

## Subalternity in Joseph Conrad's *Heart of Darkness*

**Baskota Dhananjaya**  
English Department  
Damak Multiple Campus  
*Email-baskotadh@gmail.com*

### Abstract

Human civilization has a long history about power relation among the individuals and the societies. Power relations prominently try to 'other' them who are powerless, voiceless, socially backwards, culturally isolated and economically exploited. This paper presents how European elites make 'other' to the native Africans. The process of 'othering' establishes the idea of subalternity; which is reflected through the African natives in Joseph Conrad's novel *Heart of Darkness*. The native Africans are voiceless and put beyond the center of conversations among the non-African characters. The way of keeping Africans at bay is found in the novel; and they are made only slaves. This study tries to explore how subalternity is reflected in Joseph Conrad's *Heart of Darkness*. Furthermore, this novel is viewed in this article from the subaltern perspectives proposed by Antonio Gramsci (1891-1937) Gayatri Chakravorty Spivak (1942), Ranajit Guha (1923-2023) using the qualitative research. The novel has reflected subalternity after the input of sources; and this is discussed for the objective conclusion.

**Keywords:** Binary opposition, dichotomy, orientalism, othering, projection, subalternity

### Introduction

Twenty-first century is pivoting over the inclusiveness of the people belonging to diverse social identities in the earth planet. Previously, such diverse identities were under the shade of hegemonism, i.e. Eurocentric knowledge. The way out of Eurocentric knowledge is paving number of measures to enter the world of unheard people, unseen people, unrecorded people, marginalized people, oppressed people, and the othered people. This othering is made by the dominance of hegemony over the voiceless people. There is a long human civilization history in which people are made other through the domination of hegemony, language, gender issues, racial issues, class

issues, and socio-political existence. 'I would say that Subaltern Studies arrived in the global mainstream in 1993, after Ranajit Guha's alignment with Bernard S. Cohn had made the project's cultural critique of colonialism an elixir of new vitality for American-style cultural history (Reading Subaltern Studies Critical History, Contested Meaning and the Globalization of South Asia DAVID LUDDEN).

The most striking way of othering voiceless people is examined through the 'subaltern' reading. It is the subcategory of combined Marxist and Postcolonial reading of the society. Subalterns are voiceless people, historically non-recorded people. 'They cannot represent themselves; they must be represented (Marx, 1972, 106).'

The word 'subaltern' is used first time by the Italian Marxist Antonio Gramsci to refer to the workers and peasants, the inferior in rank; but it gradually became a buzz word in the colonial and post-colonial studies. Asian critics like Ranajit Guha, Gyatri Spivak, Partha Chatterjee adapted the idea of Gramsci to confront the official historical documents which entertains to silence the subalterns and promote elite voices or ruling class people. Spivak's essay 'Can Subaltern speak?' is the rhetorical question and its answer is 'They Can't Speak'.

The subaltern characters need to raise their voices in order to protest, confront advocating for victims' rights, equality, justice, and identity. But they cannot.

Subaltern studies are the result of globalization which promote to silence the afflicted people and create sophisticated elites. The last two decades of the twentieth century became the pageant of subaltern studies. The history of the subaltern classes was just as complex as the history of the dominant classes, elite classes, ruling classes although the history is just 'official' history; not the history of 'all' people. History is indifferent to the sacrifice and contribution made by the oppressed class people. History records the voice of the heroes recognized by the higher class of people. So, Jacques Derrida tried to deconstruct the 'Eurocentric knowledge' and favoured the 'othered' group in the society for consciousness and meaning construction process.

'Derrida calls the ethnocentrism of the European science.....is the symptom of the crisis of European consciousness (Spivak, 1988, p.295)'

Subaltern Studies is a name for the general attribute of making people subordinated class in society, whether this is expressed in terms of class, gender, race etc. attempting to allow the people to speak within the pages of elitist historiography to speak for, or to sound the muted voices of the truly oppressed, repressed, marginalised and made other. The literature which represents the powerless people, oppressed class, working class people, gender discriminated people, racial and cultural discriminated people, or the deprived class people is subaltern literature. Subalterns are the voiceless people, and the literature gives them voice, raises their voice is subaltern literature. Mulk Raj Anand,

Tony Morrison, David Arnold, Partha Chatterjee etc. are the subaltern writers. 'Subaltern refers to the 'inferior in rank or status (Tyson, 2006, p. 425).' This means it is the literature of the marginalized people who have been overshadowed by the different elites, racial elites, indigenous elites, gender elites, political elites, geographical elites and cultural elites. The elites always try to keep and extend hegemony over weaker groups. As the result, the process of othering remains for long time in human society.

Joseph Conrad's renowned novel (novella) *Heart of Darkness* (1899), generally a 'sea journey novel', follows the journey of Marlow in Africa, portraying from Conrad's own time in the Congo in 1890. The narrative reflects on the inhuman realities of European colonialism, depicting disorder, devastation, and the oppression of Africans. It portrays the African people into power dynamics through language that the Africans are only slaves. The story explores the clash of European and African cultures, sparking reflections on comprehension and potential conflicts. The narrative strongly denounces imperialism, condemning cruelty and profit-driven western materialism. Marlow's narration plays a pivotal role in shaping readers' perceptions of events, reinforcing the narrative's stance against mistreatment and exploitation. Ultimately, *Heart of Darkness* encourages contemplation on cultural exchanges, personal growth, and the ethical ramifications of colonialism. The entire narrative is made by the narrators reflecting the African people from their own perception, and do not allow the natives to speak; nor their views are communicated.

Generally, Conrad explores diverse ways where integrity of the characters is threatened by the politics and economics corrupting the personal relationships. He tries to reconcile social and individual conflicts. Conrad's another novel, *The Nigger of the Narcissus* (1897) is about 'a necessary corruption of any kind of human society' (Daiches, 1998, p.1156). This novel, too, points out that society is necessary but corrupting. Daiches further conveys meaning of Conrad's all novels is that 'how material interests corrupt human behaviours and relations'. Economic and social exploitations seem to be the champions in Conrad's Novels. *Heart of Darkness* is more dimensional in this issue. 'Conrad is not protesting against anything, only illustrating a permanent aspect of human condition (Daiches, 1998, p. 1156)'. Such corruptions, exploitations, abusing power over the powerless people and process of othering is key issue of subaltern studies which is vividly found in Conrad's novel *Heart of Darkness*.

### **Statement of the problem**

The process of othering has become a part of human civilization because of power relation maintained in the society. In Joseph Conrad's *Heart of Darkness*, Elite groups always strive to keep their dominance over the marginalized groups. Marlow's narratives stand for keeping Africans silent and put them beyond the center of

conversations. They are presented as nobody and used them as slaves. They are only exploited, abused. This article tries to explore the answer to these research questions:

- i. What is the position of characters in the novel?
- ii. Why are characters silent in the novel?
- iii. How does the novelist depict the 'other' characters?

### **Research objectives**

This article is focusing on the process of othering to native Africans and finding how they reflect the subaltern position obtained in this novel.

- i. To study the position and power relations of characters in the novel
- ii. To study how the characters are silenced by the elite or hegemony group
- iii. To study how the process othering is designed throughout the novel

### **Literature review**

The study of Africa has emerged a long discourse in the latter centuries. Chinua Achebe portrayed the 'image of Africa' with the violent criticism of Joseph Conrad's novel *Heart of Darkness*. It has a racist marked, which is the development of postcolonial theory, which critically addresses the legacies of colonialism (Clarke, 2017, p. 15). Achebe saw this novel through racist lens which repressed the African natives. This view developed the concept of imperialism and colonialism; and ultimately it based subaltern lens to read the novel. Mariwan Hasan et al (2021, p. 39) has presented insight about Conrad that Joseph Conrad was a thoroughgoing racist. That this simple truth is glossed over in criticisms of his work is since white racism against Africa is such a normal way of thinking that its manifestations go completely unremarked made a detail studies over the *Heart of Darkness* with the focus on imperialism, colonialism and racism. The marginalization and exploitation of the voiceless Africans by the affluent Europeans are made key issues. This novel is the exploration of unpredictable human nature as well as the relevant matter of psychological and physical colonialism.

Several critics have observed Conrad's representation of the 'dark' continent and its people as very much a part of a marginalising tradition that has existed in Western literature for centuries. Most notably, The Nigerian writer Chinua Achebe (Clarke, 2017, p.11) accused Joseph Conrad having racism because he refused to see the black man as an individual in his own right, and because of his use of Africa as a setting—representative of darkness, savage, cannibal and evil. The oriental doctrine is present here that the Europeans are highly cultured and

intellect. This ideology has affected Joseph Conrad to be a thoroughgoing racist. That this simple truth is glossed over in criticisms of his work is since white racism against Africa is such a normal way of thinking that its manifestations go completely unremarked (Achebe, 2006, p. 172)

G. Sankar (2016) under the title 'Postmodernism and Postcolonialism in Joseph Conrad selected Novels: A Glimpse' focus on how native Africans are marginalised and repressed with the help of Europe's colonial power. ItsnainiBarorohMarfu'ah (2013) in his article entitled 'Colonialism and Racism Reflected in Joseph Conrad's *Heart of Darkness* highlighting the European imperial power over the Africans because of race and color. The formation of white elite's dominance in conversation and identity has based subaltern discourses, which is the by-product of colonial doctrine.

The different readings of *Heart of Darkness* have not read as per project of othering to make the voiceless people subaltern, repressed, marginalised, exploited. The to meet this absence, this article preliminarily focuses on the project of othering in *Heart of Darkness*; which is the projection of subaltern reading; a byproduct of postcolonial reading of the text.

### **Methodology**

Entire human civilization is in affliction in different names. They are striving despite the adversities. The writers, poets and philosophers have immense impacts of human struggles, confrontations and voices, which reflects in their thoughts and creation. These confrontations are for the stabilization of power relation between the oppressor and oppressed. The modern criticism has accepted subalternity in texts; because it seeks the oppression of minority language speakers and analyses the text from their perspectives. 'In the post-colonial studies, subaltern identifies and describes the men, women, and the social groups who are socially, politically and geographically outside of the hegemonic power (Sharma, 2078, p. 458)'.

Similarly, this article tries to examine Europeans- based characters as othering agents of the native Africans.'In the work of subaltern studies, it is necessary to reach up to not only the ideological part but also the livelihood of common people i.e. poor farmers, shepherds, workers, laborers, oppressed caste women. They are also human beings, they also think, take decisions, decide the way to live and grow in the society. The subaltern studies, therefore, defy those historians who regard people's action as external to their consciousness (Sahoo, 2014, p. 81)

These relative studies are essentially chosen for understanding of othering to make people subaltern in Conrad's *Heart of Darkness*. This paper is preliminary based on

textual readings, both printed copies, and the e-resources. These readings generally promote to admit secondary data, as the source for the qualitative data. The enormous treasure of English literature, their critical studies are assimilated. Similarly, the narrator Marlowe examines the European based- characters and native Africans quite differently. So, narrator's point of view is given focus for evidence. The researchers and the writers, their interpretations and research works are accepted as resources.

The study has been conducted assimilating historical sources and used postcolonial approach to examine Conrad's *Heart of Darkness*. To know if Conrad supports subalterns or he just showed how colonizers behaved badly with the poor people of Africa. Several writer's works have been consulted to support the ideas about the role Conrad had in showing voicelessness of African native people. Moreover, examples from the text are used to prove that fact that Africans have been made other, subaltern and they are treated as if they are not human being.

### **Findings and discussion**

#### **Otherringin subaltern projection**

Otherring process includes exposing and labelling differently individual or group of people in the identical society or group. The power holders or colonizers oppress members of indigenous culture fully quite unfairly and inhumanly. So, othering is position of human being which is subjugated by power. Such subjugated people are othering. This makes binary opposition as powerful / powerless. In the similar sense, Simone De Beauvoir entitled her one essay 'Woman as Other' in her book *The Second Sex*; as man / woman.

The *Heart of Darkness* creates very powerful binary opposition as Europeans / Africans, we / they, Whites / Blacks, civilized / savage, West / East. The narrator Marlowe observes in the journey that there is brutality in imperialism, and equally there is miserable condition of the native Africans as 'the standard of savagery' (Tyson, 2006, p. 428). The Europeans' motive to earn through ivory trade in Africa is clear and to achieve this mission they create dominance. The African natives are just the outsiders to follow white men's instructions; and they lose their identity, rights to choose and freedom. They are compelled to work. They suffer form the insufficient food, mistreatment, decline in health, lack of attention by the colonisers, and the natives think they are inferior to Europeans.

Marlowe delights when he sees a white man at the OuterStation, 'I saw a high starched collar, white cuffs, a light alpaca jacket, snowy trousers, a clean necktie, and varnished boots' (Jago, 2011, p. 393); but he never excites seeing the native Africans. This is because, Marlowe thinks only European whites are sophisticated, civilised, advanced and intelligent. That is the reason, the Chief Accountant is a White. Marlowe uses

certain puns to describe African natives, such as 'black', 'eyeball glistening', 'bodies streamed with perspiration', 'faces like grotesque mask', 'black and naked', 'savage, backward and undeveloped' etc. in order to symbolize them as 'other' and the white Europeans embody as 'self'. Marlowe observes native Africans:

I've seen the devil of violence, and the devil of greed, and the devil of hot desire; but, by all the stars! these were strong, lusty, red-eyed devils, that swayed and drove men — men, I tell you(p.381).

The process of othering African natives by the European traders builds the process of subalterning them. This process builds an identity; as subordinator, proletariat, inferior, junior, ruled, aborigine by the roles they obtain in society. Hegemony, elite and bourgeoisie class try to stabilize, protect or even enhance their dominance through language and behaviour. Most of the time the narrator speaks and sees the native Africans through his eyes. He never allows to speak to them. What the natives intend he does not know, but he knows what he knows through the elite's eyes. That's why Gayatri Spivak explores the universal rhetorical question 'Can the subaltern speak?'. Its universal answer is 'No'. Same substance occurs in the *Heart of Darkness*. Marlowe, the narrator never interacts with the native Africans, but he only observes through his eyes because the subalterns are the 'subject to others'. Marlowe observes the native Africans: A continuous noise of the rapids above hovered over this scene of inhabited devastation. A lot of people, mostly black and naked, moved about like ants(p.380).

### **Voicelessness in subaltern projection**

The Voicelessness of the black subalterns is so vivid in this novel. Marlowe speaks Kurtz's intended woman, as she is white and he shares Kurtz's feelings to her openly, even with 'white lie'; because she is from elite class, i.e. white. But Marlowe never speaks with Kurtz's black mistress, nor she can speak with Marlowe. She loses her love, but her affliction remains unspoken and unheard. Gayatri Chakravorty Spivak considered as one of the most influential postcolonial intellectuals, said, 'Subaltern is not just a classy word for 'oppressed', for [the] Other, for somebody who's not getting any opportunities. If in the context of colonial production, the subaltern has no history and cannot speak, the subaltern as female is even more deeply in shadow (Spivak, 1988, p.309)'.

Basing the words of Spivak, subalterns (African natives) are made weak, thrown away from the mainstream; even in the communication made by European elites. That might be the cause that Marlowe has obtained power, and he uses this intellectual power just because he is colonial exploiter who is capable to subjugate local people. He says:

They were nothing earthly now, — nothing but black shadows of disease and starvation, lying confusedly in the greenish gloom. (p.382)

The subalterns can speak in their own way with own tongue and accent, but they have problem to speak colonisers' standard English. Their voice is but within them. When the natives seemed to be cannibal and hungry, a nigger says, 'catch 'im. Give 'im to us' (p.404). This is because the subalterns cannot speak openly, accurately, fluently and grammatically. Rather they seek appreciation from the elites. The natives are portrayed as dirty and civilized. This creates binary oppositions between Europeans and the Africans that 'Africans are presented as subordinator' and unvoiced or, muted. The absence of dialogue between Marlowe and other Europeans with the native Africans proves the rhetorical question 'Can the subaltern Speak?'

This novel, on the way to subaltern study, creates 'eurocentrism'; which means projects the ideal position of European ideas and culture. Lois Tyson (2006, p. 421) writes, '.. the use of European culture as the standard to which all the other cultures are negatively contrasted - is called Eurocentrism.' *Heart of Darkness* reflects eurocentrism, a part of subaltern studies. This ideology is reflected in Marlowe's this comment:

There it is before you — smiling, frowning, inviting, grand, mean, insipid, or savage, and always mute with an air of whispering, Come and find out. (p.378)

### **Orientalism in subaltern projection**

*Heart of Darkness* projects the ideology of subaltern with the support of the ideology of orientalism. Orientalism, coined this term by Edward Said, is the Eastern World that includes Middle East, Near East and Far East (territory of Asia and North Africa) which the Europeans defined them as primitive, savage, 22ivilized22d and non- intellectual. This novel reflects native Africans (Orientals) characterized by these negative attributes with lack of education, poverty, primitive, savage, slave and uncivilized. They are dehumanized, and voiceless. The native Africans are not allowed to speak openly with Marlowe, rather they are represented and narrated about them by Marlowe. Marlowe gives every details of the native Africans without communicating with them. He speaks as per his impression and visualization about them. He evaluates a native woman in this way:

She must have had the value of several elephant tusks upon her. She was savage and superb, wild-eyed and magnificent; there was something ominous and stately in her deliberate progress. (p.416)

Marlowe portrays the native Africans who are working with them that they are cannibals, and they are hungry now. But they do not attack the white people; rather want to get the dead body. This creates a wonderful dichotomy between the River Thames and the Congo River to create as light / dark binary oppositions. That is the reason how the Europeans made the native Africans voiceless and created dominance over them thinking that they are superior, intellect, 22ivilized, cultured, and belonging



to the elite class. Such assumption helps to invade and stabilize dominance over the inhabitants. Marlowe cruelly describes the native people as Satan:

Black shapes crouched, lay, sat between the trees leaning against the trunks, clinging to the earth, half coming out, half effaced within the dim light, in all the attitudes of pain, abandonment, and despair (p.377).

### **Racism in subaltern projection**

*Heart of Darkness* has very strong projection of racism which creates subaltern class of people. In this novel, subaltern are niggers, they are blacks, they are foolish and immoral. They are projects as animals losing the status of human being; and having no identity of their own, nor they have any purpose and ambition for future. They are nameless slaves, physically and spiritually sick, and victims. They tolerate the oppression of colonizers' exploitation, and they need to raise voice.

Racism pervades in all sectors of society; politics, economics, culture, art etc. and this ideology just discriminates people as per physical complexion and biological differences. This exercises exclusion and oppression to extract treasures from them; as in *Heart of Darkness*, to extract ivory from the native Africans. In the beginning of the novel, Marlowe observes the black are savage and barbaric to murder anyone. He has almost negative puns while referring the native Africans.

*Heart of Darkness* is perceived through the eyes of a European; and so, Marlow displays his racial attitude towards Kurtz's black mistress by saying, 'She was savage and superb, wild-eyed and magnificent; there was something ominous and stately in her deliberate progress' (p.415). Here Conrad projects the prejudice of the European people against the black Africans that they are savage and dangerous looking.

Marlow notices that she wears 'barbarous ornaments . . . her hair was done in the shape of a helmet, she had brass leggings to the knees' (p.416). This prejudice reflects both racial and gender biasness; and tries to create positive impression about the 'self.'

### **Conclusion**

Subalternity is a form of assigning people only subordinating role and status, and it turns into an umbrella concept which extends the scope of research from various subaltern perspectives judging how much they are made voiceless. In Joseph Conrad's novel *Heart of Darkness*, there are different projections to make the native Africans subaltern. They are the process of othering, ideals of orientalism and racism. So, Spivak warns in such a situation of accommodating the condition of an enduring subordination. She declares that the undertaking of an intellectual is to headway for the subaltern groups and let them freely speak for themselves. But the European ivory traders establish themselves as imperials and colonizers and exercise power over the marginalized native Africans either suppressing them or ignoring their status as human

being and keep on exploiting them. Despite being made 'other', the native Africans cannot voice against injustice, psychological and physical torture. The readers feel pity on these subaltern native people; and may be, Conrad wants to make the voice of subalterns raised by the readers so that they could regain their previous status and respects. The dichotomy white / black, West / East, colonisers / colonised, civilised / savage can be broken, or goes reverse. Such reversing projection is advocated by the post-modernism, and it has brought a lot of changes in the people's life breaking the 'Eurocentric knowledge'.

The changes happening in a globalized post-modern world defines the subaltern as a separate class. The Subaltern School has contributed a lot in the study of history, economics and social sciences in Third World countries during end of the twentieth century, and the beginning of twenty - first century. It shapes a part of postcolonial theory in literature and its application is certainly functional in the study of certain texts; for example – Dalit Literature in our context.

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## Study of Radiation Shielding Properties of Lead, Concrete, and Water using Different Radionuclide Sources

<sup>1</sup>Arun Kumar Shrestha\*, <sup>2</sup>Ganesh Kumar Shrestha, <sup>3</sup>Buddha Ram Shah,  
<sup>4</sup>Ram Prasad Koirala

<sup>1</sup>Damak Multiple Campus, Damak, Jhapa

<sup>2</sup>Pulchowk Campus, Tribhuvan University, Lalitpur

<sup>3</sup>Nepal Academy of Science and Technology, Lalitpur

<sup>4</sup>Mahendra Morang Adarsh Multiple Campus, Tribhuvan University, Biratnagar

\*Corresponding author: arundmk1010@gmail.com

### Abstract

Radiation protection for people and environment from the harmful radiation is a prime issue all over the world. Shielding is one of the basic principles of radiation protection in the existing radiation situation. Radiation interacts with the matter, and its interaction depends upon the various factor. Based on the interaction, the shielding material is selected. In the present, we have chosen the three different shielding materials namely: lead, concrete, and water. Our aim is to select the proper shielding material among these materials based on their performances. In the virtual lab work, three different types of radionuclide sources such as Co-60, Cs-137, and Am-241 of activity 1 $\mu$ Ci have been used and results show that lead has strong shielding performance rather than concrete and water.

**Keywords:** radiation shielding, ionizing radiation, activity, radionuclide, and radiation protection

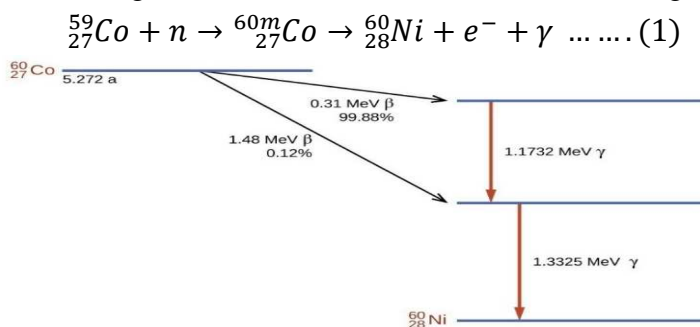
### Introduction

The International Commission of Radiation Protection (ICRP) recommended an appropriate level of protection for people and the environment from the harmful effect of ionizing radiation because it has capable of causing a deterministic or stochastic effect on the biological tissues (Domenech, 2016). Hence, the understanding of the health effect of ionizing radiation is the prime issue of radiation protection. There are three fundamental principles of radiation protection: distance, time, and shielding. If anyone is in an existing radiation

situation, exposure can be reduced by actions taken on the exposure pathways using the fundamental principle of radiation shielding. When the gamma radiation passes through matter, due to its interaction with matter, its intensity exponentially with thickness of the matter. As a result, such material is used as a shielding material to protect personnel and sensitive electronic equipment (Özavci & Çetin, 2016). It is one of the key protection methods rather than minimizing operation time and maximizing distance (ArifSazali et al., 2019). Basically, effectiveness of shielding depends upon the thickness, type of shielding material and energy of the incident radiation. Moreover, material with high atomic number and density are more effective for radiation shielding.

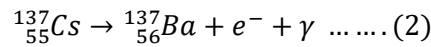
One of the effective shielding materials for gamma radiation is metallic lead (Pb) due to its low cost, ease processability, high atomic number (Z), and high density. However, it is known for its extremely low level of neutron absorption, environmental pollution, and toxicity (Mirji & Lobo, 2017). In addition to lead, other materials such as concrete and water are also used as shielding materials for gamma radiation nuclear facilities such as in nuclear power plant and research reactor.

Here, we are going to discuss the three different types of sources namely: Cobalt-60, Caesium-137, and Americium-241. Cobalt-60 (a half-life of 5.27 years) is a beta-emitting radioactive isotope along with gamma radiation. It has wide variety of industrial and medical applications, such as in thickness gauges, leveling devices, and radiotherapy in hospitals and industries. One use for it is in a medical gadget that treats brain tumors and blood vessel abnormalities precisely when they would otherwise be incurable. Large cobalt-60 sources are increasingly used for the sterilization of foods and spices. It kills bacteria and other pathogens, without damaging the product and remains non-radioactive after sterilization. The isotope Co-59 is intentionally activated with neutrons to form cobalt-60 and undergoes to produce nickel-60, a stable isotope. Since the activated nickel nucleus releases two gamma rays with energy of 1.17 and 1.33 MeV as shown in Figure 1, and the overall nuclear reaction is given in eq (1).



**Figure1:** Decay scheme of Co-60 (Ahmad, 2022)

Caesium-137 undergoes  $\beta$ -decay by a neutron decaying into a proton, releasing an electron. The decay mode of Cs-137 is shown in Figure 2 and overall reaction is given by eq. (2).



Americium-241 is a man-made radioactive metal of half-life 432 years. It is mostly alpha emitter and exists in a solid state under normal condition. The radionuclide is created when plutonium absorbs neutrons in nuclear weapons tests and nuclear reactors. It is employed as a radiation source in industry, research, and medical diagnostic equipment. It is frequently utilized as an ionization source in smoke detectors in trace levels. The first decay product of americium-241 is neptunium-237, and it is presented in Figure 3 as given by eq. (3). It also decays and forms other daughter radionuclides and finally a stable bismuth is formed. The radiation from the decay of americium-241 and its daughters is in the form of alpha particles, beta particles, and gamma rays.

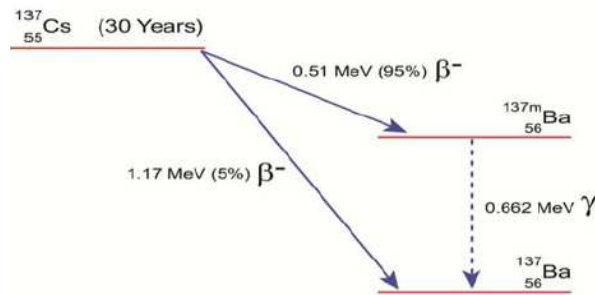
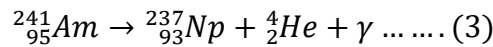


Figure 2: Decay scheme of Caesium-137 (Goodier et al., 1975)

**Lambert's law**

When the ionizing radiation passes through the matter, a part of the radiation is absorbed by matter. If a sheet of any substance is interposed in the path of ionizing radiation, its intensity decreases. Let  $I_0$  be the intensity of the incident radiation and  $I$  be the intensity of the radiation after it has traversed a thickness  $dx$  of the matter. Then the decrease in intensity  $dI$  is observed to follow the equation  $dI = -\mu I dx$ . Where  $\mu$  is called the linear absorption coefficient and depends upon the frequency of the radiation and nature of the medium. Solving, we get (Cherkasov et al., 2019)

$$I = I_0 e^{-\mu x}$$

This equation is known as Lambert's law

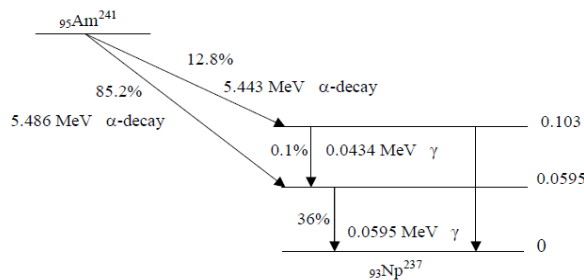


Figure 3: Decay scheme of Am-241 (Beling et al., 1952)

## Literature Review

Azeez et al. (2013a) performed the radiation shielding properties for concrete with different aggregate granule sizes and result showed that linear absorption coefficient is inversely proportional to the thickness of the shielding material. Kim (2021) also conducted a work about the shielding materials that can replace the lead. He observed the effects of the particle size of shielding materials in shielding performance. Particle structure and performance were observed for every shielding sheet, which were fabricated by mixing micro particles and nanoparticles with a polymer material using the same process. Result showed that nanoparticle shielding sheets resulted in a 5% increase in shielding efficiency in high-energy regions, and the difference between microparticles and nanoparticles was almost equivalent in the production of low-energy shielding. Azeez et al. (2013b) conducted the study of linear attenuation coefficient of concrete and result showed that concrete containing 30% iron filling has highest linear attenuation coefficient. Al-Khawalny & Khan (2018) conducted linear and mass absorption coefficient of various soil samples in India using various gamma sources that helps to study the soil properties.

To carry out such work, it needs sophisticated radiation laboratory with gamma spectrometer. Moreover, each sample should pass through the homogeneity test to get the consistent result. It is a kind of tedious laboratory work however it can be carried out anywhere without laboratory procedure in virtual lab because it is interactive, digital simulations of activities of real phenomena. While virtual lab provides unique opportunities for interactive learning and self-paced education, they also pose challenges related to technical requirements and the potential reduction of hands-on experience (De Vries & May, 2019). The main aim of the work is to study the radiation shielding properties of lead, concrete, and water using different sources of radiation using virtual lab.

## Materials and Methods

It is a virtual experiment in which three different types of sources such as Co-60, Cs-137 and Am-241 of activity of  $1\mu\text{Ci}$  have been used. The experimental setup for the radiation shielding calculation has been shown in Figure 4. The distance between the source and absorbing material ( $d_1$ ) is adjusted at 10 cm and distance ( $d_3$ ) = 0. For the exposure calculation, three different type of shielding materials such as lead, concrete and water have been used. To calculate the exposure with the radial distance between the shielding material ( $d_2$ ) = 0 and detector, the thickness of the shielding is adjusted at 0.5cm for all. The shielding

## Gamma Radiation Shielding Calculations

Gamma Radiation Shielding

Radioisotope:  Activity:

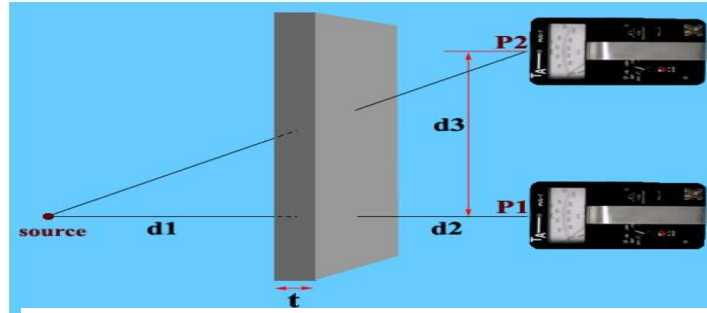
d1:  cm      d2:  cm      d3:  cm

Shielding material:  thickness:  cm

**Calculate**

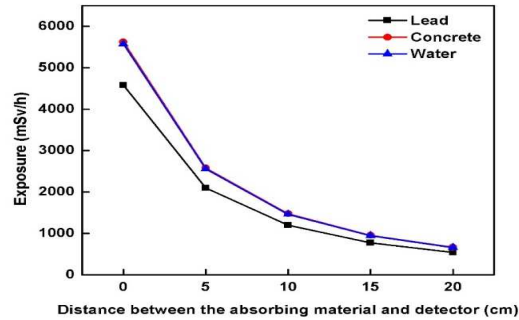
Exposure: in P1:  mSv/h     mR/h

Exposure: in P2:  mSv/h     mR/h



**Figure4:** Experimental setup for radiation shielding calculation

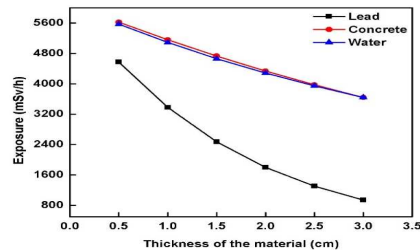
material is always adjusted perpendicular to the direction of incident radiation.



**Figure5:** Variation of the exposure with the radial distance between shielding material and detector for Co-60

### Results and Discussion

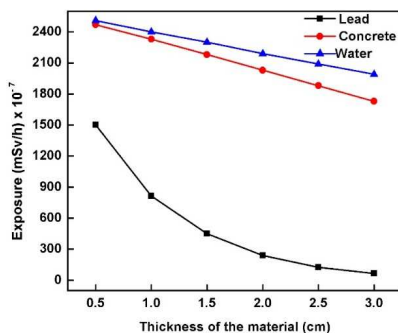
When the source of radioisotopes (Co-60), its activity ( $1\mu\text{Ci}$ ) and the thickness of the shielding materials (0.5 cm) are adjusted and the exposure is observed with the change of distance between the shielding material and detector, the variation of the exposure has been observed as shown in Figure 5.



**Figure 6:** Variation of exposure with the thickness of the shielding material for Co-60

As the distance of the detector is increased from the shielding materials, its intensity gradually decreases due to the scattering of the materials. Same result was also obtained when the source of Cs-137 and Am-241 were kept away from the source. It indicates that changing the distance of source or detector from shielding material does not alter the result. Again, the exposure rate was relatively higher in concrete and water rather than lead. The least exposure has been observed on passing through the lead.

The exposure of the ionizing radiation with the thickness of the shielding material for different source of radioisotopes also have been studied keeping distance  $d_1=0, d_3=0$  and  $d_2=10$  cm. Figure 6 shows how effective is the lead to block the ionizing radiation from exposure.



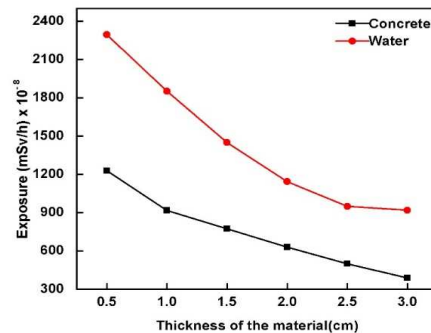
**Figure 7:** Variation of exposure with the thickness of the shielding material for Cs-137

In all cases, the intensity of the ionizing radiation in term of exposure decreases as the thickness of the shielding material increases. However, lead shows the dramatic decreases in intensity of radiation that passes through the shielding material. It may be due to the higher density of the lead. Comparing the shielding materials water and concrete for Co-60 radioisotopes, water shows relatively higher absorbing properties of radiation. Hence, least absorbing properties has been observed in the concrete.

The shielding property of the radioisotope Cs-137 also has been studied under the same condition as mentioned in Co-60. The change of radiation exposure with thickness of the shielding material is also shown in Figure 7. Three different shielding materials such as lead, concrete and water were used for that purpose. Data showed that on changing the thickness of shielding material from 0.5 to 3.0 cm, the radiation exposure decreases from  $15.0 \times 10^{-5}$  to  $0.65 \times 10^{-5}$  mSv/h in lead, from  $24.7 \times 10^{-5}$  to  $17.3 \times 10^{-5}$  mSv/h in concrete, and from  $25.1 \times 10^{-5}$  to  $19.9 \times 10^{-5}$  mSv/h in water. In this case also, lead shows the strong radiation absorbing material rather than water and concrete. For radioisotope Cs-137, concrete has less exposure than water in all thickness of the shielding material. Probably, it is due to the low value of gamma radiation of Cs-137. As we know, Am-241 is the alpha source with gamma energy around 0.06 MeV. Alpha particle is a heavier particle that can easily blocked by the thin layer of paper. On



passing the radiation from the Am-241 through lead, it is found that the intensity of radiation was dramatically reduced, and it was not possible to represent in the graph, so it is absent in the Figure8. This figure only shows the variation of the intensity of radiation with thickness of shielding material concrete and water only. Result indicates that concrete is the good shielding material rather than water. It is due to the higher density of concrete. The material having higher density can easily block the path of the alpha particle due to the interaction with radiation as a result, they are easily absorbed.



**Figure 8:** Variation of exposure with the thickness of the shielding material for Am-241

### Conclusion

Lower exposure has been detected on passing through the lead and it strongly suggests that lead is the good shielding material for gamma, beta and alpha particle. For alpha source, concrete is far better than water for radiation shielding purpose.

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## Brief history of surfactants, their applications, and research in Nepal

**Rajendra Dhakal<sup>1,2</sup>, Nabin Basnet<sup>1,2</sup>, and Ajaya Bhattarai<sup>3\*</sup>**

<sup>1</sup>Department of Chemistry, Damak Multiple Campus, Tribhuvan University, Nepal

<sup>2</sup>Central Department of Chemistry, Tribhuvan University, Kirtipur, Kathmandu, Nepal

<sup>3</sup>Department of Chemistry, Mahendra Morang Adarsha Multiple Campus, Tribhuvan University, Biratnagar, Nepal

\*Correspondence: [bkajaya@yahoo.com](mailto:bkajaya@yahoo.com) or [ajaya.bhattarai@mmamc.tu.edu.np](mailto:ajaya.bhattarai@mmamc.tu.edu.np),

### Abstract

This article reviews on the origination and development of soaps (later called surfactants) and their applications in human civilization. It was reviewed that soaps were came in use in human life as earlier as 2200 BC in Babylon. In ancient time, soaps were prepared using tallow and ashes in most of the region of world, and in similar way China began to use plants and herbs to make soaps. The soaps later called surfactants were alkali metal soaps, which have been around for thousands of years. The first recorded reference to soaps as cleaning agents dates back to 200 AD, which was prepared by Galen (Greek Physician) using fat, ash lye and lime. Nowadays, the words soap, detergent and surfactant are synonymously used. These compounds are manufacturing in large amount using plants, animals and by synthetic method. These compounds have great importance in domestic, industrial, medicinal, and synthetic applications in our daily life. Currently, the global market value is about 40 Billion USD in 2024 and is expected to meet about 60 Billion USD by 2033. *Surfactants are widely used in the field of research in Nepal. A summary of surfactant research from 2009 to now is also included in this article.*

**Key word:** Amphiphiles, Soaps, plant extracts, cleanliness

### Introduction

Surfactants, soaps, and detergents are the words that have been used frequently as their synonyms because of their similar mode of applications and their chemical physical and chemical properties. Soaps or surfactants are the surface active agents which has tendency to lower the surface tension property of liquids. Surfactants are widely used in our daily lives activities in the form of detergents , soaps , emulsifiers , foaming agent and dispersants and almost plays a significant role to wide spread their application in

different industries like food and agriculture dyestuffs, cosmetics and personal care , detergents, paints, fibers, pharmaceutical, lubricants oil recovery etc.

Each surfactant molecule has a hydrophilic (water-loving) head that is attracted to water molecule and hydrophobic (water-hating) tail that hates water and simultaneously attached itself to grease and oils in dirt, also called lipophilic group.

Based on the presence of heteroatom and dissociation behavior on water, they are classified as cationic, anionic, amphoteric and non-ionic surfactants.

**Anionic surfactants:** A very large number of surfactants fall on this group, that account about 50% of world production. They possess a negative charge amphiphilic anion on their polar head and an alkaline metal like  $\text{Na}^+$  or  $\text{K}^+$  or  $\text{NH}_4^+$  ions as cation, and have excellent water solubility, and have strong foaming capabilities. Primarily they are used as cleansing agents in numerous soap/detergent formulations and nowadays also used in industrial products. One of the mostly used examples is sodium dodecyl sulfate (SDS).

**Cationic surfactants:** These surfactants carry a positive charge on their polar head. Less than 5% of overall productions hold the market by cationic surfactants. Cationic surfactants shows specific behavior and have antimicrobial properties used to kill/control bacteria at home and in medical facilities. They are utilized for sanitizing surgical equipment, food packaging bottles or containers and creating powerful disinfectants for tough cleaning tasks. Cetyltrimethylammonium bromide (CTAB) is a commonly used surfactant in this group.

**Amphoteric Surfactants:** A surfactant containing both anionic and cationic parts within the single molecule is called amphoteric or zwitterionic. . As the molecule of surfactant carries both cationic and anionic groups, the ionic behavior is affected by  $\text{p}^{\text{H}}$  level. Due to their limited uses and very special applications in the formulation of personal care cosmetics with their high biological compatibility along with low toxicity, and amphoteric surfactants are quite expensive. An example is Cocamidopropyl betaine.

**Non-ionic surfactants:** These **surfactants do not** ionized in water or any appropriate solvents thus not giving charge carrying species similar to above mentioned anionic, cationic or zwitterionic surfactants. These have both hydrophilic groups such as hydroxyl group ( $-\text{OH}$ ), oxyethylene ( $-\text{CH}_2\text{CH}_2\text{O}-$ ), ether groups ( $-\text{O}-$ ) , or amide group ( $-\text{CONH}_2$ ) etc. Similarly they have lipophilic groups such as natural fatty alcohols or synthetic alcohols, glyceryl esters/oils or acids etc. The solubility of such surfactant depends upon the strength of hydrogen bonding with water molecules. On increasing temperature, these surfactants form a milky/cloudy emulsion, and the temperature is known as the cloud point. The cloud forming property is very important

for calculating the optimum use of such nonionic surfactants in the formulation of detergents emulsifiers and so on (*Salager, J. L. (2002)*). An example of such surfactants is for example Brij -35.

### **Materials and Methods**

The methodology for this review article involved a systematic evaluation of chronological articles including historical and contemporary literatures that mentioning the development and research of surfactants globally. For the review, primary and secondary data sources including peer-reviewed journal articles, archival documents, and conference proceedings were utilized. A comprehensive search was conducted using databases such as Google Scholar, and search engine googe.com to identify literature spanning 1958 to 2024. Keywords such as "amphiphiles", "surfactants," "history of surfactants," "applications of surfactants", "cleanliness", "surfactant research in Nepal," and related terms were employed to search appropriate literatures in various databases and search engines. Inclusion criteria prioritized studies documenting milestones in surfactant development, their applications, and research activities within Nepal. Selected articles were critically evaluated to trace the evolution of surfactants globally, their applications and research in Nepal, highlighting key trends, contributions, and challenges.

### **Result and Discussion**

#### **History of soap formulation**

In ancient Babylon, around 2800 BC, there is evidence of the earliest known manufacturing of a material like soap. Around 2200 BC, a clay tablet from Babylonia had a recipe for soaps made of alkali, water, and cassia oil. The Ebers papyrus, which dates to Egypt circa 1550 BC, suggests that the ancient Egyptians took regular baths and mixed alkaline salts and vegetable and animal oils to make a product that resembled soap. A soap recipe was made of uhulu (ashes), sesame (seed oil), and cypress (oil) during the Nabonidus reign (556–539 BC) "for washing the stones for the servant girls"(Levey, 1958). Pliny (the Elder's *Historia Naturalis*), which addresses the production of soap from ashes and tallow, is where the Latin term "sapo", which meaning soap, first appears. Roman mythology states that soap was called after Mount Sapo, a historical location for animal sacrifices (Schumann & Siekmann, 2000). The animal ash and fat that accumulated beneath the sacred site would be washed to the banks of the Tiber River by rain following an animal sacrifice.

