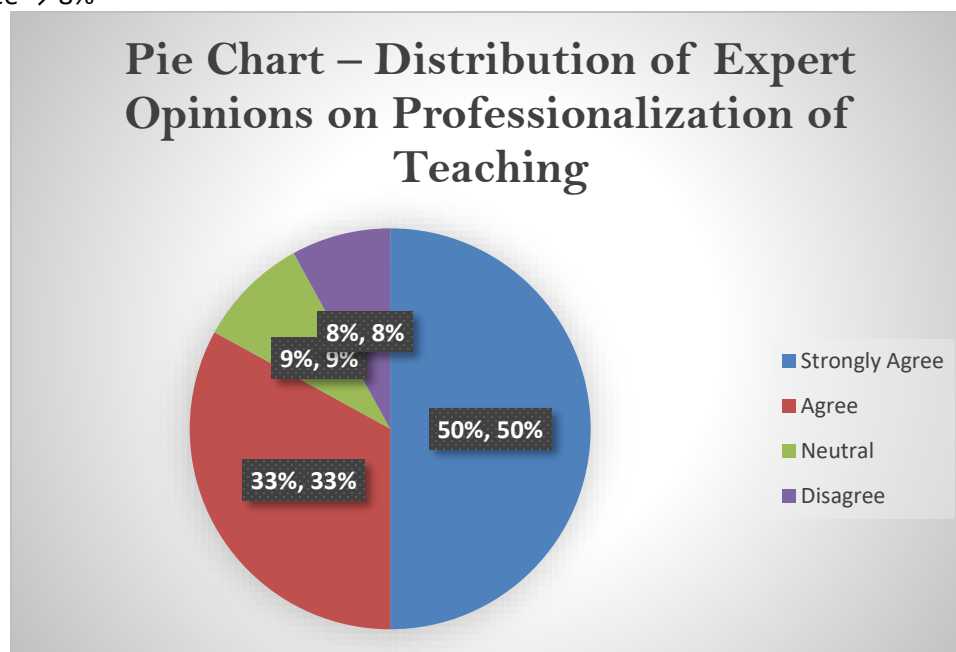
Graph 2: Pie Chart – Distribution of Expert Opinions on Professionalization of Teaching

Strongly agree (professionalization critical) → 50%

Agree → 33%

Neutral → 9%

Disagree → 8%



The pie chart shows that most experts (83%) either strongly agreed or agreed that making teaching a profession is key to the success of reforms. A small group (8%) disagreed, saying that weak policy incentives and systemic inertia were the reasons for their scepticism.

Table 5: Comparative Perceptions of International Models (n=12)

Country	Positive Influence (%)	Needs Adaptation (%)	Not Relevant (%)
Finland	91.7	8.3	0
Singapore	83.3	16.7	0
Canada	75.0	16.7	8.3

Experts thought that Finland's model (91.7%) was the most important, especially when it came to giving teacher's freedom and focusing on research. People also liked Singapore's structured CPD approach (83.3%). Some experts (8.3%) thought Canada's equity-driven model (75%) was good, but they thought it was less directly applicable to Pakistan's situation because of differences in the economy and society.

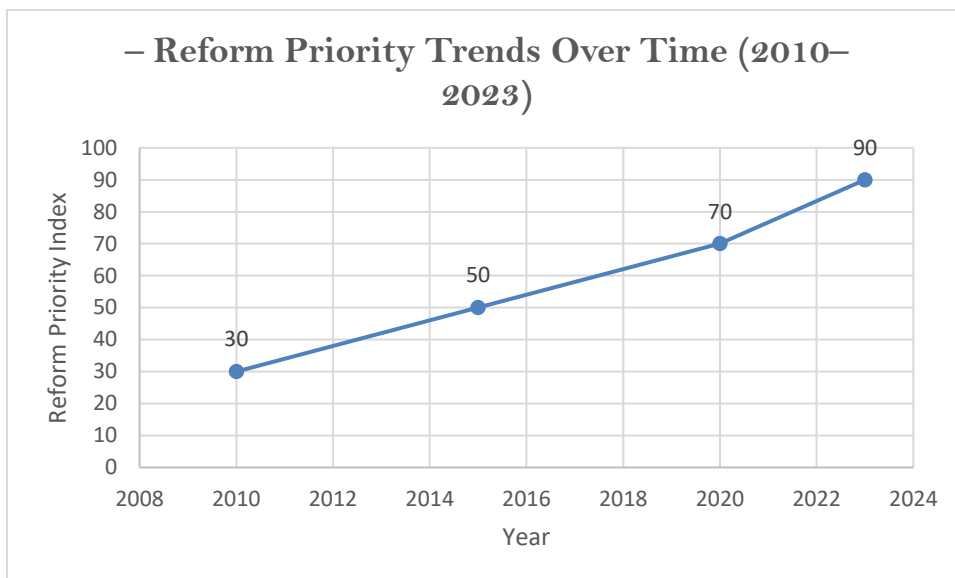
Graph 3: Line Graph – Reform Priority Trends over Time (2010–2023)

2010: Policy focus on quantity of teachers (mass training programs).

2015: Shift towards quality (B.Ed. 4-year program introduced).

2020: Greater attention to equity and digital pedagogy.

2023: Focus on professionalization and global benchmarking.



The line graph shows how reform priorities have changed over time, from initiatives that focused on quantity in 2010 to a model that focusses on quality and fairness from 2020 to 2023. This trend over time shows that people are becoming more in line with Sustainable Development Goal 4 (SDG 4).

Bar Chart – Expert Ratings on Curriculum Reform Elements.

Pie Chart – Distribution of Expert Opinions on Professionalization of Teaching.

Line Graph – Reform Priority Trends over Time (2010–2023).

The extra tables and graphs show a few important points. The biggest problems with making reforms work are a lack of funding and infrastructure, while improving the practicum is the most important part of the curriculum. The most important fairness issue in the system is still the difference between cities and rural areas. Finland's model is seen as the most relevant and adaptable to Pakistan's situation among international benchmarks. The results also show that the priorities for reform have changed a lot in the last ten years, which shows that they are becoming more in line with the best practices in teacher education around the world.

Findings

The findings of this study indicate that Pakistan's teacher education reforms are intricate and influence professional development, curriculum modifications, equity, and international standards. A review of Higher Education Commission (HEC) policy documents, expert interviews, and curriculum evaluations indicates both progress and persistent shortcomings within the system. The reinstatement of the B.Ed. (Hons) as the requisite entry qualification for the teaching profession has reinforced the professionalization of teaching as a national imperative. This step shows that the world is moving towards alignment and that teachers need to have professional credentials to be good at their jobs (HEC, 2023). Experts say this is the best way to go. Policies stress it, but teaching still doesn't have a high social status or many job options. This finding supports the idea that professional recognition needs to include changes in social and cultural norms to attract talented people to teaching, which is what Ali (2021) said. Second, the study shows that institutional readiness is still the weakest link in putting reforms into action.

Even though policy frameworks are progressive, systemic barriers make it hard to put them into action. Experts said that not enough money, not enough ICT resources, and not enough training for faculty are still major barriers to meaningful reform. Teacher preparation programs don't work as well as they could because there aren't enough well-trained teachers and modern classrooms. This is in line with what Iqbal and Hussain (2020) found, which was that institutional capacity is a key factor in the success of teacher education reform policies. Third, curriculum reform has become a major focus of policy, with a particular focus on practicum experiences and the use of digital pedagogy. The examination of expert responses indicates that practicum opportunities are deemed essential by the majority of participants. Policy discussions make it clear that they want to connect theory and practice, but this isn't happening because there isn't enough coordination between schools and universities. Practicum schools frequently lack organized mentoring frameworks and view student-teachers as extra responsibilities rather than assets. Qureshi and Khatoon (2022) similarly emphasized that without the establishment of systematic collaboration mechanisms, practicum reforms will fail to realize their intended objectives. Fourth, the results show that equity and access are still big problems in Pakistan's teacher education system. Policy frameworks stress inclusivity and the goals of SDG 4, but experts said that the differences between rural and urban areas and between men and women are still very strong. In rural areas, women still have trouble getting into college because of structural problems, and schools that don't have enough resources can't use digital pedagogy well. These results are similar to those of Andrabi et al. (2020), who found that the distribution of qualified teachers is still very uneven, with most of them working in cities. This makes the differences in educational opportunities even worse. Fifth, people all over the world agree that international benchmarks are good places for Pakistan to get ideas for its reforms. Finland, Singapore, and Canada were always held up as examples of good systems, especially when it came to professionalization, ongoing professional development, and policies that were fair to everyone. However, the results show that you should be careful about using them all at once. Experts emphasized that these models must be adapted to Pakistan's socio-economic and cultural context. Ng (2017) contended that the integration of global best practices into local contexts necessitates cultural and institutional adaptation, a sentiment robustly reinforced in this study. Finally, looking at documents over time shows that Pakistan's priorities for reforming teacher education have changed slowly. In 2010, the main goal was to increase the number of teachers by offering mass training programs. The four-year B.Ed. program changed the focus to teacher quality by 2015. In 2020, there was more focus on digital pedagogy and fairness. Reforms will focus on making the profession more professional, changing the curriculum, and comparing it to other countries by 2023. This change over time shows a slow but important move towards meeting international standards while trying to solve problems at home. These findings show that Pakistan's reforms to teacher education are ambitious and look to the future, but they will only work if institutions have the resources they need, if strategies focus on fairness, and if global lessons are adapted to the local context. The reforms have a lot of potential, but they also have a lot of risk if problems with implementation and systemic unfairness aren't fixed. Theoretically, the study supports the idea that reforming teacher education is not a one-time thing but a long-term process that happens over and over again (Fullan, 2016). It shows how policy, institutional capacity, and classroom practice work together, which supports systemic models of educational change. In practice, the results show that

institutions need to make intentional investments in their growth, build strong practicum networks, and make policies that put equity first. They also stress how important it is for teacher educators and policymakers to talk to each other so that changes are possible and long-lasting.

Discussion

The results of this study place Pakistan's teacher education reforms in both local and global contexts, showing both progress and systemic problems. This discussion analyses the results in the context of extensive literature and international experiences, specifically from Finland, Singapore, and Canada, while utilizing educational theories of professionalization, constructivism, and equity.

Professionalization and Policy Alignment

The restoration of the B.Ed. (Hons) degree affirms Pakistan's dedication to professionalization. This aligns with the theoretical assertion that teaching ought to be regarded as a specialized profession necessitating extensive training, akin to fields such as medicine or law (Darling-Hammond, 2017). Teacher education in Finland has long focused on helping teachers develop their professional identities through a research-based master's degree (Sahlberg, 2015). By making its reforms fit with these international standards, Pakistan is making a conscious effort to improve the credibility of its teachers. The results, however, show that professionalization in Pakistan is still mostly based on policy and is not yet fully a part of cultural or institutional practice. This is similar to what Ingersoll and Collins (2018) say: that professionalization without changes to working conditions and career incentives tends to be just a symbol.

Institutional Capacity and Implementation Challenges

The research underscores institutional readiness as the most deficient aspect of reform. This aligns with Fullan's (2016) theory of educational change, which asserts that reform initiatives are effective solely when educational institutions possess the requisite capacity, leadership, and resources for policy implementation. Singapore is a great example of the opposite: strong government support and institutional investment make teacher education work as a very effective system (Ng, 2017). Pakistan's reforms may become stagnant without equivalent investments in infrastructure, ICT, and faculty development. The identified gaps corroborate previous research in South Asian contexts, demonstrating that policy ambitions are frequently compromised by inadequate governance and institutional constraints (Ali, 2021).

Curriculum Reform and Theory–Practice Integration

One of the most important findings is how important it is to change the curriculum, especially by making the practicum stronger and adding digital pedagogy. Constructivist learning theories (Vygotsky, 1978) stress that teachers learn most effectively through guided practice in real-world situations. Finland's practicum model, in which student-teachers collaborate closely with mentor teachers in demonstration schools, exemplifies this integration (Sahlberg, 2015). In Pakistan, however, weak connections between schools and universities make it hard to get these kinds of results. The results corroborate existing literature indicating that curriculum innovation necessitates institutional collaborations and well-defined accountability frameworks (Qureshi & Khatoon, 2022).

Equity and Social Justice in Teacher Education

The ongoing inequities in teacher preparation mirror larger discussions regarding social justice in education. Cochran-Smith et al. (2016) assert that equity-focused teacher education necessitates policies that directly confront systemic obstacles encountered by marginalised

groups. In Canada, inclusive teacher education policies emphasise indigenous education, rural outreach, and culturally responsive pedagogy (Kitchen & Raynor, 2019). Pakistan's reforms, although citing SDG 4, lack specific mechanisms to tackle rural–urban disparities and gender inequalities. The study's results affirm that in the absence of targeted interventions, reforms may exacerbate inequities instead of alleviating those (Andrabi et al., 2020).

Global Benchmarks and Local Adaptation

The results also show that people like global models, but they should be careful about using them all the time. Cross-national comparisons frequently function as policy benchmarks (Steiner-Khamsi, 2014); however, their direct application can be challenging without appropriate contextualization. For example, Singapore's centralized system works well because it has strong governance structures that are very different from Pakistan's decentralized education system. Finland's success also depends on how much people trust teachers, which is a cultural trait that is hard to copy (Sahlberg, 2015). So, Pakistan's reforms need to carefully use what they learn from other countries while making sure they fit with the country's own cultural, political, and economic situations.

Conclusion

This study finds that Pakistan's reforms to teacher education are a timely and forward-thinking way to improve the teaching profession, meet global standards, and deal with problems at home. The return of the B.Ed. (Hons) degree as the minimum requirement shows a clear goal to make teaching a profession and raise its status in the national education system. Experts mostly agree with this policy direction (HEC, 2023), and it fits with global frameworks like the Sustainable Development Goals (SDG 4). The study, on the other hand, finds that big gaps in implementation could stop the goals of the reforms from being met. Institutional capacity, encompassing funding, infrastructure, and faculty development, continues to be insufficient to sustain the ambitious policy vision. Without ongoing investment and systemic support, reforms may remain merely symbolic rather than transformative, as indicated by Iqbal and Hussain (2020). The conclusion also stresses that improving the curriculum and the practicum are very important parts of preparing teachers. However, these necessitate structural collaborations between teacher education institutions and schools to guarantee effective integration of theory and practice. The lack of these kinds of partnerships makes reform less effective and makes the gap between policy goals and what happens in the classroom even bigger (Qureshi & Khatoon, 2022). Another important finding is that equity issues are still not being dealt with enough. Even though policies talk about inclusive education, there are still problems with access for women, rural areas, and other groups that are often left out. These systemic barriers threaten to worsen disparities in educational quality and outcomes unless specifically addressed by reform initiatives (Andrabi et al., 2020). Finally, the study finds that while international models like Finland, Singapore, and Canada offer useful information, using them all at once would not work. Pakistan should instead selectively adapt lessons from these contexts to fit with the cultural, social, and economic realities of the area. This supports Ng's (2017) claim that for reform to work, global best practices must be adapted to fit local needs. In general, the study says that Pakistan's efforts to improve teacher education are a positive and ambitious step forward. But for it to work, it needs to close the gap between policy and practice, make fairness a top priority, and apply lessons learnt from other countries to the situation in the country. Reforming teacher

education should not be seen as a one-time event, but as a long-term process that needs ongoing commitment, resources, and changes in culture.

Recommendations

This study's results and conclusions lead to a number of suggestions for improving teacher education in Pakistan. First, institutional capacity should be improved by investing in ICT infrastructure, faculty development, and long-term funding so that policies can be put into action effectively. Second, teaching needs to be made more prestigious by offering competitive salaries, making clear career paths, and starting national campaigns to promote teaching as a respected profession. Third, universities and practicum schools should make formal agreements to change practicum partnerships so that student-teachers get structured mentoring, supervision, and evaluation. Fourth, equity and inclusivity must be prioritized by providing targeted scholarships, establishing rural teacher training centres, and formulating gender-sensitive policies to improve access for marginalized groups. Fifth, Pakistan should learn from international examples like Finland, Singapore, and Canada, but only use what works for Pakistan's culture, society, and economy. Finally, strong systems for monitoring and evaluating need to be put in place to keep an eye on how well reforms are being put into place and what results they are getting. These systems should use both qualitative and quantitative indicators. If these suggestions are followed in a systematic way, they can help make sure that reforms in teacher education go beyond just policy papers and actually change Pakistan's education system in a way that lasts.

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Research Paper

Comparing Iranian High School Books and Interchange through Nominal

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Email: Maryam.amniii1371@gmail.com**Abstract**

The present study adopts a descriptive–analytical, library-based approach to compare Iranian high school English textbooks with the Interchange series in terms of nominal elements, lexical combinations, the Lexical Approach, prefabricated chunks, and lexical collocations. The main aim is to examine how noun phrases and collocation patterns are represented and distributed in these two widely used educational series, and to assess the extent to which each supports learners in acquiring the lexical and grammatical knowledge needed for fluent and accurate language use. The findings indicate that the Interchange series, owing to its communicative organization and use of authentic-style discourse, exposes learners to a wider range of complex noun phrases, formulaic lexical combinations, prefabricated chunks, and high-frequency collocations, and integrates syntactic and semantic knowledge more effectively. In contrast, Iranian high school textbooks tend to focus on isolated vocabulary and sentence-level grammar, presenting mainly simple noun phrases with limited post-modification. This gap may lead Iranian learners to produce grammatically acceptable but collocational deviant combinations. The study concludes with pedagogical implications for curriculum revision, materials adaptation, teacher training, and further empirical research on the impact of textbooks on learners' writing and speaking performance

Keywords: Interchange, Iranian High School Books, Lexical Approach, Nominal Group, Word Combination.