Ladies using the river to wash their clothing saw that after a particularly strong downpour, some sections of the river had washed their garments. Simply put, the Latin term *sapo* means "soap". It was probably taken from an ancient Germanic language and

is similar with the Latin word *sebum*, which is Pliny the Elder's account of "tallow" (Poucher's *Perfumes, Cosmetic and Soaps*, 1999). Hence, the invention of soap, or at the very least, its use. Alkali metal soaps, the ancestors of surfactants, have been around for thousands of years. The first recorded reference to soaps as cleaning agents dates back to 200 AD and is found in the writings of Galen, the Greek physician who described making soap with fat, ash, lye, and lime. In ancient China, plants and herbs were used to make soap, or detergent, which is similar to soap. In China, real soap—which is derived from animal fat—did not exist until the contemporary age (Jones, 2011b). Ointments and lotions were more often used than detergents that resembled soap. In Italy and Spain around the eight century, soap production was well recognized. By 800, the countries of medieval Spain were among the top producers of soap, and around 1200, the Kingdom of England started producing soap (Fields, 2012). An Islamic manuscript from the 12th century explains how soap is made. It refers to the main component, alkali, which is derived from *alqaly*, or "ashes," and which subsequently turns out to be essential to contemporary chemistry.

With supplies in Nablus, Fes, Damascus, and Aleppo, the production of soap in the Islamic world had essentially reached industrial levels by the 13<sup>th</sup> century. France began semi-industrialized professional soap manufacturing in a few towns around the 15th century, and these hubs provided soap to the rest of France. English manufacturers expand their business sectors to focus in London. Later, from the 16th century onward, Europe made finer soaps by substituting vegetable oils, such olive oil, for animal fats. The Westminster Soap makers Society was given a 14-year monopoly by King Charles I in 1633. These soaps are still made in large quantities. One well-known example of a vegetable-only soap made from Italy's traditional "white soap" is Castile soap. England consumed more soap than any other nation in Europe during Elizabeth I's reign. The French chemist Nicolas Leblanc came up with novel methods in 1791 for separating soda from regular salt. Because of a growing awareness of the importance of hygiene in lowering the number of pathogenic bacteria, soap use has spread throughout industrialized countries in recent years. In the late 1700s, commercials in Europe and the US raised public awareness of the connection between hygiene and health, leading to the introduction of industrially produced bar soaps. Small-scale production of crude soap was the norm prior to the Industrial Revolution.

James Keir founded a chemical plant at Tipton in 1780 to produce alkali from the sulfates of soda and potash. This alkali was then added to a procedure used in the soap industry to manufacture soap. Following Keir's finding, the extraction procedure was carried out (Jones, 2011a). In London in 1807, Andrew Pears began producing

transparent, superior soap. In 1862, Thomas J. Barratt, his son-in-law, established a business in Isleworth. From the 1850s onward, William Gossage made reasonably priced, high-quality soap. In 1837, Robert Spear Hudson started producing soap powder. At first, he ground the soap using a mortar and pestle. Sales of bar soap and product sample distribution were among the marketing ideas pioneered by American manufacturer Benjamin T. Babbitt. One of the biggest soap companies today, Unilever (previously Lever Brothers) was established in 1886 by William Hesketh Lever and his brother James, who taken the ownership by purchasing a small soap industry in Warrington. Some of the earliest companies to use extensive advertising campaigns were these soap manufacturers. In the 19<sup>th</sup> century, William Shepphard abled to patent a liquid form of soap in 1865, however the invention of liquid soap did not occur until later. By purchasing a little soap factory in Warrington, UK, William Lever and his brothers got into the soap industry in 1885. They created a nice, free-lathering soap known as "Sunlight Soap" by using vegetable oils like palm oil and glycerin. The vegetable oils replaced tallow while making soap. The B.J. Johnson Soap Company launched the "Palmolive" brand of soap in 1898 after B.J. Johnson created a soap containing palm and olive oils, that's why the name "Palmolive". The new soap brand "Palmolive" gained popularity quickly, to the point where B.J. Johnson Soap Company rebranded itself as "Palmolive". As the 20th century began, Palmolive was the best selling soap company of the world at the beginning phase of 20th century. Several numbers of companies would started their own liquid soap businesses in the early 1900s. With the introduction of chemicals like PineSol and Tide to the market, washing surfaces other than skin (clothes, floors, and bathrooms) became considerably simpler. Liquid soap works better as a detergent than flake soap and typically leaves fewer residues on surfaces like washbasins and clothing. Traditional, non-machine cleaning techniques, such the use of a washboard, are also superior with liquid soap. On marshland at what would become "Port Sunlight," larger buildings were constructed. Subsidiaries had been established in the US, Switzerland, Canada, Australia, Germany, and other countries by 1900, along with the addition of the "Lifebuoy", "Lux", and "Vim" brands. Due to their widespread use, novel formulations, and discoveries, surfactant industries are expanding quickly. The domain of surfactants has witnessed advancements recently, encompassing nonionic surfactants containing alcohols of branched-chain fatty acid, fatty amines, fluorocarbon surfactants, silicone surfactants, and Gemini surfactants. Eco-friendliness is a desired feature of surfactant compositions, regardless of the application's home or industrial goal. Specialty surfactant production is rising in part due to growing authority pressure for the industrial sector to switch to biodegradable products.

### **Applications of surfactants**

Surfactants play a pivotal role in a wide range of applications across various industries due to their unique ability to reduce surface and interfacial tension. In modern times, a large fraction of surfactants business focuses on elaborating the cleaning as well as industrial operations of surfactants to wide technological areas to enhance the role of surfactants. These promotes not only in the personal care products but also the formulation the effective medicine in pharmaceuticals , petroleum product recovery processes ,genetic science and engineering, so that a huge number of scientist and engineer divert themselves to synthesizes the unique characters of surfactants. In agriculture, surfactants improve the efficacy of pesticides and herbicides by enhancing their dispersion and adhesion to plant surfaces. Surfactants versatility and ability to modify surface properties make them indispensable in modern science and industry.

### **Surfactants research in Nepal**

Surfactants are used in a variety of industrial processes, including metal treatments, colloid stability, mineral flotation, insecticides, pharmaceutical formulation, oil production, emulsion polymerization, particle growth, and many more. As a result, surfactants have been and continue to be a highly active area of scientific inquiry and commercial development for many years. Surfactants have an intriguing property: at low concentrations, they exist purely as monomers. The formation of micelles begins at a fixed surfactant concentration known as the critical micelle concentration (cmc) at mentioned above, at which point the physical properties of the solution, such as electrical conductivity, interfacial tension, and light scattering behaviors change abruptly due to the presence of micelles. The creation of micelles will enable the calculation of numerous thermodynamic parameters. These factors make surfactants not only an attractive and rich area for the discovery of novel phenomena, but also a research area with the potential to lead to new applications in a wide range of fields. However, the majority of past surfactant investigations have only focused on aqueous media.

Studies in mixed solvent media are particularly natural since the conformations of surfactants and their interactions can be easily modulated by simply changing the medium composition (Shah et al., 2009; Shah et al., 2016a; Shah et al., 2016b).

With this concept in mind, the Eastern Nepal research team began investigating the solution characteristics of surfactants in various mixed solvent media in the presence and absence of salts (Niraula et al., 2018; P. Bhattarai et al., 2021), electrical conductivity study of cationic surfactant in short-chain alcohol-water mixed solvents (Basnet et al., 2021) as well as the interaction of cationic and anionic surfactants in mixed solvents (A. Bhattarai, 2015; A. Bhattarai et al., 2017).



Furthermore, surfactant work involving single and mixed surfactants interacts with dyes (Kumar Sah et al., 2023; Prasad Tajpuriya et al., 2021; Sachin et al., 2019; Shahi et al., 2021; Shahi et al., 2023; Yadav, Shahi, Niraula, et al., 2024) and surfactants as corrosion inhibitors (Shahi et al., 2024; Yadav, Shahi, Adhikari, et al., 2024). The synthesis, characterization, and physicochemical properties of surfactant-based Schiff base transition metal complexes are investigated (Adhikari et al., 2022). The corrosion inhibition action of Co(II) and Zn(II) complexes of pyrrole-based surfactant ligands is worth investigating (Adhikari et al., 2023). Surfactant-polyelectrolyte (A. Bhattarai, 2019; A. Bhattarai, 2020) and surfactant-polyelectrolyte-dye (Narayan Yadav et al., 2022; Narayan Yadav et al., 2024) interaction investigations have recently been conducted.

### Conclusions

The review found that, soaps have been used from Babylonia era and at that time soaps were used mainly for domestic purposes in cleanliness. Anciently, soaps were prepared from tallow and ashes and followed in china by plant and animal extracts, and the development of soaps faces many ups and downs in their formulations. Since ancient time the global market of soap or surfactants increases day by day and currently reaches about 40 billion USD in and is supposed to reach 60 billion USD by 2033. Nowadays, surfactants can be by using solid methods of preparation using plant or animal extracts or by synthetic methods. Surfactants have been used in the research fields by studying the solution properties of surfactants in mixed solvent media as well as surfactants with salts, single surfactants and mixed surfactants with and without dyes. Surfactants and mixed surfactants as the corrosion inhibitors and surfactant-based Schiff base transition metal complexes are investigated. Surfactant-polyelectrolyte and Surfactant-polyelectrolyte-dye are interesting area to study.

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## Madhesh Province's Examination System of Nepal: Problems and Difficulties

**Durga Kumari Yadav<sup>1</sup>, Yogendra Thapa<sup>1</sup>, Chandradip Kumar Yadav<sup>2</sup>, Neelam Shahi<sup>3\*</sup>, Ajaya Bhattarai<sup>3\*</sup>**

<sup>1</sup>Central Department of Education, Tribhuvan University, Kirtipur, Nepal

<sup>2</sup>Amrit Science Campus, Tribhuvan University, Kirtipur, Nepal

<sup>3</sup>Mahendra Morang Adharsh Multiple Campus, Tribhuvan University, Biratnagar, Nepal

*\*Corresponding author: bkajaya@yahoo.com (Ajaya Bhattarai)*

### **Abstract**

The main difficulties and problems with the examination system in Nepal's Madhesh Province are attempted to be brought up in this article. The entire educational system, including the curriculum, lecturers, instructional materials, and methodology, is intimately related to the examination system. The paper makes a strong case that the dualistic educational system, exclusion of local cultures, languages, and knowledge from the curriculum, pedagogy, and exams, lack of enough trained and qualified teachers, use of transmission-oriented pedagogy, and holding only three-hour paper-pencil tests to gauge students' intelligence once a year are the main obstacles to quality education in Madhesh Province, Nepal. Lack of access to high-quality education results in an undereducated workforce, increased rates of unemployment and poverty, war and violence, and perpetuation of prejudice, injustice, and inequality in Nepal's larger Madhesh Province society. This article aims to explore the problems and difficulties surrounding the examination system in the province, highlighting the socio-economic, infrastructural, and administrative barriers that hinder the system's success.

**Keywords:** Madhesh Province, Examination, System, students, Equality, Education

### **Introduction**

School examinations can vary widely in format and purpose depending on the education system, level of study, and country. Young men and women with less formal education are typically produced by the educational system of Nepal's Madhesh Region. They frequently lack the information and abilities necessary for their future career. Several young people in the Madhesh Region of Nepal struggle

to find employment even after completing higher education. Many of them have been prompted by this circumstance to apply for menial or semi-skilled jobs abroad, primarily in India, the Arab world, and Korea (Mathema, 2007). On the one hand, there is a rise in the unemployment rate among college grads, but the bulk of these recent grads are not employed in the agriculture and commercial sectors. Their employment in these occupations is discouraged even by the traditional Madhesh Province Nepali community. It has caused parents' concern and dissatisfaction with sending their kids to school and supporting them in their education because the educational system in Madhesh Province, Nepal, has been creating a sizable number of unskilled and unemployed individuals. That has helped them take an inactive role in the school. According to Riley & Khamis (2005), school is not always an ongoing activity for many students. Instead, it is a disjointed process. One of the primary learning obstacles preventing many students from benefiting from school is the lack of pertinent curricula and instructional resources.

The crucial components of education are frequently left out of the assessment systems in many nations. Instead, pupils' perceptions of passing the exams are limited (Berkvens et al., 2014). In this instance, the Madhesh Province of Nepal is not an exception. The Madhesh Province of Nepal's examination system favors memorization and repetition above pupils' creative learning methods. The material in the textbooks must be memorized by the students. The danger of having to memorize all of the lessons learned in class increases anxiety in learning when the exam date is revealed and pupils are given very little time for preparation. They will perform poorly on the exams if they don't completely memorize the lessons that were taught in the classroom. In this way, the exam neither aids in student learning nor aids in teacher improvement (The Master Plan Team, 1997). Increased dropout and repetition rates among students in schools result from pupils failing exams because they did not retain all of the material that was presented to them. According to UNESCO (2011b), greater dropout rates are closely related to the inefficiency of education spending. According to Breidlid (2013), if a child repeats a class throughout their academic career because they don't fully grasp the material, the parents will bear the financial burden.

### **System of Dualistic Education**

The system of dualistic education, also known as the dual system of education, refers to an educational approach that combines classroom-based instruction with practical, on-the-job training. This model is commonly associated with vocational education and training (VET) programs, particularly in countries like Germany, Switzerland, and Austria. The dualistic education system effectively prepares

students for the workforce by combining academic learning with practical experience. While it requires significant coordination and investment, its benefits in terms of job readiness and industry alignment make it a valuable model for vocational education and training.

Access to and completion of basic education are the key issues facing the Madhesh Region of Nepal. Around 5% of both boys and girls are still not in school (UNESCO, 2011a). In terms of location, caste, class, ethnicity, and religion, the boys and girls who are not in school are primarily from oppressed and underprivileged communities (CDC, 2007). Many of the first-graders who are enrolled continue to miss school, drop out, retake exams, and flunk them. As a result, they drop out of elementary school. Less than 10 out of every 100 boys and girls are in the higher education age group.

The students who are members of Dalit and other oppressed ethnic groups have the least access to higher education (UNESCO, 2011a). Economic disparity and social injustice have been encouraged by the current dualistic educational system in Nepal's Madhesh Region. According to Mahat (2005), the bulk of private schools were founded for commercial purposes. They are unplanned and urban regions are seeing a significant growth in them. On the one hand, public schools offer a subpar education, and on the other, private schools charge exorbitant tuition. According to Mahat, inequities and disparities in terms of geography and class have been brought about by the current dualistic educational system. Children from isolated and rural locations, for instance, do not have access to private schools due to geography. Similar to this, children from low-income families and communities—regardless of caste or location—do not have access to these schools. Hence, students from wealthy, educated, and urban parts of Nepal have more opportunities thanks to superior education than students from underprivileged, illiterate, and rural areas (Mahat, 2005). Private English schools in Nepal are primarily located in urban areas that cater to somewhat affluent families (Mathema, 2007). Private English-medium schools only accept kids from certain socioeconomic backgrounds and urban areas, thus children from wealthy families attend these schools. It's interesting to note that those who create legislation, author textbooks, or discuss educational inclusion send their kids to private, English-language schools (Poudel, 2007). In addition, a lot of Nepali educators who work in public institutions enrol their kids in private institutions. The primary reason given by parents for enrolling their children in English-medium private schools is also related to the fact that these institutions have an SLC pass rate that is around twice as high as that of public institutions. The majority of ethnic and Dalit groups, on the other hand, do not enrol their children in

private English-medium schools because they are unable to pay the high tuition. Thus, their kids are unable to attend these schools (Bhandari, 2016). According to Mathema (2007), Nepal's urban areas are seeing an increase in the number of private schools as a result of the public schools' subpar performance. He continues by saying that a lot of Nepalese teachers who work in public schools don't finish their coursework on time. As a result, children from underprivileged neighborhoods who attend public schools face discrimination to succeed in their studies. Furthermore, middle-class parents choose to send their sons to private English-medium schools while sending their daughters to public institutions. As a result, pupils from low-income families, particularly girls, have greater learning challenges. Language, Culture and Knowledge

The Nepali examination system is heavily influenced by the Western idea that "one size fits all." The questions on the school tests are the same for all students, regardless of their varied cultural and language backgrounds. Moreover, local cultures, languages, and expertise are ignored in the curriculum and policy of topics like physics, English, and mathematics in favor of western viewpoints. These subjects are taught in a decontextualized classroom setting, where students also learn them. As a result, students not only struggle to study these courses but also frequently perform poorly on exams. According to UNESCO (2015) and King & Schielman (2004), it is crucial to include both local and Western assessments when measuring learning equity. In order to empower pupils in their learning achievement, the examinations used in Nepalese schools must integrate both local and standardized/Western methodologies.

Minority and indigenous students' successful use of cultures, languages, and knowledge through the mother tongue medium of instruction in the classrooms is insufficient to empower them in their academic achievement if the language of the exams differs from their mother tongue. Students frequently do poorly or fail exams as a result of linguistic problems (Breidlid, 2013). Because all students beginning in grade one are required to take exams solely in Nepali, Nepalese schools perpetuate inequality and injustice. Only pupils who speak Nepali would benefit from it because they can comprehend questions presented in that language. Yet, because they are unable to grasp Nepali, the language used for exams, minority and native pupils are oppressed. For instance, the Rajbansi, Santhali, Tharu, and Uranw languages are not being taught in textbooks or by certified teachers, hence the exams are being given in Nepali. As a result of their difficulties with reading, writing, and taking exams in Nepali, students from the Rajbansi, Santhali, Tharu, and Uranw language communities are under pressure to perform well on tests (Bhandari, 2015). Additionally, it shows that the government of Nepal's policy on

language-in-education for mother tongue-based multilingual education is not being effectively implemented in the classroom when exams are not given in the native tongues of minority and indigenous pupils. Children from ethnic groups are less likely to learn if they are taught in a language they do not understand (UNESCO, 2014). The availability of textbooks in Nepali and the use of this language as the medium of instruction hinder the development of fundamental abilities among students from underrepresented groups (Mathema, 2007). Education does not incorporate ethnic group culture. Children from ethnic groups are thus compelled to absorb mainstream school culture, which is distinct from their culture at home and in their community. Furthermore, traditional Hindu standards and beliefs are prevalent in many schools. It makes ethnic kids less interested in learning. Implementing an irrelevant curriculum discourages students from pursuing further education (Acharya, 2007). Due to the Nepali language being used in the classroom that they do not comprehend, many children from ethnic communities tend to quit school in the first grade. It increases the likelihood of failure and repeats among non-Nepali-speaking youngsters (Acharya, 2007; Skutnabb-Kangas & Mohanty, 2009). Students' poor performance is not caused by cognitive issues, but rather by a lack of understanding of the classroom's chosen medium of instruction (Alidou, 2009).

In sufficient trained and qualified instructors are needed in the schools throughout Nepal. Acharya further claims that the majority of the teachers in the schools are members of the high-caste Hindu society who speak Nepali. They are all monolingual educators (Acharya, 2007). This indicates that there are not enough instructors from ethnic and Dalit populations. There aren't many teachers from these communities who have the necessary academic credentials and training. Students of color and Dalits are oppressed in the classroom. Poudel (2007) asserts that non-Dalit teachers hardly ever motivate Dalit students to engage actively in their education and improve their academic performance.

The transmission model of pedagogy is widely practised in Nepalese schools from the school level to the university level. Adopting this pedagogy by the teacher, s/he becomes an active, controller and transmits his/her knowledge to the students who are passive, controlled and receivers of knowledge through carefully listening of the teacher's voice, repetition and memorization of the lessons taught in the class room. Foucault (1977) & Freire (1996) claim that the exam enables the teacher to transmitting his/her knowledge to the students. Moreover, the exam is conducted to make the teacher's knowledge valid and authentic. Therefore, pedagogy based on the transmission model oppresses all students including ethnic and Dalit students and girls in learning achievement. Without taking into account the curriculum



objectives and learning outcomes, Nepalese teachers who lack training and qualifications design the exam questions (The Master Plan Team, 1997). Particularly in rural and distant places, many Nepali teachers still lack the necessary academic credentials. Additionally, they lack adequate instruction on how to write questions that will be used in exams and how to evaluate students' answers. In such a setting, administering exams does not support pupils' academic success. When formal assessments are handled poorly, the relationship between teachers and students is destroyed, claim Pollard et al. (2002). It makes the children feel vulnerable and threatens their ability to study. As a result, the flawed assessment tools employed in the exams in Nepalese schools hinder student learning. According to Khaniya (2005:43), when the examination procedure is beneficial and relevant, it fosters effective learning. By making the exam more approachable than intimidating, it lowers anxieties and student apprehension. There is a gender disparity in the classroom. Due to poverty and the prevalence of Hindu-based patriarchal ideology both in the community and at school, a large number of Nepali girls enrolled in grade one continue to be absent, drop out, repeat, and fail (Acharya, 2007). As a result, the girls' main completion rate is incredibly unsatisfactory. The inferior exam performance of Nepalese girls is due to several other factors. The primary causes include things like the absence of a gender-neutral learning environment in the classroom, the lack of sufficient study time at home, the inconsistency between classroom pedagogy and girls' learning styles, the insufficient number of female teachers, and the infrequent representation of women in management and administrations (Acharya, 2007). The SLC exam results for girls are less impressive than for boys.

The primary causes of the girls' poor performance and even under achievement in the examinations are strongly linked to their attendance at school and home. The teachers at the school treat the girls badly and provide them little feedback and focus on their academic progress. They must work or assist parents with household duties at home, which limits their study time (Mathema, 2007). Students who must work full-time in addition to their studies are more likely to experience low academic performance (UNESCO, 2015). In Nepalese schools, exam syllabuses are taught in place of lesson plans. From the standpoint of exams, teachers instruct and students absorb information. The subjects that do not present on the exams pique their attention less in conversation and education. In this environment, exams don't help teachers become better teachers or advance student learning (Khaniya, 2005). Teachers frequently believe that their main goal in instructing pupils is to ensure that they pass the exam, thus they overlook to teach them crucial lessons (The

Master Plan Team, 1997:326). Moreover, teaching and learning are not promoted when exam results are exclusively used to determine pass or fail (Khaniya, 2005). Students cannot gain fundamental abilities if the teaching and learning process is solely focused on exam preparation. It encourages kids to learn by memorization and repetition while ignoring the need for them to cultivate creativity throughout their lives. It discourages the type of education that children, notably girls and pupils from Dalit and ethnic minority groups, need for their future. Instead, it helps individuals to perform poorly academically in their exams.

### **Materials and Methods**

Some published article related to Madhesh, Different newspaper, Social media were used as secondary data.

**Study area:** The Madhesh area in the below figure has clearly shown. Which is the study site of this article. Districts of Madhesh Province are Saptari, Siraha, Dhanusa, Mahottari, Sarlahi, Rautahat, Bara, Parsa. **Figure 1** from <https://www.freepik.com>.



**Figure1:** Map of Nepal indicating the Madhesh(<https://www.freepik.com>)

### **Different Approach (Methods) of study**

- Socio-Economic Disparities
- Inadequate Infrastructure and Resources
- Language Barrier
- Pressure and Mental Stress on Students
- Corruption and Examination Malpractice
- Ineffective Evaluation and Feedback
- Administrative and Logistical Issues
- Paper Pencil-based Tests

### **Results and discussion**

#### **Socio-Economic Disparities**

Madhesh Province has a predominantly rural population, with many communities living in economically disadvantaged conditions. One of the major challenges that students face in the examination system is the lack of financial resources. Education-related

costs, such as school fees, exam registration fees, and the purchase of study materials, are often beyond the reach of many families in the region. This economic burden not only affects students' ability to prepare adequately for exams but also prevents many from sitting for them altogether (Mishra & Mishra, 2024).

Additionally, the poverty prevalent in the province forces many students to abandon their studies early and enter the workforce to support their families. This cycle of poverty impacts the quality of education, leading to lower academic performance and creating a significant gap in educational outcomes between students from wealthier and poorer backgrounds.

### **Inadequate Infrastructure and Resources**

Many schools in Madhesh Province lack essential infrastructure and resources that are necessary for an effective examination process. Basic facilities like well-equipped classrooms, libraries, and clean drinking water are often missing in rural schools. This lack of infrastructure impacts students' daily learning experiences and contributes to subpar academic performance, which is further reflected in examination results.

Furthermore, exam centers in remote areas often suffer from a lack of proper facilities and supervision. Inadequate seating arrangements, insufficient lighting, and lack of security measures during exams can lead to a chaotic and unfair examination environment, undermining the credibility of the system (Shrestha, 2023).

### **Language Barrier**

Madhesh Province is home to a large number of ethnic communities, many of whom speak regional languages like Maithili, Bhojpuri, and Tharu, among others. However, the primary language of instruction in most schools is Nepali, and examinations are conducted in Nepali. This language barrier creates significant challenges for students who are more comfortable with their native languages.

As a result, many students find it difficult to fully comprehend the exam questions, let alone express their thoughts and ideas effectively in writing. This language divide negatively impacts the performance of students, particularly in the public examinations that determine their future academic and career paths (Mishra & Mishra, 2024).

### **Pressure and Mental Stress on Students**

The examination system in Madhesh Province, much like the rest of Nepal, places immense pressure on students. In the competitive environment, where academic success is often equated with a secure future, students face the burden of high expectations from parents and society. This pressure leads to heightened stress levels, which can negatively affect students' mental health and academic performance (Dhakal, 2016).

The focus on rote memorization, rather than fostering critical thinking and problem-solving skills, further intensifies this pressure. Many students prioritize cramming over

understanding the subject matter, which results in shallow learning and poor retention of knowledge. The intense exam-related stress also contributes to rising cases of anxiety, depression, and even suicide among students in the province.

### **Corruption and Examination Malpractice**

Examination malpractice is a significant issue in Madhesh Province, as in other parts of Nepal. The prevalence of cheating during examinations, often facilitated by corrupt officials, teachers, and even students, undermines the integrity of the system. In some cases, answer sheets are leaked, and bribes are exchanged to secure higher marks.

Such malpractice not only affects the credibility of the examination system but also erodes the principle of meritocracy, where academic success should be based on individual ability and effort. This perpetuates a culture of dishonesty and unfair advantage, leading to unequal educational opportunities and outcomes for students (Chaudhari,2016).

### **Ineffective Evaluation and Feedback**

The evaluation system used in Madhesh Province largely focuses on written exams, which can be an inadequate measure of a student's overall abilities. The reliance on rote learning and memorization means that students are often evaluated based on their ability to recall information, rather than demonstrating understanding or analytical thinking.

Moreover, the feedback provided to students is often minimal and unhelpful. In many cases, students do not receive detailed feedback on their performance, making it difficult for them to identify areas of improvement. Without constructive feedback, students are unable to learn from their mistakes and are often left unprepared for future challenges (Hangen, et.al., 2013).

### **Administrative and Logistical Issues**

The examination process in Madhesh Province is also marred by administrative inefficiencies and logistical challenges. From delayed admit cards and errors in result publication to problems in coordinating exam schedules, the administrative hurdles contribute to an overall chaotic examination experience. These issues cause frustration among students, teachers, and parents, undermining trust in the examination system.

Additionally, poor coordination between local education offices, examination boards, and schools leads to confusion and delays in the management of exams. This lack of synchronization hampers the smooth conduct of examinations, further complicating an already fragile system (Mathema, 2011).

### **PaperPencil-based Tests**

The conventional examination is another name for the paper and pencil exam. In Nepal, it rules from elementary school to university. It only evaluates pupils' cognitive abilities. Thus, it is insufficient for evaluating pupils' overall

growth (The Master Plan Team, 1997). The three-hour paper-and-pencil exams don't assess factors that have helped learners develop physically, socially, intellectually, or emotionally (Khaniya, 2005:67). The paper-pencil test only assesses the most superficial learning, but it does not assess valuable educational outcomes or the overall nature of learning (Ebel & Frisbie, 2009). Even in the selection of teachers and other government positions in Nepal, paper and pencil tests are prioritized over the experiences, contributions, and practical skills and knowledge of applicants in the field. The numerous intelligences of kids are not measured by the paper-pencil exams given in Nepali schools. A student who performs better in one topic or area might not be similarly competent in another subject or area, for instance. In a similar vein, a student who performs poorly in one subject or area may not necessarily perform poorly in another. Also, not all pupils may be equally adept in the practical course as they may be in the academic course. While some students may perform better in the practical course, others may perform worse in the theoretical course. The Nepali examination system places a greater emphasis on learning's academic components and pays less attention to its practical components. Even the exams are administered without taking into account the requirements of students and society (Bhandari, 2016). Students are categorized and assigned ranks based on their exam results. Each student learns his or her rank and individuality during the examination (Foucault, 1977). When exam results are merely utilized to categorize and choose pupils, teaching and learning are not improved (Khaniya, 2005).

### **Conclusion**

Throughout its history, Madhesh Province Nepal has experienced a rising rate of unemployment and poverty, war and violence, injustice, inequality, and prejudice. Universal enrollment in and completion of basic education constitute Madhesh Province Nepal's biggest educational challenge. The dualistic educational system, which has exorbitant tuition for private schools and a subpar education in public institutions, presents another difficulty. Likewise, Madhesh Province Nepal's examination system is heavily influenced by the Western idea that "one size fits all." At the school exams, all kids from different cultural and linguistic backgrounds are given the same questions while having their local cultures, languages, and knowledge disregarded. It makes it more likely for kids to fail, repeat failures, and quit out. However, rather than encouraging pupils to be creative in their study, the examination system rewards memorization and repetition. In Madhesh Province Nepali schools, there is a dearth of trained and qualified educators. Even in the

teaching profession, there is a very long way to go before the representation of ethnic and Dalit communities and women is satisfactory. The available instructors, ranging from elementary school teachers to professors, employ the transmission model of pedagogy in the classroom and administer three-hour paper-pencil exams once a year. Both the school and community cannot develop sustainably under the current assessment system, nor can pupils improve their academic performance. As a result, Madhesh Province of Nepal urgently needs to provide quality education by reforming the entire educational system in order to increase the employment of qualified and skilled workers, lower the unemployment and poverty rates, and foster the sustainable and peaceful growth of the school system, society, and entire Madhesh Province of country. The success of these reforms will depend on the collective efforts of the government, educational institutions, teachers, and the local community. Through these efforts, Madhesh Province can build a stronger, more inclusive educational system that benefits all students and contributes to the province's long-term development.

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#### **Recommendation**

We have recommended that such type of works will be done by taking the questionnaire form and taking the data at different school and college of different district of the Madhesh province in future. Which provide the better result with evidence.

#### **Conflict of interest statement**

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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## The Golden Ratio: A Mathematical and Aesthetic Marvel

**Shantiram Subedi**

Department of Mathematics

Damak Multiple Campus

*Email :shantiramsubedi2020@gmail.com*

### **Abstract**

The Golden Ratio, approximately 1.618, is a mathematical constant that has captivated the imagination of scholars, artists, architects, and scientists for centuries. This article delves into the mathematical underpinnings of the Golden Ratio, tracing its origins and historical significance in ancient civilizations and its evolution in mathematical theory. Known for its unique properties, the Golden Ratio is often associated with beauty, balance, and harmony, which has led to its widespread application in diverse fields. From the design of iconic architectural marvels like the Parthenon to its presence in Renaissance art, the Golden Ratio continues to inspire creativity. It also manifests in nature, evident in the arrangement of leaves, the spiral patterns of shells, and the structure of galaxies. In modern science, the Golden Ratio finds relevance in engineering, computer algorithms, and even financial models. This exploration underscores its enduring allure, showcasing its theoretical elegance and practical utility across time and disciplines.

**Key words:** Golden ratio, Fibonacci number, Golden rectangle, Golden spiral, Fibonacci spiral.

### **Introduction**

The Golden Ratio, denoted by the Capital Greek letter  $\Phi$  (phi), is an irrational number that appears in various aspects of mathematics, art, architecture, and nature. Defined algebraically as  $(1 + \sqrt{5})/2$ , the Golden Ratio has been studied since ancient times and is often associated with aesthetic beauty and harmony [Akhtaruzzaman & Shafie (2011),p:1-22]. The golden ratio is associated with the Fibonacci sequence in a very simple way. The sequence is an example of a quadratic recursive equation sometimes used to describe various scientific and natural phenomena such as age-structured population growth. This article provides a comprehensive overview of the Golden Ratio, tracing its historical roots, mathematical properties, and diverse applications. In the following sections, first the golden ratio is defined mathematically and introduces later from geometrical point of view. Its appearance in nature, modern technology and architecture are reviewed very briefly.



## Historical Background

The golden section constant has incomparably richer history dating from ancient times, from Egypt to ancient Greece. Parthenon, whose construction started in 447 BC, was designed in the golden section proportions [Dunlap (1997)]. The concept of the Golden Ratio dates back to ancient civilizations. The earliest known references to the ratio appear in Euclid's "Elements" around 300 BCE. Euclid described it as the division of a line into two segments such that the ratio of the whole line to the longer segment is the same as the ratio of the longer segment to the shorter one. That is, about 300 B.C., Euclid of Alexandria, the most prominent mathematician of antiquity, gathered and arranged 465 propositions into thirteen books, entitled The Elements, denote by  $[AB]$  and  $AB$  the closed line segment with endpoints  $A$  and  $B$  and its length, respectively.

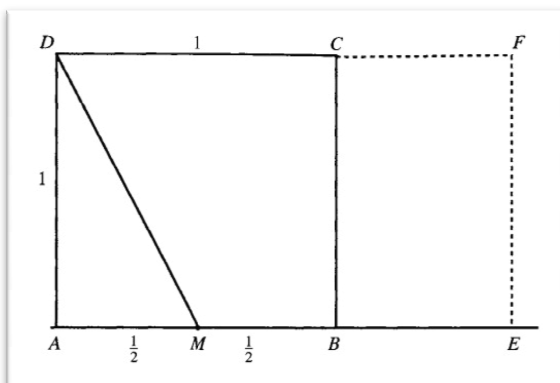


Figure 1. The mean proportion  $AE : AB :: AB : BE$

In the Book VI, given a segment  $AE$ , find the point  $B$  for which  $AE/AB = AB/BE$ . We show his construction in Figure 1 in order to generalize it later. Start with the unit square  $ABCD$  and let  $M$  be the midpoint of  $AB$ . Construct the line segment  $MD$ . Draw a circle with center at  $M$  and radius  $MD$  so that it cuts  $A$ - at the point  $E$ . So,  $MD = ME$ .

In modern notation, we have the lengths,  $ME = \frac{\sqrt{5}}{2}$ ,  $MB = \frac{1}{2}$ ,  $BE = \frac{\sqrt{5}-1}{2}$ .

Now, since  $AE = AB + BE$ , or  $AE = 1 + BE$ , we can write:  $AE = \frac{1+\sqrt{5}}{2}$ . Thus, we can easily show that  $AE/AB = AB/BE$ . The length  $AE$ ,  $\frac{1+\sqrt{5}}{2}$ , is denoted by  $\Phi$ , and is called the golden ratio, or the divine proportion. In the above figure, the rectangle  $AEFD$  is called the golden rectangle. The history of the golden ratio pre-dates Euclid.

In modern notation, we have the lengths, known as the golden ratio has always existed in mathematics, it is unknown exactly when it was first discovered and applied by mankind. It is reasonable to assume that it has perhaps been discovered and rediscovered throughout history, which explains why it goes under several names, such as golden section, golden mean, golden number, divine proportion, divine section and golden proportion.

During the Renaissance, artists and architects such as Leonardo da Vinci and Luca Pacioli embraced the Golden Ratio, believing it to be a divine proportion that embodied perfection and beauty. Da Vinci's "Vitruvian Man" and Pacioli's treatise "De Divina Proportione" highlight the Golden Ratio's influence on art and design.

### Tools and Methods

To explore the Golden Ratio, a combination of mathematical tools and geometric constructs were employed, illustrating its presence in both theoretical and practical contexts. Analytical methods such as algebraic derivations, geometric representations, and computational visualizations were used to validate the properties of the Golden Ratio. Historical tools like compass and straightedge were revisited to understand classical constructions, while modern software aided in visualizing complex patterns and relationships. The study utilized algebraic equations, Fibonacci sequences, and dynamic geometry software to demonstrate the ubiquitous nature of the Golden Ratio across various domains. To bridge historical and modern perspectives, tools ranging from simple diagrams to advanced computational algorithms were integrated into the analysis.

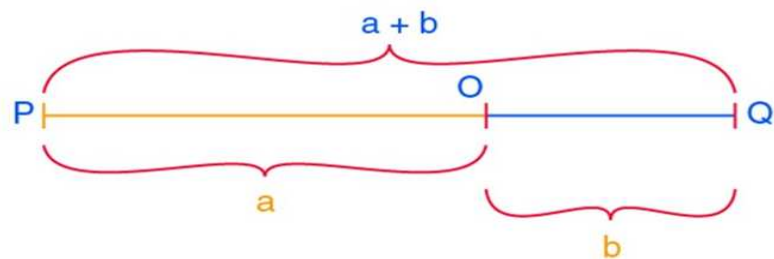
### Result and discussion

#### Mathematical Properties of golden ratio

Two quantities a and b are said to be in the golden ratio  $\Phi$  if

$$\frac{a+b}{a} = \frac{a}{b} = \Phi.$$

Golden ratio



$$\frac{a}{b} = \frac{a+b}{a} = 1.618\dots = \Phi$$

One method for finding the value of  $\Phi$  is to start with the left fraction.

$$\frac{a+b}{a} = 1 + \frac{b}{a} = 1 + \frac{1}{\Phi}.$$

Therefore,  $\Phi = 1 + \frac{1}{\Phi}$  .....(1)

This gives  $\Phi^2 - \Phi - 1 = 0$  .....(2)

Straightforward application of the quadratic formula results in  $\Phi = \frac{1+\sqrt{5}}{2} \approx 1.618$ . The negative of the negative root of the quadratic equation (2) is what we will call the golden ratio conjugate  $\phi$ , (the small Greek letter phi), and is equal to  $\phi = \frac{\sqrt{5}-1}{2} \approx 0.618$ . The relationship between the golden ratio conjugate  $\phi$  and the golden ratio  $\Phi$ , is given by  $\phi = \Phi - 1$ , or using (1),  $\phi = \frac{1}{\Phi}$ .

**Golden ratio in a continued fraction:**

One of the wonderful presentations of golden ratio on a continued fraction is as shown:

$$\Phi = 1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \dots}}}}$$

This continued fraction produces a quadratic equation

$$\Phi = 1 + \frac{1}{\Phi},$$

$$\text{Or, } \Phi^2 - \Phi - 1 = 0.$$

**Golden ratio in a continued square root:**

Another wonderful presentation of golden ratio on a continued square root is as shown:

$$\Phi = \sqrt{1 + \sqrt{1 + \sqrt{1 + \dots}}}$$

$$\text{Or, } \Phi = \sqrt{1 + \Phi}$$

Squaring both sides

$$\text{Or, } \Phi^2 = 1 + \Phi$$

$$\text{Or, } \Phi^2 - \Phi - 1 = 0$$

**Golden ratio in a Fibonacci sequence**

The golden ratio is associated with the Fibonacci sequence in a very simple way. The sequence is an example of a quadratic recursive equation sometimes used to describe various scientific and natural phenomena such as age-structured population growth. In order to define the general quadratic recursive formula, let  $x_0, x_1, p,$  and  $q$  be fixed positive numbers, and for any integer  $n > 2$ , define  $x_n$ , as

$$x_n = px_{n-1} + qx_{n-2} \dots\dots\dots(3)$$

Murthy [8] provides a number of theorems for this general recursive equation. It is clear that many of the features that are proclaimed to be unique to the Fibonacci sequence are, indeed, common to all second-order recursive equations. For example,

$$\lim_{n \rightarrow \infty} \frac{x_{n+1}}{x_n} = r. \dots\dots\dots(4)$$

Where,  $r$  is the positive root of the quadratic equation

$$x^2 - px - q = 0. \dots\dots\dots(5)$$

obtained by assuming that  $x_n = x$  is a solution to (1). One of our objectives in this paper is to show that if  $q = 1$  and  $r$  is the limit in (2), then the pair  $(r, p)$  has all of the geometric and algebraic properties that are often ascribed as being unique to the pair  $(\Phi, 1)$ . For example, we have

$$r - p = \frac{1}{r}$$

Corresponding to the property,  $\Phi - 1 = \frac{1}{\Phi}$ .

Or, 
$$\Phi^2 - \Phi - 1 = 0$$

The recursion relation for the Fibonacci numbers is given by

$$F_{n+1} = F_n + F_{n-1}.$$

Dividing by  $F_n$  yields

$$\frac{F_{n+1}}{F_n} = 1 + \frac{F_{n-1}}{F_n} \dots\dots\dots(6)$$

We assume that the ratio of two consecutive Fibonacci numbers approaches a limit as  $n \rightarrow \infty$ . Define limit  $\lim_{n \rightarrow \infty} \frac{F_{n+1}}{F_n} = \alpha$  so that  $\lim_{n \rightarrow \infty} \frac{F_{n-1}}{F_n} = \frac{1}{\alpha}$ . Taking the limit, (6) becomes  $\alpha = 1 + 1/\alpha$ , the same identity satisfied by the golden ratio. Therefore, if the limit exists, the ratio of two consecutive Fibonacci numbers must approach the golden ratio for large  $n$ , that is,

$$\lim_{n \rightarrow \infty} \frac{F_{n+1}}{F_n} = \Phi.$$

The ratio of consecutive Fibonacci numbers and this ratio minus the golden ratio is shown in Table 1. The last column appears to be approaching zero.

Table 1: Ratio of consecutive Fibonacci numbers approaches  $\Phi$ .

n	$\frac{F_{n+1}}{F_n}$	value	$\frac{F_{n+1}}{F_n} - \Phi$
1	1/1	1.0000	-0.6180
2	2/1	2.0000	0.3820
3	3/2	1.5000	-0.1180
4	5/3	1.6667	0.0486
5	8/3	1.6000	-0.0180
6	13/8	1.6154	-0.0070
7	21/13	1.654	-0.0026
8	34/21	1.6190	0.0010
9	55/34	1.6176	-0,0004
10	89/55	1.6182	0.0001

## Applications in Art and Architecture

### The golden rectangle

A golden rectangle is a rectangle whose side lengths are in the golden ratio. In a classical construction, first one draws a square. Second, one draws a line from the midpoint of one side to a corner of the opposite side. Third, one draws an arc from the corner to an extension of the side with the midpoint. Fourth, one completes the rectangle. The procedure is illustrated in Fig. 2.