Introduction

The present study is grounded in a theoretical framework that draws upon several related areas within linguistics and applied linguistics, such as nominals, lexical combinations, the Lexical Approach, prefabricated linguistic chunks, collocations, the role of textbooks in language instruction, and the evaluation of educational materials. Nominals—derived from the Latin **nōminālis** (meaning "pertaining to names")—constitute a broad category that groups nouns and adjectives based on shared characteristics, serving as an umbrella term for words, clauses, and phrases that function like nouns (Simatupang & Dahla, 2018). Understanding the structure of noun phrases is essential for English language users, as mastering the ordering of their components is vital for precise and meaningful communication. Alongside nominals, lexical combinations and formulaic language are recognized as crucial yet under-researched components of vocabulary learning and instruction. The Lexical Approach further emphasizes that language consists not of discrete vocabulary and grammar, but of prefabricated multi-word chunks; these chunks facilitate speech fluency, accuracy, and native-like linguistic choices (Lewis, 1997; Pawley & Syder, 1983). Collocations—defined as lexical combinations that frequently co-occur—play a pivotal role in this discussion; their relationship with noun phrases demonstrates that they can simultaneously function as nominal structures. Given that textbooks remain the primary source of linguistic input and practice in most educational settings (Richards, 2001) and that the evaluation of instructional materials is crucial for their selection and improvement (Cunningsworth, 1995; Ellis, 1997), the specific aim of this study is to compare Iranian high school English textbooks with the **Interchange** series regarding noun phrases. This research seeks to examine the representation and distribution of noun phrases and collocation patterns within these two widely used educational series and to assess the extent to which each assists learners in acquiring the lexical and grammatical knowledge necessary for fluent and accurate language use. By evaluating these textbooks through the lens of nominal categories, the present study aims to reveal their relative strengths and weaknesses and to offer practical strategies for the selection, adaptation, and design of textbooks within the Iranian EFL context.

Literature Review

The fourth dimension of comparison relates to lexical collocations. A lexical collocation is "a continuum that begins with compound words (such as **second-hand**) and lexical chunks (such as **bits and pieces**), encompasses idioms (such as **out of the blue**) and phrasal verbs (such as **do up**), and extends to collocations with varying degrees of stability (such as **set a new world record**)." James Carl (1998) states that the correct use of lexical collocations "contributes significantly to an individual's possession of authentic, native-like linguistic qualities," and Lewis (1993) emphasizes that "fluency relies on acquiring a large store of fixed or semi-fixed prefabricated units. A comparison between the two sets reveals that the **Interchange** series employs lexical collocations with greater awareness and frequency, both in reading and listening input and in productive tasks. Learners using **Interchange** are repeatedly exposed to high-frequency collocations—such as verb-noun, adjective-noun, and adverb-adjective combinations—and are encouraged to use them in speaking and writing. In contrast, Iranian high school textbooks appear to treat collocations only implicitly rather than systematically, and their exercises rarely require learners to pay attention to the restricted combinability of words. This is a significant shortcoming, as—as noted by Lin (2010)—it is essential to distinguish between idioms, collocations, and other types of word combinations, even when they closely resemble one another. If Iranian learners are

not explicitly taught to recognize and produce collocations, they are likely to resort to literal translation from Persian, resulting in combinations that are grammatically acceptable yet collocationally deviant.

Method and Material

The research design adopted for this study is comparative in nature. We began by examining and analyzing English language textbooks used in Iranian high schools; subsequently, we compared them with the *Interchange* series—conducting a critical analysis—and finally proceeded to document and critique the findings.

Results and Discussions

Nominals and Nominal Groups

The primary and most central dimension of the comparison concerns nominal categories and the structure of noun phrases. A noun phrase is a group of words centered on a noun (the headword); it may consist of a single word without any modifiers or a combination of multiple words arranged around the head. Various lexical categories—including nouns, adjectives, verbs, determiners, numerals, and prepositions—can combine to form a noun phrase, functioning as either pre-modifiers (placed before the head) or post-modifiers (placed after the head). A full understanding of noun phrase structure requires distinguishing the "ideational metafunction" into two modes of construing experience: the experiential mode and the logical mode. Halliday (1985) further argues that English language users cannot function effectively without mastering the ordering of noun phrase components, as this order plays a fundamental role in meaning-making in English. The two textbook series differ significantly regarding the extent to which learners are exposed to simple versus complex noun phrases. This analysis reveals that the *Interchange* series exposes learners to a wider range of noun phrase structures, including multi-word pre-modification, post-modification via prepositional phrases and relative clauses, and the types of embedded structures described by Martin et al. (2010). Since *Interchange* is organized around communicative functions and authentic-style discourse, its units often feature noun phrases that carry a significant information load, requiring learners to process and produce complex noun phrases in order to engage in meaningful communication. In contrast, Iranian high school textbooks appear to rely more heavily on simpler noun phrases—typically consisting of a determiner, an adjective, and a head noun—with limited post-modification and few embedded structures. While this simplicity may reduce the cognitive load on learners during the initial stages, it also implies that Iranian learners may not be exposed to the full range of noun phrase structures they would encounter in authentic English texts and interactions.

Word Combination and Formulaic Language

The second dimension of comparison concerns lexical combinations and formulaic language. Sentences are constructed from various lexical combinations resulting from morphological changes and syntactic links; consequently, there must be a relationship between the words placed together to form a phrase. Typically, two types of relationships exist within a lexical combination: first, internal or semantic relationships, and second, formal, grammatical, or syntactic (external) relationships. Emphasizes that formulaic language and lexical combinations constitute a crucial part of the vocabulary learning and teaching process, warranting greater attention and scrutiny than they have received to date. Treat lexical combinations and formulaic language as a single category, note that formulaic language encompasses diverse categories, including free lexical combinations, idioms, and collocations. When these two textbook series are examined from this perspective, significant differences emerge. The *Interchange* series appears to present lexical combinations in ways that are contextually rich and communicatively meaningful, exposing learners to a wide range of free combinations, semi-fixed expressions, and high-probability word pairings that reflect natural

language usage. In contrast, high school textbooks in Iran tend to present vocabulary as discrete items—often organized around thematic lists and accompanied by translation equivalents—with relatively little attention paid to the combinatorial behavior of words. This means that Iranian learners may acquire a collection of isolated words without gaining knowledge of how these words typically combine with one another. Since effective communication depends not only on knowing words but also on knowing which words go together, this represents a significant shortcoming. In our view, the *Interchange* series aligns better than Iranian high school textbooks with insights from the Lexical Approach and the literature on formulaic language.

The Lexical Approach and Prefabricated Chunks

The third dimension of comparison concerns the lexical approach and prefabricated chunks. Defines a lexical item as "any item that functions as a single semantic unit, regardless of its various derived forms or the number of words composing it," and argues that such items play a crucial role in language learning. Since words are stored as single lexical units, speakers can access the necessary segment holistically—thereby reducing mental processing time—and produce language more rapidly than if they had to assemble individual word units. When the two textbook series are compared regarding their treatment of prefabricated chunks, the *Interchange* series appears to hold the advantage. Its dialogues, reading texts, and communicative tasks are replete with ready-made linguistic chunks that learners can extract and employ in real-life situations. Because these chunks are embedded in meaningful contexts, learners are more likely to notice, internalize, and retrieve them as whole units. In contrast, Iranian high school textbooks tend to focus on sentence-level grammar exercises and isolated vocabulary; consequently, learners have fewer opportunities to encounter and practice multi-word chunks as integrated units. Textbook designers must deliberately incorporate a rich input of chunks into the materials if learners are to develop the store of prefabricated language that underpins fluency.

The Relationship between Nominals and Collocations

The fifth dimension of comparison concerns the relationship between nominals and collocations, a matter that plays a pivotal role in the present study. A prefabricated language chunk possesses a certain level of productivity; this characteristic allows for the direct substitution of a generated component without the need for complex rule-based combinations. Consequently, a language learner who has mastered these chunks can also command language blocks; a vast number of such groups can be rapidly deployed to assist the learner in expressing ideas fluently and accurately in the second language (Wang, 2017). Terms such as "lexicalized phrasal units," "formulaic sequences," "collocations," "lexical chunks," "lexical phrases," and "lexical clusters" are all used to describe multi-word units, and the use of diverse terminology should not pose a challenge when studying lexical chunks in the field of English language teaching (ibid). Nominals and collocations resemble one another in that both serve as tools and structures for combining words, and both can be classified as subsets of prefabricated structures. This dual nature of collocations and nominals is closely linked to the comparison of the two textbook series. It appears that the "Interchange" series capitalizes on this overlap by presenting collocations within nominal structures and meaningful contexts. Thus, language learners simultaneously acquire both the syntactic knowledge regarding the ordering of noun phrase constituents and the semantic knowledge concerning collocation constraints. In contrast, high school textbooks in Iran largely treat noun phrase structures as grammatical phenomena to be analyzed and collocations as lexical items to be memorized, without systematically integrating the two. Consequently, Iranian learners may be able to syntactically analyze a noun phrase yet fail to select an appropriate collocate for the head noun; conversely, they might recognize a collocation but be unable to use it correctly within a complex noun phrase.

Material Evaluation

The sixth dimension of comparison concerns the evaluation of materials, which establishes the methodological and conceptual basis for the comparison itself. The need to evaluate instructional materials stems from the insight it provides into how a textbook can be improved or justified. Textbook evaluation involves the careful selection of materials and an examination of whether they align with the needs of learners, as well as the goals, methods, and values of a specific educational program; it also yields data regarding the effectiveness of the materials. Such data are useful in determining the appropriateness of the course's predetermined objectives. The fundamental purpose of most evaluations is to provide "useful feedback" to a wide range of stakeholders—such as sponsors, contributors, client groups, staff, administrators, and other relevant parties. Consequently, the evaluation of instructional materials is crucial to language education; it can and should serve as a process that helps teachers gain greater insight into their teaching and learning contexts. In education, evaluation is vital for teachers, as it offers critical information on how to manage students' learning tasks and organize courses. There are three primary reasons for developing or refining evaluation criteria: formally establishing desired quality levels for educational outcomes and provisions, holding educational service providers accountable, and supporting continuous improvement in education. In the present study, these evaluation frameworks provide the rationale and structure for comparing Iranian high school textbooks with the *Interchange* series. This comparison can be viewed as a form of micro-evaluation focused on a specific linguistic feature—namely, nouns—rather than a broad, macro-level assessment of the two sets of materials. Given that the evaluation of instructional materials aims to provide useful feedback to a wide range of stakeholders, the findings of this comparison are relevant not only to teachers and language learners but also to curriculum developers, textbook authors, and educational policymakers in Iran. If it is found that Iranian high school textbooks exhibit fewer complex nominal structures and collocation patterns compared to *Interchange*, this constitutes precisely the type of evidence that can inform decisions regarding curriculum revision, the adaptation of instructional materials, and teacher training.

Conclusion

Overall, the six dimensions compared present a coherent, comprehensive picture. The *Interchange* series—an internationally published, communication-oriented course—appears to offer richer, more systematic exposure to complex noun phrases, formulaic lexical combinations, prefabricated language units (chunks), and collocations; it integrates knowledge of noun structures and collocations more effectively than Iranian high school textbooks. While playing vital educational and motivational roles within the national education system, Iranian high school textbooks seem to place greater emphasis on isolated vocabulary and sentence-level grammar. These findings carry several pedagogical implications. First, the deliberate and purposeful inclusion of complex noun structures and collocation patterns—presented within meaningful contexts and reinforced through repetition and review across lessons—could benefit Iranian high school textbooks. Second, teachers using these textbooks should supplement their instructional materials with content rich in formulaic language units (chunks) and complex noun structures, drawing upon the strengths of Series like *Interchange* while adapting them to local needs and cultural contexts. Third, teacher training programs should incorporate "materials evaluation" as a core component, enabling teachers to make informed, criteria-based decisions regarding the selection and adaptation of textbooks, rather than relying on subjective and unsubstantiated judgments (Cunningsworth, 1995). Fourth, given the dual nature (syntactic and semantic) of noun phrases and collocations, instructional activities should integrate "form" and "meaning," helping learners understand how noun phrase structure and collocational constraints interact in the production of accurate and idiomatic English. Finally, further empirical research is essential to examine how the differences identified in this comparison affect

the performance of Iranian learners—particularly in writing and speaking skills, where knowledge of noun phrases and collocations plays the most direct role. Such research would shift the current discussion from a theoretical, text-based comparison toward an evidence-based explanation of the impact of textbooks on learning outcomes, thereby contributing to the broader goal of enhancing English language education in Iran.

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Research Paper

Knowledge Management as an Innovation Strategy: Knowledge Management in the Context of Manufacturing and Service Industry**Syed Junaid Abbas^{*1}, Nadira Binte Nazrul^{*2}, and Marzan Kazi Rubye^{*3}**

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Email: jsyed4656@gmail.com**Abstract**

Knowledge management (KM) has become an important strategic tool for innovation, but the way it is applied and its effect is differential between manufacturing and service industries is not well understood. This paper provides an examination of KM as an innovation strategy through the lens of understanding how KM processes – creation, storage, sharing, application and transfer - drive innovation outcomes in manufacturing and service settings. The study draws on the knowledge-based view (KBV) and the SECI model to highlight some of the critical research gaps, such as the lack of comparative cross-industry studies, the underexplored intervening role of innovation between KM and organizational performance, and limited incorporation of digital era enablers like AI and Industry 4.0 technologies. The paper presents a systematic literature review and a comparative analysis which leads to the conclusion that the primary applications of KM are process innovation and operational innovation in manufacturing companies, while customer-centric and service innovation are the main applications of KM in service companies. These investments have become strategic in today's world as the KM software market is expected to grow to USD 74.22 billion by 2034 from USD 20.15 billion in 2024. The results not only advance the theory but also enable better guidance to organizations on how they can use KM as one of the competitive assets in the digital economy.

Keywords: Knowledge Management, Innovation Strategy, Manufacturing Industry, Service Industry, SECI Model, Industry 4.0, Digital Economy

Introduction

With the current global economy of high volatility, uncertainty, complexity and ambiguity, knowledge has become the most important strategic organizational asset that can mean competitive advantage [1]. Therefore, knowledge management (KM), or the systematic knowledge management process, consisting of the creation, capture, storage, sharing, and utilization of organizational knowledge, has become an important leverage point for innovation in various industries [2]. In the manufacturing sector, KM is used to tackle issues like tacit knowledge loss when employees retire, optimizing production processes, and integrating Industry 4.0 technology [3]. In service industry, where services generation is a knowledge process, KM can be used to improve service quality, shorten the service response time and promote service innovation [4]. In spite of this increasing awareness, there are still unknowns about how KM is an innovation strategy differently in manufacturing and service environments. The connection between KM and innovation is far from straightforward and is not applicable everywhere. Previously, it was found that organizational culture, leadership, technological infrastructure and industry specific features mediate the relationship between KM and innovation outcomes [5] [6]. Most of the studies however have focused on the KM-innovation linkages within the context of an individual industry, and have neglected comparative dynamics between industry environments that include different fundamental operational contexts [7]. While manufacturing companies work on tangible production processes, technical documentation and equipment-specific skills, service companies are dependent on knowledge integrated in human interactions, customer relationships, and relational skills [8]. Moreover, the concept of the digital economy, which includes artificial intelligence, cloud computing, and internet of things (IoT), has changed the face of KM [9]. The global KM software market is projected to grow at a CAGR of 13.6% and reach USD 74.22 billion by 2034 [10] and the global AI-driven KM market is expected to grow from USD 3.0 billion to USD 102.1 billion by 2034 [11].

Research Questions and Hypotheses

While there have been extensive studies on KM and innovation, four unmet key gaps need to be filled. First, the comparative analysis gap, as many studies have examined the relationship between KM and innovation at the sector level, few studies have systematically examined the comparative relationships between manufacturing and service industries [7, 12]. There are knowledge paradigms of manufacturing and service which differ markedly: manufacturing is more knowledge about codified knowledge that is explicit and understandable in terms of manufacturing processes, while services are more knowledge about experiential knowledge which is tacit and understood through customers' experience [8], [13]. Second, the gap regarding the mediating mechanism: the specific processes by which KM processes contribute to innovation and how innovation relates to the KM-performance relationship is not well understood across industry contexts [14], [15]. Research based on PLS-SEM identified that the link between KM and performance is partially mediated by innovation and was only examined in a single national context [14]. Third, the gap of integration of digital transformation in KM: the majority of current KM-innovation models date back to before the mainstream use of AI and Industry 4.0 and do not consider their transformative impact on KM processes [3], [9]. Fourth, the contextual boundary condition gap: the organizational culture, leadership, and institutional environments have different influences on the KM-innovation relationship between different industries, but the relationship between these two is still not well understood [16, 17]. In line with the gaps found, the research questions for this study are:

What are the differences between KM processes in relation to innovation outcomes between manufacturing and service industries?

How does the relationship between KM and organizational performance appear to be mediated by innovation in both industry settings?

What is the impact of Industry 4.0 technologies and AI on KM processes and innovation strategies for manufacturing versus service industries?

What are the key organizational and cultural factors and constraints that impact KM-related innovation in these settings?

To systematically compare the role of KM processes on innovation results in manufacturing and service sectors and find patterns in each sector.

To analyze how innovation is a mediator between KM and performance in both industry environments.

To explore the effects of Industry 4.0 and AI technologies on KM processes and innovation strategies, and to create an integrated framework that integrates digital era enablers.

To discover the important organizational and cultural factors that enhance or hinder the effectiveness of KM-driven innovation by sector.

To build a holistic conceptual model of KM processes, KM outcomes, digital enabling factors and contextual factors.