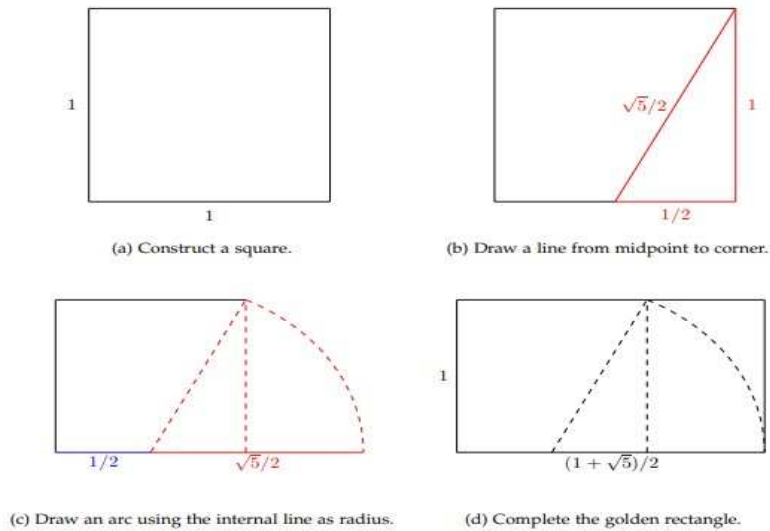


Figure 1.1. Classical construction of the golden rectangle

### The golden spiral

The celebrated golden spiral is a special case of the more general logarithmic spiral whose radius  $r$  is given by

$$r = ae^{b\theta} \dots\dots\dots(7)$$

where,  $\theta$  is the usual polar angle, and  $a$  and  $b$  are constants. Jacob Bernoulli (1655-1705) studied this spiral in depth and gave it the name *spira mirabilis*, or *miraculous spiral*, asking that it be engraved on his tombstone with the inscription “*Eadem mutata resurgo*”, roughly translated as “Although changed, I arise the same.” A spiral was engraved at the bottom of his tombstone, but sadly it was not his beloved logarithmic spiral.

The golden spiral is a logarithmic spiral whose radius either increases or decreases by a factor of the golden ratio  $\Phi$  with each one-quarter turn, that is, when  $\theta$  increases by  $\pi/2$ . The golden spiral therefore satisfies the equation

$$r = a\Phi^{\frac{2\theta}{\pi}} \dots\dots\dots(8)$$

In our figure of the spiraling squares within the golden rectangle, the dimension of each succeeding square decreases by a factor of  $\Phi$ , with four squares composing each full

turn of the spiral. It should then be possible to inscribe a golden spiral within our figure of spiraling squares. We place the central point of the spiral at the accumulation point of all the squares, and fit the parameter  $a$  so that the golden spiral passes through opposite corners of the squares. The resulting beautiful golden spiral is shown in Fig. 3.

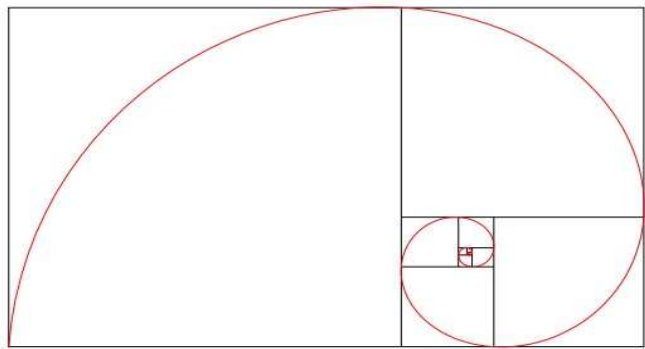


Figure 2.1. The golden spiral, the central point is where the squares accumulate

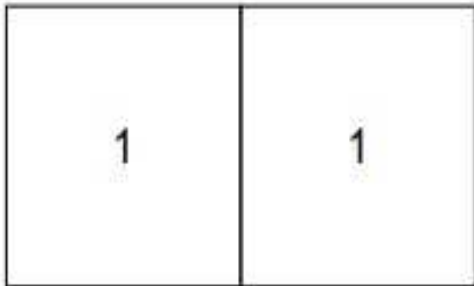
**The Fibonacci spiral**

Consider again the sum of the Fibonacci numbers squared:

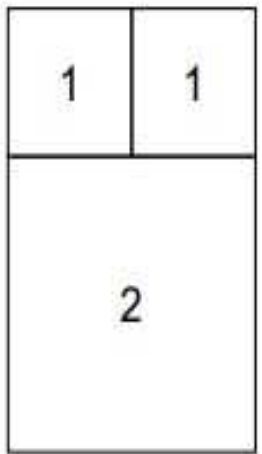
$$\sum_i^n F_i^2 = F_n F_{n+1} \dots\dots\dots(9)$$

This identity can be interpreted as an area formula. The left-hand-side is the total area of squares with sides given by the first  $n$  Fibonacci numbers; the right-hand-side is the area of a rectangle with sides  $F_n$  and  $F_{n+1}$ .

For example, consider  $n = 2$ . The identity (8) states that the area of two unit squares is equal to the area of a rectangle constructed by placing the two unit squares side-by-side, as illustrated in Fig. (3.1.a.)



(a)  $n=2: 1^2 + 1^2 = 2$



(b)  $n=3: 1^2 + 1^2 + 2^2 = 6$

Figure 3.1. Illustrating the sum of the Fibonacci numbers squared. The center numbers represent the side lengths of the squares.

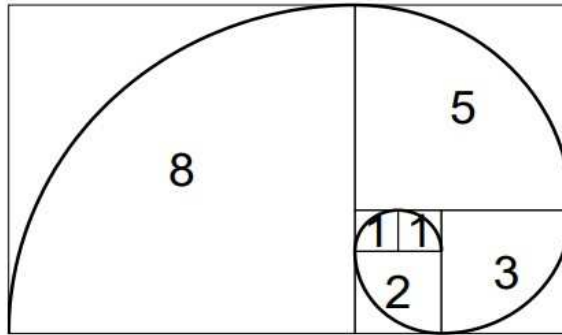


Figure 3.2. The sum of Fibonacci numbers squared for  $n = 6$ . The Fibonacci spiral is drawn

For  $n = 3$ , we can position another square of side length two directly underneath the first two unit squares. Now, the sum of the areas of the three squares is equal to the area of a 2-by-3 rectangle, as illustrated in Fig. (3.1.b.) The identity (9) for larger  $n$  is made self-evident by continuing to tile the plane with squares of side lengths given by consecutive Fibonacci numbers.

The most beautiful tiling occurs if we keep adding squares in a clockwise, or counterclockwise, fashion. Fig. (3.2) shows the iconic result obtained from squares using the first six Fibonacci numbers, where quarter circles are drawn within each square thereby reproducing the Fibonacci spiral.

**Self-similar decompositions of rectangles of any ratio and spirals:**

For any  $r > 1$ , and any rectangle  $R$  with a ratio of  $r$  to 1, we can divide  $R$  into two smaller rectangles, one of which has the same ratio  $r$  to 1, and this in turn can be so divided etc., as in Figure 2. The coordinates of the vertices  $A_1, A_2, A_3, A_4, A_5, A_6, \dots$  are given below.

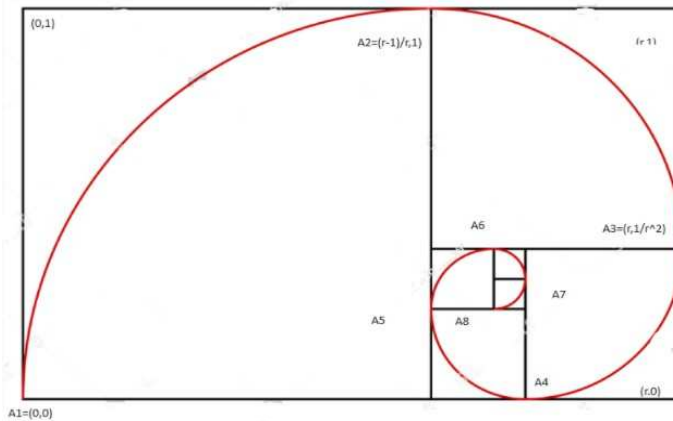


Figure.11. A rectangle of dimensions  $r$  to 1, with similar sub rectangles and a spiral

$$A_1=(0,0), A_2=(\frac{r-1}{r}, 1), A_3=(r, \frac{1}{r^2}), A_4=(r - \frac{1}{r} + \frac{1}{r^2}, 0), A_5=(r - \frac{1}{r} + \frac{1}{r^2} - \frac{1}{r^5}, \frac{1}{r^2})$$

The vertices  $A_1, A_2, A_3, \dots$  converge to a "center-point,"  $(\frac{r^3}{1+r^2}, \frac{1}{1+r^2})$ .

**Spirals.** An equiangular spiral can be drawn through the points  $A_1, A_2, A_3, \dots$  in Figure 2. Just use the center point  $(\frac{r^3}{1+r^2}, \frac{1}{1+r^2})$ . The central point is where the squares accumulate.

and fit a polar equation for the logarithmic spiral through any two of these points[5]. It is a general property of all such spirals that the tangents to the spiral at any point make a fixed angle with the rays from the center point[ Markowsky,(1992),P:2-19].

Artists and architects have long utilized the Golden Ratio to create visually pleasing compositions. In painting, the Golden Ratio is often employed to structure the layout and proportions of the canvas. Notable examples include works by Leonardo da Vinci, Salvador Dalí, and Piet Mondrian.

In architecture, the Parthenon in Athens and the pyramids of Egypt are believed to incorporate the Golden Ratio in their design. Modern architecture also embraces this ratio; the United Nations Headquarters and the Guggenheim Museum are examples of buildings influenced by  $\phi$ .

#### **Golden ratio in nature**

The Golden Ratio appears in various natural phenomena, reflecting its fundamental role in the growth and structure of living organisms. Examples include:

- a. **Phyllotaxis:** The arrangement of leaves, seeds, and flowers often follows a spiral pattern governed by the Golden Ratio, optimizing exposure to sunlight and space efficiency.
- b. **Animal Morphology:** The proportions of certain animal bodies, such as the spirals of shells and the branching of trees, exhibit the Golden Ratio.
- c. **Human Anatomy:** The human body, including the proportions of the face and limbs, can be analyzed through the lens of the Golden Ratio, contributing to perceptions of beauty and symmetry.
- d. **Leonardo Da Vinci:** Many artists who lived after Phidias have used this proportion. Leonardo Da Vinci called it the ‘Divine Proportion’ and features it in many of his paintings for example in the famous “Mona Lisa”
- e. **The vitruvian Man:** Leonardo did an entire exploration of the human body and the ratios of the lengths of various body parts. The vituvian man illustrates that the human body is proportioned according to golden ratios.
- f. **The Parthenon:** The exterior dimensions of the in Parthenon in Athens, built in about 440BC, form a perfect rectangles.
- g. **Egyptian pyramids:** The base lengths of pyramids divided by height of them gives a golden ratio.
- h. **Sea shells:** The shape of inner and outer surfaces of the sea shells.



- i. **Petals of Flowers:** Many flowers have a number of petals that is a Fibonacci number. The arrangement of petals often exhibits the Golden Ratio, optimizing exposure to sunlight and space.
- j. **Galaxies:** Spiral galaxies, such as the Milky Way, follow a logarithmic spiral pattern, which is closely related to the Golden Ratio.
- k. **Hurricanes:** Hurricanes display a spiral pattern similar to that of galaxies and shells, adhering to the logarithmic spiral that approximates the Golden Ratio.
- l. **Photography:** Photographers use the Golden Ratio to compose images that are aesthetically pleasing. The Rule of Thirds is a simplified version of this principle, dividing an image into sections that are pleasing to the eye.
- m. **Spider-Webs:** Some spiders build webs with spiral patterns that follow the Golden Ratio, optimizing the structural efficiency and strength of the web.
- n. **Pinecones:** The scales of pinecones are arranged in a spiral pattern, with the number of spirals typically corresponding to Fibonacci numbers, demonstrating the Golden Ratio.

### **Modern Scientific Applications**

In contemporary science and technology, the Golden Ratio continues to find relevance. It appears in the analysis of financial markets, where certain trading algorithms utilize  $\Phi$  for predictive modeling. Additionally, the ratio is explored in computer graphics and design, where it aids in creating harmonious and visually appealing interfaces.

Like the golden ratio in art and architecture, this balance leads to more elegant and effective AI solutions. Achieving the golden ratio of AI requires both technical expertise and an understanding of human needs and preferences. When AI systems are designed with the golden ratio in mind, they are more likely to provide meaningful and useful insights to users. Overall, the golden ratio of AI represents an exciting opportunity to create smarter, more human-centered technology solutions [Thapa & Thapa (2018), P:188-199].

### **Conclusion**

The Golden Ratio remains a captivating and multifaceted concept that bridges mathematics, art, nature, and modern science. Its unique properties and widespread occurrences underscore its significance and enduring appeal. As research continues, the Golden Ratio is likely to reveal even more about the intrinsic harmony and structure of the world around us.

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## Fear in Beauty: Sylvia Plath's Reflections in *Mirror*

**Bhawani Shankar Adhikari**

Department of English

Valmiki Campus, Nepal Sanskrit University,

*Email: bhawanishankar.adhikari12@gmail.com*

### **Abstract**

This research aims to explore the role of fear and its outcome in the quest for beauty in Sylvia Plath's poem "Mirror". Beauty has been defined as the source of power as well as the cause of the annihilation of the entire civilization. Internal beauty has a superior role to external beauty. The persona of the poem has been found engaged in the quest for external beauty even in her old age which is unnatural and worthless. Extreme fear has acted negatively and devastatingly to ruin the life of the persona of the poem. It has led the speaker of the poem hopelessness of life and depersonalized condition which compelled her to commit suicide. The role of fear must be focused on the balance form of fear to maintain and achieve the goal in life. Otherwise, fear's role and its effect tend to be detrimental and destructive to reaching the destination of keeping beauty, peace, and harmony in life. It has been analyzed how fear has acted and affected the life of Sylvia Plath due to extreme fear in beauty's quest in old age. The original lines of the poem have been adopted as the primary data and analyzed with the support of secondary articles and journals produced on the poem. The speaker's fear in the poem "Mirror" has been explored in various forms and such fears have been found to be acting actively in the psyche of the speaker in losing her charming facial appearance of her own youth.

**Keywords:** depersonalized, fear, detrimental, quest, suicide

### **Introduction**

Fear is a primal psychological instinct that exists naturally, distinguishing itself from the fear observed in animals like birds, which express it through instinctual bodily reactions such as flight. While animals exhibit sensory-based fear responses, human fear is more complex and rooted in psychology. As Subba asserts, human life is often shaped and influenced by psychological fear, with the assertion that "life is directed, conducted, and controlled by fear" (Subba, cover page). In human experience, fear is

intricately tied to consciousness and knowledge. Subba posits that fear is a product of awareness and understanding in everyday life, emphasizing that "fear is the outcome of knowledge and consciousness" (Subba, 47). This perspective underscores how fear in humans is shaped by cognitive processes and awareness, unlike the more instinctual fear observed in animals. In summary, Subba's insights highlight the nuanced nature of fear as experienced by humans, linking it closely with cognitive awareness and psychological processes that define human existence.

Fear plays diverse roles in everyday life, influencing various aspects of human experience. According to Russell (1373), fear is primarily responsible for causing errors, while overcoming fear is seen as a pathway to acquiring wisdom. There exists a spectrum of fears encompassing fears of gods, ghosts, sin, superstition, making mistakes, losing health, and losing beauty—an attribute particularly valued by individuals. Sylvia Plath, for instance, grapples with doubts about her personal beauty, seeking validation through different means.

Beauty is regarded as a form of power, manifesting in two dimensions: internal and external. Internal beauty, comprising character, excellence, skills, and knowledge, is crucial for survival and achieving success in life. It enriches the quality of life internally, representing a potent force that enhances one's inner being. Achieving both internal and external beauty is considered rare and signifies a balance between inner and outer qualities (Sontag, 300). In essence, the exploration of fear and beauty in human existence underscores their multifaceted roles and impacts, revealing their complexities as perceived and experienced by individuals in society (Russell, 1373; Sontag, 300). Beauty does not always have positive consequences. Historical figures like Helen of Troy and Padmini illustrate this vividly.

According to Devkota (332-338), Helen's beauty famously sparked the Trojan War, a conflict that lasted a decade and brought catastrophe upon many. Similarly, Padmini, renowned for her beauty among the Rajputs, chose self-immolation rather than face capture by a Muslim king, an act that led to further conflict and fear. The power of beauty, as exemplified by Helen and Padmini, can attract risk, death, danger, and misfortune. Medusa, from ancient mythology, provides another stark example. Bogam (380-381) details how Medusa, once praised as the most beautiful of the three Gorgon sisters, incurred the wrath of Minerva for her arrogance and was transformed into a monstrous creature whose gaze turned others to stone. Even after her death, her terrifying visage continued to wield its deadly power.

The poem "Medusa" poignantly portrays Medusa's transformation from a beautiful maiden to a feared and reviled creature, highlighting how the pursuit and possession of beauty can lead to calamity, destruction, and profound fear (Bogam, 380-381). In

essence, these stories underscore the dual nature of beauty, which can bring admiration and desire but also provoke jealousy, conflict, and tragic consequences. They serve as cautionary tales, urging careful consideration of beauty's allure and its potential pitfalls. Regarding Helen, "In the Homeric poems, she is the surprisingly beautiful wife of Menelaus, and her abduction by Paris led to the Trojan war(Lohani, 338)". It displayed the disaster of Helen's beauty to draw the Trojan war for 10 years.

Padmini was a beautiful Rajput queen, A Mewar, wife of Ratna Singha. Enchanted by the talks of her beauty, Alladin Ahilji attacked Mewar in order to achieve her. The Rajputs were defeated and Padmini burned herself to death, before falling into the hands of the Muslim king(Lohami, 338). Padmini's beauty became a kind of curse in her life. Her beauty ruined her and she turned out to be the victim of her own charming personality.

The poem "Mirror" by Sylvia Plath has been analyzed through a psychoanalytical lens, revealing it as a metaphorical representation of the speaker's emotional state. In this interpretation, the speaker becomes akin to a mirror, reflecting unfiltered truths about identity and self-perception. In Plath's collection "Ariel," this metaphor extends to suggest that a woman's self-awareness evolves into a complex network of mirrors, initially constructed during infancy. Over time, these mirrors distort idealized memories of the past, presenting a stark portrayal of a woman who is awakened to reality, akin to a modern-day Sleeping Beauty either painfully aware or still dreaming. In Sylvia Plath's earlier story "The Wishing Box," the motif of Sleeping Beauty's transformative slumber is reinterpreted as an eternal awakening, symbolizing irreversibility. According to McCort (148), Plath employed this children's book theme not only as a narrative structure but also as a multifaceted reflection of her own experiences. This approach became integral to her poetic exploration of revisiting childhood memories and understanding their enduring impact on her present life. Plath often framed her personal narrative through the lens of children's literature, using it as a tool to reinterpret her own childhood and to analyze how societal norms and values were ingrained from the stories she cherished (McCort, 156). Her poems reflect a deep introspection into her childhood experiences, framed within the context of these literary influences.

According to McCort (156), Sylvia Plath demonstrates the strong interconnection between the past and present within the female experience. She explores how deeply women's perceptions of themselves are shaped by the stories they were told in childhood. Plath illustrates that the self is viewed as an evolving narrative that can be constantly reexamined and rewritten. Through her identification with children's fiction and poetry, she not only reveals her own identity but also delves into how these literary influences inform and reshape her understanding of herself over time. According to

Freedman (160), Sylvia Plath's personal struggle is encapsulated in the image of the truly terrifying fish, representing a submerged woman who has come to accept her own dehumanization and passivity, seeking solace in the numbness it offers. This imagery implies that the mirror not only reflects the fish but also conceals a monstrous presence beneath its surface. At the same time, Schwartz (72) suggests that this same depiction may also suggest that a superficial image of angelic beauty can itself be monstrous. In essence, the monster lurking in the depths symbolizes the same monstrosity found on the surface, or perhaps more precisely, the superficiality and lack of depth inherent in mere appearances. According to Freedman (165), embracing the role of the mirror indirectly entails accepting the societal image of womanhood and motherhood as dictated by males. In Sylvia Plath's "Mirror" and other poems exploring themes of motherhood and confinement, aggression often prevails over tenderness. Schwartz (72) further argues that a woman who assumes the reflective role can become harsh, particularly towards herself. The image of the poetess reflected as a fish seeking her beauty in the lake metaphorically underscores Plath's profound depression, attributing it to the oppressive influence of patriarchal and societal norms. This analysis aims to highlight how these stereotypes contribute to Plath's mental struggles and emotional turmoil. According to Ghlib (2593), Sylvia Plath's symptoms of hysteria, such as depersonalization, severely restricted her life and ultimately led to her suicide. The poetess's depression, reflected in her poetry, vividly illustrates her struggle and the desperation that culminated in her decision to take her own life.

Kroll (1978) argues that Plath's poem "The Mirror" reveals the profound insight that a life dominated by false realities is not truly living but rather a form of unbearable existence akin to a living death, which can only be escaped through actual death. The poem portrays how the persona within it is inwardly victimized, searching desperately for her own identity amidst overwhelming trauma. The mirror serves as a metaphor for the hidden traumas, much like those experienced by Sylvia Plath herself, concealed beneath a veneer of outward composure that projects an idealized image.

This analysis underscores how Plath's poetry reflects her personal anguish and psychological turmoil, shedding light on the complex intersections of identity, mental health, and societal expectations. According to Schwartz (20), Sylvia Plath dedicated her life to resolving the discord between her inner feelings and outward appearances. She grappled with a profound dilemma involving internal and external conflicts throughout her lifetime. Researchers have explored how her mental illness, personal struggles with identity, and metaphorical reflections on transitioning from youth to motherhood shaped her attempts to transcend earthly existence. However, the specific exploration of fear

and her pursuit of beauty in defining her existence remains an unaddressed gap in existing research, which this research aims to fill.

### **Research Questions**

Beauty has been regarded as the source of power and glamour in mortal life. The research is guided with:

A. What is the effect of beauty in the personal life of Sylvia Plath reflected in the poem 'mirror'?

B: How has fear acted in the poem "Mirror"?

### **The Objectives of the Research**

The general objective is to discuss the role of beauty in life but the specific objective is:

A: To explore the effect of beauty in the personal life of the poetess Sylvia Plath as revealed in the poem "Mirror".

B: To investigate the fear's role as it has acted in the poem "Mirror".

### **Significance of the Research**

The significance of the study dwells to create awareness and consciousness in dealing with fear and beauty. It has shown the connection between fear and beauty in which the role of fear has opened how beauty has to be dealt with. Beauty has not turned out to be always positive since it hides risks and fear. The invisible aspects of fear lead to the entire annihilation of life if the beauty is mishandled.

### **Materials and Methods**

The research has been carried out in the detailed critical analysis of the poem "Mirror" by Sylvia Plath. The poem's original lines and stanzas have been taken as the primary data of the research. The various journals, research articles, and related materials written on the concept of beauty and about the poem itself have been taken as the secondary data for the research. Fearism, which has got both positive and negative role in leading the life or destroying it, has been adopted as the lens to analyze the poem, "Mirror." The various thematic categories have been made and analyzed the poem as the qualitative research.

### **Delimitation of the Research**

This research has been confined to the textual analysis of the poem 'Mirror' by Sylvia Plath. It has only been observed from the perspective of fear and its role seen in the poem. It has not linked with the ideas of the external similar texts.

### **Result and Discussion**

#### **Mirror's Impartial Role**

The poem "Mirror" consists of two stanzas: the first stanza depicts the mirror's position as an observer in the room, while the second stanza metaphorically portrays the mirror

as a lake. In this stanza, the lake reflects the aging beauty of a woman who distrusts the mirror's portrayal and seeks her genuine facial appearance in the lake's reflection.

The woman in the poem laments the gradual loss of her beauty as she ages. She fears the inevitable decline and strives to preserve her attractiveness. She values her charismatic persona and keeps a mirror in her bedroom to monitor her appearance. The narrator of the poem is personified as the mirror itself. Sylvia Plath's poem begins with the line, "I am silver and exact. I have no preconceptions," indicating that the mirror is made of silver and impartially reflects the true state of its owner without bias or prejudice. The mirror further states, "Whatever I see I swallow immediately Just as it is, unmisted by love or dislike," emphasizing its role as an objective observer that faithfully reflects everything it sees without distortion from emotions like affection or aversion (Plath).

This interpretation underscores the mirror's role as a symbol of truth and impartiality in the poem, highlighting its ability to reveal the stark reality of aging and the woman's fear of losing her allure.

In the poem "Mirror," the extracted lines span two lines where the mirror describes its immediate acceptance of whatever it reflects, without bias or preference based on love or dislike. The mirror serves as an impartial observer of truth, yet the owner of the mirror, Sylvia herself, doubts whether it accurately reflects her beauty. She harbors a fear of losing her attractiveness and dreads the possibility of becoming unattractive. Plath's depiction in "Mirror" intertwines her own identity with that of her mother, expressing apprehensions about eventually resembling her. According to Conway (p, 42), the poem reflects Plath's dual perspective as both daughter and herself, revealing her poignant anxieties about aging and maintaining her allure. As a young girl, the mirror held no significance, but as she matures, the woman in the poem wrestles with deep-seated desires to preserve her beauty and captivating persona.

The poem "Mirror," the narrator, the mirror itself, asserts its role as a compassionate and truthful observer to anyone who seeks their reflection. The mirror states, "I am not cruel, only truthful," likening its gaze to that of a small, impartial deity with four corners that faithfully reflects all who come before it (Plath). It remains unchanged in its duty, reflecting visitors without altering their appearances. Over time, the mirror observes its owner aging and becoming fearful of losing her beauty. The mirror reflects on its own existence, noting how it constantly gazes at the opposite wall, which has become like its counterpart. The faces of visitors and the darkness of night are the only interruptions to this contemplation (Plath).

This interpretation highlights the mirror's perspective as a passive yet deeply observant entity, reflecting the evolving fears and anxieties of its owner about aging and losing



attractiveness. The mirror's metaphorical relationship with the opposite wall symbolizes its constant and introspective observation of the world around it.

The mirror imagines itself as a lake in the second stanza of the poem. The mirror utters:

“Now I am a lake. A woman bends over me,

Searching my reaches for what she really is (Plath)”.

A woman approaches a lake, leaning over its surface to glimpse her own reflection. She seeks clarity about her true position and appearance, indicating a dissatisfaction with the mirror on her wall. Despite what the mirror reflects, she feels she has aged and lost her former beauty, causing her distress. She harbors skepticism about her external appearance as shown in the mirror and turns to the lake for a more genuine reflection of herself.

In poem "Mirror," the reflection not only mirrors the challenges faced by Plath herself but also reflects the broader struggles of women who feel compelled to maintain youth and beauty to remain relevant. According to Conway (p, 44), the mirror in the poem judges the woman as a failure, suggesting that true success does not hinge on external appearance, particularly for accomplished women. The mirror becomes a source of distress as the woman fears her aging and perceived unattractiveness, prompting her to seek validation by looking into the lake.

The shift in the poem's second section where the mirror declares, "Now I am a lake," signifies a deeper metaphorical exploration. Like a lake, the mirror gains depth and complexity, reflecting a woman searching for her true self, reminiscent of the myth of Narcissus. Plath and women in general are depicted as struggling to reconcile their self-perception with societal expectations, sometimes resorting to deceptive means symbolized by candles and moonlight, which cast both shadows and illumination, masking reality.

The mirror maintains its steadfast role, faithfully reflecting whatever stands before it, even when this reflection disturbs the woman who is drawn to the lake for solace. Plath employs glass imagery to symbolize the concealment and revelation of one's authentic identity, emphasizing the woman's fear of losing or distorting her true beauty. Schwartz (70) discusses how Plath portrays the internalized fears and dialogues of a woman confronting her aging process, viewing signs of time as a form of mutilation. The poem's speaker, though the mirror, reveals the woman's profound anxiety about aging and her reluctance to trust the mirror's reflection, instead seeking affirmation from the lake.

In essence, "Mirror" delves into themes of self-perception, aging, and societal pressures through its portrayal of a woman's ongoing struggle to reconcile her inner and outer selves, using the mirror and lake as symbolic reflections of her journey.

“She rewards me with tears and an agitation of hands.

I am important to her. She comes and goes (Plath)”.

These two lines of the poem depict how much sad she is by the loss of her beauty. she is terrified and scared so much that she cannot see her own face reflected in the lake and she weeps and cries over the lake. She is with the river of tears dropping into the lake and she is even agitating with her hands. Lake has become essential for her to know her true beauty and she regularly visits there. Her fear is beyond her control and she has turned out to be conscious of her beauty as it is said consciousness and knowledge are the main causes of fear (Subba 47). If she did not have knowledge about the loss of her beauty with age, she would not go to the lake as a routine. Hence, she is fear-stricken and feels restless. “Each morning it is her face that replaces the darkness (Plath)”. She reaches the lake each morning and bends over it to know how much ugly she is seen as reflected in the image of the lake. Her face replaces the darkness in the lake by eliminating the sunlight and the light of the morning.

“In me she has drowned a young girl, and in me an old woman

Rises toward her day after day, like a terrible fish (Plath)”.

Mirrors serve as steadfast companions to those who are preoccupied with maintaining beauty and a desirable image, much like the speaker in Sylvia Plath's poem. From a young age to her elderly years, the woman has been captivated by her reflection in the mirror, and even now, she visits the lake regularly. However, the mirror metaphorically transforms her into a frightening fish, symbolizing her intense fear and anxiety over losing her beauty as she ages. This fear has deeply troubled her, affecting her physical and mental well-being. Plath's own experiences illustrate how excessive fear can lead to depression and tragic outcomes, such as suicide. Schwartz (71) explores what draws the woman back to the mirror day after day, despite the distress it causes her. The mirror reflects an image that frightens her, possibly representing the inevitable effects of aging that transform her into something she fears becoming. Metaphorically, the fish in the depths of the mirror symbolizes both the depths of her fear and a deeper, unacknowledged aspect of herself that she may be drawn to but struggles to accept.

In essence, Plath's poem delves into themes of self-perception, fear of aging, and the psychological turmoil that can result from an obsession with external beauty. The mirror becomes a symbol of both fascination and terror for the woman, reflecting her internal struggles and fears in a poignant exploration of identity and mortality. In Sylvia Plath's poem, the mirror symbolizes a woman's reflection of herself and others. Plath presents a dual image of herself, portrayed as both a brightly reflective surface and a devilish form within the mirror and its representation. According to Schwartz (71), the mirror embodies the persona that Plath projected to society—a disciplined performer

who flawlessly adhered to societal and parental expectations of elegance, charm, and success. This persona was frozen in a socially constructed ideal of femininity, akin to a Cover Girl smile.

However, the relentless pursuit of beauty became self-destructive for the speaker in the poem. Plath explores the theme that beauty is fleeting and the obsession with maintaining it, especially in old age, led to her own demise. The fear and anxiety over losing beauty eventually drove her to take her own life. In summary, Plath's poem scrutinizes the complexities of self-perception and societal expectations through the metaphor of the mirror, illustrating how the relentless pursuit of beauty can become detrimental and ultimately tragic. The opening line of the poem suggests that when a woman spends all her time in front of a mirror, she wastes her youth, immersing herself deeply in her own reflection much like Narcissus. The poem's central message is that indulging in narcissism is ultimately futile and drains one's time and energy. Mirrors, depicted as non-judgmental, merely "swallow" reflections, implying that once something is reflected, it is lost forever and irretrievable. The mirror, originally intended to reflect truth, now reflects a blank wall, symbolizing the woman's lack of identity and self-definition over time. She becomes insignificant, blending into the various faces and the surrounding darkness.

This research has aimed to highlight Sylvia Plath's profound depression and suggests that societal and patriarchal stereotypes contributed to her mental disorder. According to Ghlib (2593), symptoms of hysteria such as depersonalization severely constrained her life and ultimately led to her tragic decision to end her own life. Plath's poetry reflects her struggle with depression and the pressures imposed by societal norms, illustrating how extreme fear and societal expectations can have detrimental effects on mental health and well-being.

In essence, the poem "Mirror" delves into themes of identity, self-perception, and the destructive consequences of internalizing societal ideals, offering a poignant reflection of Plath's own psychological struggles and the broader societal issues she grappled with. Sylvia Plath's poem "Mirror" portrays multiple types of fears from the viewpoint of the mirror, which also embodies the persona of the poetess. The poem explores various fears through the mirror's perspective, reflecting Plath's own anxieties and concerns.

The mirror in Plath's poem, "Mirror", reflects several fears from the poetess's point of view. The poem explores different kinds of fears as it has been analyzed in the following forms.

### **Fear of Aging**

In Sylvia Plath's poem "Mirror," the speaker expresses a profound fear of aging and the loss of youthfulness. She obsesses over her physical appearance and becomes

disillusioned and cynical towards the mirror, which faithfully reflects the reality of her aging face. She accuses the mirror on the wall of deceiving her by not reflecting the youthful beauty she desires, viewing it as an adversary. Her intense fear of losing her youthful beauty overwhelms her, causing internal turmoil and restlessness (Plath).

This fear drives her to seek various means of recapturing her lost beauty of youth. Despite her distrust of the mirror, she turns to the lake in hopes of finding a reflection that aligns with her memories of past beauty. However, she finds no solace there either, as the lake mirrors the same reality as the mirror on her wall, intensifying her fear of losing the joys associated with her youthful appearance.

In essence, Plath's poem delves into the psychological complexities of aging and the fear of losing external beauty, portraying how these fears can consume and disturb an individual's sense of self and reality.

### **Fear of Truth**

The mirror in Sylvia Plath's poem starkly reflects an unvarnished truth about appearance and mortality, which proves unsettling for the speaker. While she may have felt physically attractive, charming, and magnificently beautiful in her youth, the mirror forces her to confront the harsh reality of aging and the inevitable changes in her appearance. Plath's speaker is reluctant to face this truth, preferring the comforting realm of imagination and fantasy over the bitter facts of reality. However, the relentless truth presented by the mirror becomes increasingly difficult for her to accept and integrate into her life (Plath). Ultimately, the poem underscores the inevitability of confronting and coming to terms with truth, even when it challenges one's self-perception and cherished illusions.

### **Fear of Self-Identity**

The mirror in Sylvia Plath's poem represents the fear of confronting one's authentic self and the evolving perceptions of identity as time passes. Plath, as the poetess, grapples with the fear of clinging to her past beauty and the illusion of maintaining a static self-identity indefinitely, despite knowing it's beyond human control (Plath). This fear becomes detrimental to her well-being, as she wrestles with the realization of her mortality and the limitations inherent in being human.

In essence, Plath's poem explores the existential anxiety of facing one's true self and the inevitability of change, highlighting the struggle to reconcile past perceptions with present realities. The speaker's fear has turned out as hard to hide as it has been discussed by Adhikari ([www.ijtell.com](http://www.ijtell.com)).

### **Fear of Time's Passing**

The mirror in Sylvia Plath's poem encapsulates the fear of time slipping away and the inevitability of aging and mortality. Plath herself grapples with the relentless passage of

time and the overwhelming desire to retain her youth indefinitely. She dreads the process of aging and the changes it brings, experiencing profound anguish and melancholy as a result (Plath). The speaker confronts a fear that is beyond human - influence, a futile apprehension that causes immense suffering.

In essence, Plath's poem explores the existential angst of confronting the passage of time and the uncontrollable nature of aging, portraying the speaker's poignant struggle with mortality and the relentless march of time. It has been portrayed as much fearful condition of the speaker as Adhikari (DOI: <http://doi.org/10.25058/179400x.1709>) has pointed out the fear of adjusting the life while converting in a new religion from the old religion in which the person has been identified in the society.

### **Fear of Vanity**

The mirror in Sylvia Plath's poem reflects a fear of excessive focus on outward appearances at the expense of inner beauty or worth. Plath herself grapples with a sense of vanity, her pride in always presenting herself as charming and physically beautiful causing her considerable distress. This vanity becomes a source of deep-seated fear in her inner thoughts, leading to significant suffering (Plath). These intertwined fears form a complex depiction of how perception, aging, and self-awareness intersect in Plath's examination of identity and mortality in "Mirror."

In essence, Plath's poem delves into the existential struggle between external beauty and inner worth, illustrating the profound consequences of placing too much emphasis on physical appearance while neglecting deeper aspects of self-perception and identity.

### **Overall Findings**

In Sylvia Plath's poem "Mirror," beauty is depicted as a significant and often burdensome aspect of personal identity and self-perception. The mirror in the poem serves as a metaphor for both objective reflection and the subjective scrutiny of one's appearance over time. Plath herself struggled with issues of identity, self-worth, and the pressures of societal expectations, all of which are reflected in the poem. Beauty, as portrayed in "Mirror," exerts a profound influence on the speaker's and by extension, Plath's own personal life in several ways:

#### **Fear of Aging and Loss of Beauty:**

The mirror reflects the fear of aging and the gradual loss of youthful beauty. Plath's speaker laments the inevitable changes wrought by time, expressing dismay at the aging process which diminishes external attractiveness. This fear of losing beauty can be seen as reflective of Plath's own anxieties about aging and societal ideals of beauty.

**Struggle with Self-Image:** The poem suggests a constant struggle with self-image and the discrepancy between inner identity and outer appearance. The mirror presents an unflinching truth that contrasts with the speaker's internal perception of herself.

Plath's own battles with self-perception and identity are mirrored in this conflict between reality and self-illusion.

**Psychological Impact:** The pursuit and perception of beauty in the poem highlight its psychological impact on the speaker. Beauty becomes a measure of self-worth and validation, leading to introspection and self-criticism. This introspective journey mirrors Plath's own exploration of identity and the psychological pressures she faced throughout her life. It has reflected the psychological impact as Adhikari (2024) has revealed the psychological fear in the minds of people in the process of leading life ahead.

**Cultural and Societal Expectations:** The societal and cultural expectations placed on women regarding beauty are also implicitly critiqued in the poem. Plath, through the speaker's narrative, challenges these norms and exposes their restrictive nature, suggesting a broader commentary on gender roles and societal pressures. Overall, in "Mirror," Sylvia Plath examines the complex interplay between beauty, identity, and self-perception. The poem serves as a poignant reflection of Plath's own struggles with these themes, offering a glimpse into the profound impact of beauty on personal identity and the human psyche.

In the poem "Mirror," fear plays a significant role in shaping both the thematic depth and the emotional landscape of the speaker's reflections. Here's how fear manifests and acts within the poem:

**Fear of Aging and Mortality:** One of the central fears depicted in the poem is the fear of aging and mortality. The mirror, personified as a truthful observer, reflects the inevitable changes that time brings to the speaker's appearance. Lines such as "I am silver and exact. I have no preconceptions" illustrate the mirror's impartiality in showing the progression of age and the physical deterioration that accompanies it. This fear of losing youth and beauty is palpable throughout the poem, as the speaker grapples with the harsh reality of aging. This type of fear is just like the fear of conserving the ecology and environment as it has been pointed out ecofeminism by Adhikari ([www.ijoes.in](http://www.ijoes.in)).

**Fear of Self-Perception and Identity:** The mirror also reflects the fear of self-perception and the challenges of maintaining a consistent identity over time. The speaker's internal dialogue reveals a struggle with accepting the mirror's reflection, often seeking affirmation or denial of her own perceived beauty. This fear of not recognizing oneself or feeling disconnected from one's reflection speaks to deeper existential anxieties about self-image and identity. Such kind of fear has become similar with the fear portrayed by Adhikari et al (2022) regarding the fear of global eco-condition in which it has become visible but helpless to solve unless it has been activated through policies.

**Fear of Inauthenticity and Deception:** Another layer of fear in the poem revolves around the concept of authenticity and deception. The mirror, despite its objectivity, is accused by the speaker of being deceitful or cruel in its truthful reflection. This fear of not knowing the true self or being deceived by appearances underscores a broader theme of existential uncertainty and the quest for self-understanding. It has turned out as of self-awareness as Adhikari et al (2022) have advised the global citizens to be aware of conserving the ecology and the environment of the world for the entire humanity.

**Psychological Impact and Emotional Distress:** The poem conveys the psychological impact of these fears, depicting emotional distress and inner turmoil experienced by the speaker. Lines such as "In me she has drowned a young girl, and in me an old woman / Rises toward her day after day, like a terrible fish" evoke a sense of suffocation and despair caused by the relentless confrontation with aging and the passage of time. This kind of fear as depressing as Adhikari et al (2020) have figured out the fear of eco-turbulence in the world.

**Cultural and Societal Expectations:** Beyond personal fears, "Mirror" also critiques societal expectations and cultural norms regarding beauty and aging. The pressure to conform to idealized standards of beauty, perpetuated by external forces, intensifies the speaker's internal struggle and fear of not measuring up. In short, fear in Sylvia Plath's "Mirror" operates on multiple levels—fear of aging, fear of identity crisis, fear of deception, fear of societal judgment—all of which contribute to a profound exploration of existential angst and the complexities of human perception and self-image. Such fear has been taken as the fear of social image as Adhikari (2020) has revealed the global fear of coronavirus and the deteriorating condition of the ecology and the environment of the entire globe.

### Conclusion

The effect of fear in beauty has been found devastating, detrimental, and life-taking. The speaker of the poem "Mirror" has explored the poetess, Sylvia Plath herself though the mirror has been presented as the narrator in the poem. The mirror is the poetess's own persona and she has reflected the pain and fear in the process of seeking her beauty both in the mirror of her bedroom wall and in the lake in the first and the second stanzas respectively. As the poetess has found her beauty getting vanished with her old age, she has developed a kind of doubt with the mirror concealing her factual identity and she has attempted to trace out her real appearance in the lake. However, she has found no difference in her facial appearance and beauty even in the lake and she has been found in the depth of her mental agonies and her melancholic situation led her to depression. As a result, she has found no alternative solution of replacing her beauty except committing suicide. Her fear turned extreme and it has been found beyond her control

and she has been victimized by her own extreme fear. The persona of the poem has found that her conflict between the inner self and outer self, guided by fear led her to mutilate herself. Fear horrified, traumatized, scared and led her depersonalized condition to the persona of the poem and she became restless in maintaining her beauty in society even in her old age. It was beyond her capacity as a mortal being and it must have been realized as the natural process of life. Fear has acted rather dreadfully and negatively in the life of the persona of the poem "Mirror" and it has compelled her to take her own life in vain. Hence, it has given the message that fear must be within a balanced form rather than the extreme one for a meaningful, worthwhile, and successful life. Otherwise, extreme fear acts to ruin the entire goal and life itself as it has acted in the life of the poetess, Sylvia Plath. She has been found seeking external beauty rather than internal one and it has been found unnatural in old age. Internal beauty is gained with learning skills, enhancing knowledge and wisdom but external beauty is natural and innate but it fades away with the passing of time. To fear such perishing external beauty ruins life. So, it has to be accepted what nature has bestowed on mortal beings.

**Further topic for research:**

**Psychological aspect of fear in the poem "Mirror" of Sylvia Plath**

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## Relationship between Governance and Economic Growth

**Gyan Mani Adhikari**

Central Department of Management

Tribhuvan University

*Email: adgyanmani@gmail.com*

### **Abstract**

Governance and economic growth are interconnected with each other. A sound understanding of good governance and economic growth plays a critical role in solving the existing debatable issues of whether economic growth drives good governance or good governance drives economic growth. The study employed the co-integration test and Granger causality test to examine the relationship between governance indicators, developed by the World Bank, through the government efficiency index (GEI) and real gross domestic product using time series data for the period 2002–2022. The VECM results showed that there exists a long-run relationship between CIM and real GDP. Based on VECM test results, the study concluded that all the explanatory variables have a short-run relationship with economic growth at a 1 percent level of significance. The Granger causality test result indicates that causality runs from the government effective index as well as government expenditure to real GDP in the short run. The study recommended that governments or policymakers should widen their focus on integration between institutional factors and economic variables that affect economic growth.

**Keywords:** governance, real GDP, government efficiency index, corruption, market enhancing governance

### **Introduction**

Economic growth refers to a sustained rise in the country's real per capita output. According to Kuznets, "Economic growth is a long-term rise in capacity to supply increasingly diverse economic goods to its population, this growing capacity is based on advancing technology and the institutional and ideological adjustments that it demands." Economic growth means more output and changes in technical and institutional arrangements (Herrick and Kindleberger, 1983). Economic growth is concerned with six major determinants, namely, natural resources, human resources,

capital formation, and technology, which are grouped under supply factors; the remaining two are demand-enhancing and efficiency factors.

The development of a country encompasses economic growth through higher productivity, political systems that represent as accurately as possible the preferences of its citizens, the extension of rights to all members of society, and the opportunity to get them. As institutions influence behavior and incentives in real life, they forge the success or failure of nations (Acemolglu and Robinson, 2012). This aptly summarizes why governance matters for growth.

Governance is a multi-faceted and broad concept that explains the power of a state that exercises to control and govern its economic, technological, social, and political endeavors for the benefit of its nations (WGI, 2014). Good governance is significant in public institutions to conduct and manage public affairs and resources to guarantee human rights free of abuse and corruption and with due regard for the rule of law (Orji et al., 2022). It is significant because it promises to deliver on the promise of human rights: civil, cultural, economic, political, and social rights. Good governance is thus a function of the installation of positive virtues of administration and the elimination of vices of functionalities. It makes government work effective, credible, and legitimate in the administrative system; it is citizen-friendly; and it values caring and people-sharing. A sound understanding of good governance and economic growth plays a critical role in examining the relationship between governance indicators and economic growth. The answer to the question, “How can developing countries boost their economic growth rates by introducing and implementing good governance?” has occupied the minds of researchers for many years. With the declaration of the new constitution in Nepal in 2015, the question of good governance has become more significant than ever. In this scenario, it is necessary to understand how governance factors over the years have helped shape the Nepalese economy, and what steps can be taken to enhance its role in the growth of the economy. The economic analysis of the impact of governance on economic growth can help establish a relationship between these two highly interlinked areas of economy and development in a changed context based on the past as well as the present and guide a way toward the future.

Various studies by Han et al. (2014), Alam et al. (2014), Yokoyama (2011), and Kaufmann (1999) found a positive relationship between governance and economic growth, while Siyakia (2017), Sen (2014), and Pere (2015) found a negative relationship between governance and economic growth. Owing to the disparity in the results of research on the effect of governance on economic growth, this study contributes to enhancing previous studies on the relationship between governance and economic growth using six governance indicators, compiled by the World Bank (1992)

and empirically tested by Kaufmann and Kray (2015; Pere, 2015; Beyene, 2022; Singh, 2022, Hisham, 2023) in the context of the Nepalese economy using continuous time series data for the period ranging from 2002 to 2022. The study justifies the existence of short-run and long-run relationships among the examined variables by applying the Granger causality test. The study also aims to contribute to evidence-based policy discourse by encouraging policymakers to take governance variables into account while formulating economic policies and vice versa.

The rest of the paper is structured as follows. The review section makes a systematic review of the theoretical foundation and empirical literature. The methodology section presents the model specification and methods of analysis. Section 4 provides empirical results and discussion. The last section concludes the findings and offers policy implications.

### **Review of literature**

Governance consists of the traditions and institutions by which authority in a country is exercised. This includes (a) the process by which governments are selected, monitored, and replaced (i.e., voice and accountability, and political instability and absence of violence); (b) the capacity of the government to effectively formulate and implement sound policies (i.e., government effectiveness and regularity quality); and (c) the respect of citizens and the state for the institutions that govern economic and social interactions among them, i.e., rule of law and control of corruption (Kaufmann et al., 2010). Governance may be classified as market-enhancing governance or growth-enhancing governance.

Institutional economics focuses on understanding the role of human-made institutions in shaping economic behavior. It is concerned with the social systems, or institutions, that constrain the use and exchange of resources (goods and services) and their consequences for economic performance (Coase, 1998). Institutions form the incentive structure of a society, and the political and economic institutions, in consequence, are the underlying determinants of economic performance (North 1993). Growth theorists argued that economic growth is mainly driven by innovative entrepreneurship (Schumpeter, 1911), technological change supported by exogenous factors (Solow, 1956), and endogenous factors (Romer, 1989). Hence, investment in human capital, innovation, and knowledge with well-governed institutions is considered to be a significant contributor to economic growth.

### **Theoretical review**

The theoretical models associated with the interaction between governance and economic growth are discussed below.

### **Schumpeterian Growth Model**

Schumpeter (1911) argued that economic growth is mainly driven by innovative entrepreneurship, which is influenced by the institutional environment. This model is centered on three core ideas for economic growth: (i) innovation is the primary source of technological progress; (ii) innovations are created by self-interested firms, entrepreneurs, and researchers who expect rewards through monopoly rents if their innovation is successfully implemented; and (iii) the monopoly rents are eventually dissipated when new processes and/or products introduced by the innovations become out-dated and are driven out of the market by new technologies. Discontinuous technological changes, thus lead to economic growth.

Schumpeter (1911) argued that developed financial systems play an intermediary role in fostering technological innovations and economic growth by providing basic services such as mobilization savings, monitoring managers, evaluating investment projects, managing and pooling risks, facilitating transactions, and then supporting productivity and growth-enhancing efforts through innovations.

### **Neo-Classical Growth Model**

The neoclassical growth model, developed by Solow in 1956, stated that steady-state growth is determined by technological change, and can be achieved by endogenous variations in factor accumulation, including institutional efficiency and governance. Good governance is the prerequisite for the development of efficient financial institutions, technological change, and advancement. A well-developed financial sector channels resources to viable investment projects via financial intermediation, thereby promoting economic growth. Thus, countries with higher investment levels and capital levels per worker will enjoy higher levels of per capita output through the mobilization of savings, investment, technological change, and institutional quality.

### **Endogenous Growth Model**

Endogenous growth theorists believed that economic growth could be generated through endogenous factors rather than exogenous factors such as changes in technology or population (Romer, 1989; Grossman and Helpman, 1990; Levine, 1991; Bencivenga and Smith, 1991). This model states that the function of a financial sector can effectively increase the rate of economic growth. By increasing the quality and probability of success of an innovation, these functions can positively affect the level and progress of technology available in the economy. Additionally, since technology plays such a pivotal role in new growth models, a well-governed financial system can substantially influence economic performance by mobilizing savings, banks, and equity markets to increase capital accumulation and again exert a positive impact on the equilibrium growth rate.

### **New Institutional Theory**

This theory concentrates on the effect of the internal institutional environment on the process of reforms that they set out (Kara and Balid, 2019). The problem of developing countries achieving economic growth is not only related to setting plans and policies with the establishment of the physical structure of institutions but also to the extent of these countries 'ability to activate these policies, implement strategic plans, and properly carry out these institutions (Street, 2017).

Institutions form the incentive structure of a society, and the political and economic institutions, in consequence, are the underlying determinants of economic performance (North, 1993). The insights are techniques of endogenous growth models, which have revealed that there can be self-sustaining growth without exogenous technological progress and that the growth rate can be associated with preferences, technology, income distribution, and institutional arrangements. This has led to the recent revival of interest in the link between governance and growth (Pagano, 1993).

### **Empirical Review**

Siddiqui & Ahmed (2009) analyzed the role of institutions in promoting economic growth and development using a GMM econometric model. Specifically, it attempted to test the impact of two dimensions of institutions on growth using a recently developed index of institutionalized social technologies and their sub-indices, namely risk-reducing technologies and rent-seeking technologies. The result suggested a strong causal link between institutional quality and economic performance and also confirmed conditional convergence as predicted in modern theories of growth.

Aisen&Veiga (2013) examined the effects of political instability on economic growth by using the system-GMM estimator for linear dynamic panel data models on a sample covering up to 169 countries and 5-year periods from 1960 to 2004. The study found that higher degrees of political instability were associated with lower growth rates of GDP per capita, and political instability adversely affected growth by lowering the rates of productivity growth and, to a smaller degree, physical and human capital accumulation. nd higher economic growth.

Emara & Jhonsa (2014) examined the impact of the improvement in the quality of governance on per capita income and the increase in per capita income on the quality of governance using two-stage least squares (2SLS) regression for cross-sectional observations of 22 countries in the MENA region for the year 2009 following Kaufman and Kraay (2002) methodology. The study found a positive, strong, statistically significant causation from quality of governance to per capita income and concluded that most MENA countries had achieved a relatively high but fragile standard of living for their citizens that was not based on firm governance.

Yerrabati & Hawkes (2015) studied the nexus between economic governance and economic growth by using the meta-synthesis of empirical evidence on governance and growth in South and East Asia Pacific countries based on 29 studies with 554 estimates from 1980–2012. The empirical results showed that, while corruption was significantly and negatively correlated with growth, government effectiveness and regulation were positively and significantly correlated. Therefore, the study concluded that overall governance was important for growth and could have policy implications.

Westræus (2016) investigated whether normative institutions such as good governance are causing economic growth in Botswana, Namibia, and South Africa by seeking congruence in the empirical evidence with institutional theory. The study used numeric data from the World Bank to assess and correlate gross domestic product per capita growth and governance levels. The study concluded that although normative good governance institutions lacked causality for economic growth, there might be other institutional arrangements that are prerequisites for growth.

Fawaz et al. (2021) examined the impact of governance on economic growth in developing countries using worldwide governance indicators with a fixed effect model for 1996–2018. The study found that the rule of law and control of corruption have positive effects on developing countries' per capita income.

Kesar, Bandi, Jena, and Yadav (2022) investigated the impact of governance index and gross capital formation on the economic growth of BRICS using annual data from 2002 to 2019. The study employed the fixed effect model, FMOLS, and DOLS models. The study found that the government index, gross capital formation, population, control of corruption, and governance effectiveness have a positive and significant impact on economic growth, whereas negative quality showed a significant and negative impact on growth.

Baysoy & Altog (2021) explored the spatial influences on the economic growth of 18 countries in the Middle East and North Africa between 1970 and 2014. The study concluded that the economic growth of neighboring countries with similar institutional characteristics is positively correlated.

Orji et al. (2022) analyzed the impact of the control of corruption on economic growth in Nigeria using multiple regression models and found that increasing the corruption control rate leads to increased growth rates by 0.54 percent with the constant of the other factors.

Singh (2022) examined the relationship between economic growth and six governance indicators by employing the panel cointegration technique for BRICS nations. The study found that governance promotes economic growth, and then there is a bidirectional relationship between governance and economic growth.

Bryene (2022) studied the impact of governance on growth in 22 African countries by examining the effects of each dimension of governance individually and then creating a composite index of governance. The findings revealed that the composite governance index positively impacted growth despite the negative impact of corruption and government efficiency separately.

Hisham (2023) investigated the impact of governance on economic growth, considering spatial dependence between countries, by employing spatial regression models in a sample of 116 countries worldwide in 2017. The study found that the influence of governance indicators on economic growth is statistically significant. The findings emphasized that promoting regional integration among the countries of the same region will enhance its economic growth.

## **Materials and Methods**

### **Model specification**

The methodology for this study took cues from that of Izilein and Mohammed (2017), who studied how democratic institutions and foreign direct investment affected economic growth in Nigeria from 1981 to 2015. This study employs the Johansen Cointegration and Ordinary Least Square approach in the estimation of the model. This study also obtains the residual and incorporates it into the model to ascertain the speed of adjustment it will take to equilibrate in the long run. For uniformity, all the source data in this study are logged to assume the same unit of measurement.

The model of this study is an offshoot of Solow's (1956) model of economic growth used in the works of Udah and Ayara (2014), who examined institutions, governance structure, and the economic performance nexus in Nigeria. According to the Solow model, output is a function of labor (L) and capital (K), with constant returns to scale. The rate of capital accumulation, in the long run, is higher than that in the short run, the marginal efficiency of capital approaches zero, and the growth rate is subsequently determined by technical progress and growth in the labor force.

$$GDP = AK_i^\alpha L_i^{1-\alpha} \dots\dots\dots(1)$$

Where GDP = real GDP, A = total factor productivity K = capital stock; L = labor;  $\alpha$  = elasticity of capital to output. The model assumes that each productive unit will use the same level of capital and labor with the following aggregate production function:

$$GDP = AK^\alpha L^\beta \dots\dots\dots(2)$$

In the study of Udah and Ayara (2014), they incorporate governance structure and institutions into equation two through their effects on total factor productivity (TFP) or technical efficiency on the premise of the role of institutions in increasing technical efficiency (David (1997)), which in turn affects the efficiency of investment. Thus, their



study assumes that TFP is a function of the quality of institutions and governance structure (corruption, government effectiveness, and rule of law). Thus

$$A = Yt = \alpha_0 + \alpha_1 X_t + \alpha_2 CIM + \epsilon_t \dots \dots \dots (3)$$

Combining equations 2 and 3, we get

$$GDP = AK \dots ALFA^\alpha L^\beta, CIM^\phi \dots \dots \dots (4)$$

Where  $\alpha$ ,  $\beta$ ,  $d$ , and  $\phi$  are elasticity coefficients. From equation 4 an explicit estimation function is specified, ignoring labor and capital and taking the natural logs of both sides as follows:

$$\text{Log}GDP_t = \alpha_0 + \alpha_1 X_t + \alpha_2 CIM + \epsilon_t \dots \dots \dots (5)$$

Where  $X_t$  is a vector of explanatory variables including; voice and accountability (VACCOUNTR), Political stability and absence of violence (PSVIOLNCTR), governance effectiveness (GEFFECTR), regulatory quality (REGULATR), control of corruption (CORRUPTR), CIM = contract intensive money (CONTRINTR), and  $E_t$  = stochastic error term with the usual normality assumptions

To achieve the objective of this study, which is to investigate the effect of governance quality on economic growth in Nepal for the period of 2002–2022, the model by Uдах and Ayara (2014) in equation (5), will be adopted and modified. Thus, the implicit functional model of this study is stated below:

$$RGDP = f(CIM, DOINV, GOEXP, GEI) \dots \dots \dots (6)$$

The mathematical form of the model is as follows:

Where: RGDP = real gross domestic product, CIM = contract-intensive money proxy for institutional quality, DOINV = domestic investment proxy by gross fixed capital formation, GOEXP = government expenditure, and GEI = governance effective index proxy for good governance.

The mathematical form of the model is as follows:

$$RGDP = \gamma_0 + \gamma_1 CIM + \gamma_2 DOINV + \gamma_3 GOEXP + \gamma_4 GEI + \epsilon$$

Where: RGDP = real gross domestic product, CIM = contract-intensive money proxy for institutional quality, DOINV = domestic investment proxy by gross fixed capital formation, GOEXP = government expenditure, and GEI = governance effective index proxy for good governance.

**Method of analysis**

This study used modern time series techniques of analysis to analyze and estimate the relationship between the governance indicators and other selected macroeconomic variables. The techniques of time series analysis employed in this study include the unit root test, Johansen Cointegration techniques, ECM, and Granger causality. These techniques of analysis are explained in detail in the following section.

### Unit root test

A unit root is a peculiarity of techniques that develop through time that can result in issues of statistical inferences, which involve models of time series. The unit root test is the official test used to check whether a time series variable is stationary or not. There are different forms of unit root tests, such as the Phillip-Perron (PP) test, the Dickey-Fuller Generalized Least Square (DF-GLS) test, and the test of Augmented Dickey-Fuller (ADF). Dickey and Fuller (1971, 1981) developed a technique to test for nonstationary formally based on the simplified AR (1) model, as shown in Equation 5.

$$Y_t = \phi Y_{t-1} + \varepsilon_t \dots \dots \dots (7)$$

The aim here is to test whether  $\phi$  is equal to 1 (unit root or non-stationary). Henceforth, the null hypothesis  $H_0: \phi = 1$  while the alternative hypothesis  $H_1: \phi < 1$ . However, by subtracting  $Y_{t-1}$  on both sides of Equation (7),

$$\Delta Y_t = (\phi - 1)Y_{t-1} + \varepsilon_t \dots \dots \dots (8)$$

This can be written alternatively in the form of Equation (9).

$$\Delta Y_t = \beta Y_{t-1} + \varepsilon_t \dots \dots \dots (9)$$

where  $\beta = (\phi - 1)$  and  $\Delta$  is the operator of the first difference. Therefore, the null hypothesis is now  $H_0: \beta = 0$  and the alternative hypothesis is  $H_1: \beta < 0$ . When  $\beta = 0$ , then  $\phi = 1$ , which means there is the presence of a unit root, which implies that the time series under investigation is non-stationary. Dickey and Fuller (1979) also suggested an alternate regression equation, which can be utilized for testing the existence of a unit root. This equation incorporates a constant within the random-walk process, as shown in Equation 8:

$$\Delta Y_t = \alpha_0 + \beta Y_{t-1} + \varepsilon_t \dots \dots \dots (10)$$

Dickey and Fuller (1984) broaden the procedure of their test by proposing an augmented version to deal with serial correlation. The ADF test includes the lagged value of the dependent variable in the regression model to wipe out the autocorrelation. Therefore, this study used the test of ADF, The test was conducted by expanding Equation (v) through the addition of the lagged value of the dependent variable  $\Delta Y_t$ , as shown in Equation (11):

$$\Delta Y_{t-1} = (Y_{t-1} - Y_{t-2}), \Delta Y_{t-2} = (Y_{t-2} - Y_{t-3}) \dots \dots \dots (11)$$

### Co-integration test

Engle and Granger (1987) recommended that it is probable for a linear combination of integrated time series variables to become stationary and hence integrated in the same order. Therefore, the test of cointegration requires the order of integration of all the time series variables to be the same in the long run. The order of integration involves the number of times that the time series variable is required to be different before it

becomes stationary. A non-stationary time series variable that turns out to be stationary after its difference  $n$  times is termed integrated of order  $n$ . A set of time series variables is said to be cointegrated, if the set of individual variables is integrated in a similar order,  $n$ . A set of time series variables integrated of the same order  $n$  is cointegrated if the linear combination of the time series variables is integrated of order less than  $n$ . Succinctly, cointegration analysis is a process of estimating the long-run parameters in a relationship with non-stationary variables (Brooks, 2008).

The notion of integration makes regression of variables that are integrated of order one  $I(1)$  potentially meaningful, it also serves as a pre-test conducted to evade spurious regression; it is one of the analyses used for estimating, testing, and specifying dynamic models, it is also significant for testing the validity of underlying economic theories (Seddighi, 2012).

Two forms of cointegration methods have been used by previous studies, which are: 1) the Johansen cointegration method; and 2) the Engle-Granger method of cointegration. This research utilized the Engle-Granger method because of its advantage over the methods. This technique is a method of maximum likelihood that determines the number of cointegrating vectors in a VAR of non-stationary time series with restrictions imposed, known as VECM. The estimation model of Johansen's method is shown in Equation (12):

$$Y_t = A_1 Y_{t-1} + \dots + A_p Y_{t-p} + \beta X_t + \varepsilon_t \dots \dots \dots (12)$$

where  $Y_t$  is a non-stationary  $I(1)$  vector of the variables,  $X_t$  is a deterministic vector of the variables, and  $\varepsilon_t$  is an innovation vector, as indicated in Equation (13).

$$\Delta Y_t = \pi Y_{t-1} + \sum_{i=1}^{p-1} r_i \Delta Y_{t-i} + \beta X_t + \varepsilon_t \dots \dots \dots (13)$$

If  $\varepsilon_t$  is estimated as integrated of order zero  $I(0)$ , the  $Y_t$  and  $X_t$  variables are integrated of order one  $I(1)$ . It will have the advantage of having information on both long-run and short-run.

Johansen (1991) proposed two distinct tests of cointegration under the Johansen method: the Trace (TR) test as well as the Maximum Eigenvalue Test (L-Max). The ratio of the likelihood statistic for the TR test is shown in Equation (12).

$$Tr = -T \sum_{i=r+1}^{p-2} (1 - \lambda_i) \dots \dots \dots (13)$$

The TR test is a kind of joint test that tests the null hypothesis of no cointegration ( $H_0: r = 0$ ), contrary to the alternative hypothesis that there is cointegration ( $H_1: r > 0$ ). While the L-Max test is based on Equation (14),

$$L = -T \ln(1 - \lambda_{r+1}) \dots \dots \dots (14)$$

The test of the maximum eigenvalue conducts a test on each eigenvalue separately. It then tests the null hypothesis that the number of cointegrating vectors is equal to  $r$  contrary to the alternative hypothesis of  $r + 1$  cointegrating vectors (Brooks, 2008).

### **Granger causality test**

It is a convenient practical technique used for identifying the direction of the causal relationship between the variables, and therefore, it may also be used within the cointegration analysis when a theoretical framework is absent concerning the investigated variables. If, let's say, in a regression equation, independent variable  $X_t$  influences the explained variable  $Y_t$ , indirectly this acknowledges that  $X_t$  variable causes  $Y_t$  variable, which means that if variable  $X_t$  changes, it will induce variable  $Y_t$  to change also. In simple terms, this is a concept of causality. Therefore, the following cases will be identified concerning the direction of causality:

- i. When  $Y_t$  does not cause  $X_t$  but  $X_t$  causes  $Y_t$ , this case will be called a unidirectional causal relationship.
- ii. When  $X_t$  and  $Y_t$  variables are determined jointly, this is a case of feedback or bilateral causality.

Since a theoretical model concerning the direction of the causal relationship is not known, several tests have been recommended to recognize this direction. The most prominent test is the one suggested by Granger (1986). This test is based on the proposition that “the future cannot cause the present or the past” and uses the VAR model concept. The Granger causality general specification test in a context of (X, Y) bivariate can be expressed in Equations [14] and [15]

$$Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \dots + \alpha_i Y_{t-i} + \beta_1 X_{t-1} + \dots + \beta X_{t-i} + \beta X_{t-i} + \varepsilon_t \dots (15)$$

$$X_t = \alpha_0 + \alpha_1 X_{t-1} + \dots + \alpha_i X_{t-i} + \beta_1 Y_{t-1} + \dots + \beta Y_{t-i} + \beta Y_{t-i} + \varepsilon_t \dots (16)$$

As indicated in Equations [15] and [16], the subscripts indicate periods, and  $\varepsilon_t$  is the error term. The constant growth rate of Y and X in Equations eighteen and seventeen is represented by the constant parameter  $\alpha_0$ , and hence, in these variables, the trends can be interpreted as general movements of the cointegration among X and Y that go through the process of unit root. We can derive from this analysis two different test hypotheses. The first hypothesis tests the null hypothesis that Y does not Granger causes X, as does the second hypothesis, which tests the null hypothesis that X does not Granger cause Y. If the first null hypothesis is rejected and the second fails to be rejected, it would be concluded that changes in Y Granger cause changes in X. Also, between the two variables, unidirectional causality will occur if one of the null hypotheses is rejected, bidirectional causality, on the other hand, is said to exist if both

of the null hypotheses are rejected, and no causality is found if both of the null hypotheses fail to be rejected.

The standard Wald F-statistic would be used to test the hypothesis concerning the significance or not of the Equation [15] and Equation [16] VAR model coefficients, as shown in equation [17].

$$F_c = \frac{\frac{SSR_r - SSR_u}{K}}{\frac{SSR_u}{(n - 2k - 1)}} \sim F(K, n - 2k - 1) \dots (17)$$

Where,

SSRu = unrestricted sum of square residuals.

SSRr = restricted sum of square residuals.

This kind of hypothesis in this test would be formulated as follows:

#### **Hypothesis one**

H0: X does not Granger cause Y, that is,  $\{\alpha_{11}, \dots, \alpha_{1k}\} = 0$ , if the critical value of  $F > F_c$

H1: X does Granger cause Y, that is,  $\{\alpha_{11}, \dots, \alpha_{1k}\} \neq 0$ , if the critical value of  $F < F_c$

#### **Hypothesis Two**

H0: Y does not Granger cause X, that is,  $\{\beta_{11}, \dots, \beta_k\} = 0$ , if critical value of  $F > F_c$

H1: Y does Granger cause X that is  $\{\beta_{11}, \dots, \beta_k\} \neq 0$ , if the critical value of  $F < F_c$

The selected variables GEI (good governance) and RGDP are denoted by “X” and “Y”, respectively. It is supposed to be noted that here in hypotheses one and two, the hypothesis has not been tested if we found that “X causes Y,” but it has been instead tested if, according to the Granger type, “X causes Y”. This is because Granger causality test is just a simple statistical tool of analysis that is used for testing the causal relationship between the variables; it is not based on a particular theory of causation but rather on the capability of the equation to predict the dependent variable better. However, the test validity depends upon the VAR model order and on whether the variables are stationary (Seddighi, 2012).

However, the hypothesis of the Granger causality test of this study will be expressed as:

H0: Good governance does not Granger cause economic growth

H1: Good governance Granger causes growth.

The null hypothesis should be rejected if the F-test statistic is greater than the critical value of the estimate. This implies that money growth causes Inflation. However, the same test procedure applies to other variables of the study.

### **Results and discussion**

This section presents the results of the unit root test, cointegration test, VECM, and Granger causality test, which serve as a foundation for facilitating informed decision-

making and deeper insights into the relationship between good governance indicators and real GDP in Nepal.

### Unit root test results

**Table 1** Unit Root Test

Variables	Level	First Difference
LRGDP	1.358506	-5.580956***
LCIM	-1.576134	-4.413339***
LGOEXP	-0.278189	-3.471699**
LDOINV	-0.741434	-3.099488**
LEGI	1.492814	-7.080826***

Table 1. shows that LRGDP, LCIM, LNM1, LGOEXP, LNM2, LDOINV, and LEGI have unit root at a 1 percent level of significance in both intercepts with trend and without trend in the form of level data. So, the variables are not stationary at this level. However, all these variables are stationary at 1 percent and 5 percent levels of significance, with the first difference in intercept and without trend. It means all the variables are integrated into order 1, i.e. I(1). Hence, the variables can be used for the Engle-Granger cointegration test.

### Engle-Granger cointegration test

The **Engle-Granger test** is a test for cointegration. It constructs residuals (errors) based on the static regression. The test uses the residuals to see if unit roots are present, using the Augmented Dickey-Fuller test or another, similar test. The residuals will be practically stationary if the time series is cointegrated.

The components of the vector  $x_t$  are said to be cointegrated of order  $d, b$ , denoted  $x_t \sim CI(d,b)$ , if

- a- all components of  $x_t$  are I (d)
- b- there exists a vector  $b (\neq 0)$  so that  $m = b'x_t \sim I(d-b)$ ,  $b > 0$ . The vector  $b$  is called the co-integrating vector

$$x_t \sim I(1) \Rightarrow a + b x_t \sim I(1)$$

### Results of OLS

This study aims to understand how changes in these independent variables impact economic growth and to what extent. It fulfills the requirement of a co-integration test.

Table 2: Results of OLS

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGOEXP	0.308431	0.090853	3.394832	0.0040
LEGI	0.000540	0.001992	0.271164	0.7900
LDOINV	-0.052796	0.095153	-0.554858	0.5872
LCIM	-0.057261	0.346280	-0.165361	0.8709

C	9.208345	0.420150	21.91678	0.0000
R-squared	0.991444	Durbin-Watson stat		0.923599
Adjusted R-squared	0.989162			
F-statistic	434.5305	Durbin-Watson stat		0.923599
Prob(F-statistic)	0.000000			

Table 5.3 shows the OLS estimate of the variables under study. This stage is necessary for performing the integration test. Table 5.4 shows the unit root test of the residual for cointegration.

### Unit root test of residuals

Table.3 :Unit Root Test of Residuals

Null Hypothesis: D (RESID02) has a unit root				
Exogenous: Constant				
Lag Length: 0 (Automatic - based on SIC, maxlag=4)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-4.721702	0.0017
Test critical values:	1% level		-3.857386	
	5% level		-3.040391	
	10% level		-2.660551	
*MacKinnon (1996) one-sided p-values.				

Table.3 shows the unit root test for the residuals, required for the Eangle- Granger cointegration. The unit root test confirms that the variables are cointegrated in the long run. So this requires estimating VECM to analyze the short-run relationship.

### VECM test

Table.4:VECM Results

<b>DLRGDP and DCIM</b>				
Variable	Coefficient	Std. Error	t-value	P value
EC <sub>t-1</sub>	-1.383082***	0.355657	-3.888811	0.0006
DLRGDP <sub>t-1</sub>	0.313341	0.248486	1.261002	0.2177
DLM1 <sub>t-1</sub>	0.455069	0.333819	1.363221	0.1837
C	0.001090	0.006121	0.178104	0.8599
<b>DLRGDP and DLDOINV</b>				
EC <sub>t-1</sub>	-1.781091***	0.408866	-4.356173	0.0002
DLM1 <sub>t-1</sub>	0.523677	0.298363	1.755169	0.0902
DLRGDP <sub>t-1</sub>	-0.055536	0.075463	-0.735944	0.4679
C	0.000487	0.005745	0.084781	0.9330
<b>DLRGDP and DLEGI</b>				
EC <sub>t-1</sub>	-0.806601***	0.223709	-3.605575	0.0013
DLRGDP <sub>t-1</sub>	-0.124372	0.166137	-0.748612	0.4608
DLM2 <sub>t-1</sub>	-0.002595	0.001544	-1.680543	0.1048
C	0.001437	0.005518	0.260489	0.7965

<b>DLRGDP and DLGOEXP</b>				
EC <sub>t-1</sub>	-1.820089***	0.420408	-4.329341	0.0002
DLM2 <sub>t-1</sub>	0.405914	0.310102	1.308970	0.2012
DLRGDP <sub>t-1</sub>	-0.016373	0.083460	-0.196179	0.8459
C	0.000623	0.005344	0.116582	0.9080

Based on the results of VECM from Table 5.5, the error correction term in the RGDP equation is significant at a 1 percent level and has a negative sign, implying that there exists a long-run relationship running from CIM to RGDP. Its relative value (-1.383082) shows that, the rate of convergence to the equilibrium state per year. More clearly, the speed of adjustment of any disequilibrium toward long-run equilibrium is that about 45.5 percent of the disequilibrium in RGDP is adjusted each year. The degree-of-adjustment mechanism is quite powerful. The coefficient of error correction term with narrow money supply as a dependent variable is observed to be statistically significant at a 1 percent level, indicating that there exists a strong short-run relationship running from real GDP to narrow money supply.

Similarly, the error correction term of RGDP as a dependent variable was observed to be statistically significant with domestic investment (DOINV), at a 1 percent level of significance, implying the existence of short-run causality from domestic investment to real GDP.

Further, the ECM test shows that all the explanatory variables have a short-run relationship with economic growth at a 1 percent level of significance.

### **Granger causality test results**

To determine the causal relationship between GDP and good governance, the Granger causality test is used in this instance. The test is conducted on the first differenced variables since it is determined that all of the variables are I (1). The following results relate to the relationships between the variables:

Table.5: Pair-wise Granger Causality

<b>Dependent variable</b>	<b>Independent Variable</b>	<b>lags</b>	<b>F stat</b>	<b>Remarks</b>
LRGDP	LCIM	1	0.32981	No Causality
LCIM	LRGDP	1	1.96554	No causality
LRGDP	LDOINV	1	1.30749	No causality
LDOINV	LRGDP	1	0.33567	No Causality
LRGDP	LEGI	1	0.47186	No Causality
LEGI	LRGDP	1	4.59809**	LEGI $\rightarrow$ LRGDP
LRGDP	LGOEXP	1	0.75774	No Causality
LGOEXP	LRGDP	1	1.36729**	LGOEXP $\rightarrow$ LRGDP

*Source: Author's calculation using E-Views 10*

\*\*\*, \*\* rejection of null hypothesis at 1 percent and 5 percent levels of significance.



The Granger causality test result presented in Table 4.5 reveals that the government effectiveness index and government expenditure cause the real GDP, and that the null hypothesis of government effectiveness does not Granger because real GDP is rejected at the 5 percent level, but real GDP does not Granger cause the other explanatory variables. Therefore, this result indicates that causality runs from the government effectiveness index as well as government expenditure to real GDP in the short run. The result implies that government expenditure growth has valuable information for forecasting the value of economic growth in the short run. These findings resonate with previous studies, such as Singh (2022), Hisham (2023), and Han et al. (2014), which highlight the intricate relationships between good governance and economic growth in various economies.

### **Conclusion**

A sound understanding of good governance and economic growth plays a critical role in examining the relationship between governance indicators and economic growth. The research thus aims to examine the relationship between governance indicators and economic growth in Nepal. Owing to the disparity in the results of research on the effect of governance on economic growth, this study contributes to enhancing previous studies on the relationship between governance and economic growth using six governance indicators (World Bank) in the context of the Nepalese economy. The study concentrates on the period from 2002 to 2022, using only six governance indicators developed by the World Bank and some control variables. The study employed a co-integration test to explore the existence of short-run and long-run relationships between governance indicators and real GDP. The study also used the Granger causality test to examine the causality running from governance indicators to real GDP and from real GDP to governance indicators.

The study concluded that the trend of governance indicators and GDP per capita growth rates is fluctuating. The VECM results indicated that a long-run relationship exists between CIM and RGDP. Similarly, a strong short-run relationship exists running from real GDP to a narrow money supply. The VECM test results showed that all the explanatory variables have a short-run relationship with economic growth at a 1 percent level of significance. The Granger causality test result indicates that casualties run from the government effectiveness index as well as government expenditure to real GDP in the short run. These findings imply that government expenditure growth provides valuable information for estimating the value of economic growth in the short run.

The study recommended that the government create a better environment for private sector business growth and strictly enforce those laws and regulations, which are closely associated with property rights and corruption control, by ensuring political

stability. The study further suggested that it is necessary to reinforce the cornerstones of democracy by increasing citizen's ability to join and participate in civic and social-political life without fear of discrimination or oppression.

The research provides a foundation for further exploration into the relationship between good governance and economic growth in different contexts. Researchers can build on and extend on these findings to investigate the combined effects of both market-enhancing and growth-enhancing governance indicators on economic growth by employing advanced econometric models, including cross-country comparisons. This can lead to more accurate predictions and policy recommendations.

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## Dryopteris Plant Extracts as a Green Inhibitor for the Corrosion Inhibition of Mild Steel in Acidic Media

**Ramala Niroula<sup>1</sup>, Sudiksha Niroula<sup>1</sup>, Dilli Ram Pokhrel<sup>2</sup>**  
<sup>1,2</sup>Department of Chemistry, Damak Multiple Campus, Jhapa.  
*\*Corresponding author: dillirampokhreldmc@gmail.com*

### Abstract

The corrosion inhibitive properties of *Dryopteris wallichiana* leaves extract was investigated for mild steel in different concentration of acidic medium of HCl. This study revealed that the corrosion rate increases with the increase in acid concentration whereas the corrosion rate decreases with the increase in inhibitor concentration. It is associated with the action of corrosive medium with the metal sample (MS) and the active phytochemicals constituent present in the inhibitor. The maximum inhibition efficiency was found to be 85.84% and the maximum corrosion rate was found to be  $214.8 \text{ gm m}^{-2} \text{ hr}^{-1}$  in 2M HCl.

**Keywords:** Green inhibitor, Weight loss, Plant extract, Corrosion rate, Inhibition efficiency.

### Introduction

Corrosion is the destruction of metal by chemical or electrochemical reactions in its atmosphere. It is a natural process. It is a continuous and regular problem that is never eliminated. [1] Prevention would be preferable to complete elimination. It affects our daily lives in direct or indirect ways. It degrades the useful properties of metals. It is the most serious problems in economic factors. [2]. When corrosion inhibitors are present, metal corrosion rate can be highly reduced.

Corrosion inhibitors can be separated into mainly two groups i.e., inorganic and organic. Most of the inorganic inhibitors are not environmentally safe. Therefore, the extract of green plants leaves has been suggested. In green plants, they contain many compounds to control corrosion problems without damaging the ecosystem of the environment [3]. In many research, corrosion inhibition by the use of synthetic chemical is widely used because of faster effective. Synthesized inhibitors cost a lot of money and in the same time could negatively affect the environment. So, many researchers are focused on

green inhibitors because it is non-toxic, renewable, less cost and eco-friendly materials.[4] Corrosion is becoming an issue in a variety of industries, including oil and chemical production. It is economically wasteful, costing industrialized countries 4.5% of their annual GDP. A basic understanding of electrochemistry material science, and corrosion might potentially save the nation 25% of this loss. Dryopteris plants are commonly called as the wood ferns. These ferns are easily found and easy to grow. The major constituents of Dryopteris fern include flavonoids and terpenoids. So, they are considered as effective, eco-friendly and natural green inhibitor for mild steel in hydrochloric acid solution. Hence, the main aim of this study is to produce corrosion inhibitor from Dryopteris plant extract and determine the inhibition rate for mild steel in acid solution [5].

*Dryopteris wallichiana*, commonly called the wood ferns or male ferns, is a fern genus in the family Dryopteridaceae. Its height ranges from 3 to 5 feet. It is found growing in cool mountainous forest in Japan, Hawaii, Mexico, China, Africa and the foothills of Himalaya. It is one of the most attractive garden ferns, with thin, dark, glossy midnight green leaf that forms a giant clump. Nathaniel Wallich (1786-1854), Danish botanist, was indeed the inspiration for the name. The major constituents of Dryopteris ferns include flavonoids and terpenoids so they are considered as effective eco-friendly and natural green inhibitor for mild steel in hydrochloric acid solution. Hence, the main aim of this study is to produce corrosion inhibitors from Dryopteris plant extract and determine the inhibition rate for mild steel in acid solution [6].



Figure 1 *Dryopteris Wallichiana*

## Materials and Methods

### Material Preparation

The experiment was carried out using steel coupons purchased from the local market; each area was about 1x2cm. After polishing and cleaning the coupons with emery paper they were washed with double distilled water and acetone. They dried at room temperature and left in a desiccator over a Silica gel for 1 hour. Each sample was weighed accurately to the four decimal digital balance before and after the experiment.

### Extract Preparation

Healthy *Dryopteris Wallachiana* leaves were collected from local area of Damak-Jhapa. The *Dryopteris Wallachiana* leaves were washed and dried at room temperature for two weeks and powdered for extraction. *Dryopteris Wallachiana* extract was prepared by adding 100gm of powdered leaves in 1000ml of de-ionized water. It was then heated in a Soxhlet apparatus and the solution was reduced to 250ml. It was then filtered and used for corrosion study.

### Weight Loss Study

The cleaned and pre-weighed MS specimens were immersed in 1M and 2M HCl solution for 5 hours regular interval of 1 hour. After each exposure the specimens were washed with de-ionized water, dried and weighed. Then the MS specimens were placed separately in 10ml, 20ml, and 30ml inhibitor extract along with 100ml of acid. From the initial and final mass of the specimen, the weight loss was calculated with and without inhibitor extract.

The rate of corrosion is estimated by equation:

$$\text{Corrosion rate(R)} = \frac{\text{Weight loss (gm)}}{\text{Area (m}^2\text{)} \times \text{Time(hrs)}} \dots\dots\dots\text{(i)}$$

Where,  $\Delta W$  = Weight loss of the sample in gram

A = Area of the sample in cm

t = time in hours

Similarly,

The following equation was used to calculate the inhibitory efficiency (IE%) and surface coverage ( $\theta$ ):

$$\text{IE (\%)} = \frac{W_o - W_i}{W_o} \times 100 \dots\dots\dots\text{(ii)}$$

Where,  $W_o$  = Weight loss without inhibitor.

$W_i$  = Weight loss with inhibitor.

$$\text{And, surface coverage } (\theta) = \frac{\text{IE\%}}{100} \dots\dots\dots\text{(iii)}$$

## Results and Discussion

### Effect of concentration on weight loss

The weight loss of the mild steel was calculated by using the equation:

$$\Delta W = W_1 - W_2$$

Where,  $W_1$  and  $W_2$  are the weight loss of mild steel sample with and without inhibitor. Table 1 shows the results of a weight loss, corrosion rate, inhibition efficiency, and surface coverage experiment for mild steel immersed in 1M and 2M HCl with and without inhibitor for 5 hours. 2M HCl without inhibitor extract resulted in the greatest

weight loss. The inclusion of Dryopteris leaves extract decreased weight loss and delayed the corrosive activity as shown in Figure 2.

Table 1 Corrosion parameters for mild steel in 1M and 2M HCl in absence and presence of optimum concentration of the inhibitor studied at 5 hours.

Concentration	Weight Loss ( $\Delta W$ )	Corrosion Rate (R)	Inhibition Efficiency (IE)	Surface Coverage ( $\theta$ )
<b>1M HCl (Blank)</b>	0.1204	120.4	0	0
10ml Extract	0.0735	73.5	37.7	0.377
20ml	0.0558	55.8	53.65	0.5365
30ml	0.1589	31.19	73.5	0.735
<b>2M HCl (Blank)</b>	0.2148	214.8	0	0
10ml Extract	0.0816	81.6	62.01	0.6201
20ml	0.078	78.6	63.4	0.634
30ml	0.0435	43.5	79.75	0.7975

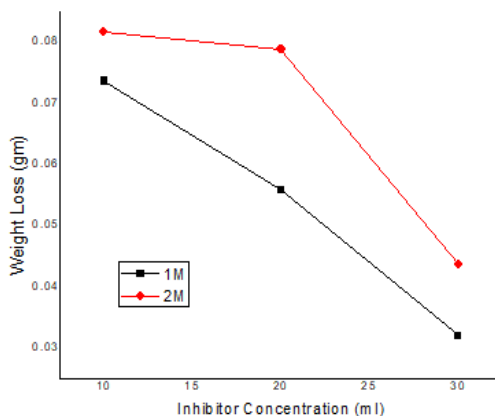


Figure 2 Variation of weight loss with the Dryopteris plant extract.