This study has theoretical, methodological and practical implications. In theory, it extends the knowledge-based view (KBV) which is limited to an industry perspective [19], [20]. The study is interesting because it contrasts KM-innovation relationships between manufacturing and service organizations, which helps provide a more fine-grained understanding of how the various types of knowledge contribute to innovation in different operational contexts. Methodologically, the integrated framework proposed here allows cross-industry analyses and includes key variables related to digital transformation to overcome the temporal gap in current models [3, 9]. The study provides managers with practical recommendations. Less than 1% of organizational data is effectively analyzed and less than 1% of Fortune 500 companies are losing USD 31.5 billion per year because of failure in knowledge sharing [21]. The small increase in data accessibility generates a significant gain in terms of net income for Fortune 1000 companies: it's more than USD 65 million [21]. Manufacturing has a serious problem of about 40% of their employees will be eligible for retirement which will lead to untapped knowledge loss [22]. Through the identification of sector specific KM strategies, enablers and barriers, this study serves as a roadmap for organisations that wish to use KM as a conscious innovation strategy. This AI-powered, 42% CAGR projected market for KM [11] only further highlights the importance of comprehending the implications of these technologies on KM-innovation dynamics across sectors.

Literature Review

Knowledge Management: Theoretical Foundations

Knowledge management is based on several theories; the most important are the knowledge-based view (KBV) and Nonaka's SECI model. The KBV suggests that knowledge is the most strategically important asset of the firm and the capacity to integrate, generate and apply knowledge is the key source of competitive advantage in the long term [19] and [20]. In contrast to physical resources which decline with use, knowledge is a resource that can grow with sharing and use [23]. In order to understand knowledge creation as a dynamic interaction between tacit and explicit knowledge, Nonaka and Takeuchi's SECI model, which consists of socialization, externalization, combination and internalization, is introduced [24]. Tacit knowledge is transferred through sharing experiences (socialization); tacit knowledge is translated into explicit knowledge (externalization); explicit knowledge is combined into new systematic knowledge (socialization); and explicit knowledge is internalized to tacit knowledge (internalization) using practice as a means [25]. The model has been tested across the different sectors and was found to be predictive of organizational performance and innovativeness (empirically validated) [26]. But critics say that only two of the four modes of conversion are supported empirically strongly [27] and that the model needs to be rethought with the help of generative AI [28]. These frameworks are complemented by the dynamic

capabilities view which focus on how organizations can sense, seize, and transform knowledge resources [29].

KM in the Manufacturing Industry

Production processes, technical knowledge and digital automation are the key factors of the sector that define the challenges for manufacturing KM. Significant amounts of explicit knowledge (specifications, SOPs, quality data, etc.) are produced by manufacturing companies, but critical knowledge is often tacit encoded in the skills and judgment of the experienced operators and engineers [3] [22]. The 'retirement cliff' is a huge challenge: around 10,000 baby boomers are retiring every day and almost 40% of those in manufacturing will be eligible to retire over the next ten years [22]. With Industry 4.0, new opportunities have presented themselves: Cyber-physical systems, IoT sensors and digital twins will make it possible to generate knowledge in real time, and generative AI will provide new possibilities for acquiring tacit knowledge and for connecting departments. Toyota's on-going practices of knowledge sharing involve explicit documentation as well as tacit knowledge transfer through mentoring, which is the hallmark of successful manufacturing KM [30].

KM in the Service Industry

The nature of the service industry differs from the manufacturing industry in that it is intangible, heterogeneous, inseparability, and perishability [4, 33] which determines the paradigm of service industry KM. Knowledge is mostly tacit and relational and is deeply embedded in customer interaction and professional expertise. Service KM puts an emphasis on sharing and applying rather than storing, since value is created in the knowledge application which is directed to customers [12]. Technology enablers include CRM systems, knowledge portals, and AI chatbots. In Saudi Arabia, a research study of service organizations revealed that KM processes, and in particular knowledge sharing, had significant and positive impacts on organizational performance [12]. Unique barriers are turnover, knowledge hoarding and issues in capturing knowledge from fluid interactions in service [34].

Method and Material

The paper presents a systematic literature review and a comparative analysis which leads to the conclusion that the primary applications of KM are process innovation and operational innovation in manufacturing companies, while customer-centric and service innovation are the main applications of KM in service companies.

Results and Discussion

Table I: Comparative KM Characteristics — Manufacturing vs. Service Industry

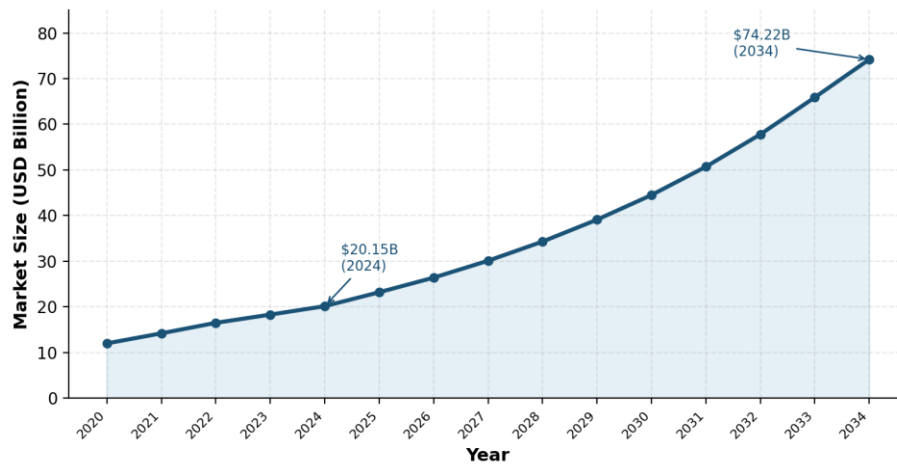
KM Dimension	Manufacturing	Service
Primary Knowledge	Explicit (technical)	Tacit (relational)
Knowledge Creation	R&D, process engineering	Customer interaction
Knowledge Storage	Databases, SOPs, CAD	CRM, case repositories
Knowledge Sharing	Cross-departmental	Cross-functional, customer-facing
Key Technology	MES, ERP, Digital Twins	CRM, AI chatbots, portals
Dominant Innovation	Process & product	Service & business model
Critical Barrier	Tacit knowledge loss	Knowledge hoarding, turnover
Industry 4.0	CPS, IoT, robotics, AI	Cloud, AI, big data analytics

KM an Innovation Strategy

A paradigm shift from a supportive function to a proactive innovation driver has occurred when considering KM as an innovation strategy. The ability of the organization to create, combine and use knowledge new

ways is a key component of its innovation capacity [14, 37]. There is empirical evidence throughout that companies with well-developed KM practice have more innovation [5]. KM can be the driver of innovation, in several ways: creating new ideas, sharing to promote cross-pollination, storing to avoid reinvention, and applying to produce new results [2]. Finally, the relationship between KM and performance was found to be mediated by innovation through a PLS-SEM study which revealed that innovation lies between the two variables [14]. The combination of open innovation with KM further magnifies knowledge flows that transcend the boundaries of the organization and thus the innovation potential [38].

Fig. 1: Global Knowledge Management Software Market Growth (2020-2034)



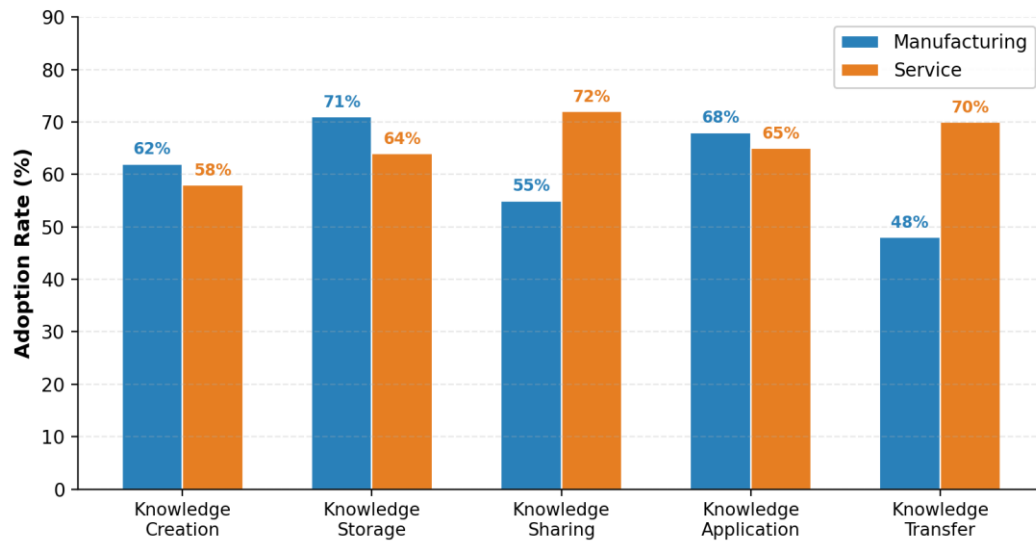
Compiled from Compiled from Grand View Research [10] and Fortune Business Insights [39]

Comparative Analysis: Manufacturing vs. Service Industry

Adopting and maturing processes

There are differences between the KM adoption patterns of manufacturing and service industries. For manufacturing, the highest adoption rate is knowledge storage (~71%) because of the compliance requirements and quality management systems [3] [35]. Knowledge application is followed by (~68%) with the support of Lean and Six Sigma methodology [30]. But the knowledge transfer is around 48%, which shows the importance of the tacit knowledge loss challenge [22]. The collaborative nature of services, as reflected in the collaborative aspects of services, is reflected in the measurement of the extent of sharing of knowledge (~72%) compared with the creation of knowledge (~58%) [12] in services.

Fig. 2: KM Process Adoption Rates — Manufacturing vs. Service Industry

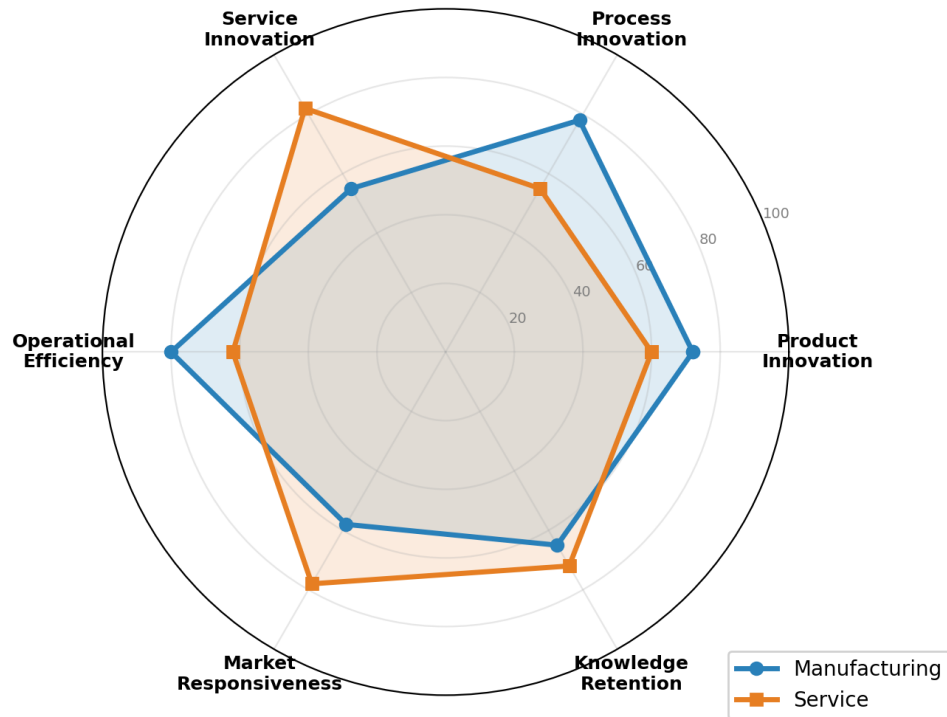


Source: Synthesized from [3], [5], [12], [35], [37]

Innovation Outcomes and KM Pathways

There are significant variations in innovation outcomes across sectors. Process innovation (impact index: 78) and operational efficiency (80) are the key activities in which manufacturing companies use KM, in line with the focus on production optimization [3] [32]. Product innovation (72) is also very pronounced by means of R&D intensive KM (Research and Development) processes [7]. Service firms demonstrate the highest effects in service innovation (82) and market responsiveness (78), which are both indicators of the customers' orientation. But KM is not used sufficiently in manufacturing for service innovation (55), and services do not invest enough in process innovation (55) and operational efficiency (62). These patterns illustrate that there are important cross-sector learning opportunities.

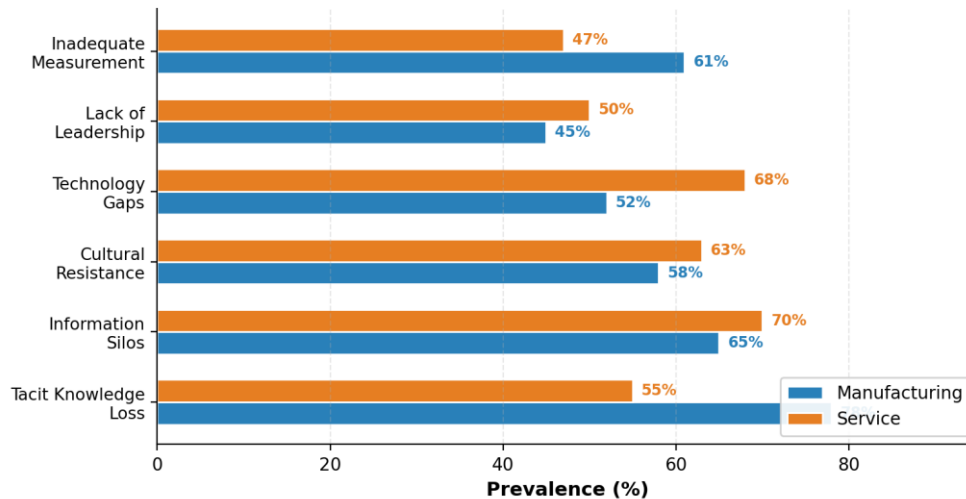
Fig. 5: Innovation Performance Impact of KM — Manufacturing vs. Service



Source: Synthesized from [3], [5], [12], [35], [37]

Barriers to KM-Driven Innovation

There are significant inter-sector differences in barriers. For manufacturing, the top barrier is tacit knowledge loss (78%), which is directly linked to the retirement cliff [22]. Information silos (65%) represent departmental fragmentation [3] and poorly designed measurement systems (61%) make ROI quantification difficult [35]. In services, functional specialization [34] is the driving force behind information silos (70%). Cultural resistance (63%) is attributed to the competitive aspects of how individual expertise is seen as personal gain [16]. It is interesting to note that in services, technology gaps (68%) are much higher, indicating a lack of integrated KM technologies when it comes to capturing knowledge for the customer.

Fig. 3: Key Barriers to KM Implementation — Manufacturing vs. Service Industry

Source: Synthesized from [3], [12], [16], [22], [34], [35]

Conceptual Framework

Based on the theoretical frameworks and the comparative analysis, this research develops a holistic conceptual model of KM processes, innovation outcomes, digital enablers and contextual moderators (Fig. 4). The framework places KM at the center, with four fundamental processes, namely creation, storage, sharing and application, leading to four innovation outcome categories, namely product innovation, process innovation, service innovation, and business model innovation. Different KM processes have varying degrees of importance and effectiveness, depending on the industry context (manufacturing vs. service). The relationship between KM and innovation can vary in strength and direction due to the role of organizational enablers (IT infrastructure, organizational culture, and leadership and AI/digital technologies). What this finally translates to is the organizational performance and competitive advantage, while the mediating mechanism in this instance is innovation.

An important one is its explicit inclusion of enablers from the digital era as moderators. In the field of knowledge creation and sharing, Generative AI transforms the process by making it easier to retrieve information from natural language and automatically extract knowledge [3]. The world of Internet of Things and cyber-physical systems generates new sources of real-time operational knowledge [31]. The framework thereby offers a modern perspective which includes both traditional and digital processes of knowledge.

Fig. 4: Conceptual Framework — Knowledge Management as an Innovation Strategy

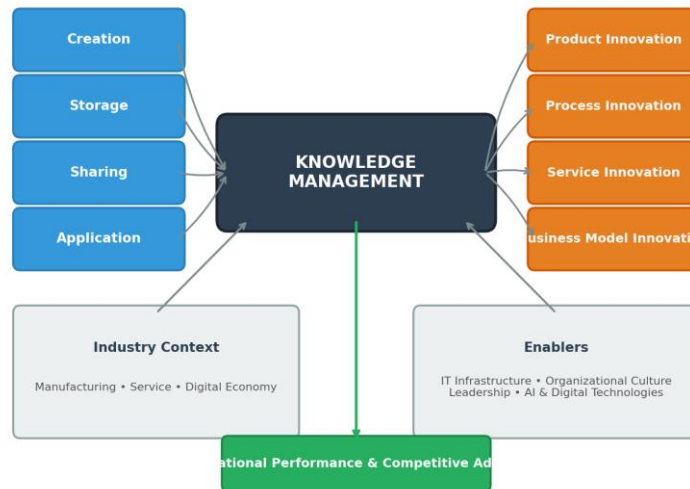


Fig. 4: Conceptual Framework — Knowledge Management as an Innovation Strategy
The components of the Proposed Conceptual Framework are presented in Table II.