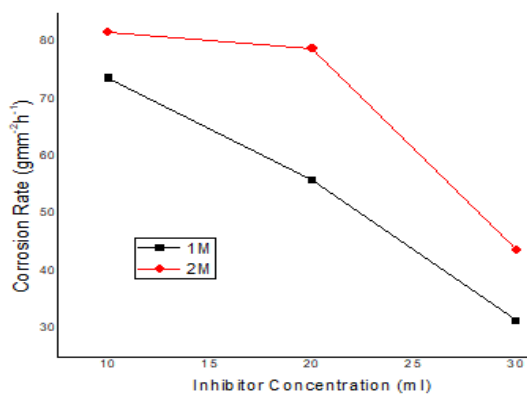


Figure 3 Variation of corrosion rate with Concentration of the Concentration of Dryopteris plant Extract.

### Effect of concentration on corrosion rate

From the weight loss method, the corrosion rate for the mild steel sample in 1M and 2M were calculated. In Table 1, the corrosion rate of mild steel increases with increased in acid concentration due to the action of corrosive medium i.e., HCl with the component of the mild steel sample. The result in Table 1 shows that the addition of Dryopteris leaves extract i.e., 10ml, 20ml, 30ml to the electrolyte decreases the corrosion rate of mild steel sample. Figure 3 shows the effect of acid and inhibitor concentration on corrosion rate. It illustrates that the corrosion rate decreases with the increase in inhibitor concentration.



### Effect of concentration with inhibition efficiency

Table 1 shows the relationship between inhibitor concentration and inhibition efficiency. As shown in Figure 5, the effectiveness of extract inhibition increases as the concentration of inhibitor extract increases because the fraction of surface covered by the adsorbed molecule increases as the concentration of the extract increases. The inhibitory efficiency improves progressively as the concentration of extract increases up to 30. It was discovered that the greatest inhibitory efficiency was 85.84%.

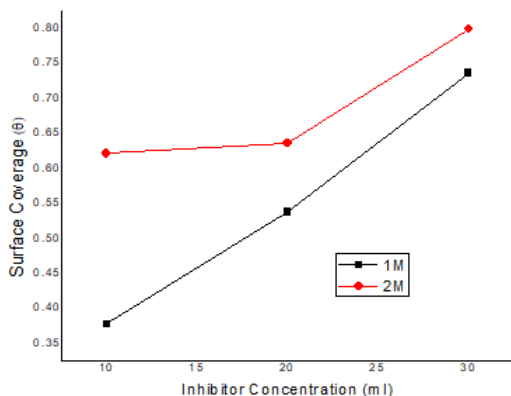


Figure 4 Variation of surface coverage with the concentration of Dryopteris plant extract

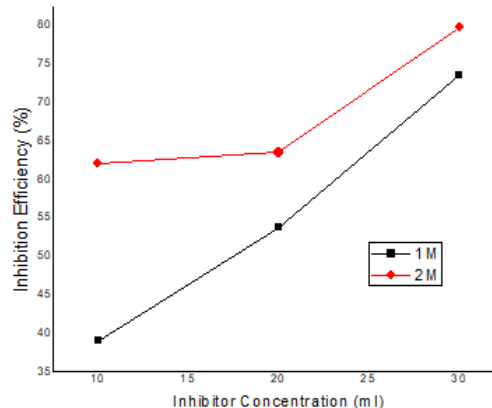


Figure 5 Variation of inhibition efficiency with the concentration of Dryopteris plant extract.

### Effect of concentration on surface coverage

Surface coverage ( $\theta$ ) is directly proportional to the concentration of the inhibitor since it is related to the number of adsorbed molecules on the surface of MS sample. Hence, as the concentration of the inhibitor increases the molecules adsorbing on the surface also increases and hence the inhibitory effect of extract also increases that mitigate the corrosion. It was illustrated in Figure 4.

### Conclusion

From the above experiment it is quite obvious that *Dryopteris wallichiana* plants can be the efficient green inhibitor which could replace the toxic and environmentally unfriendly synthetic inhibitor and be its replacement in a wide area of metal application. In different concentrations of acid, such as 1M and 2M HCl, several corrosion metrics such as weight loss, corrosion rate, inhibition efficiency, and surface coverage were investigated. The inhibitory efficiency improves progressively as the concentration of extract increases up to 30. It was discovered that the greatest inhibitory efficiency was 85.84%. It was observed that the acid with the highest concentration induces the most weight loss, which is around  $214.8\text{g/m}^2\text{hr}$ . The weight loss and corrosion rate values were decreased whereas surface coverage and inhibition efficiency were increased.

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## Customer Attitude Towards Mobile Advertising

**Paras Mani Acharya**

Department of Management

Damak Multiple Campus

*Email: acharyapars017@gmail.com*

### **Abstract**

Mobile Advertising is now emerging as a new channel of marketing communication. The major objectives of this descriptive research are to examine the customer attitude towards mobile advertising. The researcher has used convenience sampling method and collected 100 samples from the respondent located at Damak. The data collected through the questionnaire were organized and analysed using SPSS and Microsoft Excel. From result, indicate a significant relationship between all independent variables and the dependent variable, which is customer attitude. Among the various independent variables, credibility emerges as the most influential factor shaping customer attitude towards mobile advertising. This suggests that individuals perceive mobile advertising as a reliable and trustworthy source, often using personalized content as a reference for their purchasing decisions.

**Key words:** Informativeness, Entertainment, Personalization, Credibility, Irritation and Customer attitude *towards mobile advertising*

### **Introduction**

#### **Background of the Study**

The surge in mobile users has brought about a paradigm shift in the realms of advertising and marketing, giving rise to the phenomenon known as mobile marketing. Duccofe (1996) delved into this transformative landscape, scrutinizing various independent variables that shape consumer attitudes towards mobile marketing. The variables under examination included personalization, entertainment, informativeness, credibility, and advertising, aiming to uncover users' attitudes towards advertising in this mobile-centric era.

#### **Objectives of the Study**

The major objective of this study is to examine the customer attitude towards mobile advertising. Specific objectives of the study are as follows:

- i) To examine the influence of entertainment, informativeness, Credibility, personalization and irritation in the customer attitude toward the mobile advertisement.

- ii) To analyze the relationship between entertainment, informativeness, Credibility, personalization and irritation with customer attitude toward the mobile advertisement.
- iii) To examine the impact of entertainment, informativeness, Credibility, personalization and irritation on customer attitude toward the mobile advertisement

### **Hypothesis Testing**

To achieve the objectives of the study and to answer the research questions, the following research hypotheses have been formulated and will be tested for empirical verification:

#### **Hypothesis-1**

H0: There is no significance impact of entertainment on customer attitude toward the mobile advertisement.

H1: There is significance impact of entertainment on customer attitude toward the mobile advertisement.

#### **Hypothesis-2**

H0: There is no significance impact of informativeness on customer attitude toward the mobile advertisement.

H1: There is significance impact of informativeness on customer attitude toward the mobile advertisement.

#### **Hypothesis-3**

H0: There is no significance impact of Credibility on customer attitude toward the mobile advertisement.

H1: There is significance impact of Credibility on customer attitude toward the mobile advertisement.

#### **Hypothesis-4**

H0: There is no significance impact of personalization on customer attitude toward the mobile advertisement.

H1: There is significance impact of personalization on customer attitude toward the mobile advertisement.

#### **Hypothesis-5**

H0: There is no significance impact of irritation on customer attitude toward the mobile advertisement.

H1: There is significance impact of irritation on customer attitude toward the mobile advertisement.

### **Rationale of the Study**

The purpose of the study is to examine the influence of informativeness, entertainment, personalization, credibility, and irritation in the customer attitude toward the mobile advertisement. This study is an adaptation and combination of several past researches but conducted in Nepalese context. This study hence can become significant to investigate what effects do mobile advertising have on customer purchase intentions.

The findings will provide insights to companies in building good relationship with customer and help to take proper business decisions making suitable competitive strategies. In addition, it can help companies to attract new or potential customer and develop effective product and promotion mix for different segments. Also, the study will help researcher to improve academic competence.

### **Limitation of the Study**

The study possesses certain limitations that provide opportunities for future research to address. The primary constraints of this study are outlined below:

- i) The geographical scope of the study is confined to the Damak Consequently, the findings and conclusions derived from this study may not be applicable or generalizable to broader populations.
- ii) The study relies primarily on existing literature and observations for the theoretical and general aspects of the research. While this provides a foundational understanding, future research could explore additional empirical data or employ diverse research methodologies to enhance the robustness of the study.
- iii) The sample size for the study is limited to 100 participants, primarily focusing on the youth and adults who use mobile phones. Expanding the sample size or diversifying the demographic focus could provide a more comprehensive understanding of the subject matter in future investigations.

### **Literature Review**

This chapter encompasses various theories and reviews past studies relevant to the customer's attitude toward mobile advertising. Initially, the discussion will revolve around patterns in customer attitudes towards mobile marketing. Subsequently, the focus will shift to the description of enabling technologies in mobile marketing. Finally, a review of theories pertaining to the factors influencing mobile marketing will be undertaken. Towards the end, hypotheses will be formulated to explore the relationships between dependent and independent variables.

The term "mobile marketing" or "wireless marketing" has been defined in various ways. According to Altuna and Konuk (2011), it refers to utilizing wireless technology to deliver integrated content about a product or service directly to the intended customers. Carter (2008) offers a distinct definition, describing mobile marketing as the systematic planning, implementation, and control of a mix of business activities aimed at facilitating mutually advantageous exchanges or transfers of products between buyers and sellers. Mobile marketing, also known as m-marketing, not only addresses issues such as time, distance, convenience, and costless transportation but also stands out due to its interactive communication channel and the provision of customized information, making it a crucial and innovative marketing approach.

## **Theoretical Review**

### **Concept of Advertising**

Advertising is a form of persuasive communication directed at the public, typically operating as a one-sided message from the advertiser to the audience. Although individuals are free to respond individually or at the family level, there is minimal dialogue involved, and advertising often imposes itself on the public. In democratic societies with market economies, this form of communication is deemed necessary to enable informed decision-making.

The primary objective of advertising is to convey a message about an idea, product, or service to a targeted consumer or group of consumers. It is executed through specified media devices, representing a non-personal means of communication aimed at the masses. The term "advertising" is derived from the Latin word 'advertere,' meaning 'to turn attention.' The fundamental goal of advertising is to capture attention for the promoted product, service, or idea.

### **Research Gap**

Numerous studies have explored customer attitudes towards mobile advertising on an international scale, but limited research has been conducted in Nepal to understand the impact of mobile advertising on customer attitudes. Additionally, there is a lack of research on customer attitudes towards mobile advertising in the Nepalese context, with only a few studies conducted for academic purposes. The current study seeks to identify various factors associated with mobile advertising that influence customer behavior. Building on prior research, the factors influencing customer attitudes towards mobile advertising have been acknowledged, with the objective of measuring the overall impact of mobile advertising on customer attitudes in this study.

## **Materials and Methods**

This chapter serves to outline the research methodology employed in the course of this study, offering comprehensive insights into the approach and execution of qualitative research. It delineates the chosen research methodology, elucidating the construction of questionnaires derived from the problem discussion. The chapter expounds on the research design, delineates the population and sample characteristics, specifies the sampling technique, details the tools for data analysis, and identifies the software utilized for data entry and analysis. Furthermore, it presents an overview of the respondents' profiles and assesses the viability and reliability of the thesis.

### **Coefficient of Correlation Analysis (r)**

The Pearson's formula is: -

$$r = \frac{N \sum xy - \sum x \cdot \sum y}{\sqrt{N \sum x^2 - (\sum x)^2} \cdot \sqrt{N \sum y^2 - (\sum y)^2}}$$

## **Regression Analysis**

Regression analysis is a statistical method that is used to examine the relationship between one or more independent variables (often called predictors or explanatory variables) and a dependent variable (often called the outcome or response variable). The goal of regression analysis is to develop a model that can be used to predict the value of the dependent variable for new observations. There are many different types of regression analysis, but the most common are linear regression and multiple regression. Linear regression is used when there is a single independent variable, and multiple regression is used when there are multiple independent variables.

Multiple linear regressions are used as the data analysis technique to determine the relationship strength of the independent's variables and dependent variable. The multiple regression equation in this research as below

$$Y = \alpha + \beta_1(X_1) + \beta_2(X_2) + \beta_3(X_3) + \beta_4(X_4) + \beta_5(X_5)$$

where,

Y = Consumer attitude towards m-advertising (AT)

$\alpha$  = a constant, the value of Y when all X values are zero  
 $\beta_i$  = the slope of the regression surface

X1 =

Entertainment

(EN) X2 =

Informativeness

(IN) X3 =

Credibility (CR)

X4 = Irritation (IR)

X5 = Personalization (PE)

## **Research Framework**

The following theoretical framework is constructed on the basis of different study and analysis.

## **Result and Discussion**

This chapter systematically presents all research findings and the statistical analysis derived from primary data collected from 100 respondents. The analysis utilizes the Statistical Package for the Social Sciences (SPSS) version 25.0 to fulfill the study's objectives. Following the research methodology outlined in Chapter Three, the data have been meticulously analyzed, encompassing techniques such as descriptive analysis, Pearson correlation, multiple linear regression, and simple linear regression.

## Respondents Demographic Profile

This section gives the summary of the primary data collected through the questionnaire distribution. The analysis of demographic profile is done by the interpretation of the responses collected. This section deals with the profile of the respondents characterized by Gender and age.

### Gender of the Respondents

Gender is a socially and culturally constructed concept that encompasses roles, behaviors, expectations, and attributes associated with being male, female, or non-binary. When collecting data for research, particularly in survey-based studies, researchers often include a demographic variable that captures the gender of the respondents.

Table 1  
Distribution of Respondents Based on Gender

Gender	Frequency	Percent
Female	18	18.0
Male	82	82.0
Total	100	100.0

*Sources: Survey 2024 & SPSS25*

Table 1: Distribution of Respondents Based on Gender

Table 1 shows the Gender of the respondents. Out of total 120 respondents, 68.3% of respondents represented male and 31.70% respondents represented female of the total respondents. Table 1 illustrates the distribution of respondents based on gender in the research study, offering valuable insights into the demographic composition of the surveyed population. The data reveals a notable gender imbalance within the sample, with 82.0% of respondents identifying as male and 18.0% as female.

This gender distribution is essential to consider when interpreting the study's findings, as it introduces the potential for gender-specific patterns or variations in responses. The substantial majority of male respondents could influence the overall trends observed in the study, reflecting a predominantly male perspective.

Analyzing data based on gender can unveil nuanced insights into how different groups may perceive or respond to the subject matter. In this context, understanding the gender breakdown provides a foundation for exploring potential variations in attitudes, preferences, or behaviors related to the study's focus.



## Age of Respondents

Table 2  
**Distribution of Respondents Based on Age**

Age	Frequency	Percent
20-30 yrs	21	21.0
31-40 yrs	62	62.0
Above 40 yrs.	17	17.0
Total	100	100.0

Table 2 presents the distribution of respondents based on their age, categorizing them into three groups: 20-30 years, 31-40 years, and above 40 years. The data reveals that the majority of respondents fall within the 31-40 years age bracket, comprising 62% of the total sample. This suggests a significant presence of individuals in their thirties, indicating a potential focus on a demographic that may share common characteristics or experiences.

Furthermore, the 20-30 years age group represents 21% of the respondents, suggesting a smaller but still noteworthy segment within the study population. It would be interesting to explore any patterns or trends specific to this younger age category.

Conversely, the above 40 years age group constitutes 17% of the respondents. While relatively smaller in percentage, this segment still represents a notable portion of the sample. Investigating the perspectives and responses of this older demographic could provide valuable insights into how age influences the variables under consideration.

## Descriptive analysis of Informativeness

Table 3  
**Descriptive Statistics of Informativeness**

Items	N	Minimum	Maximum	Mean	Std.Deviation
I1	100	1	5	4.10	0.870
I2	100	1	5	4.02	0.791
I3	100	1	5	4.33	0.865
I4	100	1	5	3.94	0.839

*Sources: Survey 2024 & SPSS25*

Table 3 presents the descriptive statistics of four items assessing the informativeness of mobile advertising. Each item (I1 to I4) is rated on a scale from 1 to 5, with 1 representing the minimum score and 5 the maximum. The respondents, numbering 100 in total, have provided their assessments, and the statistical analysis using SPSS25 reveals interesting insights into the perceived informativeness of mobile advertising.

The mean scores for each item shed light on the overall trend. For I1, which measures the belief that mobile advertising is a good source of sales information, the mean score is 4.10, suggesting a generally positive perception among respondents. Similarly, I2, focusing on the relevance of sales information supplied by mobile advertising, has a mean score of 4.02, indicating a high level of perceived relevance.

In terms of immediate accessibility of sales information through mobile advertising (I3), respondents give it a relatively higher mean score of 4.33, suggesting that they consider this medium effective in providing timely information. However, it is essential to note that I4, which assesses the perception of mobile advertising failing to provide information on time, has a mean score of 3.94. While this is still above the midpoint, it signals a slightly less favorable evaluation compared to the other items.

The standard deviations across all items (ranging from 0.791 to 0.870) are relatively consistent, indicating a moderate level of variability in responses. This suggests that while there is a general consensus among respondents regarding the informativeness of mobile advertising, there are still variations in individual opinions.

### **Descriptive analysis of Entertainment**

In this study, the magnitude of entertainment includes four different statements that are measured in 5 pointed likert scale where 1 denote strongly disagree and 5 denote strongly agree. These items are presented as E1, E2 ,E3, E4 and E5 which denote the following statements:

E1: Mobile advertising is enjoyable. E2: Mobile advertising is entertaining. E3: Mobile advertising is interesting. E4: Mobile advertising is Pleasant

**Table 4**  
**Descriptive Statistics of Entertainment**

Items	N	Minimum	Maximum	Mean	Std.Deviation
E1	100	1	5	3.94	0.839
E2	100	1	5	4.24	0.818
E3	100	1	5	3.34	1.075
E4	100	1	5	3.46	1.105

*Sources: Survey 2024 & SPSS25*

Table 4 presents the descriptive statistics for respondents' perceptions of the entertainment aspects of mobile advertising, as captured by four items (E1 to E4). The analysis, conducted using SPSS25 based on data from a 2024 survey, provides valuable

insights into how respondents perceive the enjoyable, entertaining, interesting, and pleasant attributes of mobile advertisements. The mean score for this item is 3.94, with a minimum score of 1 and a maximum score of 5. This suggests that, on average, respondents find mobile advertising moderately enjoyable. The standard deviation of 0.839 indicates a moderate level of variability in responses, reflecting differing opinions among respondents regarding the extent of enjoyment.

For this item E2, the mean score is 4.24, indicating that respondents, on average, perceive mobile advertising as entertaining. The minimum and maximum scores are 1 and 5, respectively. The standard deviation of 0.818 suggests a more consistent agreement among respondents regarding the entertaining nature of mobile advertisements.

The mean score for this item is 3.34, suggesting a moderate level of agreement among respondents that mobile advertising is interesting. The standard deviation of 1.075 indicates a higher level of variability in responses, suggesting differing opinions regarding the interest value of mobile advertisements.

For this item E4, the mean score is 3.46, indicating that respondents, on average, find mobile advertising moderately pleasant. The standard deviation of 1.105 suggests a higher level of variability in responses, reflecting differing opinions among respondents regarding the pleasantness of mobile advertisements.

### **Descriptive Analysis of Personalization**

In this study, the magnitude of sources of personalization includes four different statements that are measured in 5-pointed Likert scale where 1 denote strongly disagree and 5 denote strongly agree.. These items are presented as P1, P2, P3 and P4 which denote the following statements:

P1: Contents in mobile advertising are personalized. P2 Mobile advertising is available for my preference.

P3: Mobile advertising displays personalized message to me

P4: Mobile advertisement provides me with personalized deals/ads according to my activity context.

**Table 5**  
Descriptive Statistics of Personalization

Items	N	Minimum	Maximum	Mean	Std.Deviation
P1	100	1	5	3.46	1.105
P2	100	1	5	3.97	0.834
P3	100	1	5	2.93	1.037
P4	100	1	5	4.10	0.870

*Sources: Survey 2024 & SPSS25*

Table 5 provides a detailed analysis of the descriptive statistics related to the personalization aspects of mobile advertising. The four items (P1 to P4) measure respondents' perceptions of the degree of personalization in mobile advertising, each rated on a scale from 1 to 5. The analysis, conducted using SPSS25 based on data from a 2024 survey, reveals distinct patterns in how respondents perceive the personalization features of mobile advertisements.

Starting with P1, which assesses whether respondents perceive the content in mobile advertising as personalized, the mean score is 3.46. This suggests a moderately positive but not overwhelmingly strong perception regarding the customization of content to individual preferences.

Moving to P2, which evaluates the availability of mobile advertising according to respondents' preferences, the mean score is 3.97. This indicates a more favorable view, suggesting that, on average, respondents feel that mobile advertising is somewhat tailored to their preferences.

P3, which assesses whether mobile advertising displays personalized messages to respondents, has a mean score of 2.93. This score is below the midpoint, indicating that, on average, respondents are less convinced about the personalized messaging aspect of mobile advertising.

P4, focusing on whether mobile advertising provides personalized deals or ads based on activity context, has a higher mean score of 4.10. This suggests a relatively positive perception, with respondents indicating that they feel mobile advertising delivers personalized content based on their activities. The standard deviations across all items (ranging from 0.834 to 1.105) indicate variability in responses, revealing differing opinions among respondents regarding the extent of personalization in mobile advertising.

### **Descriptive Analysis of Credibility**

C1: Mobile advertising is

reliable. C2: Mobile advertising

is believable C3: Mobile

advertising is trustworthy

C4: I use personalized mobile advertising as a reference for purchasing.

Table 6  
**Descriptive Analysis of Credibility**

Items	N	Minimum	Maximum	Mean	Std.Deviation
C1	100	1	5	3.22	1.097
C2	100	1	5	3.28	1.045
C3	100	2	5	3.98	0.752
C4	100	1	5	3.35	0.903

*Sources: Survey 2024 & SPSS25*

Table 6 provides a detailed overview of the descriptive statistics related to the credibility aspects of mobile advertising. The four items (C1 to C4) assess respondents' perceptions of the reliability, believability, trustworthiness, and utility of personalized mobile advertising, each rated on a scale from 1 to 5. The analysis, conducted using SPSS25 based on data from a 2024 survey, offers insights into how respondents perceive the credibility of mobile advertisements.

Beginning with C1, which measures whether respondents find mobile advertising reliable, the mean score is 3.22. This suggests a moderate perception of reliability, with respondents not overwhelmingly convinced of the trustworthiness of mobile advertising.

Moving to C2, which assesses the believability of mobile advertising, the mean score is 3.28. This indicates a similar level of moderate perception, suggesting that respondents find mobile advertising somewhat believable but with room for improvement.

C3, focusing on the trustworthiness of mobile advertising, has a higher mean score of 3.98. This suggests a more positive perception compared to reliability and believability, indicating that respondents, on average, consider mobile advertising to be somewhat trustworthy.

C4, which explores whether respondents use personalized mobile advertising as a reference for purchasing decisions, has a mean score of 3.35. This suggests a moderate level of agreement among respondents, indicating that personalized mobile advertising is used to some extent as a reference for their purchasing choices. The standard deviations across all items (ranging from 0.752 to 1.097) suggest variability in responses, indicating differing opinions among respondents regarding the credibility of mobile advertising.

### **Descriptive Analysis of Irritation**

In this study, the magnitude of sources of irritation includes four different statements that are measured in 5-pointed Likert scale where 1 denote strongly disagree and 5 denote strongly agree. These items are presented as IR1, IR2, IR3 and IR4 which denote the following statements:

IR1: Mobile advertising is

annoying IR2: Mobile

advertising is displeasing IR3:

Mobile advertising is irritating

IR4: Mobile advertising is excessive and out of control.

**Table 7**  
**Descriptive Analysis of Irritation**

Items	N	Minimum	Maximum	Mean	Std.Deviation
IR1	100	1	5	4.10	0.870
IR2	100	1	5	4.07	0.671
IR3	100	1	5	3.72	1.055
IR4	100	1	5	3.22	1.097

*Sources: Survey 2024 & SPSS25*

Table 7 presents a descriptive analysis of respondents' perceptions regarding the irritation caused by mobile advertising. The four items (IR1 to IR4) assess whether mobile advertising is perceived as annoying, unpleasing, irritating, and excessive, each rated on a scale from 1 to 5. The analysis, conducted using SPSS25 based on data from a 2024 survey, provides insights into how respondents view the potentially bothersome aspects of mobile advertisements.

Starting with IR1, which measures whether respondents find mobile advertising annoying, the mean score is 4.10. This high mean score indicates that, on average, respondents strongly perceive mobile advertising as an annoying aspect of their digital experience.

Moving on to IR2, which assesses the level of unpleasantry associated with mobile advertising, the mean score is 4.07. This suggests a similar level of strong negative sentiment, with respondents finding mobile advertising to be generally unpleasing.

For IR3, focusing on the irritation caused by mobile advertising, the mean score is 3.72. While this score is slightly lower than the previous items, it still indicates a substantial level of irritation perceived by respondents.

IR4, which explores whether respondents feel that mobile advertising is excessive and out of control, has a mean score of 3.22. This suggests a moderate level of agreement among respondents regarding the excessive nature of mobile advertising, though not as pronounced as the other items. The standard deviations across all items (ranging from 0.671 to 1.097) suggest some variability in responses, indicating differing opinions among respondents regarding the degree of irritation caused by mobile advertising.

### **Descriptive Analysis of Attitude**

In this study, the magnitude of sources of attitude includes four different statements that are measured in 5 pointed likert scale where 1 denote strongly disagree and 5 denote strongly agree. These items are presented as A1, A2, A3 and A4 which denote the following statements:

A1: I think mobile advertising is good

A2: I like to receive and read mobile advertisements A3: I appreciate receiving mobile

advertising messages A4: I have positive attitude towards mobile advertising

**Table 8**  
**Descriptive Analysis of Attitude**

Items	N	Minimum	Maximum	Mean	Std.Deviation
A1	100	1	5	3.40	1.015
A2	100	1	5	3.28	1.045
A3	100	1	5	3.97	0.834
A4	100	1	5	4.02	0.791

*Sources: Survey 2024 & SPSS25*

Table 8 provides a descriptive analysis of respondents' attitudes towards mobile advertising, as assessed through four items (A1 to A4). Each item is rated on a scale from 1 to 5, capturing respondents' thoughts on the goodness of mobile advertising, their willingness to receive and read mobile advertisements, their appreciation for receiving mobile advertising messages, and their overall positive attitude towards mobile advertising. The analysis, conducted using SPSS25 based on data from a 2024 survey, offers insights into the general sentiments of respondents towards mobile advertising.

Starting with A1, which measures respondents' belief in the goodness of mobile advertising, the mean score is 3.40. This suggests a moderate level of agreement among respondents, indicating that, on average, they view mobile advertising as somewhat good. Moving on to A2, which assesses respondents' preference for receiving and reading mobile advertisements, the mean score is 3.28. This indicates a similar level of moderate agreement, suggesting that respondents are somewhat inclined to receive and read mobile advertisements. For A3, which explores respondents' appreciation for receiving mobile advertising messages, the mean score is 3.97. This higher mean score suggests a more positive perception, indicating that respondents, on average, appreciate receiving mobile advertising messages. A4, focusing on respondents' overall positive attitude towards mobile advertising, has a mean score of 4.02. This indicates a generally positive sentiment among respondents, suggesting that they hold favorable attitudes towards mobile advertising. The standard deviations across all items (ranging from 0.791 to 1.045) suggest some variability in responses, indicating differing opinions among respondents regarding their attitudes towards mobile advertising.

### **Summary of all Independent Variables and Dependent Variables**

This section presents the scenario of all the independent variables of the study i.e. (informative, entertainment, personalization, credibility, irritation) through mean and standard deviation analysis.

**Table 9**  
**Analysis of summary of all independent variables and dependent variables**

Items	Minimum	Maximum	Mean	Std.Deviation
Attitude	2.25	5.00	3.67	0.58
Informativeness	1.75	5.00	4.10	0.53
Entertainment	2.25	5.00	3.75	0.63
Personalization	1.25	5.00	3.62	0.62
Credibility	1.50	5.00	3.46	0.65
Irritation	2.25	5.00	3.78	0.51

*Sources: Survey 2024 & SPSS25*

Table 9 presents a comprehensive analysis of summary statistics for both independent and dependent variables, providing insights into various aspects of respondents' perception towards mobile advertising. The analysis, conducted using SPSS25 based on data from a 2023 survey, includes minimum and maximum values, mean scores, and standard deviations for each variable, shedding light on the overall trends and variability in the data.

The attitude variable ranges from a minimum of 2.25 to a maximum of 5.00, with a mean score of 3.67 and a standard deviation of 0.58. This suggests that, on average, respondents hold a moderately positive attitude towards mobile advertising. The relatively low standard deviation indicates a degree of agreement among respondents regarding their attitudes.

Informativeness ranges from 1.75 to 5.00, with a mean score of 4.10 and a standard deviation of 0.53. This indicates a high level of perceived informativeness, with respondents generally considering mobile advertising as a valuable source of information. The low standard deviation suggests a more consistent agreement among respondents regarding the informativeness of mobile advertising.

Entertainment scores range from 2.25 to 5.00, with a mean of 3.75 and a standard deviation of 0.63. This suggests a moderately positive perception of the entertainment value associated with mobile advertising. The standard deviation indicates some variability in responses, reflecting differing opinions among respondents regarding the entertainment factor.

### **Regression Analysis**

The major objective of multiple regression analysis is to examine the single dependent variable by a set of independent variables. The significance of informativeness, entertainment, personalization, credibility, irritation on consumer attitude towards mobile advertising will be analyzed from the result.



Table 10 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.850 <sup>a</sup>	0.723	0.709	0.31111

ation, Informativeness, Entertainment, Credibility, Personalization

*Sources: Survey 2024 & SPSS25*

The model summary suggests that the included predictors (Irritation, Informativeness, Entertainment, Credibility, Personalization) collectively account for a significant portion of the variability in the dependent variable (Attitude). The R Square value of 0.723 indicates a substantial level of explained variance, supporting the model's overall fit. The Adjusted R Square considers the number of predictors, providing a more conservative estimate of the model's goodness of fit. The relatively low standard error of the estimate suggests that the model's predictions are relatively close to the actual values.

Table 11 ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	23.784	5	4.757	49.146	.000 <sup>b</sup>
Residual	9.098	94	0.097		
Total	32.882	99			

a. Dependent Variable: Attitude

b. Predictors: (Constant), Irritation, Informativeness, Entertainment, Credibility, Personalization

*Sources: Survey 2023 & SPSS25*

The Regression section indicates the overall statistical significance of the model. The sum of squares for the Regression is 23.784, and it is compared to the Residual sum of squares (9.098) using an F-statistic. The F-statistic is 49.146 with a significance (Sig.) value of .000 ( $p < 0.05$ ). This low p-value suggests that the regression model is statistically significant, meaning that at least one of the predictors has a significant effect on the dependent variable (Attitude). The Residual section provides information about the unexplained variance in the dependent variable. The Total row sums up the total variance in the dependent variable.

Table 12  
Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized	t	Sig.
	B	Std. Error	Coefficients Beta		
(Constant)	0.155	0.308		0.504	0.615
Informativeness	0.405	0.071	0.372	5.685	0.000
Entertainment	-0.306	0.067	-0.334	-4.552	0.000
Personalization	0.389	0.073	0.417	5.296	0.000
Credibility	0.735	0.067	0.829	10.924	0.000
Irritation	-0.250	0.091	-0.221	-2.761	0.007

a. Dependent Variable: Attitude

*Sources: Survey 2024 & SPSS25*

**Regression model**

$$\hat{Y} = 0.155 + \beta_1 0.405 - \beta_2 0.306 + \beta_3 0.389 + \beta_4 0.735 - \beta_5 0.250$$

Where,

$\hat{Y}$  = Attitude (dependent variable)

$\beta_1$  =

Informativeness

$\beta_2$  =

Entertainment

$\beta_3$  =

Personalization

$\beta_4$  =

Credibility

$\beta_5$  =

Irritation

Error term

Table 12 provides the coefficients for the regression model, including unstandardized coefficients, standardized coefficients (Beta), t-values, and significance values (Sig.). The coefficients represent the strength and direction of the relationship between each predictor (Informativeness, Entertainment, Personalization, Credibility, Irritation) and the dependent variable (Attitude). Here is an interpretation of the coefficients:

The constant represents the expected value of the dependent variable (Attitude) when all predictors are zero. In this case, the constant is not statistically significant ( $p > 0.05$ ). As

Informativeness increases by one unit, Attitude is expected to increase by 0.405 units. The positive Beta value indicates a positive relationship between Informativeness and Attitude, and the relationship is statistically significant. As Entertainment increases by one unit, Attitude is expected to decrease by 0.306 units. The negative Beta value indicates a negative relationship between Entertainment and Attitude, and the relationship is statistically significant. As Personalization increases by one unit, Attitude is expected to increase by 0.389 units. The positive Beta value indicates a positive relationship between Personalization and Attitude, and the relationship is statistically significant. As Credibility increases by one unit, Attitude is expected to increase by 0.735 units. The positive Beta value indicates a strong positive relationship between Credibility and Attitude, and the relationship is highly statistically significant. As Irritation increases by one unit, Attitude is expected to decrease by 0.250 units. The negative Beta value indicates a negative relationship between Irritation and Attitude, and the relationship is statistically significant.

In summary, the coefficients provide insights into the direction, strength, and significance of the relationships between each predictor and the dependent variable (Attitude). The standardized coefficients (Beta) allow for a comparison of the relative importance of each predictor in influencing attitudes towards mobile advertising.

### Test of Hypothesis

Table 13  
Result of Hypothesis

Variable	Hypothesis	P Value	Sig Value	Remarks
Informativeness	There is no significance impact of informativeness on customer attitude toward the mobile advertisement.	5.685	0.000	H1 Accepted
Entertainment	There is no significance impact of entertainment on customer attitude toward the mobile advertisement	-4.552	0.000	H1 Accepted
Personalization	There is no significance impact of personalization on customer attitude toward the mobile advertisement	5.296	0.000	H1 Accepted
Credibility	There is no significance impact of Credibility on customer attitude toward the mobile advertisement.	10.924	0.000	H1 Accepted
Irritation	There is no significance impact of irritation on customer attitude toward the mobile advertisement	-2.761	0.007	H1 Accepted

*Sources: Survey 2024 & SPSS25*

The results presented in Table 13 indicate the outcomes of hypothesis tests for each variable in the regression model. Here's a summary of the results:

This topic focuses on the major finding of the study, which are derived from Questionnaire Survey. Some of the major findings of this analysis are summarized and presented below.

- i) The data reveals a notable gender imbalance within the sample, with 82.0% of respondents identifying as male and 18.0% as female.
- ii) The age distribution of respondents indicates a substantial representation of individuals in their thirties, with notable but comparatively smaller segments in the 20-30 years and above 40 years age groups. Understanding the nuances within each age category may contribute to a more comprehensive analysis of the data and its implications.
- iii) The descriptive statistics paint a positive picture of the perceived informativeness of mobile advertising. Respondents generally believe it to be a good source of sales information, with high relevance and immediate accessibility. However, the slight concern raised by item I4 warrants further investigation to understand the nuances behind the perception that mobile advertising may not always provide information on time.
- iv) Enjoyment and entertainment aspects are generally positively viewed, there seems to be a divergence in opinions regarding the interest and pleasantness of these advertisements. Further exploration into the specific factors influencing these perceptions could provide valuable insights for advertisers seeking to enhance the entertainment value of their mobile campaigns.
- v) There is a positive perception regarding the availability of mobile advertising according to preferences and the provision of personalized deals based on activity context, there is less agreement on whether the content and messages are perceived as personalized. Exploring the factors influencing these perceptions could provide valuable insights for advertisers aiming to enhance the personalization features of their mobile campaigns.
- vi) There is a moderate level of trustworthiness, there is room for improvement in terms of reliability and believability. Understanding the factors influencing these perceptions can be crucial for advertisers looking to enhance the credibility of their mobile campaigns and better align them with consumer expectations.
- vii) There is a slightly lower level of agreement regarding the irritation and excessiveness of mobile advertising, the overall sentiment leans towards a negative view. Advertisers may need to address these concerns to mitigate the irritation associated with mobile advertising and enhance the overall user experience.
- viii) There is a moderate level of agreement on the goodness of mobile advertising and the willingness to receive and read advertisements, the higher mean scores for

appreciation and overall positive attitude indicate a more favorable sentiment. Understanding the factors influencing these attitudes can be crucial for advertisers aiming to enhance the effectiveness and acceptability of their mobile campaigns.

- ix) Respondents' perceptions towards mobile advertising. While there is a generally positive attitude and high informativeness, variations exist in how respondents perceive the entertainment, personalization, credibility, and irritation aspects of mobile advertising. These insights can guide advertisers in refining their mobile campaigns to align more closely with consumer preferences and expectations.
- x) Respondents generally perceive mobile advertising as entertaining, with high mean scores for items E2. However, there is more variability in responses for items E1, E3, and E4, suggesting differing opinions regarding the enjoyable, interesting, and pleasant aspects of mobile advertising. Understanding these nuances can be valuable for advertisers aiming to enhance the overall entertainment value of their mobile campaigns to better resonate with diverse consumer preferences.
- xi) The correlation analysis revealed several noteworthy associations. Positive correlations between attitude and informativeness, entertainment, personalization, credibility, and a negative correlation with irritation suggest that these factors are interconnected. Respondents who perceive mobile advertising as informative, entertaining, personalized, credible, and less irritating are more likely to have a positive attitude towards it. Understanding these relationships can assist advertisers in developing strategies to improve overall attitudes towards mobile advertising by focusing on these key factors.
- xii) Based on the model summary, the regression model appears to have a good fit, with the selected predictors contributing significantly to the prediction of respondents' attitudes towards mobile advertising.
- xiii) The ANOVA results indicate that the regression model, with the predictors (Constant, Irritation, Informativeness, Entertainment, Credibility, Personalization), is statistically significant in explaining the variance in the dependent variable (Attitude). The low p-value ( $p < 0.05$ ) suggests that the model's explanatory power is not due to random chance, supporting the conclusion that the model is meaningful in predicting attitudes towards mobile advertising.
- xiv) The coefficients provide insights into the direction, strength, and significance of the relationships between each predictor and the dependent variable (Attitude). The standardized coefficients (Beta) allow for a comparison of the relative importance of each predictor in influencing attitudes towards mobile advertising.

All five hypotheses are accepted (H1 Accepted), indicating that each variable (Informativeness, Entertainment, Personalization, Credibility, Irritation) has a

significant impact on customer attitude toward mobile advertisements. The p-values being less than the significance level (0.05) provide strong evidence to reject the null hypotheses, supporting the idea that these factors influence customers' attitudes in the context of mobile advertising.

The finding of the current study also found that the correlation analysis several noteworthy associations. Positive correlations between attitude and informativeness, entertainment, personalization, credibility, and a negative correlation with irritation suggest that these factors are interconnected. Respondents who perceive mobile advertising as informative, entertaining, personalized, credible, and less irritating are more likely to have a positive attitude towards it. Understanding these relationships can assist advertisers in developing strategies to improve overall attitudes towards mobile advertising by focusing on these key factors.

### **Conclusion**

This study examines the customer attitude toward mobile advertising. Mobile advertising plays a significant role in customer perception and attitude. The existing literature suggests that mobile advertising is a unique and different channel to reach among target audience and also marketers can send customized message as per the nature and buying habit of

The study, conducted in Damak, illustrates the pivotal role of independent variables in shaping customer attitudes towards mobile advertising. The research highlights the significance of providing personalized and relevant information to gain customer trust and enhance the overall advertising experience. This aligns with the broader industry goal of establishing direct connections with customers to foster loyalty. Therefore, advertisers aiming to build trust and engage customers effectively should focus on delivering personalized and valuable content that meets the specific needs and preferences of their target audience.

### **Implications**

The implication is divided into two portions. First one is managerial implications and second is implication for academicians for future research related to similar studies.

- i) The study emphasizes the crucial role of entertainment in shaping the attitude of Nepalese customers towards mobile advertising. Advertisers are advised to focus on making m-advertising content more entertaining and enjoyable, potentially incorporating elements such as games and puzzles to enhance the overall entertainment value.
- ii) The research highlights the importance of credibility in influencing the attitude of Nepalese customers towards mobile advertising. Advertisers are encouraged to

ensure that the content of m-advertising messages provides relevant and trustworthy information to instill confidence and trust among customers.

- iii) The findings stress the significance of advertisements being relevant, interesting, and personalized to effectively capture the attention and interest of Nepalese customers. Advertisers should tailor their messages to meet the specific needs and preferences of the target audience, creating a more personalized and engaging advertising experience.
- iv) The research indicates that advertisers should be cautious about the frequency of advertising messages sent via mobile phones to prevent irritation among customers. Advertisers are advised to manage and limit the number of mobile advertising messages to maintain a positive customer experience and avoid potential annoyance.

These recommendations aim to guide future research endeavors, providing avenues for further exploration and refinement of the understanding of customer attitudes towards mobile advertising in the context of Nepal.

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## Snake Species In The Vicinity Of Damak Municipality, Jhapa

**Krishna Phuyal Chettri**

Department of Zoology

Degree Campus, Tribhubhan University, Biratnagar

*E-mail: krchettri@gmail.com*

### **Abstract**

Transformation of wetland to agricultural land and from agricultural land to urban land is the present layout of the Damak. These changes result in rapid habitat degradation of those plants and animals that had adapted in this environment from last many thousands of years. This changing scenario led to a rapid decline in the population of different kinds of flora and fauna including snakes also. The present study tries to identify the current status to serpent of Damak Municipality. All together 12 species of snake were identified in the study sites that belong to four families of snake species. One species belong to the Typhlopidae, one species belong to the Pythonidae, seven species belong to the Colubridae and three species belong to the Elapidae family of snake species. Out of them only three species belong to Elapidae are venomous (25%) and the rest are non-venomous. Five species i.e. *Ptyas mucosus* and *Amphiesmastolatum* from Colubridae and *Bangarus fasciatus* and *Naja naja* from Elapidae family were found quite adequate number. The result shows that the most populated human settlement site has least number of snake species as well as rate of snake encounter.

**Key words:** Snakes diversity, venomous, non-venomous snakes, Damak Municipality.

### **Introduction**

Nepal is a 93<sup>rd</sup> largest country in the world in the contest of total land area that it occupies. But the geography that it holds makes it rich in ecosystem, flora and fauna. Within a short distance both towards the north - south as well as east - west direction, the diversity in geography brings diversity in climatic condition which in turn created diversity in ecosystem. This helps to form a unique environment for the different types to plants and animal. There are ample scientific study regarding the macro fauna of Nepal but the field of herpetology has always received less priority. Scientific investigations concerning the herpetofauna of Nepal specially Serpents has been sporadic and so the information related to the subject is scanty. The first zoogeographical analysis of Nepalese herpetofauna was done by Swan and Leviton (1962) which laid a



good basis for further studies. In later years several herpetologists like Fleming and Fleming (1974), Kramer (1977), Joshi (1985), Nanho and Ouboter (1987), Shah and Giri (1991), Schleich (1993), Shah (1995, 1997), Orlov and Helfenberger (1997), Schleich and Kastle (2002), Shah et al. (2003), Shah and Tiwari (2004) have given important contribution on the study of snake fauna in Nepal.