Component	Elements	Industry Relevance
KM Processes	Creation, Storage, Sharing, Application	Mfg: Storage dominant; Svc: Sharing dominant
Innovation Outcomes	Product, Process, Service, Business Model	Mfg: Process/Product; Svc: Service/Market
Industry Context	Manufacturing, Service, Digital Economy	Shapes knowledge ontology and KM priorities
Digital Enablers	AI, IoT, Cloud, Big Data, GenAI	Mfg: CPS, robotics; Svc: AI chatbots, analytics
Organizational Enablers	Culture, Leadership, IT Infrastructure	Trust and communication critical in both
Performance Outcome	Competitive Advantage, Financial Performance	Innovation mediates KM-performance link

Discussion

The results show that KM could be an innovation approach via industry-specific routes. For manufacturing, the prevalent stream is that of knowledge storage and application leading to process innovation, operational efficiency and competitive advantage. This falls in line with the sector's focus on production optimization and continuous improvement [3], [30]. This finding of a lower knowledge sharing contribution in manufacturing indicates an opportunity: There is potential for cross-functional sharing mechanisms to drive more innovation potential in product and market. The pathway is service innovation, knowledge sharing and transfer to market responsiveness, with the latter pathway being dominant in services. The smaller role of knowledge creation indicates that service companies might prefer to use unstructured creation processes, with an emphasis on interaction, over structured ones [4]. Innovation productivity can be improved by formalizing knowledge creation, such as customer insight analysis and service design

methodology. In terms of mediation (RQ2), innovation seems to better mediate the link between KM and performance in manufacturing, in which KM links to process and product innovation [14]. Mediation is more distributed along many innovation pathways at the same time in services, which may be why some service firms don't experience as strong direct KM returns. The digital technologies remold KM in various ways across different sectors (RQ3). In the manufacturing industry, IoT and cyber-physical systems present data-driven knowledge ecosystems where knowledge is generated as they operate [3] [31]. In services, AI-powered systems can facilitate knowledge sharing and application, such as with natural language processing (NLP) and intelligent recommendations [33]. The AI-driven KM market is expected to grow at a CAGR of 42% [11] indicating a high rate of adoption, but applications vary: predictive maintenance knowledge in manufacturing and process optimization in services rely on AI-based KM, whereas customer knowledge management and personalization of services in services are driven by AI. In terms of enablers and barriers (RQ4), it is found that organizational culture (including norms and trust) is a universal enabler [16] [17]. Manufacturing, however, needs to deal with hierarchical communication and departmental silos, and services have to deal with competitive individualism and knowledge hoarding [18], [34]. The most important barriers by sector were tacit knowledge loss in manufacturing and technology gaps in services, suggesting various strategic priorities: Knowledge capture/transfer programs in manufacturing and integrated KM technology platform in services.

Counterarguments and Limitations

There are a few caveats. The first is the binary approach of dividing industries into manufacturing and service, which is an oversimplification of the present situation. However, servitisation (service introduction to manufacturing) and the manufacturing-like standardization of some service processes fuzz this distinction [40] and the binary classification may not fully describe the KM-innovation dynamics of the hybrid organisations.

Second, it is a methodological limitation to solely use synthesized secondary data instead of empirical primary data. Adoption rates, prevalence of barriers, and impact on innovation are drawn from a range of sources having differing methodology, sample sizes and geographic context, which impacts on comparability. Third, SECI model is one of the theoretical foundations which is limited in support of empirical evidence and oversimplification in the knowledge conversion process [27]. There are other models which may provide complementary insights not covered here. Fourth, existing research is mainly from the Eastern Asian and European context, so it has limited generalizability. Lastly, the KM-innovation landscape is continually changing, with speed of change exceeding the ability of the literature to capture it, and longitudinal studies are needed to capture how dynamics evolve over time.

Conclusion

This study has analyzed the knowledge management as an innovation strategy in manufacturing as well as service sectors while highlighting the critical gaps, research questions and a comprehensive conceptual framework of KM as an innovation strategy. The analysis shows that the KM-innovation pathway fundamentally depends on the context of the industry: Manufacturing: KM-innovation pathway for process and product innovation is related to the knowledge storage and application; Services: KM-innovation pathway for service and market innovation is related to the knowledge sharing and transfer. The proposed framework is contributing by introducing a cross-industry model that links together KM processes, innovation outcomes, digital enablers and contextual moderators. It may be argued that it is the incorporation of AI and Industry 4.0 technologies that are presented as moderating enablers that can fill the temporal void in the current models. Manufacturing companies should focus on knowledge transfer and cross-functional sharing, alongside storage and application capabilities, for practitioners; the retirement cliff calls for knowledge tacit knowledge capture [22]. It is important to formalize the creation of knowledge

processes and to invest in integrated KM technology platforms in service firms [33]. Both industries can gain from strategic AI integration, with a different focus for each sector: Predictive maintenance and process optimization in manufacturing and Customer knowledge management and personalization in services. Future studies might focus on collecting primary data and verifying the findings of these studies through cross-industry comparative studies. Longitudinal designs are required to document changing KM-innovation processes. A binary classification would be covered by studies of hybrid organizations (servitized manufacturers, industrialized service providers). Global applicability of the framework would be improved if it were studied in developing economies and a variety of cultural contexts.

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Research Letter

The Overlooked Role of Women in Pakistan's Biodiversity Management: From Knowledge to Policy Inclusion

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Dear Editor:

Men and women have different roles and responsibilities in society and biodiversity conservation and management (Barrios et al., 2020). Women traditionally have an in-depth understanding of the surrounding plants, animals and ecological processes (Wyllie de Echeverria & Thornton, 2019). The weightage of biodiversity varies upon gender, such as in rural communities; a gender bias hypothesis that makes women potential reservoirs of traditional biodiversity knowledge exists (Luzuriaga-Quichimbo et al., 2019; Temudo & Talhinhos, 2019). Pakistan has problems in the field of biodiversity (Lashari et al., 2020). In the meantime, women are performing cardinal and active roles nearly in all walks of life, such as in diary forms and agriculture (Drucza & Peveri, 2018; Yasmeen, 2011). On the contrary, women are not involved in the biodiversity conservation, management and governance within

the male-oriented society. Only few studies and knowledge has been documented for Pakistan, such as in the Drosh Valley, where the experience of women is treated equally for fruiting plant species to men (Aumeeruddy-Thomas & Pei, 2003). In northern Pakistan, the Valley Conservation Fund established a 25-female member Women's Protection Committee, particularly for livestock and poultry, in cooperation with the Department of Forests, Parks and Wildlife of the Northern Territory (Edwards et al., 2006). In the northwest part of the Swat District in Pakistan, women have a rich indigenous knowledge of medicinal plants. This situation is due to 90% flora comprising medicinal herbs that are collected by indigenous women and children. In Pakistan, 90% of medical herb collection is conducted by women, and 71% of collected herbs are being sold by women at local markets (Khadka & Verma, 2012). However, women involvement in decisions for forest, rangeland and wildlife management remains limited. Therefore, the inclusion of female empowerment in the area of biodiversity conservation is still a void in Pakistan. Considerable efforts over the years at national and international flora have fetched the Convention on Biological Diversity to understand the fundamental roles for biodiversity conservation. The convention has expected the equal role of women in managing and conserving biodiversity and integration of the gender perspective into their framework (Allendorf & Yang, 2017; Mokua et al., 2019). However, women's role is also committed by national biodiversity strategies and action plans by the '2015–2020' Gender Plan of Action (Mathibela et al., 2015) and Sustainable Development Goals (SDG), particularly SDG 5, which favours gender equality (Thomas et al., 2019). At the Conference of Parties 14, adequate presence is made, particularly that of women and girls to formulate biodiversity policy process, as they pay more attention to the task of managing and maintaining biodiversity (Ogar et al., 2020). The women's role is inevitable and accounts for 60%–80% of food production in agriculture; besides this role, the gender disparity is still overlooked in decision making (Deda & Rubian, 2004) on access to and use of biodiversity resources. The main cause is a male-dominated society, and even entrepreneurship is considered a male-gendered concept (Yunis et al., 2019). As for as the role of a women in the field of conservation in many communities, the seed banks for the preservation of local agricultural field seeds have been re-established in some areas around the globe and are managed by women. In some parts of Nepal, women take their own decisions in choosing finger millet (*Eleusine coracana*), taro seed (*Colocasia esculenta*) and seed selection criteria (Baniya et al., 2005). In 1955, a number of campaigns began to promote the status and role of women in the field of biodiversity. For instance, the Lao Women's Development Plan (2016–2020) seeks to mainstream women's role in managing natural resources and protecting the environment; two of its projects contribute directly to the implementation of Lao's National Biodiversity Strategic Action Plans. In 2015, a group of community-based South African Rangers, composed mainly of women, the black Mamba anti-poaching unit was one of the winners of the United Nations Supreme Environmental Award. This group aims to protect biodiversity inside the fences (Brown, 2018). However, some women's efforts for environmental biodiversity conservation could not be ignored, such as Green Belt movement, Kenyan land takeover, Silent Valley movement and Appiko movement (Mago & Gunwal, 2019). Similarly, the women still have a critical role in agriculture of Pakistan. They are responsible for the storage of seeds, protection of seeds and preparation before the cultivation of crop. Therefore, women play a role in

ensuring food security in Pakistan (Armitage et al., 2020; Varumo et al., 2020). However, the women's roles in biodiversity conservation and management are seldom recognised in Pakistan.