Snake belongs to the class Reptile with suborder Serpentes. The cylindrical, elongated with lateral undulation of the body is the characteristic feature of snake. Many other morphological characters like vestigial or absence of limbs, absence of eyelids, absence of external ear opening, presence of imbricate dry scale is peculiar in snake. The forked tongue in snake is an organ of smell rather than taste. The pupil of snake may be circular, vertical or horizontal depending on their activity time for feeding. Snake are all carnivorous, feeding on small insects, rat and also of their own species (cannibalism). They are well adapted to live with human as many insect and rats are living with human. In fact snakes are called the silent friend of man because it lives with human without his information and helps to control the various pests around him.

### **Description of study areas**

Damak is a mid-sized and one of the oldest municipalities of Nepal located in Jhapa district of Eastern Development Region. It has Sivalik Hills in its north and ends with the intersection of Ratuwa River and Maawa River in the south. The municipality is bordered by Kamal VDC in the east, Urlabari, Madhumalla, and Rajghat VDC of Morang district in the west, Chulachuli VDC of Ilam district in the north and Kohwara VDC of Jhapa district in the south. The average temperature of Damak has a maximum of 35<sup>0</sup> C and minimum temperature of 16<sup>0</sup> C. The municipality has sub-tropical climate and is situated at an elevation of only 71m from mean sea level. It lies between 26.65641 to 26.66378"N latitude and 87.70476 to 87.64330"E longitude. It has the total area of 7513 hectares (70.86 sq km) out of which 1406.7 hectares is covered by residential area whereas 5586.30 hectares is used for agriculture and the rest is covered by forest by forest (Damak Municipality Profile). There were a lot of oxbow lake, marshes, quicksand, holes and swamps inside the thick and dense forests of Damak before 1960. At present most of the wetlands are modified in agricultural land and deep wide fertile cultivated lands are changing

For the collection of snake species from different areas of Damak Municipality, four study sites were undertaken, viz., Site I – including ward no 1 and 2, Site II – including ward no 3 and 4, Site III – including ward no 5, 6, 7, 8, and Site IV – including ward no 9 and 10 (Fig. 1). This division of site is based on the distribution of land as per the human settlement, agricultural land and forest area.

**Site I** – It includes Ward no 1 and 2 of Damak Municipality. Ward no 1 has an area of 3.68 sq km and ward no 2 has an area of 11.09 sq km. Ward no 1 and 2 is bordered by Ratuwa river in east with sparse forest and agricultural land, north and west is bordered by ward no 2, south is bordered by ward no 5, 6 and 7. Most of this ward is occupied by open plain agricultural land. Ward no 1 has a community forest named Himalaya

community forest with an area of 3 hecter and ward no 2 has a community forest named Humse-Dumse Community forest with the area of 631.50 hecter including Bhutanese Refugee Camp. Ward no 2 is irrigated by Ratwa river, Batena river, Bhalu river and Kharkhara river.

**Site II** – It include Ward no 3 and 4 of Damak Municipality. Ward no 3 has an area of 20.61 sq km and ward no 4 has an area of 9.54 sqkm. Ward no 3 is irrigated by Ratwa river, Mawa river, Batena river, Dhukura river, Bhalu river, Depini River, Kharkhara river. Ward no 4 is irrigated by Mawa river, Batena river, Dhukura river, Bhalu river and Bharaghara river. This site has the largest area as compared to other sites.

**Site III** – It include Ward no 5,6,7 and 8 of Damak Municipality. Ward no 5 has an area of 2.05 sq km, Ward no 6 has an area of 0.62 sq km, Ward no 7 has an area of 1.23 sq km and ward no 8 has an area of 1.72 sq km. Ward no 5 is irrigated by Depini River and Kharkhara river. It is the most populated ward of Damak. Ward no 6 does not have any river. It is the least populated ward but as per the population density it is the highest with respect to all wards. Ward no 7 is irrigated by Ratwa river and Rata river. Ward no 8 is irrigated by Ratwa river, Rata river, and Depini River. Site III is the most densely populated site in Damak as compare to other site because it has many developmental facilities to support the people's requirement.

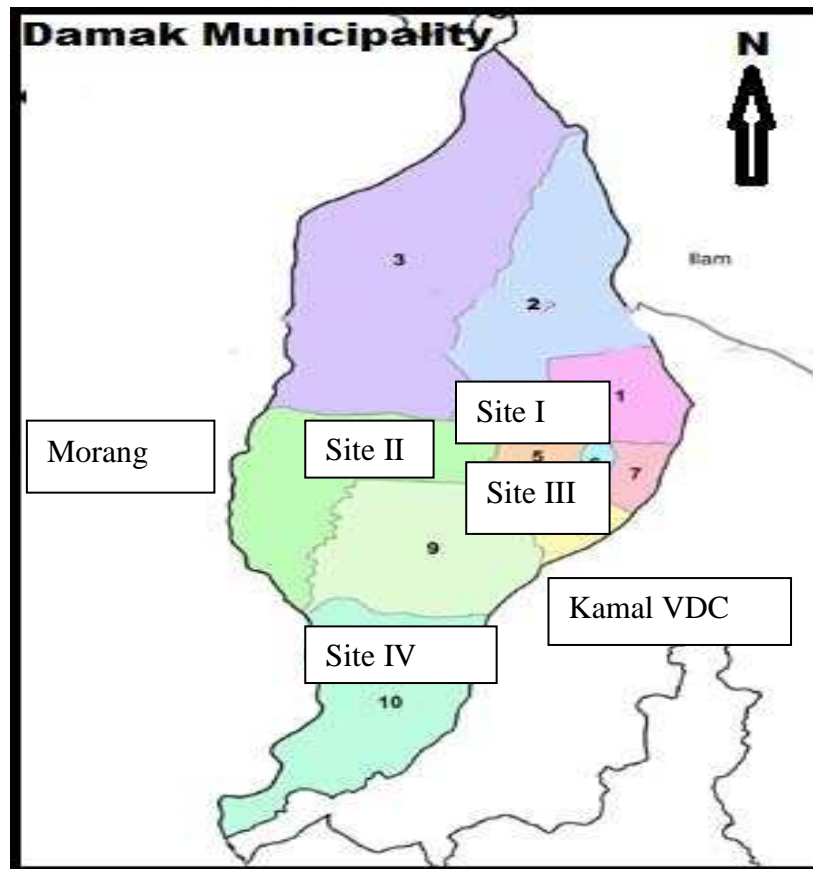


Fig 1: Map of Damak Municipality

**Site IV** – It include Ward no 9 and 10 of Damak Municipality. Ward no 9 has an area of 9.70 sq km and ward no 10 has an area of 10.62 sq km. Ward no 10 has a community forest named Rama Community forest with the area of 198 hector out of which 38 hector is occupied for Industrial Corroder by Damak Municipality. Ward no 9 is irrigated by Ratwa river, Batena river, Bhalu river, Depini River, Kharkhara river and bharaghara river. It is the least populated ward of Damak.

## **Materials and Methods**

### **Survey methods**

The duration of study period was from March 2022 to July 2024. All the sites were visited on daytime especially in summer and rainy season and species were collected with the help of local people. For snake collection, visual encounter survey method was employed with regular visits to study sites and interaction with local people, teachers and students. The survey was conducted in all possible microhabitats such as shade, under boulder and logs, alongside of streams, agricultural field, forest, bushes and human settlements areas. The killed snake species were collected and preserved in 10% formalin for further study whereas the live species were released in their natural habitat after their identification. The collected snake specimens were identified by the standard books of Deoras (1965), Shrestha (2001), Daniel (2002), Schleich and Kastle (2002) Shah and Tiwari (2004), etc.

### **Questionnaire**

A questionnaire is prepared for the local people. This help to get the information about the different snake species that are found in their localities. The target groups were farmers and other local groups. For the easy identification of the snakes, snake field guides - Herpetofauna of Nepal: A Conservation Companion by Karan Bahadur Shah and S. Tiwari with coloured picture from mobile was employed.

## **Results**

During the study period, total of 12 species of snakes were identified (Table 1), belonging 4 families (Fig 1). Among these 1 species belong to the Typhlopidae, 1 species belong to the Pythonidae, 7 species belong to the Colubridae and 3 species belong to the Elapidae. Out of the 12 identified species, 9 species are all non-venomous and only 3 species i.e. *Naja naja*, *Bungarus caeruleus* and *Bungarus fasciatus* are highly venomous. *Naja naja* and *Bungarus caeruleus* has been known for causing fatality in humans in Damak and from its nearby villages. *Python morurus* do not have photographic evidence but are placed on the list based on past sighting i.e. before the study period. Four species *Ptyas mucosus*, *Amphies mastolatum*, *Naja naja* and *Bangarus fasciatus* were commonly found in Damak and from its nearby villages. Notably, *Naja naja* and *Ptyas mucosus* are very commonly found to kill by local due to

the poisonous characteristics of *Najanaja* and *Ptyasmucosus* for their resemblance with *Najanaja* and also potential threat to their poultry birds. *Bangarusfasciatus* are not killed by local people even though it is poisonous because of misbelieve.

Table 1:

Check-list of snake species observed during the study

S. N	Family	S.N species	Scientific name	Common name	Nepali name	Toxicity
1	Typhlopidae	i	<i>Ramphotyphlops braminus</i> (Daudin, 1803)	Brahminy worm snake/Common blind snake	Andharasarpa , ,Ganeulesanp.	Nv
2	Pythonidae	ii	<i>Python morurus</i> (Linnaeus, 1758)	Burmese Python	Ajingar	Nv
		iii	<i>Ptyasmucosus</i> (Linnaeus, 1758)	Asiatic rat snake	Dhaman	Nv
		vi	<i>Lycodonaulicus</i> (Linnaeus, 1758)	Common wolf snake	Dhamiloosarpa, Bagala,	Nv
		v	<i>Amphiesmastolatium</i> (Linnaeus, 1758)	Buff striped keelback	Ashara, Harara	Nv
3	Colubridae	vi	<i>Elaphe helena</i> (Daudin, 1803)	Common trinket snake	Singarasarpa	Nv
		vii	<i>Sibynophissagittaris</i> (Cantor, 1839)	Black headed snake	Sarpa	Nv
		viii	<i>Xenochrophis piscator</i> (Schneider, 1799)	Chequered keelback water snake	Panisanp, Dhodiasanp	Nv
		ix	<i>Atretiumschistosum</i> (Daudin, 1803)	Olive keelback water snake	Panisanp	Nv
		x	<i>Bungarus caeruleus</i> (Schneider, 1801)	Common krait	Karet, Churiasarpa	V
4	Elapidae	xi	<i>Bangarusfasciatus</i> (Schneider, 1801)	Banded krait	Gangwari, PanhelokaloC huria sarpa	V
		xii	<i>Najanaja</i> (Linnaeus, 1758)	Spectacled cobra	Goman, Nag	V

Abbreviation: Nv-Non-venomous

V- Venomous

**Fig 2:** Number of different snake families observed during the study

From Typhlopidae Family one snake species

From Pythonidae Family one snake species

From Colubridae Family seven snake species

From Elapidae Family three snake species

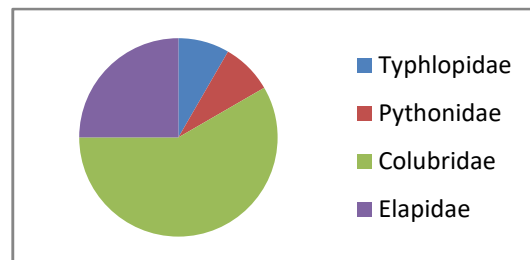


Table 2:

List of snake species recorded from different study sites in Damak Municipality, Nepal.

S.N	Scientific Name	Site I	Site II	Site III	Site IV
1	<i>Ramphotyphlops braminus</i>	+	+	-	+
2	<i>Python morurus</i>	-	-	+	-
3	<i>Ptyasmucosus</i>	+	+	+	+
4	<i>Lycodonaulicus</i>	+	+	-	+
5	<i>Amphiesmastolatium</i>	+	+	+	+
6	<i>Elaphe helena</i>	-	-	-	+
7	<i>Sibynophissagittaris</i>	-	-	-	+
8	<i>Xenochrophispiscator</i>	+	-	-	+
9	<i>Atretiumschistosum</i>	-	+	-	+
10	<i>Bungarus caeruleus</i>	+	+	+	+
11	<i>Bungarusfasciatus</i>	+	+	+	+
12	<i>Najanaja</i>	+	+	+	+

- Symbol: + indicates species encountered and - indicates species not encountered during the study period.
- \* Recorded before study period.
- Local people claim about the existence of many other species of snake also but the research report only considered those snake species that are seen by the researcher only.

### Discussion

There are about 3000 species of snakes found in the world, out of which 375 species (12.5%) are poisonous (Sharma, 1999). Shrestha, (2001) reported 90 species of snakes from Nepal, out of which 21 species are venomous. However, no detail survey of the snake fauna of the country has been carried out so far. The present study recorded altogether 12 species belonging to four families. The four families are Typhlopidae, Pythonidae, Colubridae and Elapidae. The snakes of Boidae family, recorded from other parts of Nepal, were not encountered in this area during the study period. Only on family with three snake species i.e. *Bungarus caeruleus*, *Bungarusfasciatus* and *Najanaja* are found venomous in Damak Municipality. The study reveals that the highest number of snake species was recorded from Site-VI and least number of snakes was recorded from site III. The least number of snake species site III must be because of dense human population in this site. High human density may be the causes of reduction of many other species specially herpetofauna. Different kinds of anthropogenic disturbances in the forms of killing on sight, urbanization, livelihood dependence and pollution are destroying snake population. In most of the cases, people are not able to distinguish the venomous and non-venomous snakes. According to their knowledge and thinking every

snake is poisonous. So, they kill snakes whenever they come with the meeting Thus, the snake species are decreasing day by day. For the conservation of snakes in Nepal, public awareness regarding the importance of snake to keep the ecosystem in balanced condition is essential.

### **Conclusion**

The study highlights the significant impact of rapid land-use transformation in Damak Municipality, with wetlands being converted into agricultural lands and subsequently into urban areas. This shift has resulted in substantial habitat degradation, leading to a decline in biodiversity, including snake populations. The research identified 13 snake species across four families: Typhlopidae, Pythonidae, Colubridae, and Elapidae. Among these, only three species from the Elapidae family were venomous (25%), while the rest were non-venomous. Species like *Ptyas mucosa*, *Amphiesmastolatum*, *Bangarus fasciatus*, and *Najana naja* were relatively more abundant. The findings also revealed a negative correlation between human settlement density and snake diversity, with fewer species and encounters in densely populated areas. This underscores the urgent need for conservation efforts to mitigate habitat loss and preserve biodiversity in Damak Municipality

### **Acknowledgement**

I would want to convey my heartfelt gratitude to Dr. Damodar Thapa, retired HOD of M.Sc. Degree Campus Biratnagar for his invaluable advice in completing my project. I would also like to thank all the Local people and supporting personnel of Damak Municipality who assisted me by providing information as well as snake sample to complete the research work. I would like to thank the students of Siddhartha English Boarding School, Damak 7 for providing the picture of snake species as well as snake sample during the study period. I would also like to thank my friends, my spouse and parents for their support and encouragement as I worked on this assignment.

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### Damak Municipality Profile 2075

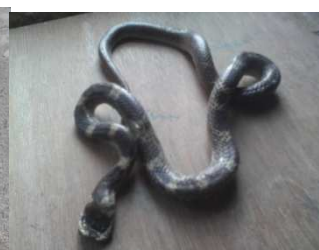
#### Appendix



*Ramphotyphlopsbraminus*



*Ptyas mucosa*



*Lycodonaulicus*



*Amphiesmastolatum*



*Sibynophissagittaris*



*Xenochrophispcator*



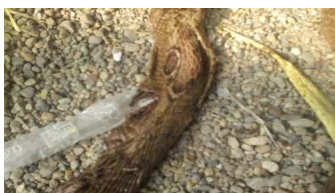
*Atretiumschiostomum*



*Bungarus caeruleus*



*Bungarusfasciatus*



*Najanaja*



## The Impact of Social Media Marketing on Customer Behavior

**Netra Bahadur Budhathoki**

Department of Management

Damak Multiple Campus

*E-mail: netrabudhathoki14@gmail.com*

### **Abstract**

Social media is used by billions of people around the world and has quickly become one of the defining technologies of our time. Social media marketing has become one of the increasingly important aspects of customer behavior. Social media marketing is the practice of using social media platforms and tools to promote a business and connect with existing potential customers. The impact of social media marketing on customer behavior is a topic of paramount importance in today's digital age. This article aims to shed light on the ways in which social media marketing shapes customer behavior, providing valuable insights for businesses and marketers. The purpose of this article is to focus on where to believe the future of social media when considering customer behavior.

**Keywords:** Social media, Social media marketing, Customer behavior, Platform, Strategies.

### **Introduction**

In recent years, the marketing scenario has been significantly reshaped by the emergence and extensive adoption of social media platforms. The influence of social media marketing on customer behavior has become a focal point of interest for both academics and marketing professionals. This article delves into the dynamic relationship between social media marketing strategies and customer purchasing decision making, seeking to answer the basics about the extent to which digital advertisement strategy impacts customer behavior. In the modern digital age, understanding customer behavior is central to business success. It directly shapes decisions, from setting organizational goals to marketing strategies. This understanding is dynamic and ever-changing with the increasing interaction of customers on social media. Social media is something that most people on the planet use on a daily basis. In fact, on a global



scenario social media is used by general public. While primarily many people around the world use social media as a medium for communication or just to talk with their friends and relatives. In this blog, we'll explore the complex link between social media and customer behavior, providing detail tips and valuable tools for navigating the evolving landscape. So, let's first start by unpacking the meaning of today's topic. The major crux of this article is to explore and provide the insights on the role and impact of social media in making purchasing decision by both the organization and by individual customer. A quantitative study investigates the degree to which social media use has changed experiences. The views of consumers about products and services and entire brand's offerings are currently becoming increasingly dominated by competitors and other external factors in the predominant areas, which has an effect on closure in the unrelated space. Since advertisers and marketers have no control over the timing, content, or recurrence of online exchanges between marketers, a web-based social media platforms aids more in attracting and engaging the customer.

According to the study, social media use affects the satisfaction and drive of customers when they are seeking product and service information and weighing their options; as they proceed through the purchase decision making process, their level of satisfaction arises. In addition to approaching your target audience directly, social media marketing let you track the success of each post, remark, and advertisement in order to meet your objectives. Additionally, this article illustrates how to integrate social media marketing with other digital marketing strategies including mobile marketing, discussion boards, and video streaming, displays, Search Engine Optimization and media boost.

Social media marketing is a powerful and often used tool for any business, especially for profit oriented organizations of the time required to successfully manage it. Further, Social media marketing campaign and its activities includes the following:

### **Planning for Media content and Creation**

The most noticeable aspect of social media marketing is content creation and planning. the skill of producing content that is appropriate for each platform in order to engage its target audience.

### **Scheduling of Content and Publishing**

It is simply an issue of getting your media content on the perfect stages at the ideal time. Social media evaluation report proceeds the developments while monitoring the effectiveness of the content with the use analytics tools. Set social media objectives and make plans to enhance overall response in general.

### **Social and Community Listening (Empathy)**

Social listening is the process of using social media platforms to virtually listen to what others are saying about your company and your sector

### **Management of Social Community (customer relationship management)**

Community management is establishing an online relationship with followers, reacting to messages, and providing chances for continued participation in order to maintain the community's vitality.

### **Social Media Marketing and Advertisement**

Social media advertising is the practice of promoting your content to a wider audience on social networks through the use of paid promotion tools and technologies. This can entail collaborating with secondary content creators and campaigners or any other sort of external marketing influencers.

Nowadays, social media has become an essential component of every person's life; over 2.5 billion people make use of social media platforms like Facebook, Instagram, Tiktok, videos, blogs, forums, Reels, comments, and messages. In nutshell, We generate and share content on a social media platform leading in appealing the customer mindset and their brand positioning.

### **Review of Literature**

A new precise survey investigation discovered that informal communities are Web based channels that empower clients to cooperate with enormous or explicit networks that get esteem from client produced content and a feeling of association with others, whether continuously or no concurrently (Carr, C.T.; Hayes R.A. 2015.)The content created by a company, organization, or individual as well as the relationships or exchanges with other users are what makes utilizing social media so important. The term "social media marketing strategy" describes an organization's coordinated efforts that transform social media interactions and communications (platforms) into practical, strategic tools for achieving targeted marketing goals( Li. F.; Larimo, J. Leonidou; L.C.; 2020). The scope of social media marketing is the use of social media as a means of interacting with one or a few stakeholders as an essential tool for communication. The Social Media Marketing Association (SMMA) developed a construct that will have a different appeal when using social media as a marketing tool compared to traditional marketing platforms such as printed advertisements, billboards, etc( Kim, A. J.; Ko. E, 2012).

Social media offers the following advantages as a marketing tool: First, the company's free marketing materials will amuse customers more and spark social media activity. Second, users can personalize information search by utilizing the enterprise's direct

custom search services, hash tags, or SNS default search tools. Third, social media is quick and real-time, giving clients access to the most recent details and industry trends about the goods and services the company offers. Fourth, social network marketing initiatives enable direct user interactions that may result in fifth-order effects, or customers' readiness to tell others about information they have seen on the business's social network. The five constructs blocks that make up SMMA are: Entertainment, interaction, trend, adaption, and word-of-mouth.

It has been proven that SMMA significantly affects purchasing intention, brand equity, etc. In addition, numerous more investigations have examined SMMA in various settings and validated numerous findings (Kim, A. J.; Ko. E, 2012). SMMA proposes that social identity and enjoyment are indirectly impacted by perceived worth. At the same time, satisfaction is directly impacted by social identity and perceived value, which in turn influences intentional stability, purposeful involvement, and purchase intention (Chen, S. C.; Lin, C. P. 2019). SMMA serves as an illustration of how SMMA enhances brand equity through improving brand awareness and image. Brand image as well as awareness, in turn, positively impacted e-word-of-mouth and commitment (Seo and Park, 2018).

According to the previously mentioned and defined literature and research, the relationship between social media marketing and construct indicators (entertainment, engagement, trend, adaption, and word-of-mouth) is thought to be second-degree reflective. (Park, J. W.; Seo, E. J.; 2018). According to recent research, a customer's experience is a multifaceted construct that captures their reactions to a company's goods and services on a cognitive, emotional, behavioral, sensory, and social level throughout their purchasing process (Lemon, K.N.; Verhoef, P.C. 2016). Because there is no personal interaction and no means of communication with service staff, internet products and services are thought to deliver a rather unsatisfactory experience (McLean, G.; Wilson, A. 2016).

Marketers and Managers must take note of the customer experience framework in order to recognize and take advantage of possibilities to strengthen an organization's competitive position (Keiningham, T.; Aksoy, L.; Bruce, H.L.; Cadet, F.; Clennell, N.; Hodgkinson, I.R.; Kearney, T. 2020). According to the study, social support and website quality have an impact on social commerce and users' intentions to keep using social networking sites, but their relationship with the sites also plays a mediating role (Yadav, M.; Rahman, Z.; 2018). Due to the good ideals that the company and its customers share, customers choose to identify with the business.

Customers are also eager to aid and support the business; rather than doing business or any other purchase decision with another company or competitors, they prefer to

communicate about any weaknesses or issues in the quality of the services they receive or any suggestions for growth and development with regard to the organization and brand. Consumer decisions are influenced by tailored recommendations, user-generated content, and compelling advertising, underscoring the value of real and personalized marketing tactics. An age-based analysis that shows younger participants to be more receptive highlights the significance of taking demographic factors into account when developing marketing strategies. But it also suggests that different age groups require distinct adaptive methods (Benslimane et al., 2021; Kangwa et al., 2021).

### **Materials and Methods**

The methodology employed for this articles involves a mixed-methods approach designed to provide a comprehensive understanding of the research topic.

The quantitative aspect entails the administration of structured surveys to a representative sample of participants selected through stratified random sampling. The combination of both quantitative and qualitative data allows for a robust, nuanced understanding of the article topic, offering a more holistic and in-depth perspective. The article aimed to assess the participants' social media usage, their response to various marketing strategies, and the influence of social media on their recent purchasing decisions. Additionally, the article adheres to ethical article guidelines, ensuring informed consent, privacy protection, and data confidentiality throughout the data collection process.

### **Result and Discussion**

The article suggests that social media marketing plays an important role in shaping customer behavior. The highly targeted and personalized nature of digital advertising on platforms like Facebook and Instagram enables businesses to connect with customers on a more personal level. The highly targeted and personalized nature of digital advertising on platforms like Facebook and Instagram enables businesses to connect with customers on a more personal level. User-generated content, including reviews and recommendations, also has a substantial impact on purchasing decisions.

Moreover, compared to consumers of various sources of information and Marketing Intelligence System, social media users perceived the decision-making process to be simpler, easier more enjoyable leading to more engagement. Throughout the involvement process, they also exhibited a lot of confidence and satisfaction in purchase decision. In general, customers who perceived and emphasized that social media provided more and better-quality information than they had anticipated were satisfied in the long run. According to this article, customers' pleasure with social media is unaffected by information overload. Lastly, the paper makes the case that while social media use increased consumer happiness during the early phases of information search

and alternative evaluation, it had no discernible effect on satisfaction throughout the stage of making a purchase decision or during the post-purchase evaluation.

In nutshell, responding to and participating in online conversations and exchange relationship, as well as by observing what people are talking about in blogs, forums, and online communities, social media has made it possible for marketers to continuously and making real-time access and monitoring customer thoughts, opinions, product attitude and buying attributes. Hence, Businesses hubs, marketers and companies must make good use of the intelligence from both internal and external sources and with access to digital tool and social media and integrate in making marketing strategies, campaigns and product and service offerings and building proper Customer Relationship Management and profitability in the long run.

### **Conclusion**

Summing up, this article reflects that social media marketing significantly affects customer behavior. The power of personalized advertising, user-generated content, and engagement strategies cannot be understated. Businesses and marketers should recognize the potential of social media platforms as an effective tool for building brand awareness and increasing consumer engagement. As social media continues to evolve, understanding its impact on customer behavior is vital to creating effective marketing campaigns that resonate with today's digitally-connected consumers. This article contributes to the growing body of knowledge in the field and provides practical insights for businesses looking to leverage social media marketing effectively.

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## बहुभाषिक कक्षामा भाषिक परीक्षण तथा मूल्याङ्कन

रेगिना भट्टराई

शिक्षा विभाग

त्रिभुवन विश्वविद्यालय

Email : [upamayor.damakmun@gmail.com](mailto:upamayor.damakmun@gmail.com)

### लेखसार

प्रस्तुत लेख बहुभाषिक कक्षामा भाषिक परीक्षण तथा मूल्याङ्कन कसरी प्रभावकारी बनाउन सकिन्छ भन्ने कुराकोसैद्धान्तिक चर्चामा केन्द्रित रहेको छ। यस लेखमा मूलतः बहुभाषिक कक्षाको परिचय र आवश्यकता, भाषिक परीक्षण तथा मूल्याङ्कनको परिचय तथा प्रयोजन, परीक्षण र मूल्याङ्कनका सिद्धान्तहरू, भाषिक परीक्षणका उपाय र साधनहरू तथा परीक्षण प्रक्रिया र शिक्षकको भूमिका आदिका बारेमा स्पष्ट पार्ने प्रयास गरिएको छ। लेखलाई गुणात्मक ढाँचामा संरचित गरिएको छ। यसका लागि सैद्धान्तिक किसिमका पुस्तकहरूलाई आधार बनाइएको छ। यस लेख निर्माणका लागि आवश्यक सामग्री सङ्कलन पुस्तकालय पद्धतिबाट विभिन्न सन्दर्भ कृतिका सहायताले गरिएको छ भने तिनको सङ्गठन र प्रस्तुतीकरणका लागि वर्णनात्मक र व्याख्यात्मक विधि अपनाइएको छ। अध्ययनबाट बहुभाषिक कक्षामा भाषिक परीक्षण तथा मूल्याङ्कन सम्पन्न गर्नका लागि पाठ्यक्रमका उद्देश्य, परीक्षणीय विषय, भाषिक सिपको छनोट, भाषिक एकनिष्ठता, योजनाबद्ध परीक्षण, विश्वसनीयता र वैधता आदि कुरामा ध्यान दिनु पर्ने निष्कर्ष निकालिएको छ। त्यस्तै बहुभाषिक कक्षामा परीक्षण तथा मूल्याङ्कन सम्पन्न गर्नका लागि लिखित, मौखिक, अवलोकन तथा प्रयोगात्मक आदि युक्तिहरूको प्रयोग गर्नु पर्ने, विद्यार्थीका कक्षाकार्य, गृहकार्य, परीक्षाका उत्तरपुस्तिका आदिलाई समेटेटी पोर्टफोलियो निर्माण गर्नु गर्ने र त्यसलाई भाषा सिकाइका क्रममा उपयोग गर्नु पर्ने तथा परीक्षणमा कमजोर देखिएका विद्यार्थीलाई निराकरणमूलक, प्रोत्साहनमूलक र सबलीकरणयुक्त कार्यहरू गरेर पुनः परीक्षणका लागि तयार गर्ने, निरन्तर प्रेरणा, हौसला, मार्गदर्शन र परामर्श सेवा प्रदान गर्ने आदि कार्य गरी बहुभाषिक कक्षाका विद्यार्थीहरूको उपलब्धि स्तर बढाउन सकिने निष्कर्ष निकालिएको छ।

**मुख्य शब्दावली :** भाषिक परीक्षण, मूल्याङ्कन, परीक्षणका सिद्धान्त, मूल्याङ्कनका उपाय तथा साधन, निराकरणात्मक शिक्षण।

### परिचय

दुईभन्दा बढी भाषा बोल्ने विद्यार्थीको उपस्थिति भएको कक्षाकोठा बहुभाषिक कक्षा हो। मातृभाषा, समाजको भाषा र विद्यालयको भाषा अलग अलग भएमा विद्यार्थीहरू स्वतः बहुभाषिक बन्दछन्। बहुभाषी समाजमा एकभन्दा बढी भाषाहरू प्रयोग प्रचलनमा आउने भएका हुनाले त्यस्तो समाजका

कक्षाकोठाहरू पनि स्वभावतः बहुभाषिक नै हुने गर्दछन् । यिनै विविध भाषाभाषी समुदायका भाषाहरू र अल्पसङ्ख्यकको भाषाको विकासका लागि बहुभाषिक शिक्षाको धारणा अघि सारिएको हो (ढकाल र खतिवडा, २०७३) । बहुभाषाको प्रयोगले शिक्षण सिकाइमा सहजता हुनुका साथै सिकारुको सिकाइ दर पनि बढ्ने हुनाले वर्तमान समयमा बहुभाषी शिक्षणको प्रचलन बढ्दै गएको पाइन्छ । बहुभाषिक समाजको आवश्यकता र विविधतालाई सम्बोधन गर्न पनि बहुभाषिक कक्षा सञ्चालन गर्न आवश्यक हुन्छ ।

वर्तमान सन्दर्भमा बहुभाषिक शिक्षाको आवश्यकता बढ्दै गएको पाइन्छ । कक्षा दोहोर्‍याउने वा कक्षा छोड्ने दर कम गर्न, मातृभाषामा सिकेका ज्ञान, सिप, अनुभवलाई दोस्रो भाषामा स्थानान्तरण गर्न, भिन्न भिन्न भाषिक पृष्ठभूमि भएका विद्यार्थीबिचमा आपसी सद्भाव बढाउन, बालबालिकाको सामाजिकीकरण प्रक्रियालाई गतिशील बनाउन, संज्ञानात्मक क्षमता विकास गर्न, मातृभाषी विद्यालय खोल्दा हुने आर्थिक व्ययभारलाई कम गर्न यसको आवश्यकता रहेको शर्मा र पौडेल (२०६७) ले उल्लेख गरेका छन् ।

यसरी बहुभाषाका माध्यमले शिक्षण गर्दा सिकारुमा अपनत्वको भावना जागृत हुन्छ । उनीहरूले आफ्नो पहिलो भाषा अर्थात् मातृभाषामा पनि शिक्षण हुने भएकाले विद्यालय र घरको वातावरण समान पाउँछन् । जसले गर्दा विद्यार्थीहरू कक्षामा बस्न रुचाउँछन्, शिक्षण सिकाइमा सक्रिय भएर लाग्न सक्दछन् र कक्षा छोड्ने वा दोहोर्‍याउने दरमा कमी आउँछ । उनीहरूले मातृभाषामा सिकेका ज्ञान, सिप र अनुभवलाई दोस्रो भाषामा पनि स्थानान्तरण गर्ने अवसर पाउँछन् । जसले गर्दा उनीहरूमा आपसी सद्भाव बढ्छ, एकआपसमा अन्तर्क्रियाको दरमा बढोत्तरी हुन्छ । उनीहरूका एक आपसका भाषा सिकाइका अनुभवहरू पनि साटासाट गर्ने अवसर बहुभाषिक कक्षामा उपलब्ध हुन्छ । जसले गर्दा उनीहरूको सामाजिकीकरण प्रक्रियामा वृद्धि हुन्छ । उनीहरू आफ्नो घरको भन्दा भिन्न भाषिक वातावरणमा पनि सजिलैसँग समायोजन हुन सक्छन् । त्यति मात्र नभएर एकभन्दा बढी भाषा जान्ने विद्यार्थीको संज्ञानात्मक क्षमता पनि एक भाषिक विद्यार्थीको भन्दा बढी हुने निष्कर्ष अध्ययनबाट पत्ता लागेको छ । त्यसबाहेक हरेक भाषाका अलग अलग मातृभाषी विद्यालय खोल्दा हुने आर्थिक व्ययलाई पनि बहुभाषिक शिक्षाका माध्यमबाट कम गर्न सकिन्छ । यसरी हेर्दा बहुभाषिक कक्षाको व्यवस्थापन र उपयुक्त शिक्षण प्रविधिको विकास नेपाल जस्ता बहुभाषिक मुलुकका लागि अनिवार्य आवश्यकता बनेको देखिन्छ ।

प्रस्तुत लेख बहुभाषिक कक्षामा भाषिक परीक्षण तथा मूल्याङ्कनको सैद्धान्तिक चर्चामा केन्द्रित रहेको छ । यस लेखमा मूलतः बहुभाषिक कक्षाको परिचय र आवश्यकता, भाषिक परीक्षण तथा मूल्याङ्कनको परिचय तथा प्रयोजन, परीक्षण र मूल्याङ्कनका सिद्धान्तहरू, भाषिक परीक्षणका उपाय र साधनहरू तथा परीक्षण प्रक्रिया र शिक्षकको भूमिका आदिका बारेमा स्पष्ट पार्ने प्रयास गरिएको छ ।



## अध्ययन विधि

प्रस्तुत लेखलाई गुणात्मक ढाँचामा संरचित गरिएको छ । बहुभाषिक कक्षामा भाषिक परीक्षण तथा मूल्याङ्कनका उपाय र साधनहरू, परीक्षण तथा मूल्याङ्कनको प्रक्रिया र यसमा शिक्षकको भूमिका पहिल्याउनका लागि सैद्धान्तिक किसिमका पुस्तकहरूलाई आधार बनाइएको छ । यस लेख निर्माणका लागि आवश्यक सामग्री सङ्कलन पुस्तकालय पद्धतिबाट विभिन्न सन्दर्भ कृतिका सहायताले गरिएको छ भने तिनको सङ्गठन र प्रस्तुतीकरणका लागि वर्णनात्मक र व्याख्यात्मक विधि अपनाइएको छ ।

## परिणाम र छलफल

### परीक्षण र मूल्याङ्कनको अवधारणा तथा प्रयोजन

कक्षाभित्र वा बाहिर शिक्षक विद्यार्थीले गरेका सम्पूर्ण क्रियाकलापद्वारा विद्यार्थीको व्यवहारमा के, कति र कुन हदसम्म अपेक्षित परिवर्तन आयो वा आएन भनेर जान्नका लागि अपनाइने उपायलाई परीक्षण तथा मूल्याङ्कन भनिन्छ ।

शिक्षण तथा सिकाइबाट अपेक्षित उद्देश्य पुरा भएनभएको लेखाजोखा गर्न अपनाइने उपायलाई पनि मूल्याङ्कन भन्न सकिन्छ । यस्तै उद्देश्यको परिपूर्ति भएनभएको, शैक्षिक सामग्रीको प्रभावकारिता रहेनरहेको, शिक्षण तथा सिकाइ उद्देश्यमूलक भएनभएको र मूल्याङ्कनका उपायको उपयुक्त प्रयोग हुन सकेनसकेको समेत जानकारी लिन मूल्याङ्कन उपयोगी माध्यम हुन्छ (खनाल र अन्य, २०७५) । पाठ्यक्रम र पाठ्यपुस्तकको संशोधन र परिमार्जनका निमित्त पनि मूल्याङ्कनका विविध उपायहरू अपनाउन सकिन्छ । भाषा शिक्षणको मूल ध्येय भाषिक सिपहरूको प्राप्ति हो । यसमा विषयवस्तु सिप र ज्ञान आर्जन गर्ने माध्यम मात्र हुन्छ । त्यसकारण विद्यार्थीको बोध (सुनाइ र बोलाइ) र अभिव्यक्ति (बोलाइ र लेखाइ) क्षमताको वस्तुपरक लेखाजोखा गरी निर्माणात्मक र निर्णयात्मक पहल गर्न मूल्याङ्कनका विविध उपायहरू अपनाउने गरिन्छ । भाषिक सिपहरूको विकास गर्न भाषा शिक्षणमा मूल्याङ्कनलाई निरन्तरप्रक्रियाका रूपमा लिइन्छ ।

विद्यार्थीको पृष्ठभूमि पहिल्याउन वा वैयक्तिक भिन्नताको यथार्थ जानकारी लिई त्यसअनुसार समूहीकरण गरेर विमातृभाषीलाई सामान्य स्तरसम्म ल्याउन र मातृभाषीलाई स्तरीकृत गर्दै जान मूल्याङ्कन जरूरी हुन्छ । पढाइमा रुचि जागरण गराउन, कक्षा सहभागिता बढाउन पनि मूल्याङ्कन आवश्यक छ । त्रुटिको विश्लेषण र व्यतिरेकी विश्लेषण समेतका लागि भाषामा मूल्याङ्कन गर्नु अनिवार्य हुन्छ । पठित पाठको गहन अध्ययन र सबलीकरणका निमित्त पनि मूल्याङ्कन गर्नुपर्छ । निर्णयात्मक मूल्याङ्कनको तयारीका निमित्त कक्षा स्तरीय वा विद्यालय स्तरीय प्रबन्ध गरी परीक्षा (लिखित, मौखिक) लिन सकिन्छ (ढकाल, २०७४) । जसबाट विद्यार्थीको पढ्ने बानी बस्छ अनि नतिजाको प्रकाशनले उनीहरूको पढाइलाई यथोचित पृष्ठपोषण प्राप्त हुन्छ । उत्तरपुस्तिका फिर्ता गरी उनीहरूलाई आवश्यक निर्देशन दिने वा टिप्पणी गर्ने कार्यबाट विद्यार्थी लाभान्वित हुन्छन् । सम्बन्धित विद्यार्थीको दृष्टि नपुगेका कुरामा उनीहरूलाई सचेत र सावधान गराउन मूल्याङ्कन आवश्यक हुन्छ ।

निर्माणात्मक प्रयोजनका निमित्त आन्तरिक र बाह्य मूल्याङ्कनको व्यवस्था हुनु पनि अनिवार्य हुन्छ । आन्तरिक मूल्याङ्कनको व्यवस्था भएका अवस्थामा विद्यार्थी नियमित हुन्छन् र पढाइप्रति जागरुक पनि हुन्छन् । विद्यार्थीलाई अनुशासित बनाउने राम्रो उपाय मूल्याङ्कनलाई ठानिन्छ ।

### **बहुभाषिक कक्षामा परीक्षण र मूल्याङ्कनका सिद्धान्तहरू**

विद्यार्थीको व्यवहारमा ल्याउन खोजिएको परिवर्तन के हो र त्यो कुन हदसम्म प्राप्त भयो वा भएन भनेर गरिने लेखाजोखा परीक्षण तथा मूल्याङ्कन हो । यो कार्य जटिल प्रकृतिको हुन्छ । यस्तो जटिल कार्यलाई केही हदसम्म सरल, सहज, व्यवस्थित र प्रभावकारी बनाउन सुझाइएका कुरालाई परीक्षण तथा मूल्याङ्कनका सिद्धान्त भनिन्छ । यस्ता सिद्धान्तहरू ढकाल (२०७४) का अनुसार यसप्रकार छन् :

### **उद्देश्य अनुरूपता**

उद्देश्यअनुरूप मूल्याङ्कन हुनुपर्छ । भाषा शिक्षणको प्रयोजन/उद्देश्य पाठ्यक्रमले निश्चित गरेको हुन्छ, त्यसअनुरूप मूल्याङ्कन हुनुपर्छ । उद्देश्य र मूल्याङ्कनका बीच सामञ्जस्य/सापेक्ष सम्बन्ध हुनुपर्छ । भाषा शिक्षण भाषिक सिपको शिक्षण हो त्यसकारण भाषिक सिपसँग सम्बन्धित मूल्याङ्कन हुनुपर्छ । भाषा शिक्षणमा विषयवस्तु साधन मात्र हुन्छन् । ती साधनका सहायताबाट भाषिक सिप विकास गर्ने उद्देश्य पाठ्यक्रमले राखेको हुन्छ भने उद्देश्य पुरा भएनभएको जान्न अपनाइने माध्यमले सिपको परीक्षण गर्न सक्नुपर्छ । उद्देश्यएकातिर मूल्याङ्कन अर्कातिर भई दुबैका बिचमा तालमेल मिलेन भने मूल्याङ्कनबाट समय, स्रोत र श्रमको बर्बादी मात्र हुन्छ । गन्तव्यको वस्तुपरक लेखाजोखा हुन सक्तैन । त्यसकारण परीक्षण र मूल्याङ्कन उद्देश्यअनुरूप हुनु जरुरी हुन्छ ।

### **परीक्षणीय वस्तुको छनोट**

भाषा शिक्षण भाषिक सिपको प्राप्तिसँग सम्बन्धित भएको हुँदा सिप र विषयजन्य ज्ञानमध्ये कुनलाई कति महत्व दिने भन्ने कुरा यससँग सम्बन्धित छ । मूल्याङ्कन किन गर्ने भन्ने कुरामा मूल्याङ्कनकर्ता स्पष्ट भएपछि मात्र मूल्याङ्कन गर्नुपर्छ । मूल्याङ्कनको योजना बनाउँदा यो यो कुराको परीक्षण गर्ने भनेर परीक्षण सूची बनाउनुपर्छ । त्यस्तो सूची बनाउँदा पाठ्यक्रमका उद्देश्यसँग भिडाएर हेर्नु पनि जरुरी हुन्छ । शब्दोच्चारण सस्वर/लयबद्ध वाचन, वर्णविन्यास क्षमता, अभिनयात्मक क्षमता, श्रुतिबोध, लिखित रचना अलग अलग भाषिक सिपसँग सम्बन्धित हुन्छन् । त्यसैले कुन कुन सिपको परीक्षण गर्ने भन्ने कुरामा स्पष्ट भई परीक्षण गर्नु जरुरी हुन्छ (अधिकारी, २०६९) । लिखित परीक्षा लिएर वर्णविन्यासको र लिखित रचनाको मापन हुन सक्छ तर संवाद, वक्तृता, वादविवादात्मक अभिव्यक्ति लिखित परीक्षाबाट जाँचिदैन । सस्वर/लयबद्ध पाठ गर्ने क्षमताका पहिचानका लागि पढ्न लगाउनु जरुरी हुन्छ । पाठ्य सामग्री उपलब्ध गराएर पढ्न लगाई पठन क्षमताको जाँच गर्नु अनिवार्य हुन्छ । मूल्याङ्कन भाषिक सिपसँग सम्बद्ध हुनुपर्छ तर त्यो पहिले परीक्षणीय सूची बनाएर मूल्याङ्कन गर्नु पर्ने हुन्छ ।

विद्यार्थीको पृष्ठभूमि जाँच्ने, खास भाषिक क्षमता जाँच्ने, खास समस्याप्रति उनीहरूको दृष्टिकोण बुझ्ने, विद्यार्थीको खास कमजोरी पहिल्याउने, मातृभाषी प्रयोग र इतर मातृभाषी प्रयोगका बिचको अन्तर जाँच्ने प्रयोजनका अलग अलग परीक्षणीय वस्तु हुन्छन् । त्यसकारण परीक्षणीय वस्तुमा स्पष्ट नभइन्जेल परीक्षण औचित्यपूर्ण हुँदैन ।

### भाषिक सिप र भाषातत्वको परीक्षण

सुनाइ, बोलाइ, पढाइ र लेखाइ भाषिक सिप हुन् भने भाषातत्वाभिन्न वर्णविन्यास, शब्द निर्माण, लेख्यचिह्न प्रयोग, सङ्गति, काल र पक्ष, भाव, वाच्य, धातु, कारक र विभक्ति, शब्दवर्ग, वाक्य संश्लेषण र विश्लेषण आदिलाई समेटिएको देखिन्छ । भाषातत्वलाई व्याकरण पनि भनिन्छ । व्याकरण भाषाभन्दा भिन्न विषय होइन । भाषाका आन्तरिक संरचनामा अन्तर्निहित विशेषता (नियम र अपवादसमेत) नै व्याकरण हो । त्यसकारण भाषा र व्याकरणलाई अलग विषय ठान्न उपयुक्त हुँदैन । विद्यार्थीका मौखिक लिखित अभिव्यक्तिभिन्न रहेर भाषातत्वको परीक्षण गर्नु आवश्यक हुन्छ । भाषातत्व सैद्धान्तिक जानकारी हो । त्यस सिद्धान्तलाई भाषाको व्यवहारमा नियाल्नु युक्तिसङ्गत हुन्छ भन्ने मान्यता यससँग सम्बन्धित देखिन्छ । सिद्धान्त र व्यवहारलाई साथसाथै लिएर जाने दृष्टिकोणले यससँग नाता गाँसेको देखिन्छ । भाषिक सिप र भाषातत्वलाई अलग्याएर परीक्षण गर्न नसकिने होइन, सकिन्छ तर अलग्याएर परीक्षण गर्नु गराउनु भाषिक मूल्याङ्कनको सिद्धान्त प्रतिकूल हुने देखिन्छ (लामिछाने, २०५७) । दुबै कुरालाई एउटै सम्पादनमा नियाल्दा भाषिक सिपको आड लाग्नु राम्रो हुन्छ । भाषातत्वको परीक्षणलाई विशेष महत्त्व दिँदा परीक्षणले सैद्धान्तिक स्वरूप ग्रहण गर्न पुग्छ । भाषिक सिपहरू सैद्धान्तिक नभएर प्रायोगिक प्रकृतिका हुन्छन् भन्ने कुरालाई यहाँ सम्झनु जरुरी हुन्छ ।

### एक पटकमा एउटा कुराको परीक्षण

भाषाका आन्तरिक संरचनाले देखाउन खोजेका सबै कुरालाई आधार मान्नु युक्ति सङ्गत नहुने कुरा यससँग सम्बन्धित छ । एउटै कुराबाट धेरै कुराको परीक्षण गर्न खोज्दा परीक्षण वैध वा विश्वसनीय नहुने सम्भावना हुन्छ । एक पटकमा एउटा कुरालाई मात्र परीक्षण गर्ने प्रयास गर्नु वाञ्छनीय हुने देखिन्छ । भाषिक मूल्याङ्कनमा परीक्षणीय तत्वको निर्धारण भएपछि मात्र अन्य कुराका सम्बन्धमा विचार गर्नु जरुरी हुन्छ ।

### परीक्षणीय वस्तु र मूल्याङ्कनका उपायका बिचको तालमेल

भाषिक सिप र भाषातत्वको प्रकृतिजस्तो छ, त्यसअनुसारका मूल्याङ्कनका साधन हुनुपर्छ । श्रुतिबोधको परीक्षणका लागि कुनै अंश सुनाएर (वक्ताद्वारा वा यान्त्रिक उपकरणद्वारा) मौखिक वा लिखित (विषयगत, वस्तुगत) उपाय अपनाउनु उपयुक्त हुन्छ । मौखिक अभिव्यक्ति क्षमताको परीक्षण संवाद, वादविवाद, वक्तृता, एकाङ्कीमा सरिक गराएर गर्नु जरुरी हुन्छ भने वाचन कलाको परीक्षण गर्न पाठ्यांशको सस्वर पाठ गराउनुपर्छ । लिखित परीक्षाबाट वाचकताको मापन हुन सक्तैन । उद्देश्य र मूल्याङ्कनका साधनबीच तालमेल मिल्न नसक्दा परीक्षण वैध र विश्वसनीय हुन सक्तैन ।

शब्दोच्चारणको मापन लिखित अभिव्यक्तिबाट हुन सक्तैन । त्यस्तै मनोवादको मापक लिखित अभिव्यक्ति कुनै हालतमा पनि हुन सक्तैन । परीक्षण गर्न खोजिएका कुराको प्रकृति हेरी मूल्याङ्कनका उपायको चयनमा सावधान हुनुपर्छ ।

### **योजनाबद्ध र नियोजित परीक्षण**

योजनाबद्ध ढङ्गले गरिएको कामको परिणाम अपेक्षानुकूल हुन्छ । योजना नबनाई गरिएका कामको राम्रो परिणाम हुन्छ भनेर भन्न सकिन्न । परीक्षण गर्ने कुरा र मूल्याङ्कनका उपायकाबारेमा पूर्व तयारी हुनु जरूरी छ । यसका लागि विशिष्टीकरण तालिका बनाउनुपर्छ । भाषिक सिप विषयवस्तुजन्य ज्ञान वा धारणा अनि भाषातत्वका परीक्षणीय कुनै पनि कुराहरू नछुटून् र सबै क्षेत्र समेटिउन् भन्नका लागि योजना बनाउनु जरूरी छ । त्यो योजना भनेको विशिष्टीकरण तालिका हो । उक्त प्रयोजनका लागि विशिष्टीकरण तालिका हेर्न सकिन्छ ।

### **नियमित र निरन्तर मूल्याङ्कन**

भाषाका प्रत्येक सिप हासिल गर्न गराउन, सिक्सकेका सिपलाई सबलीकरण तथा पृष्ठपोषित गर्न मूल्याङ्कनलाई नियमित र निरन्तर गरिरहनु जरूरी हुन्छ । निर्माणात्मक मूल्याङ्कनले विद्यार्थीको क्षमता विकास गर्छ भने निर्णयात्मक मूल्याङ्कनले सिक्सकेका र सिक्न बाँकी रहेका कुराहरूको निर्णय गरी स्तर निरूपण गर्दछ । दुबै किसिमका मूल्याङ्कन भाषा शिक्षण तथा सिकाइका लागि अनिवार्य हुन्छन् ।

### **विभिन्न मूल्याङ्कनका उपाय र साधन**

लिखित परीक्षामात्र लिई मूल्याङ्कन गर्ने परम्परा तोडी मौखिक, लिखित (विषयगत र वस्तुगत) साधनका साथसाथै पर्यवेक्षण र प्रयोगात्मक परीक्षाजस्ता उपायलाई प्रयोग गरी विद्यार्थीको भाषिक सिप, विषयवस्तु र व्याकरणका क्षमताको मापन गर्ने प्रयास गरिनु आवश्यक छ । एउटा माध्यमबाट सबै किसिमका परीक्षणीय विषयको मापन हुन नसक्ने कुरामा सचेत हुनु आवश्यक छ । मूल्याङ्कनका विविध उपायको प्रयोग गर्ने सोच विकसित हुनु जरूरी छ ।

### **परिणामको अध्ययन, व्याख्या, विश्लेषण र त्यसको उपयोग**

जाँच लिने तर त्यस परिणामको अध्ययनविश्लेषण नगरी छोडनाले मूल्याङ्कनको औपचारिकतालाई मात्र सङ्केत गर्छ । परिणाम/नतिजाको समुचित विश्लेषण गरी शिक्षण सिकाइमा प्रयोग वा उपयोग गर्न सकियो भने पठनपाठन फलदायी हुन सक्ने देखिन्छ ।

### **बहुभाषिक कक्षामा प्रयोग गरिने परीक्षण तथा मूल्याङ्कनका उपाय र साधन मूल्याङ्कनका उपायहरू**

विद्यार्थीको भाषिक सिप, भाषातत्व र विषयजन्य ज्ञानको वस्तुपरक लेखाजोखा गर्नका लागि मूल्याङ्कनका विभिन्न उपायहरू अपनाउन सकिन्छ । ती उपायहरू लिखित, मौखिक, पर्यवेक्षण र

प्रयोगात्मक परीक्षा हुन सक्छन् । परीक्षणीय सिप तथा धारणाको प्रकृतिअनुसार उक्त उपायहरू/युक्तिहरू उपयोगमा ल्याउनु जरुरी हुन्छ । भाषा शिक्षणको मूल प्रयोजन भाषिक सिपको प्राप्त नै हो । भाषातत्वको ज्ञान र विषयवस्तुको ज्ञानसँग पनि भाषिक मूल्याङ्कन सम्बन्धित छ तर भाषिक सिप हासिल गर्ने कुरासँग भने यसको अभिन्न सम्बन्ध हुन्छ । सुनाइ, बोलाइ, पढाइ र लेखाइजस्ता भाषिक सिपहरूको वस्तुपरक लेखाजोखा गर्न कुनै एउटामात्र उपाय अवलम्बन गर्नु उपयुक्त हुँदैन । तसर्थ हरेकको चर्चा यस प्रसङ्गमा गर्ने प्रयास गरिन्छ ।

लिखित परीक्षा :श्रुतिबोध र पठनबोध क्षमताको वास्तविक लेखाजोखा गर्न प्रयोग गरिने यो उपाय अत्यधिक रूपमा प्रचलनमा आइरहेको छ । समय, श्रम र स्रोतको सीमित उपयोगबाट परीक्षण गर्न र अभिलेख राख्न सजिलो यस उपायलाई पठनपाठनको अभिन्न अङ्ग ठानिन्छ । सीमित समयमा एकैपटक हजारौंलाई परीक्षामा सामेल गराउन, सामेल परीक्षार्थीको उत्तरपुस्तिका सङ्कलन, प्रेषण, परीक्षण, सुरक्षण आदिमा सहजता हुने हुँदा अत्यधिक रूपमा यसको प्रयोग व्यवहार भइरहेको छ (ढकाल, २०७४) । लिखित परीक्षाबाट शब्द प्रयोगगत उपयुक्तता, वाक्य रचनागत उपयुक्तता, विचार प्रकटीकरणमा क्रमबद्धता र अनुच्छेद गठन, विषयवस्तुको प्रासङ्गिकता, वर्णविन्यास, चिह्न प्रयोग, किनारा छोडाइ, सफाइ, अक्षरको बान्की आदि कुराहरू परीक्षण गर्न सकिने अवस्था हुन्छ ।

कथ्य भाषा र लेख्य भाषाका आ-आफ्नै स्वरूप छन् । लिपिबद्ध गर्दा एक ढङ्गले गरिएको विषयवस्तु आखर (उच्चारण) गर्दा अर्कै ढङ्गले गरिन्छ, गरिनु जरुरी हुन्छ । लिखित परीक्षाबाट विचारको प्रकटीकरणको लिपिबद्ध स्वरूपको मात्र लेखाजोखा हुन सक्ने देखिन्छ । लिखित परीक्षामा विभिन्न साधनहरूको उपयोग हुन सक्छ । ती साधनहरू परीक्षणीय वस्तुसँग सम्बन्धित हुन्छन् ।

मौखिक परीक्षा: मौखिक अभिव्यक्ति क्षमताको लेखाजोखा अन्य उपायबाट सम्भव हुँदैन । संवाद, वादविवाद, वक्तृता, एकाङ्की आदिमा सामेल गराएर विद्यार्थीको विषयवस्तु प्रस्तुतीकरणमा भाषिक र भाषेत्तर गतिविधिको यथार्थ अवस्थाको जानकारी लिन सकिन्छ । लिखित अभिव्यक्ति र मौखिक अभिव्यक्तिमा पर्याप्त भिन्नता हुने भएको हुँदा मौखिक उपायद्वारा बोलीमा भएको सहजता, स्वाभाविकता, प्रवाहमयता, स्पष्टता, शुद्धताका साथै वाक्य गठनगत क्षमता समेतलाई आधार बनाएर मौखिक परीक्षा लिनु वाञ्छनीय हुन्छ (अधिकारी, २०६९) । अन्तर्वार्ता पनि मौखिक अभिव्यक्ति क्षमताको मापन गर्ने भरपर्दो उपाय हो । अर्काका कुरा सुन्ने धैर्यता, हार्दिकता, समर्थन गर्ने वा विरोध गर्ने तरिका शिष्टाचार र मैत्रीपूर्णव्यवहार आदिको परीक्षण गर्न संवाद र एकाङ्कीको अभिनयात्मक प्रस्तुति आवश्यक हुन्छ भने तार्किक शक्तिको लेखाजोखा गर्न पक्षको मण्डन र विपक्षको खण्डन गर्ने विषय तोक्यो मूल्याङ्कन गर्नुगराउनु जरुरी हुन्छ । यस्ता विशिष्ट भाषिक क्षमताको वस्तुपरक मूल्याङ्कन मौखिक परीक्षाबाट मात्र सम्भव हुन्छ ।

पर्यवेक्षण/अवलोकन :भाषा शिक्षणमा मूल्याङ्कनलाई वस्तुपरक रूप दिन पर्यवेक्षणलाई भरपर्दो उपायका रूपमा लिइन्छ । अवलोकन औपचारिक (पूर्व नियोजित रूपमा थाहा दिएर) र अनौपचारिक (थाहा नदिई अप्रत्यक्ष ढङ्गबाट गरिने) प्रकृतिको हुन सक्छ । औपचारिक पर्यवेक्षणमा परीक्षार्थीले

सचेत र सावधान भई आफ्नो वास्तविक भाषिक र भाषेत्तर व्यवहार गर्न सक्छ । अनौपचारिक रूपमा गरिएका पर्यवेक्षणले परीक्षार्थीको वास्तविक अवस्था ठम्याउने भरपर्दो आधार दिन सक्छ । भावनात्मक अवस्था ठम्याउन काम दिएर वा कुराकानी, संवाद, वादविवादमा सरिक गराएर, सामुन्ने बसेर वा अप्रत्यक्ष रूपमा गरिने मूल्याङ्कनबाट परीक्षार्थीको यथार्थ मूल्याङ्कन हुन सक्छ (लामिछाने, २०५७) । शिक्षकको उपस्थितिमा साँचिलो भएर गरेजस्तो गर्ने विद्यार्थी शिक्षकको अनुपस्थितिमा अराएको काम गर्नेहरूलाई भड्काउने पनि हुन सक्छ । यी र यस्तै कुरा जान्न पर्यवेक्षणलाई पूरक उपायका रूपमा लिनु आवश्यक हुन्छ । बोलाइ ध्वन्यात्मक उपकरणबाट (टेलिफोन, रेडियो, टेपरिकर्डर, ग्रामोफोन) बाट पनि सुनिन्छ तर पर्यवेक्षणमा उसको आनीबानी, भाषिक र भाषेत्तर व्यवहारको परिचय प्रत्यक्ष रूपमा पाउन सकिँदैन । पर्यवेक्षणबाट प्राप्त सूचनाहरूलाई सहज ढङ्गले अभिलेख राख्न जाँच सूची र श्रेणी मापनलाई आधार बनाउनु वाञ्छनीय हुने देखिन्छ ।

प्रयोगात्मक परीक्षा: भाषा आदत वा बानी हो । यसलाई भाषिक व्यवहार पनि भनिन्छ भने भाषिक व्यवहारको परीक्षण गर्न प्रयोगात्मक परीक्षा हुनु जरूरी देखिन्छ । सुनाइ सिप वा दक्षता जाँचन दृष्टांश, अदृष्टांश, मौखिक वा यान्त्रिक उपकरणबाट सुनाएर प्रस्तुत अंशमा आधारित भई भाषिक सिप, भाषातत्व र भाषेत्तर पक्षको प्रयोगात्मक परीक्षा लिन सकिन्छ । यस्तो प्रयोगात्मक परीक्षामा लिखित वा मौखिक उपायहरू पनि संलग्न हुन सक्छन् । बोलाइको प्रयोगात्मक परीक्षाका लागि लिपिबद्ध गरिएका संवादमा भूमिका निर्वाह गराउन सकिन्छ भने विषय तोकेर स्वतन्त्र ढङ्गले दुई वा दुईभन्दा बढी सहभागीका बीचमा संवाद गराउन पनि सकिन्छ (लामिछाने, २०५७) । पढाइ सस्वर र मौन दुईखाले हुन्छन् । लिपिबद्ध गरिएका विषयलाई शुद्ध र स्पष्टसँग गति यति र लय मिलाई मौखिक भाषाका विशेषतालाई आत्मसात् गर्दै सस्वर पढ्ने क्षमता विकसित भए नभएको ठम्याउन गद्य/पद्यको सस्वर पाठ गर्न लगाउनु आवश्यक हुन्छ । दृष्टांश वा अदृष्टांश पढेर बुझ्न सक्ने क्षमता मापन गर्न लिखित वा मौखिक उपायलाई अपनाउन सकिने अवस्था हुन्छ । त्यस्तै लेखाइ क्षमताको यथार्थतालाई बुझ्न लेखाइमा अवलम्बन हुने वर्णविन्यासीय परम्परा, सरसफाइ, वाक्यगठन, किनारा छोडाइ, विषयवस्तु प्रस्तुतिमा क्रमबद्धता आदि जाँचन अन्य उपाय उपयोगी र उद्देश्यमूलक नहुने देखिन्छन् त्यसकारण लेख्नै लगाउनु जरूरी हुन्छ । तसर्थ सुनाइ, बोलाइ, पढाइ र लेखाइलाई प्रयोगात्मक परीक्षाद्वारा मापन गर्नुपर्छ । समय, स्रोत र श्रम बढी लाग्ने बाहनामा यसको महत्वलाई उपयोग गर्न नसक्नु हाम्रो कमजोरी ठहर्छ । त्यस कारण यसको उपयोग गर्नेतर्फ सचेष्ट रहनुपर्छ ।

### मूल्याङ्कनका साधनहरू

भाषा शिक्षणमा निर्माणात्मक (अभ्यासात्मक) र निर्णयात्मक प्रयोजन पूर्तिका निमित्त विभिन्न साधनहरू उपयोगमा ल्याउन सकिन्छ । मूल्याङ्कनका यी साधनहरूका आ-आफ्नै प्रकृति र प्रयोजन देखिन्छन् । हरेक साधनको निर्माण र प्रयोगलाई उद्देश्यमूलक बनाउन तिनीहरूको संरचना र अभीष्टसँग परिचित हुन

आवश्यक हुन्छ । यस्ता युक्तितथा साधनहरू कक्षाकोठामा प्रयोग गर्दा भने शिक्षकले सावधानी अपनाउनु पर्छ । विशेषतः यस्ता साधनहरू बहुभाषिक विद्यार्थीका लागि रोचक, आकर्षक, स्पष्ट र उमेर सुहाउँदिला हुनुपर्दछ । परीक्षणका साधन एकभन्दा बढी भाषामा राम्रोसँग निर्माण गर्नु पर्दछ र परीक्षा पनि आवश्यकताअनुसार दुवै भाषामा वा पालैपालो सञ्चालन गर्नुपर्दछ (शर्मा र पौडेल, २०६७) । त्यस्तै मूल्याङ्कन प्रक्रियालाई व्यवस्थित गर्न परीक्षणका साधनमा लचकता अपनाउने, बहुवैकल्पिक, जोडा मिलाउने, ठिक बेठिक, खाली ठाउँ भर्ने, क्लोज र सी प्रश्न तथा लामा र छोटो प्रश्नहरू प्रश्नपत्रमा समावेश गर्नुपर्दछ । कक्षाका सम्पूर्ण विद्यार्थीलाई ध्यानमा राखी औसत किसिमका प्रश्नहरू सोध्ने, प्रश्नहरू स्पष्ट, विश्वसनीय र वस्तुपरक बनाउने आदि कार्यहरू पनि बहुभाषिक कक्षाको परीक्षणमा मननीय हुन्छन् ।

### **बहुभाषिक कक्षामा परीक्षण तथा मूल्याङ्कन प्रक्रिया**

बहुभाषी कक्षामा विद्यार्थीको स्तर र योग्यताअनुसार फरक फरक विधि र प्रविधि प्रयोग गरेर परीक्षण तथा मूल्याङ्कन गर्नुपर्दछ । एउटै विधि र प्रविधिको प्रयोगले विभिन्न भाषिक क्षमता भएका विद्यार्थीलाई समेट्न नसक्ने कुरालाई मध्यनजर गरी परीक्षण सञ्चालन गर्नुपर्दछ । परीक्षणका क्रममा विद्यार्थीहरूले सिक्नहेको र सिक्दै गरेको भाषाको प्रकृति पनि ध्यान दिनुपर्दछ (ढकाल र खतिवडा, २०७३) । यदि विद्यार्थीले पहिले सिकेको भाषा र पछि सिकेको भाषाको प्रकृति मिलेको खण्डमा त्यस्तो अवस्थामा भाषा सिकाइ सरल हुन सक्छ तर पहिले सिकेको र पछि सिक्दै गरेको भाषाको प्रकृति फरक परेमा त्यहाँ भाषा सिकाइमा जटिलता उत्पन्न हुन सक्छ । तसर्थ भाषा सिकाइको यो पक्षलाई ध्यानमा राखेर परीक्षण र मूल्याङ्कन प्रक्रिया सञ्चालन गर्नु आवश्यक हुन्छ ।

कक्षाकोठामा रहेका बहुभाषी विद्यार्थीका सबै भाषालाई परीक्षणमा समावेश गर्न कठिनाई हुन सक्छ तसर्थ परीक्षणका लागि बढीमा दुई वटा भाषा (एउटा नेपाली र अर्को बहुसङ्ख्यक विद्यार्थीले बोल्ने मातृभाषा) चयन गर्नु उपयुक्त हुन सक्छ । कक्षाकोठामा प्रयोग गरिने यिनै मुख्य दुई वटा भाषामै परीक्षणका साधनहरू निर्माण गरी भाषिक परीक्षण सम्पन्न गरिनु पर्ने हुन्छ । यसतर्फ पनि भाषा शिक्षकहरू सचेत हुनु पर्ने देखिन्छ । परीक्षणका क्रममा तल्ला कक्षामा सुनाइ, बोलाइ, पढाइ, लेखाइ जस्ता आधारभूत सिपमा र माथिल्ला कक्षामा सिर्जनात्मकता, मौलिकता, समालोचनात्मकता, उच्च बौद्धिकता र तार्किकता जस्ता कुराहरूलाई ध्यान दिनु पर्ने हुन्छ (अधिकारी, २०६९) । त्यसैगरी बहुभाषिक कक्षामा भाषिक परीक्षण र मूल्याङ्कन गर्दा विद्यार्थीको उमेर, स्तर, तह आदिलाई पर्याप्त ध्यान दिनु पर्ने देखिन्छ ।

### **बहुभाषिक कक्षाको परीक्षण तथा मूल्याङ्कनमा शिक्षकको भूमिका**

बहुभाषिक कक्षामा परीक्षण तथा मूल्याङ्कन सञ्चालन गर्न शिक्षकको मुख्य भूमिका रहन्छ । शिक्षकले कक्षाका सम्पूर्ण विद्यार्थीलाई समेट्न उत्तरपुस्तिका परीक्षणका क्रममा लचकता अपनाउने, जस्तै : सुधारेर अङ्क दिने, गल्ती निर्देश गरेर अङ्क दिने, ग्रेस अङ्क प्रदान गर्ने आदि कार्य गर्नु पर्ने हुन्छ (ढकाल, २०७४) । बहुभाषी विद्यार्थीको सिकाइ उपलब्धि बढाउन गैरमौद्रिक (स्यावासी, हौसला, प्रेरणा आदि) र मौद्रिक (पैसा, किताबकापी, भौतिक सामान आदि) पुरस्कार प्रदान गर्ने कार्य पनि गर्नु पर्ने हुन सक्छ । त्यस्तै परीक्षण र मूल्याङ्कनलाई व्यवस्थित बनाउन विद्यार्थीका कक्षाकार्य, गृहकार्य, परीक्षाका उत्तरपुस्तिका आदिलाई समेटी पोर्टफोलियो निर्माण गर्ने र त्यसलाई भाषा

सिकाइका क्रममा उपयोग गर्ने कार्य पनि आवश्यक हुन्छ । यसका लागि पनि भाषा शिक्षकको मुख्य भूमिका रहने देखिन्छ । त्यस्तै भाषा शिक्षकले परीक्षणमा कमजोर देखिएका विद्यार्थीलाई निराकरणमूलक, प्रोत्साहनमूलक र सबलीकरणयुक्त कार्यहरू गरेर पुनः परीक्षणका लागि तयार गर्नु पर्ने भूमिका पनि निभाउनुपर्छ । यसरी शिक्षकले निरन्तर प्रेरणा, हौसला, मार्गदर्शन र परामर्श सेवा प्रदान गरी बहुभाषिक कक्षाका विद्यार्थीहरूको उपलब्धि स्तर बढाउन सक्ने देखिन्छ ।

### निष्कर्ष

एकभन्दा बढी भाषाभाषीकाविद्यार्थी भएको कक्षा बहुभाषिक कक्षा हो । नेपाली समाजको भाषिक विविधतालाई सम्बोधन गर्नका लागि बहुभाषिक कक्षा शिक्षणको आवश्यकता परेको हो । बहुभाषिक कक्षामा भाषिक परीक्षण तथा मूल्याङ्कन सम्पन्न गर्नका लागि पाठ्यक्रमका उद्देश्य, परीक्षणीय विषय, भाषिक सिपको छनोट, भाषिक एकनिष्ठता, योजनाबद्ध परीक्षण, विश्वसनीयता र वैधता आदि कुरामा ध्यान दिनु पर्ने हुन्छ । बहुभाषिक कक्षामा परीक्षण तथा मूल्याङ्कन सम्पन्न गर्नका लागि लिखित, मौखिक, अवलोकन तथा प्रयोगात्मक आदि युक्तिहरूको प्रयोग गर्नु आवश्यक हुन्छ । त्यस्तैगरी लिखित रूपमा परीक्षण सञ्चालन गर्नका लागि पनि विषयगत, वस्तुगत आदि सबै प्रकृतिका प्रश्नहरूको निर्माण गरी कार्यान्वयन गर्नुपर्दछ । बहुभाषिक कक्षामा परीक्षण कार्य सञ्चालन अत्यन्त जटिल प्रकृतिको हुने हुनाले भाषा शिक्षकहरू यसप्रति सचेत हुनै पर्दछ । विशेषतः शिक्षकले परीक्षण र मूल्याङ्कनलाई व्यवस्थित बनाउन विद्यार्थीका कक्षाकार्य, गृहकार्य, परीक्षाका उत्तरपुस्तिका आदिलाई समेटेटी पोर्टफोलियो निर्माण गर्ने र त्यसलाई भाषा सिकाइका क्रममा उपयोग गर्ने कार्य गर्नुपर्दछ । त्यस्तै परीक्षणमा कमजोर देखिएका विद्यार्थीलाई निराकरणमूलक, प्रोत्साहनमूलक र सबलीकरणयुक्त कार्यहरू गरेर पुनः परीक्षणका लागि तयार गर्नु पर्ने भूमिका पनि निभाउनुपर्छ । यसरी शिक्षकले निरन्तर प्रेरणा, हौसला, मार्गदर्शन र परामर्श सेवा प्रदान गरी बहुभाषिक कक्षाका विद्यार्थीहरूको उपलब्धि स्तर बढाउन सक्ने देखिन्छ ।

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## च्याउको जङ्गल कवितामा परिवेश

फुलकुमारी ढकाल

नेपाली विभाग

त्रिभुवन विश्वविद्यालय, कीर्तिपुर

Email: [junudhakal203@gmail.com](mailto:junudhakal203@gmail.com)

### लेखसार

यस लेखमा कवि विप्लव ढकालको 'च्याउको जङ्गल' कवितालाई पाठका रूपमा लिई त्यसमा अभिव्यक्त परिवेशको अध्ययन र विश्लेषण गरिएको छ । प्रस्तुत कविताले २०६२/६३ सालको जनयुद्धको परिवेशलाई समेटेको छ । नेपालको सुमेरु पर्वत, पर्खाल, मरुभूमि, समुन्द्र, आकाश जस्ता स्थानिक सन्दर्भ र ती स्थानका विविध कार्याव्यापारले कविताको स्थानिक परिवेश सिर्जना भएको छ । जनयुद्धमा सर्वसाधारण नागरिकले भोग्नुपरेको दुस्ख, कष्ट, पिडा, युद्धमा गरेको सङ्घर्ष, व्यक्तिगत स्वतन्त्र विचार तथा भोगाइका विविध घटनाक्रमहरूले कविताको कालिक परिवेशको सिर्जना भएको छ भने जनआन्दोलनले निम्त्याएको युद्ध र त्यसको परिणामले वातावरणीय परिवेशको सिर्जना भएको छ । परिवेशकविता निर्माणका लागि चाहिने आवश्यक तत्त्व हो । यसले कविताकोसमय, ठाउँ र वातावरणकोस्पष्टता तथा निश्चितता प्रदान गर्छ । २०६२/६३ सालको जनयुद्धले ल्याएको राजनैतिक परिवर्तन र जनयुद्धबाट आक्रान्त नेपाली जनजीवनको विषय उठानमा परिवेशले महत्त्वपूर्ण भूमिका निर्वाह गरेको छ । यसमा एकातिर कृतिमा व्यक्त देश, काल र वातावरणको अध्ययन गरिएको छ भने अर्कोतिर यसले कृतिमा व्यक्त परिवेशको अध्ययन, घटनाले सिर्जित परिस्थिति तथा कथानकले ल्याएको परिस्थितिलाई के कसरी उठान गरिएको छ ? भन्ने जस्ता कुराहरूको परिवेशीय साहित्यिक प्रतिबिम्बनकोअध्ययनगरिएको छ । त्यसैगरी विसङ्गतिपूर्ण कम्युनिस्ट कमजोर विचारधारा र त्यसले निम्त्याएको परिणामलाई एक पाटोबाट देखाइएको छ भने अर्को पाटोमा आम सर्वसाधारण नागरिकको स्वतन्त्रता र उनीहरूको विचारलाई यस कवितामा मुख्य रूपमा उल्लेखित गरिएको छ । 'च्याउको जङ्गल' कवितामा के कस्ता परिवेश आएका छन् र तिनको प्रयोग कसरी गरिएको छ ? कवितामा व्यक्त परिवेशले के कस्तो किसिमको सन्देश दिन खोजेको छ ? भन्ने कुराको खोजी गर्नु नै यस लेखको मुख्य उद्देश्य हो । यसमा परिवेशको आधारभूत सिद्धान्तलाई कविता विश्लेषणको महत्त्वपूर्ण र केन्द्रीय सिद्धान्तका रूपमा प्रयोग गर्दै मूलतः साहित्य, समाज व्यवस्था र राजनीतिक संस्कृतिबिचको सम्बन्धलाई कालिक परिवेश, स्थानिक परिवेश र वातावरणीय परिवेशका माध्यमबाटस्पष्ट रूपमा कविताको अध्ययन तथाविश्लेषण गरिएको छ । परिवेश सिद्धान्त कवितामा के कसरी प्रतिबिम्बित भएको छ ? भन्ने प्राज्ञिक जिज्ञासा नै प्रस्तुत शोधको मूल समस्या हो । यही समस्या समाधानको निमित्त शोधविधि अन्तर्गत

सामाग्री सङ्कलन विधि र सैद्धान्तिक पर्याधार र अध्ययन विश्लेषण विधिलाई लिइएको छ । कवितामा अभिव्यक्त परिवेशको खोजीले नेपाली कविता अध्ययनको क्षेत्रमा कविताको परिवेशको खोजी गर्न चाहने जो कोहीलाई थप सहयोग र योगदान पुऱ्याउनुका साथै उपयुक्त परिवेशको बारेमा जानकारी दिन्छ । अन्त्यमा परिवेश सिद्धान्तका आधारमा यो कविता सफल, प्रभावकारी र सौन्दर्यपूर्ण नै छ भन्ने निष्कर्ष निकालिएको छ ।

**शब्दकुञ्जी** : अन्तर्धुलन, जिजीविषा, त्रिकोणान्मक, प्रतिबिम्बन, प्रभावोत्पादकता ।

### परिचय

विप्लव ढकाल (२०२४) नेपाली साहित्यको कविता, मुक्तक, एकाङ्की, हाइकु, गजल, लघुकथा, गीत र समालोचना लेखनमा सक्रिय रहँदै आएका छन् । २०४२ मा चिताको ज्वाला लघुकाव्य प्रकाशन गरी नेपाली साहित्य क्षेत्रमा प्रवेश गरेका बहुमुखी प्रतिभाका धनी व्यक्तित्व ढकालले हालसम्म आइपुग्दा लघुकाव्य, कविता, मुक्तक, समालोचना तथा एकाङ्की विधाका कृतिहरू प्रकाशन गरेका छन् । व्यङ्गात्मक शैलीमा मानवीय मनोभाव, इतिहास, मिथक र जिजीविषाको पहिचान गर्नु नै कवि ढकालको कवितात्मक सामर्थ्य हो । कवि ढकालले आफ्नो साहित्यिक यात्रालाई अगाडि बढाउँदै जाने क्रममा हालसम्म आइपुग्दा निर्जन बन्दरगाह (२०५१), कालो मध्यान्तर (२०६०), प्रोफेसर शर्माको डायरी (२०६५) र च्याउको जङ्गल (२०७१) गरी चारवटा कविता सङ्ग्रहहरू प्रकाशन गरेका छन् । 'च्याउको जङ्गल' कविता च्याउको जङ्गल कविता सङ्ग्रहमा सङ्ग्रहित विभिन्न कविताहरू मध्ये एक हो ।

'च्याउको जङ्गल' कवितामा एकातिर देश, काल र वातावरणको अध्ययन गरिएको छ भने अर्कोतिर यसले कृतिमा व्यक्त परिवेशको अध्ययन, घटनाले सिर्जित परिस्थिति तथा कथानकले ल्याएको परिस्थितिलाई के कसरी उठान गरेको छ ? भन्ने जस्ता कुराहरूको अध्ययन गरिएको छ । त्यस्तै विसङ्गतिपूर्ण कम्युनिस्ट कमजोर विचारधारा र त्यसको परिणाम, सर्वसाधारण नागरिकको स्वतन्त्रता र उनीहरूको विचारलाई यस कवितामा मुख्य रूपमा उल्लेखित गरिएको छ । परिवेशकुनै पनि कृति निर्माण लागि चाहिने आवश्यक तत्त्व हो । पात्रको कार्यव्यापार सम्पन्न स्थान, समय, र पर्यावरणको संयोजन नै परिवेश हो । परिवेशअन्तर्गत देश, काल र वातावरण अन्तर्निहित भएर आउछ । घटितकार्य विवरण कहिले र कुन स्थानमा घट्यो भन्ने प्रश्नको उत्तरसँग देश र कालको सम्बन्ध रहन्छ भने घटित घटनाले कस्तो परिस्थिति सिर्जना गर्‍यो भन्ने प्रश्नको उत्तरसँग वातावरणको सम्बन्ध रहन्छ । कवितामा परिवेश कथ्य भावसँग अन्तर्निहित भएर आएको हुन्छ । परिवेशले वस्तु तथा सहभागीलाई विश्वासनिय र सहज बनाउनका लागि महत्त्वपूर्ण भूमिका खेलेको हुन्छ । कवितामा परिवेश वर्णनात्मक, विवरणात्मक, व्यङ्ग्यात्मक, स्थूल, सूक्ष्म वा सङ्केतात्मक तथा सिधै जुनसुकै माध्यमबाट पनि आउन सक्छ । कविताको आयाम बढेसँगै परिवेश पनि विस्तारित हुन्छ । जुनसुकै प्रकृतिका कवितामा परिवेश अनिवार्य रूपमा आएको हुन्छ । यसरी कविताको परिवेशलाई स्थानिक, कालिक र

वातावरणीय परिवेश गरी तीन प्रकारले विभाजन गर्न सकिन्छ । स्थानिक परिवेशले घटना भएको स्थानलाई बुझाउछ । कालिक परिवेशले घटना भएको समयलाई बुझाउछ भने वातावरणीय परिवेशले घटनाले कस्तो परिस्थितिको सिर्जना गर्‍यो ? भन्ने कुरालाई बुझाउछ । परिवेश के हो ? कविताको विशिष्ट अङ्ग किन हो ? परिवेश कहाँ, कहिले र कसरी आउछ भन्ने प्रश्नको उत्तरका क्रममा यस सिद्धान्तले एकातिर देश, काल र वातावरणको अध्ययन गर्छ भने अर्कोतिर यसले कृतिमा व्यक्त परिवेशको अध्ययन, घटनाले सिर्जित परिस्थिति तथा कथानकले ल्याएको परिस्थितिलाई के कसरी उठान गरेको छ ? भन्ने जस्ता कुराहरूको अध्ययन गर्छ । यसरी सर्वाधिक चिन्ता र चासोको विषयमा रहेको परिवेश सिद्धान्त कवितामा के कसरी प्रतिबिम्बित भएको छ ? भन्ने प्राज्ञिक जिज्ञासा नै प्रस्तुत शोधको मूल समस्या हो । यही समस्या समाधानको निमित्त शोधविधि अन्तर्गत सामाग्री सङ्कलन विधि र सैद्धान्तिक पर्याधार र अध्ययन विश्लेषण विधिलाई लिइएको छ । सामाग्री संकलन विधि अन्तर्गत पुस्तकालयीय अध्ययनमा आधारित प्राथमिक र द्वितीयक स्रोत अन्तर्गत रहेर गरिएको छ भने सैद्धान्तिक पर्याधार अन्तर्गत परिवेशको सैद्धान्तिक मान्यतालाई आधार मानेर प्रस्तुत लेख सम्पन्न गरिएको छ । यस सन्दर्भमा परिवेश विश्लेषणका विभिन्न सैद्धान्तिक मान्यता अन्तर्गत विभिन्न शैली तथा सिद्धान्तहरूलाई अवलम्बन गरिएको छ । त्यसमध्ये यहाँ स्थानगत परिवेश, कालिक परिवेश र वातावरणीय परिवेशको सिद्धान्तहरूलाई मूल आधार बनाई देश, काल र वातावरणको पारस्परिकता देखाउदै 'च्याउको जङ्गल' कवितामा प्रयुक्त परिवेशको खोजी गरी तिनको विश्लेषण तथा मूल्याङ्कन गरिएको छ ।

कवि ढकालको 'च्याउको जङ्गल' कवितालाई 'च्याउको जङ्गलको ह्याडअभरमा' शीर्षकमा विभिन्न किसिमले अध्ययन, विश्लेषण र मूल्याङ्कन गरिएको भए तापनि हालसम्म कविताको संरचक घटक सम्बन्धि कुनै पनि अध्ययन, विश्लेषण र मूल्याङ्कन नभएको हुदाँ यस कवितामा अभिव्यक्त परिवेशको खोजी गर्नु औचित्यपूर्ण नै देखिन्छ, भने यसको अध्ययनले नेपाली कविता अध्ययनको क्षेत्रमा कविताको परिवेशको खोजी गर्न चाहने जो कोहीलाई थप सहयोग र योगदान पुऱ्याउनुका साथै उपयुक्त परिवेशको बारेमा जानकारी दिन्छ ।

### उद्देश्य

यसलेखको उद्देश्य विप्लव ढकालद्वारा लिखित 'च्याउको जङ्गल' कवितामा प्रयुक्त स्थानिक परिवेश, कालिक परिवेश र वातावरणीय परिवेश पक्षको अध्ययन र विश्लेषण गर्नु रहेको छ । लेखका उद्देश्यहरू बुदाँगत रूपमा निम्नानुसार रहेका छन् :

- (क) कवि विप्लव ढकालको कवितामा रहेको परिवेशीय चेतना प्रस्तुत गर्नु,
- (ख) 'च्याउको जङ्गल' कविता भित्र रहेका परिवेशीय महत्त्वलाई उद्घाटन गर्नु ।

## अध्ययन विधि

सामग्री सङ्कलन विधिअन्तर्गत पुस्कालयीय अध्ययनमा आधारित प्राथमिक र द्वितीयक स्रोत अन्तर्गत रहेर गरिएको छ । प्राथमिक सामग्रीका रूपमा कवि ढकालको 'च्याउको जङ्गल' कवितालाई लिइएको छ भने तत्सम्बन्धी समीक्षा, समालोचना, सम्बन्धित विषयका पाठ्यपुस्तक, लगायतका आवश्यक सामग्रीहरू द्वितीयक सामग्रीको रूपमा रहेका छन् । त्यसैगरी अध्ययन विश्लेषण विधि अन्तर्गत कविताको संरचक घटक वा कविताको आवश्यक तत्त्वअन्तर्गत रहेको परिवेशलाई आधार बनाएर प्रस्तुत लेखन कार्य तयार पारिएको छ । यस क्रममा सौद्धान्तिक पर्याधारअन्तर्गत कविताको परिवेश सिद्धान्तलाई लिइएको छ भने अध्ययन विश्लेषण ढाँचा (पद्धति) अन्तर्गत विश्लेषणात्मक विधिलाई अँगालिएको छ ।