Conclusion

In some areas of Himalayas, women are considered to be biodiversity managers and custodians, particularly in the field of agriculture and forest resources. Many countries, such as Laos, India and Nepal, have made great efforts to support women's efforts to protect and manage biodiversity without Pakistan to ensure gender inequality. Government should therefore ensure the role of women given that an active participation in all entities related to biodiversity, particularly in forest, rangeland and wildlife management, within a male-oriented society is required to meet SDG 5 in particular. Limiting the role of women as a labour woman in the field of biodiversity is necessary. Therefore, the active participation of women, particularly in biodiversity conservation and management, is necessary to fulfil the goals for sustainable development.

Recommendations:

Gender-based biodiversity knowledge, practices and end gender disparities in Pakistan need to be prioritised to protect biodiversity. Additional implications for biodiversity conservation and management in Pakistan are listed as follows: Awareness of the empowerment of women needs to be disseminated, and this empowerment should be considered a cross-cutting component of the implementation of the United Nations Convention on Biological Diversity. Cultural and logistical barriers should be alleviated to ensure that women can express their needs, knowledge, priorities and sustainable development solutions at an equal level to men. The gender issues should be integrated into programmes and plans at the local and international levels. The full participation and support of men and women should be galvanised to ensure that empowered people can participate in biodiversity conservation and guarantee that these measures are socially acceptable. The central government should develop a strategy to eliminate various obstacles to women's full participation in sustainable development, such as constitutional, legal, administrative, social and economic obstacles. Environmental education should be expanded in rural areas.

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Research Paper

A Comparative Study of Formal and Informal English Used by Secondary School Students**Mansoor Unar *¹ Muhammad Ameen*²**

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Email: Manchhar37@gmail.com**Abstract**

English is widely used by secondary school students in both academic and social contexts, requiring them to understand the distinction between formal and informal language. This study examines the differences between formal and informal English among secondary school students, focusing on vocabulary, grammar, contractions, abbreviations, slang, politeness, and online communication. A descriptive research design was adopted to examine students' use and understanding of both forms of English. Data were collected through a structured questionnaire and analyzed using descriptive statistics to identify common patterns in students' language use. The findings indicate that students generally use formal English in written assignments, examinations, classroom presentations, and communication with teachers, while informal English is more common in conversations with peers, family members, and social media interactions. The study further reveals that students frequently use contractions, abbreviations, slang, and digital expressions in informal communication. The study concludes that both forms are important and recommends teaching students when and how to appropriately use formal and informal English.

Keywords: Formal English, Informal English, Secondary School Students, Language Variation, Digital Communication

Introduction

Language plays an important role in human communication. Individuals adjust their language when speaking or writing, depending on who they are speaking to, why, how, and where. All secondary school students encounter various uses of English on a daily basis. They communicate in English in the classroom, in exams, on assignments, in discussions, in text messages, and on social media. In formal and official communication situations, the general form of English is spoken. Uses grammar and vocabulary in the correct manner. Informal English is less formal and is generally used in informal communications with friends and loved ones. Secondary school students use English in both academic and social situations. Formal English is used in written assignments, tests, presentations, and with teachers; informal English is used with peers, family, and on social media. In this study, the difference between formal English and informal English is compared among secondary school students. It emphasizes words, grammar, contractions, abbreviations, slang, politeness, and online communication. The study shows that both forms of English serve a purpose. Pupils should be taught to know when to use formal or informal language.

For example:

Formal: "I don't feel well and can't go to school today."

Informal: "Due to illness, I am unable to attend school today."

Both sentences have a similar meaning, with the first being more appropriate for formal communication. Students need to understand the difference between formal and informal English because they must be able to speak formal and informal English as required in various situations. A student may use slang when speaking to a friend, but may not be appropriate for an examination or formal letter. To make formal and informal English comparisons among secondary school students. The comparative shows that secondary students use formal and informal English differently. Formal English is essential for academic tasks, exams, presentations and communicating with teachers. Informal English can be helpful when students are communicating with family members and friends. Informal English should not simply be considered "wrong." It's suitable in some cases. The key skill students require is his/her ability to know when to use formal language and when informal language is appropriate. Students who grasp this distinction are able to be more successful communicators. They can comfortably apply informal English in social settings and appropriate formal English in educational settings. Practical examples can be given by teachers, which can help students. For example, students can be asked to change a text message into a formal email or rewrite an informal sentence as an academic sentence. The activities can make English learning more interesting and useful. To recognize the common characteristics of the informal English. To analyze the effect of social media on the English of students.

Literature Review

Sociolinguistics is a field of study where language variation is significant. According to Holmes (2013), people are adapting their language in social contexts, relationship, and/or audience. Biber (1988) further demonstrates that there are differences in the linguistic characteristics of spoken and written English. Formal settings such as school or official places, Standard English is typically used. Usually contains full sentences, appropriate grammar and vocabulary. Hyland (2009) points out that in academic communication, it is necessary to use the correct language. Every day or casual communication in English. It could contain slang, contractions, abbreviations and conversational phrases. With the advent of digital communication, youth have been using informal English more.

Punctuation is often abbreviated, e.g. “u” for “you”, “btw” for “by the way”, “idk” for “I don't know”, “pls” for “please”, “lol” for “laugh out loud”. While these forms are convenient for fast communications, they are generally not suitable for academic tasks.

Method and Material

Qualitative comparative research method is applied in this study. It explores forms of formal and informal English, contrasts their vocabulary, grammar, sentence structure, abbreviations, slang and usage in digital communication. The study is grounded on the previous research related to the language. There is no real student survey and so no fabricated statistical results in the paper. To pursue the study, questionnaires, interviews, formal and informal writing samples and classroom observation could be used with the secondary school students. Students might be requested to write a formal school paragraph and an informal message. The examples could then be compared to look for differences in language use.

Results and Discussion

Comparison of Formal and Informal English

Table 1

Comparison of Formal and Informal English Expressions

Formal English	Informal English
I cannot attend the class.	I can't come to class.
Please provide the information.	Send me the info.
I would like to ask a question.	I wanna ask something.
I do not understand.	I don't get it.
Please contact me later.	Text me later.

Vocabulary

Standard and carefully chosen words are typical of formal English. In informal English, common words, slang, or shortened words are used. For example, a student may say the examination was difficult in formal writing but say that the examination was really hard in conversation with a friend. Both expressions are comprehensible, but are from different styles.

Grammar

The forms of English used in formal contexts are typical of the grammatical rules of English. The informal communication can have shorter sentences and conversational forms.

Formal: “I'm not well enough to attend the meeting.”

Informal: “Could not come, not feeling well.”

The informal version can be used in a text message, and the formal version would be more appropriate for academic or official communication.

Contractions

Contractions like don't, can't, I'm or we're are normal in informal English. In formal writing students are able to use the full form of cannot, do not, I am and we are. But contractions do not necessarily indicate that the writing style is incorrect. They are suitable based on the kind of writing and what the teacher is expecting.

Abbreviations

Students frequently use abbreviations in digital communication, such as:

u = you

btw = by the way

idk = I don't know

pls = please

asap = as soon as possible

These forms make communication faster. However, students should avoid using them in examinations, essays, applications, and other formal writing.

Slang

Informal phrases like cool, awesome, bro, dude are in use. Words of the street can lend to a more friendly and natural conversation. At times it can be hard for different age groups and backgrounds to understand, however. Students must, therefore, know their audience prior to using slang.

Politeness

Formal communication typically calls for a greater degree of politeness. A student might say to a friend, for instance:

“Pass me your notebook.”

If talking to a teacher, the student can say:

Do you have a notebook, please?

This distinction implies that language is also related to respect and social relations.

Digital Communication

Social and messaging media have greatly affected students' language. Students can communicate quickly through messaging apps and social networking sites. They tend to employ informal words, short sentences, emojis, and abbreviations.

For example:

Informal: “Hey, do you plan on coming to school tomorrow?”

Formal: “Will you come to school tomorrow?”

Digital communication does not have to be detrimental to language. It's just one form of communication. The issue is when students cannot distinguish between informal digital language and formal academic writing.

Conclusion

Based on this study, the researchers are able to conclude that both formal and informal English is important as means of communication. Students in secondary school employ formal English primarily for academic purposes and informal English for everyday purposes. Social media has heightened students' use of abbreviations, slang and short forms. Thus, pupils should be prepared to adapt their speech to meet the needs of different situations, audience, and purpose. By learning both styles, students can have a better overall understanding of the communication skill and grow to be more confident English users. Rather than giving pupils the message that informal English is "bad", the teacher should communicate that there are different kinds of English and that informal English is appropriate in some contexts.

Recommendation

Teachers should describe the difference between formal and informal English. Practicing both academic and conversational English should be done by students. Social media should be discussed with respect to language impact by teachers. Students should not use abbreviations in formal work. Classroom activities should involve actual situations of formal and informal communication. Pupils to practice informal sentences to formal sentences. Schools should be supportive of academic writing skills being developed by students. Pupils should be able to think about their audience when deciding on language.

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