### सैद्धान्तिक आधार

कार्यव्यापार सम्पन्नसमय, स्थान र वातावरण नै परिवेश हो भने कवितामा सहभागीले आफ्नो सहभागिता जनाउने ठाउँ, समय र परिस्थिति वा अवस्था नै कविताको परिवेश हो । समय भन्नाले 'ऐतिहासिक कालखण्ड, निश्चित मिति, वर्ष, ऋतु वा दिनको कुनै आंशिक अवधिलाई बुझाउँछ भने स्थानले कुनै महादेशको व्यापकतादेखि कोठाको साँघुरो अवस्थितिसम्मलाई देखाउँछ । त्यसैगरी वातावरणले पात्रको चरित्र निर्धारण गर्छ' (एटम, २०७४ पृ.१४४) । यसरी कवितामा 'कार्यव्यापार गर्ने र घटनाहरू घटित हुने वस्तुजगतलाई परिवेश भनिन्छ' (शर्मा, २०६३ पृ.३९६ ) । यसभित्र 'समय वा काल, स्थान वा देश र वातावरण गरी तीन कुराहरू पर्दछन्' (शर्मा, २०७८ पृ.३५८) । परिवेशअन्तर्गत देशकाल र वातावरण अन्तर्निहित भएर आउने हुनाले यसलाई कविताको सेटिङ पनि भनिएको छ । हडसनका अनुसार देशकालको अर्थ 'कार्यव्यापारको समय र ठाउँ हो भने वातावरणको अर्थ रीतिथिति, प्रथा, व्यवहार, जीवनी, रहनसहनका साथै प्राकृतिक पृष्ठभूमि र वातावरण हो' (शर्मा, २०६३ पृ.३९६ ) । साहित्यमा देश भन्नाले पात्रले आत् नो क्रियाकलाप गर्ने ठाउँ र काल भन्नाले पात्रले आफ्नो क्रियाकलाप प्रस्तुत गरेको समयलाई बुझिन्छ । यसैगरी वातावरण भन्नाले देश र कालअन्तर्गत घटनाद्वारा उत्पन्न मानसिक चित्तवृत्तिका पक्षहरू भन्ने बुझिन्छ । साहित्यमा वर्णित विभिन्न घटना तथा सन्दर्भलाई ग्रहण गर्दा पाठकका मनमा उत्पन्न हुने भाव तथा साहित्यिक अनुभूतिलेकरुणा, ईर्ष्या, संवेग, अन्तर्द्वन्द्व, आवेग, डर जस्ता मनोवैज्ञानिक पक्षहरूको अस्थायी र स्थायी सञ्चरण' (पोखरेल, २०७९ पृ. ११५) हुने भएकोले कृतिमा घटित कार्य विवरण कहिले र कुन स्थानमा घट्यो भन्ने प्रश्नको उत्तरसँग देश र कालको सम्बन्ध रहन्छ । त्यसैले 'निश्चित स्थान र समयको पर्यावरण, मानवीय सांस्कृतिक र प्राकृतिक पक्षको समग्रतालाई पनि परिवेशअन्तर्गत नै समेटिन्छ' (पोखरेल, २०७९ पृ. ११५-११६) । यसैगरी 'परिवेशले घटना घटित हुने वा कार्यव्यापार गर्ने समय र स्थानका अतिरिक्त घटना र सहभागी क्रियाशील रहने दृश्य एवं परिस्थिति तथा समग्र पर्यावरण (रहनसहन, चालचलन, रीतिथिति, व्यवहार, जीवन, प्राकृतिक पृष्ठभूमि, वातावरण आदि)

लाई बुझाउछ' (लुइटेल्, २०६७पृ.२१)। त्यसैले प्रकृतवादी साहित्यिक सिद्धान्तमा परिवेशको ठूलो महत्त्व हुन्छ । 'तेनका अनुसार प्रतिपादित कृति विश्लेषणको प्रजाति र क्षणपछिको तेषो महत्त्वपूर्ण धारणा परिवेश हो' (पाण्डेय, सन् १९८९ : १२५) । परिवेश अन्तर्गत मुख्य रूपमा प्राकृतिक परिवेश परे तापनि यस अन्तर्गत सामाजिक, आर्थिक, राजनीतिक परिवेशको पनि व्याख्या पाइन्छ । त्यसैले परिवेश र साहित्यिक कृतिकाबिच कार्यकारणको सम्बन्ध हुन्छ । प्राकृतिक परिवेश अन्तर्गत जलवायु र भूगोलको प्रभाव रहन्छ । जलवायु र भूगोलले मानव स्वभावमा प्रभाव पार्छ र त्यसको अभिव्यक्ति साहित्यिक कृतिमा हुने गर्दछ । संसारमा मानिस एकलो हुँदैन । उसको चारैतिर प्रकृति हुन्छ, समाज हुन्छ । मानिसका आदिम प्रवृत्ति तथा प्रजातिगत विशेषता भौतिक, सामाजिक परिस्थितिहरू तथा घटनाहरूबाट प्रभावित हुन्छन्, कहिले पुष्ट हुन्छन् भने कहिले तिनमा परिवर्तन हुन्छ (पाण्डेय, सन् १९८९ : १२५) । उनले 'मानव स्वभाव र प्राकृतिक परिवेशकाबिच कार्यकारण सम्बन्धका आधारमा साहित्यिक कृतिको विश्लेषण गरेका छन् । जलवायु, भूगोल जस्ता प्राकृतिक परिवेशको वर्णनसँगसँगै तेनले आर्थिक, राजनीतिक र सामाजिक परिवेशले साहित्यमा पर्ने प्रभावको पनि उल्लेख गरेका छन् । सामाजिक परिवेश अन्तर्गत आर्थिक पक्षलाई साहित्यिक कृतिसँग जोड्ने प्रयास गरेका छन्' (श्रेष्ठ, २०७१ पृ.७६) । यसरी समाजको भौगोलिक, आर्थिक, राजनीतिक, सामाजिक परिवेशको प्रभाव साहित्यिक कृतिमा पर्ने हुनाले कवितामा परिवेश कथ्य भावसँग अन्तरनिहित भएर आएको हुन्छ । परिवेश आन्तरिक र बाह्य गरी दुई प्रकारका हुन्छन् । कविताको बाह्य परिवेश अन्तर्गत स्थान, काल, भौगोलिक पर्यावरण पर्छ भने आन्तरिक परिवेश अन्तर्गत मनोदशा, हर्ष, विस्मात, शोक, करुणा आदि पर्दछन् । परिवेशले वस्तु तथा सहभागीलाई विश्वासनिय र सहज बनाउनका लागि महत्त्वपूर्ण भूमिका खेलेको हुन्छ । त्यसैगरी सहभागीको मानसिकतामा उत्पन्न सन्दर्भहरू पनि परिवेश भित्र पर्दछन् । कवितामा परिवेश वर्णनात्मक, विवरणात्मक, व्यङ्ग्यात्मक, स्थूल, सूक्ष्म वा सङ्केतात्मक तथा सिधै जुनसुकै माध्यमबाट पनि आउन सक्छ । कविताको आयाम बढेसँगै परिवेश पनि विस्तारित हुन्छ । जुनसुकै प्रकृतिका कवितामा परिवेश अनिवार्य रूपमा आएको हुन्छ । 'कवितामा स्थान स्थूल, सूक्ष्म वा साङ्केतिक जुनसुकै रूपमा आउन सक्छ भने सामान्य र विशिष्ट रूपमा समयआएको हुन्छ तर प्रगीतात्मक कवितामा समय अत्यन्त सामान्य सङ्केत मात्र भएर पनि आएको हुन्छ । वातावरणलाई परिस्थिति पनि भनिन्छ । कवितामा वर्णित सुखद, दुस्खद, सामान्य, विशिष्ट आदि जुनसुकै अवस्थाबाट पाठकका मनमा उत्पन्न हुने एक किसिमको प्रभाव वातावरण हो । वातावरण निर्माणमा स्थान र समयको विशेष भूमिका रहेको हुन्छ' (गौतम, २०६९ पृ.५, २०६९ पृ.११५-५१६)। कतै व्यापकतथा विस्तृत (वर्णनात्मक तथा विवरणात्मक) रूपमा त कतैसाङ्केतिक, सङ्क्षिप्त, सूत्रात्मक प्रतीकात्मक माध्यमबाट आउने भएकोले नै परिवेशलाई कविताको संरचक घटकका रूपमा लिइएको छ । 'आख्यानतात्मक र नाटकीय कवितामा परिवेशको चित्रण व्यापक हुन्छ भने प्रगीतात्मक कवितामा अत्यन्त न्यून रूपमा परिवेशलाई देखाइएको हुन्छ । अर्थात्प्रगीतात्मक कवितामा परिवेश अत्यन्त

सङ्क्षिप्त, सूत्रात्मक र सङ्केतात्मक' (गौतम, २०६९ पृ.५१६) रूपमा आएको हुन्छ । नाटकीय कवितामा कविले आफ्ना भावना, अनुभूति र विचारलाई नाटकीकरण गरीपरिवेशमा प्रस्तुत गर्छन् भने आख्यानमा कविले आफ्ना भावना, अनुभूति र विचारलाईव्याख्यात्मक शैलीमा परिवेश अन्तर्गत प्रस्तुत गर्छन् । अनुभूति र विचारविस्तार तथा व्यवस्थित गर्न घटना र पात्रसँगसँगै परिवेशको पनि आवश्यकता पर्छ । नाटकीय कवितामा घटनाले आफै पात्र, संवाद, द्वन्द्व, दृश्ययोजनासँगसँगै परिवेश पनि लिएर आउँछ र पात्रको संवादका माध्यमबाट कविको कुरा भन्छ भने आख्यानमा कवितामा आख्यानसँग सम्बद्ध भएर परिवेशको व्यापक चित्रण गरिएको हुन्छ ।

यसरी कविताको परिवेशलाई अध्ययन गर्दै जाने क्रममा स्थानिक परिवेश, कालिक परिवेश र वातावरणीय परिवेश गरी तीन प्रकारमा विभाजन गरी अध्ययन गर्न सकिन्छ । स्थानिक परिवेशले घटना कहाँ भयो भनि घटना भएको स्थानलाई बुझाउछ । यसमा कुनै व्यापकतादेखि साँघुरो अवस्थितिसम्मलाई समेटिएको हुन्छ । कालिक परिवेशले घटना कहिले भयो भनि घटना भएको समयलाई बुझाउछ । समय भन्नाले निश्चित मिति, वर्ष, ऋतु वा दिनको कुनै आंशिक अवधिलाई समेटेछभने वातावरणीय परिवेशले देश र कालअन्तर्गत घटनाद्वारा उत्पन्न मानसिक चित्तवृत्तिका पक्षहरू भन्ने बुझिन्छ । साहित्यमा वर्णित विभिन्न घटना तथा सन्दर्भलाई ग्रहण गर्दा पाठकका मनमा उत्पन्न हुने भाव तथा साहित्यिक अनुभूतिलाई सम्बोधन गर्छ । घटनाले के कुरा सिर्जना गर्‍यो ? भनि परिस्थितिको सिर्जना गर्छ जस्तै मुनाको मृत्यु भएपछि मदनमा उत्पन्न भएको परिस्थिति । यसरी 'साहित्यिक कृतिमा वर्णित भएका स्थानसँग सम्बद्ध विभिन्न घटना, संस्कृति, चालचलन, विचारधारा आदिको प्रतिनिधित्व साहित्यमा भएको हुन्छ । त्यस्तै तत्कालीन कालिक सन्दर्भसँग जोडिएर आउने अनेक सामाजिक, आर्थिक, राजनीतिक, शैक्षिक आदि प्रसङ्गरूले पनि साहित्यमा परिवेशको निर्माण गरेका हुन्छन् । परिवेश यथार्थ र मिथकीय गरी दुई प्रकारको हुन्छ । यथार्थ परिवेश वर्तमानसँग सम्बन्धित हुन्छ भने मिथकीय परिवेश अतीत वा मिथकसँग सम्बन्धित हुन्छ' (पोखरेल, २०७९ पृ. ११५) । परिवेश के हो ? कविताको विशिष्ट अङ्ग किन हो ? परिवेश कहाँ, कहिले र कसरी आउछ भन्ने प्रश्नको उत्तरका क्रममा यस सिद्धान्तले एकातिर देश, काल र वातावरणको अध्ययन गर्छ भने अर्कोतिर यसले कृतिमा व्यक्त परिवेशको अध्ययन, घटनाले सिर्जित परिस्थिति तथा कथानकले ल्याएको परिस्थितिलाई के कसरी उठान गरेको छ ? भन्ने जस्ता कुराहरूको अध्ययन गर्छ । यसमा परिवेश विश्लेषणका सैद्धान्तिक मान्यताअन्तर्गत विभिन्न शैली तथा सिद्धान्तहरूलाई अवलम्बन गरिएको हुन्छ । यसअन्तर्गत यहाँ स्थानगत परिवेश, कालिक परिवेश र वातावरणीय परिवेशमा केन्द्रित रही देश, काल र वातावरणको पारस्परिकता देखाउदै 'च्याउको जङ्गल' कवितामा प्रयुक्त परिवेशको खोजी गरी तिनको विश्लेषण तथा मूल्याङ्कन गरिएको छ ।

### नतिजा र विमर्श

कवि ढकालको 'च्याउको जङ्गल' छोटो आयामको एउटा गद्य कविता हो । गद्य कविता भए तापनि यसले नवीनलयको सिर्जना गरेको छ । विशिष्ट लयात्मक ढाँचाका कारण कवितालाई सङ्गीतबद्ध गरेर

गायनमा सफलतापूर्वक प्रस्तुत गर्न सकिन्छ । यसले मानवीय चरित्रको मनोभाव र कार्यको गम्भीर विडम्बनाको उत्खनन गर्दै इतिहास, मिथक र वर्तमान आर्दशबाट थिचिएका मानिसको जिजीविषाको पहिचान गर्छ । कवितामा नेपालको २०६२/६३ सालको जनयुद्धले ल्याएको राजनैतिक परिवेशलाई प्रस्तुत गरिएको छ । जनताको आफ्नो स्वतन्त्र विचार भएर पनि उनीहरूकम्युनिस्टको कमजोर विचारधारामा च्याउजस्तै लत्र्याकलुत्रुक हुनुपरेको बाध्यात्मक अवस्थाको भाव व्यक्त गरिएको छ । हतियार, औजार, सुरुङ, मस्तिष्क, रोटी र आकाश जस्तो प्रतीकात्मकबिम्बको प्रयोग गरी लेखक विसंगतिपूर्ण कम्युनिस्ट राज्य व्यवस्थाबाट अलग रहेर आफ्नो नयाँ विचारमा स्वतन्त्र हुन चाहेको कुरा प्रस्तुत गरिएको छ । विगतको इतिहासलाई कुल्चेर आम नागरिकको स्वतन्त्रता, समानता र अधिकारलाई जबरजस्ती खोसेर उनीहरूलाई नै पशुवत व्यवहार गरिएको छ । आफ्नै मेहनतमा बाँचेको, रमाएको र कमाई खाएको छु भने किन अरूको कमजोर विचारको पछि लाग्नु ? किन अरूको खोक्रो आर्दशमा अडिग रहनु ? आफू आफ्नै मेहनतमा बाँचेको हो भने विचार पनि आफ्नै स्वतन्त्र हुनुपर्छ र त्यही स्वतन्त्र विचारमा अडिग रहनुपर्छ । कमजोर विचारको पछि लागेर अन्याय सहनु भन्दा बिष पिउन परे पनि पिउछु तर कम्युनिस्टको कमजोर विचारलाई छोडेर 'म' आफ्नो स्वतन्त्र विचारमा अडिग रहन्छु भन्ने चेतना र साहस 'म' पात्रमा आएको छ । त्यसैगरी आफ्नो विचारमा अडिग रहन नसकी जसले जे भन्यो त्यसैको पछि लागेर सही र गलत छुट्याउन नसक्दा 'म' आफैँ कमजोर भैसके । कमजोरी नै मेरो विचार भएको छ । प्रजातन्त्रका लागि गरेको विगतको त्यो युद्ध बेकार भयो । नागरिकका विचार सबै अर्थहीन भए । संसार बदल्न हिडेको 'म', 'म' आफैँ कम्युनिस्टको कमजोर विचारधारामा बदलिए भन्ने कुराको चेतना 'म' पात्रमा आएको छ । अन्त्यमा मानिस भएर मानिसको रगतको मूल्य बुझी अन्याय अत्याचारमा परेकालाई अभ् बढी अन्याय अत्याचारमा पार्नका लागि पशुवत् व्यवहार गर्न हुँदैन । उनीहरूलाई मानवताको व्यवहार गर्नुपर्छ । अन्याय अत्याचारबाट मुक्त बनाउनुपर्छ अनि मात्र प्रजातन्त्र ल्याउनका लागि गरिएको विगतको युद्धको इतिहास सार्थक हुन्छ भन्दै प्रजातन्त्र ल्याउनका लागि गरिएको युद्धकालीन परिवेश, राजनैतिक परिवेश र त्यसले सर्वसाधारण जनताका पारेको असर तथा राजनैतिक दबाबबाट मुक्त भएपछिको परिवेशको कल्पना गर्दै कविताको अन्त्य गरिएको छ । यसरी हेर्दा प्रस्तुत कविताले २०६२/६३ सालको राष्ट्रिय युद्धकालीन परिवेशलाई ग्रहण गरेको स्पष्ट हुन्छ ।

विप्लव ढकालद्वारा लिखित 'च्याउको जङ्गल' कवितामा परिवेश सूचक स्थान र समयको स्पष्ट उल्लेख नभए तापनि कविता लेखनको समय र प्रस्तुत विषयवस्तुको आधारमा २०६२/६३मा भएको नेपालको युद्धकालीन परिवेश हो भनि आकलन गर्न सकिन्छ । नेपाली कम्युनिस्टहरूको विसङ्गतिपूर्ण अवस्था र यसले निम्ताएको युद्धकालीन वातावरण, प्राप्त परिणाम र असन्तुष्टिको विद्रोहात्मक स्वरमुख्य परिवेशका रूपमा कवितामा आएको छ । कवितामा आएका यिनै विभिन्न परिवेशीयपक्षहरू लाई कविताको परिवेश सिद्धान्तको दृष्टिकोणबाट विभिन्न उपर्शाषक निर्धारण गरी यहाँ चर्चा गरिएको छ ।

## स्थानगत परिवेश

यस कवितामा राष्ट्रिय परिवेशको निर्माण गरिएको छ । कविताको स्थानगत परिवेशका सन्दर्भमा नेपालका विभिन्न स्थानहरू आएका छन् । सुमेरु पर्वत, मरुभूमि, समुद्र, सुरुङ, पर्खाल र आकाशयहाँ स्थलगत परिवेशका रूपमा आएका छन् । यिनै ठाउँहरूको विभिन्न घटनाक्रमबाट नै कविताको निर्माण भएको छ । विकासका नाममा 'म' पात्रले अनुभूत गरेका कुरा, तत्कालीन समयको वस्तु अवस्था र अनेक घटनाक्रमहरूको कलात्मक अभिव्यक्ति कवितामा भएको छ । कविताको सुरुमै नेपालको राष्ट्रिय राजनीतिक परिवेश आएको छ । नेपालको इतिहास, गणतन्त्र ल्याउनका लागि गरिएको युद्ध, गणतन्त्रको आगमनपछि कम्युनिस्ट राजनीतिज्ञहरूले नागरिकमाथि गरेको शोषण, दमनका कारण नागरिकको आफ्नो स्वतन्त्र विचार भएर पनि आफ्नो विचारमा अडिग रहन नसकी कम्युनिस्ट विसङ्गतिपूर्ण कमजोर विचार धारामा च्याउ जस्तै लत्र्याकलुत्रुकहुनु परेको अवस्थाको चित्रण गरिएको छ । 'म' पात्रमा आएको चेतनाका कारण कम्युनिस्टको विसंगतिपूर्ण खराब राज्यव्यवस्थाबाट अलग भई आफ्नो नयाँ स्वतन्त्र विचारमा रहन चाहेको भावलाई हँसिया, औजार, सुरुङ, मस्तिष्क, रोटी, आकाश जस्ता प्रतीकात्मक बिम्बको माध्यमबाट स्पष्ट पारिएको छ जुन कुरालाई तलकोसाक्ष्यबाट पुष्टि गर्न सकिन्छ :

यही भन्डाबाट उखेल्लु घन  
र फुटाउँछु आफ्नै निधारको चट्टान !  
यही भन्डाबाट निकाल्लु हँसिया  
र भत्काउँछु आत् नै विचारको पर्खाल  
हतियार र औजारले पिटीपिटी  
ज्वाल पार्छु मस्तिष्कमा र बनाउँछु रोटी !  
त्यही रोटीको गोलाकार सुरुङबाट बाहिर निस्केर  
म उड्छु अब यो निलो आकाशमा ! (पृ. ६८०)

यसरी माथि उद्धृत साक्ष्यमा कतिपय कम्युनिस्टलाई आफ्नै कम्युनिस्टको विचार धारा मन नपरेकै कारण त्यसबाट आफू अलग भई सम्पूर्ण नागरिकको पक्षमाक्रान्तिकारी काम गर्ने विचारआएको कुरालाई यहाँ व्यक्त गरिएकोछ । 'म' पात्र वा नेपाली जनता आफ्नो स्वतन्त्र विचार र खुल्ला आकाशमा रमाउन चाहेको भाव व्यक्त गरिएको छ । त्यस्तैस्थानगत परिवेशमा यहाँ समुन्द्र, सुमेरु पर्वत, जमिन र मरुभूमिको परिवेश आएको छ । आफै मेहनत गरी आफ्नो मेहनतमा बाँचेको छु, रमाएको छु, आफ्नो मेहनतकोकमाइखाएको छु भने 'म' किन अरूको खोक्रो आदर्श र कमजोर विचारको पछि लाग्नु ? आजबाट अरूको कुनै पनि कमजोर विचारको पछि नलागि आफ्नै विचारमा अगाडि बढ्दा विष पिउनु परे तापनि पिउछु तर आजबाट 'म' अरूको कमजोर विचार र खोक्रो आदर्शको पछि लागिदिन भन्ने भावलाई कविले आफ्नो कविता मार्फत यसरीप्रस्तुत गरेका छन्:



म गर्छु अब समुद्रमन्थन  
 र पिउँछु हलाहल विष !  
 म खोस्छु कृष्णको हातबाट मुरली  
 र उठाउँछु सुमेरु पर्वत !  
 विष्णुलाई जमिनमा ओरालेर  
 म चढ्छु अब गरुडमाथि !  
 महादेवको घाँटीबाट निकालेर  
 म लाउँछु अब सर्पको मफलर !

मरुभूमिमा

पसिनाले बालुवा मुखेर खाएको छु मैले ! (पृ. ६८०)

यो च्याउको जङ्गलभिन्न

एउटा निर्जीव भिडको विपक्षमा उभिएर

उखेल्छु आफ्नै टाउको

र भुइँभरि टकटक्याइदिन्छु ! (पृ. ६८१)

यसरी माथि उल्लेखित साक्ष्यमा नेपाली कम्युनिस्ट आन्दोलनको विसङ्गतिलाई स्वरकल्पनाका माध्यमबाट व्यङ्ग्यात्मक शैलीमा प्रस्तुत गरिएको छ । अब मैले कम्युनिस्टको हरेक कार्यलाई अध्ययन, अनुसन्धान तथा मूल्याङ्कन गर्छु र खराब कार्यकोविरोध गर्दै त्यसको विरुद्धमा आवाज उठाउछु भन्ने कुरालाई कविले यहाँ समुन्द्रमन्थन, हलाहल विष, कृष्णको मुरली र सुमेरु पर्वतका माध्यमबाट स्पष्ट पारेका छन् । त्यसैगरी सत्तामा रहेको कम्युनिस्टलाई सत्ताबाट बाहिर ल्याउछु र उनीहरू हातमा भएको शासन व्यवस्था वा सत्ताको सम्पूर्ण जिम्मेवारी लिएर कडिकडाउका साथसबैको हितमा रहेर समयअनुकूल कार्य गर्छु । विसङ्गतिपूर्ण कम्युनिस्टको कमजोर विचार धारा विपरित रहेर कसैले गर्न नसकेको कार्य गरेरै छोड्छु र काम मार्फत त्यसको जवाफ दिनेछु भन्ने किसिमको भावलाई कविले यस कवितांशमा व्यक्त गरेका छन् । कवितांशमा व्यक्त भएको 'समुद्रमन्थन'ले यहाँ कम्युनिस्टको मूल्याङ्कनलाई, 'हलाहल विष'ले कुनैपनि खराब काम नगर्ने कुरालाई, 'कृष्णको मुरली'ले राज्य सत्ताको सम्पूर्ण कार्यमा आनन्दित भएको कुरालाई, 'सुमेरु पर्वत'ले उच्चतहमा रहेको राज्यसत्तालाई, 'विष्णु'ले राज्यको शासन व्यवस्थाको सृष्टिकर्तालाई, 'गरुड'ले राज्यको सर्वोच्च तहलाई, 'महादेवको घाँटी'ले सत्ताको स्थान, 'सर्पको मफलर'ले हरेक कुराको चुनौतीलाई, 'मरुभूमि'ले अहिलेसम्म कसैले केही नगरेको र नभएको कुरालाई, 'बालुवा'ले कठिन कार्य गर्न सक्ने क्षमतालाई, 'च्याउको जङ्गल'ले कम्युनिस्ट विभिन्न दलहरूलाई, 'आफ्नै टाउको'ले आफैले कठिन कार्यको जिम्मेवारी उठाएको कुरालाई र 'भुइँभरि टकटक्याइदिन्छु'ले काम सफल गरेर देखाइदिन्छु भन्ने कुरालाई यहाँ सङ्केत गरेको छ । यसले एकातिर मानिसलाईसत्यको पक्षमा लाग्न

आग्रह गरेको छ भने अर्कोतिर यसले खराब कार्यको विरोध गरी राम्रो र सबैको हितअनुकूलको कार्यमा आवाज उठाउनु पर्छ । अरूको डर, धाक, धम्कीका कारण गलत कुराको पछि लाग्नु भन्दा सत्यकै पक्षमा लागेर मर्नु राम्रो हुन्छ तर गलत कुराको पक्षमा कहिल्लै पनि लाग्नु हुँदैन भन्ने सन्देश दिदै परिस्थितिजन्य वातावरणीय परिवेशको चित्रण गरेको छ । कवितामा समुद्र, सुमेरु पर्वत, मरुभूमि र जङ्गल जस्ता स्थानको प्रयोग गरिएको छ । त्यसैगरी कवितांशमा प्रयुक्त विष, मुरली, गरुड, सर्पको मफलर जस्ता अलङ्कारले कवितामा मिठासता प्रदान गर्दै समुन्द्र सुमेरु पर्वतको स्थानगत परिवेशलाई स्पष्ट पारेको छ भने उल्लेखित विभिन्न उपमा तथा प्रतीकात्मक बिम्बले कविताको भाषा अत्यन्त जटिल र लक्षणीक बनेको छ ।

त्यसैगरी जङ्गलको परिवेशका माध्यमबाट संसार परिवर्तनका लागि अगाडि बढेको 'म' पात्र आफू कम्युनिष्टको विसङ्गतिपूर्ण कमजोर विचार धारामा बदलिएर, अलमलिएर आफ्नो जीवन पनि कमजोर बनाएकोमा पश्चाताप तथा चेतना 'म' पात्रमा आएको कुराको पुष्टि तलको यस पङ्क्तिपुञ्जले गर्छ:

संसार बदल्न हिँडेको म  
अब आफैँ बदलिएँ !  
यो च्याउको जङ्गलभित्र  
रिंगटा लागि रहेको छ मलाई !  
यो मेसिनको शरीरभित्र  
तरङ्गिँदै छ जीवनको कम्पन ! (पृ.६८१)

परिवर्तनका नाममा नेपालमा विभिन्न राजनैतिक दलहरू च्याउसरी उम्रिएका छन् र उनीहरूको आ-आफ्नै विधिविधान र उद्देश्य पनि छ । अरू भन्दा फरक तरिकाले आफ्नो पहिचान बनाएर समाजमा स्थापित हुन चाहन्छन् तर पुराना र ठूला दलहरूले नयाँ खुलेका दललाई विभिन्न बाहाना बनाएर हरेक क्षेत्रमा हस्तक्षेप गरिरहेका हुन्छन् । यसरी पुराना दलहरूले उदाउदै गरेका नयाँ दलहरू माथि पटक-पटक हस्तक्षेप गरेर अगाडि बढ्न नदिएपछि र आफू अगाडि बढ्न नसकेपछि उदाउदै गरेका नयाँ दलका कार्यकर्ताहरूले हरेस खान्छन र पुराना दलहरूसँग सहकार्य गर्न पुग्छन । सहकार्य गरेपछि जसरी मेसिनले निर्देशन पाएपछि खुरुखुरु काम गर्छ त्यसैगरी आफूले पनि पुरानै दलको आदेश अनुसार अगाडि बढ्नुपर्ने र काम गर्नुपर्ने बाध्यात्मक अवस्थाको सिर्जना हुन्छ । यस्तो बाध्यात्मक अवस्थाको सिर्जना भएपछि आफूलाई पीडाबोध भएको र जीवनमा विभिन्न हलचल पैदा भएको कुरालाई कविले यहाँ च्याउको जङ्गल, मेसिन र जीवनको कम्पनका माध्यमबाट प्रतीकात्मक बिम्बका माध्यमबाट स्पष्ट पारेका छन् । कवितांश प्रयोग गरिएको 'च्याउको जङ्गल' ले यहाँकम्युनिष्ट राज्यसत्तालाई सङ्केत गरेको छ भने 'मेसिन' ले नेपाली जनता तथा नयाँ राजनैतिक दलहरूलाई सङ्केत गरेको छ । यहाँ नेपालको राष्ट्रिय राजनीतिक, कम्युनिष्टको विसङ्गतिपूर्ण कमजोर परिवेश वा खोक्रो आदर्श,

सुरुङ, खुल्ला आकाशमा रहेका नागरिकको स्वतन्त्र वैचारिकता जस्ता विषयवस्तुका माध्यमबाट कविताको स्थानिक सन्दर्भलाई मुख्य रूपमा चित्रण गरिएको छ । यसरी माथि उल्लेखितयी सम्पूर्ण विषयवस्तुलाई हेर्दा यहाँ राजनैतिक कार्यक्षेत्रको स्थानगत परिवेश चित्रण भएको छ ।

### कालिक परिवेश

कवितामा आएका घटना सन्दर्भ तथा 'म' पात्रले भोगेको कष्ट र गरेको दुस्खको प्रसङ्गबाट नै कविताको समय निर्धारण गर्नुपर्ने देखिन्छ । यस कवितामा वर्णित घटना सन्दर्भबाट हेर्दा २०६२/६३ को जनयुद्धमा सर्वसाधारण नागरिकले भोग्नुपरेको दुस्ख, कष्ट, त्रासपूर्ण वातावरण, जीवन निर्वाहका विभिन्न उपायहरू, युद्धमा आफ्नै सन्तान गुमाउनुपर्दाको पीडा, युद्धमा होमिदा खाएको खाना वा भर्ना युद्धमा खानाका रूपमा बाँसको मुना वा तामा खाएको, टुकीको सलेदो चुसेको रभोकभोकै युद्ध गरेको प्रसङ्गलाई कवि ढकालले कालिक परिवेशका माध्यमबाट स्पष्ट पारेका छन् जसको पुष्टि तलकोसाक्ष्यले गर्छ ।

मरुभूमिमा

पसिनाले बालुवा मुछेर खाएको छु मैले !

आफ्नै रगतको घुट्टकाले भिजाएको छु घाँटी !

बाँस चपाउँदै टुकीको सलेदो चुसेर बाँचेको छु म ! (पृ. ६८०)

यसरी माथिको पङ्क्तिपुञ्जमा गणतन्त्र ल्याउनका लागि कम्युनिस्टहरूले गरेको त्याग र समर्पणलाई कवितामा सशक्त रूपमा उठान गरिएको छ । यहाँ उल्लेखित मरुभूमि, पसिनाले बालुवा मुछेर खाएको, रगतको घुट्टकाले घाँटी भिजाएको प्रसङ्गले यहाँ युद्धकालीन समय र त्यतिबेलाको वस्तु अवस्थालाई सङ्केत गर्छ । बाँस चपाएको प्रसङ्गले त्यतिबेलाको खानाको परिवेशलाई प्रष्ट पारेको छ भने टुकीले रात्रिकालीन परिवेशको सिर्जना गरेको छ । त्यसैगरी अर्कोतिर त्यही गणतन्त्रका नाममा गरिएको युद्धले आम सर्वसाधारण मानिसको मनमा उब्जिएको डर, त्रास, कम्युनिष्टहरूको शोषण, दमन, धम्कीपूर्ण व्यवहार सम्भ्रदा आफ्ना सन्तानलाई केही गरिदिने पो हुन कि ! कतै लगेर युद्धमा सामेल गरी हामीलाई मारिदिने पो हुन कि ! भन्ने चिन्तैचिन्ताले बुढा भएका बाबुआमा पनि रातभरि निदाउन नसकेको प्रसङ्ग २०६२/६३ को समयावधि हो । त्यहि समयलाई यहाँ कालिक परिवेशमा रूपमा व्यक्त गरिएको छ जसको पुष्टि तलको यस पङ्क्तिपुञ्जले गर्छ ।

के थाहा तिमीहरूलाई-

मभिन्न कसरी उम्लिरहेको छ खरानी ?

के थाहा तिमीहरूलाई-

म किन निदाउन सकिदैनँ रातभरि ? (पृ. ६८१)

माथि उदघृतकवितांशमा २०६२/६३ को जनयुद्धले मानिसमा पैदा गरेको डर तथा निराशालाई चित्रण गरेको छ । गणतन्त्रका नाममा कम्युनिस्टहरूले सर्वसाधारण नागरिकमाथि गरेको अन्याय, अत्याचार, शोषण, दमन, डर, धाक, धम्कीकै कारण सर्वसाधारण जनताहरू ढुक्कसँग कुनै पनि काम गर्न नसकेको, दिनरात आक्रमणकारीको डरैडरमा बस्नुपरेको, आक्रमणकारीको अन्याय सहन नसकेको तर पनि सहन बाध्य भएको प्रसङ्गलाई समेत प्रस्तुत गरिएको छ । कवितांशलाई सरसर्ती हेर्दा उल्लेखित सम्पूर्ण घटनाक्रम र त्यससँग जोडिएर आएका सम्पूर्ण समयलाई नै कविताको कालिक परिवेशका रूपमा लिइएको छ । कवितामा उल्लेखित विभिन्न घटनाक्रमहरू कतै सुत्रात्मक कतै व्याख्यात्मक कतै लाक्षणिक त कतै वर्णनात्मक माध्यमबाट आएका यी समयगत सन्दर्भले एकातिर कवितामा पाठकीय अभिरूचि वृद्धि गरेको छ भने अर्कोतिर कालिक परिवेशका माध्यमबाट कविताको कवितात्मक प्रभावोत्पादकतामा वृद्धि गरेको छ ।

### वातावरणीय परिवेश

कवितामा उल्लेखित विभिन्न घटना तथा प्रतिघटनाका सन्दर्भबाट विभिन्न संवेगहरू उत्पन्न भएका छन् । मुख्यतस्यसमा दुःख, भय, त्रास, डर, धाक, धम्की, बलिदान आदिबाट कवितामा भययुक्त वातावरण निर्माण भएको छ । घटनाबाट उत्पन्न परिस्थिति नै यहाँ कविताको वातावरणीय परिवेशका रूपमा आएको छ । गणतन्त्रका नाममा भएको जनयुद्धले नेपालको विगतको इतिहासलाई कुल्चेर, बिर्सेर आज सर्वसाधारण नागरिकको स्वतन्त्रता, समानता र अधिकारलाई उनीहरूबाट नै खोसेर जबरजस्ती लात हानेको परिस्थितिलेनागरिकमाथि गरिएको दोहनको वातावरणीय परिवेशलाई चित्रण गरेको छ जसको पुष्टि तलको यस पंक्तिपुञ्जले गर्छ :

तिमीहरूले

चामलको दानामा लेखेछौ मेरो इतिहास !  
सागको पातमा लेखेछौ मेरा गीतहरू !  
मेरै विचारलाई सिक्री बनाएर  
पशुको तबेलामा बाँधेको मलाई !  
मेरै हड्डीलाई मुरली बनाएर  
आवाजको विपक्षका बजाएछौ मलाई ! (पृ. ६८०)

माथि उल्लेखितपंक्तिपुञ्जमा नागरिकको आफ्नो स्वतन्त्र विचार, हक अधिकार र नेपालको विगतको इतिहासको समेत कुनै मतलब नगरी कम्युनिष्टहरू राज्यसत्ताले आफ्नो एकल विचारमा अगाडि बढ्दै जाँदा युद्धको सिर्जना भएको प्रसङ्गलाई कविले यहाँ कलात्मक रूपमा व्यक्त गरेका छन् । राज्यसत्ताले जनताको विगतको इतिहासलाई मेटाएको, नागरिकको स्वतन्त्र आवाजतथा विचारलाईराज्यसत्ताले काहिले सङ्गीत बनाएर सुनेकोत काहिले सिक्री बनाएर लगाइ आफ्नो शासन व्यवस्थामा पशुलाई जस्तो जबरजस्ती बाधेको, राज्यसत्ताको शासन व्यवस्था विरुद्धमा कसैले बोलेमा उनीहरू भन बढी यातना दिइएको विषयलाई यस कवितांशमा व्यक्त गरिएको छ । यसले भययुक्त वातावरणको सिर्जना

गरेको छ । त्यसैगरी युद्धबाट सिर्जित परिस्थिति र त्यसको परिणामलाई युद्धमा मरेका केटाकेटी, उखुको राइफल, तरबारमा भुन्डिएका टाउका, विक्षिप्त कङ्काल जस्ता प्रतीकात्मक बिम्बका माध्यमबाट यहाँ भययुक्त वातावरणीय परिवेशलाई स्पष्ट पारिएको छ ।

त्यसैगरी केटाकेटीको मृत्यु हुनु, तरबारले मानिसका टाउकाहरू काट्दै हिड्नु, मन विक्षिप्त हुनु, जीवनको मृत्यु मागेर लखेट्नु यी सबै त्यही युद्धबाट निस्किएका परिणामहरू हुन् । जनआन्दोलन युद्धमा परिणत हुदाँकतिको सिन्दुर त कतिको काख रित्तिएको छ । यो सबै युद्धको परिणाम हो । यस कारुणिक दृश्यले मानिसलाई मुख छोपेर रुनुपरेको बाध्यात्मक परिस्थिति सिर्जना गरेको छ भन्ने कुराको पुष्टि तलको यस पंक्तिपुञ्जबाट भएको छः

युद्धमा मरेका केटाकेटीहरू  
 उखुको राइफल बोकेर लखेट्छन् मलाई  
 म तिम्रो तस्बिरपछाडि लुकेर सास फेर्छु !  
 तरबारमा भुन्डिएका टाउकाहरू  
 गीत गाउँदै लखेट्छन् मलाई !  
 खरानीबाट उठेर क्षतविक्षत कङ्कालहरू  
 आफ्नो जीवनको मृत्यु माग्दै लखेट्छन् मलाई !  
 म भन्डाले मुख छोपेर आँसु पुछ्छु ! (पृ. ६८१)

यसरी माथि उल्लेखित सम्पूर्ण घटनाक्रम तथा प्रसङ्गले २०६२/६३ सालमा गणतन्त्रका नाममा गरिएको जनयुद्ध र त्यसले निम्ताएको परिणामलाई यहाँ सङ्केत गरेको छ । जनयुद्धमा मरेका मानिसको लासले पनि मलाई बन्दुक ताकेर लखेटिरहेको जस्तो लाग्छ । तिनैका कङ्कालहरूले समेत मलाई जिस्काउँदै मसँग मेरो मृत्यु मागिरहेका छन् । त्यसैले म तिनै लाससँग समेत डराएर म भाँगिरहेको छु । कति बेला जीवन के हुन्छ ? कुनै टुङ्गो छैन । सम्भ्रदा पनि बारम्बार मनमा डर लागिरहन्छ तर पनि उनीहरू को त्यो लाससँग डराएर डरैडरमा बाँचिरहेको छु भन्ने कुराको अभिव्यक्ति नेपाली जनताले व्यक्त गरेका छन् भन्ने कुरालाई कविले यस कविताशंमा व्यक्त गरेका छन् । कविताशंमा प्रयोग गरिएको 'राइफल' र 'तरबार' युद्ध हो भने 'कङ्काल' युद्धको परिणाम हो । त्यसैगरी 'भन्डा' नेपालको प्रतीक हो । यी सम्पूर्ण कुरालाई सारमा अर्थात्नु पर्दा र मनन गर्दा यिनीहरूले यहाँ नेपालको युद्धकालीन वातावरणी परिवेशलाई चित्रण गरेका छन् । यसैगरी कविताशंमा प्रयोग गरिएको योजक चिन्हले कवितालाई गम्भीर र अभ्र ओभ्रपूर्ण तुल्याउनका लागि विशिष्ट भूमिका खेलेको छ । यी सबै प्रसङ्गबाट हेर्दा प्रस्तुत कवितामा मूलतः जनयुद्ध र त्यसले निम्ताएको भयावहले त्रासद वातावरणको सन्नाटा र कारुणिक वातावरणको सिर्जना भएको छ ।

### निष्कर्ष

'च्याउको जडगल' कविताको परिवेशले कवितालाई सशक्त र विद्रोहात्मक बनाएको छ । व्यङ्ग्यात्मक तथा सङ्केतात्मक शैलीमा लेखिएको यस कवितामा 'म' पात्रको भोगाइ, अनुभव र स्वतन्त्र विचार तथा साहित्य, समाज व्यवस्था र राजनीतिक संस्कृतिबिचको त्रिकोणात्मक सम्बन्धलाई गहन

तरिकाले समाहित गरी कविताले पूर्णता प्राप्त गरेको छ । कवितामा मूलतः राष्ट्रिय परिवेश प्रस्तुत गरिएको छ । यस क्रममावस्तु, परिवेश, उद्देश्य, दृष्टिबिन्दु, भाषाशैलीय विन्यास र सहभागीको अन्तर्घुलनबाट कवितामा विभिन्न स्थान, काल र वातावरणको परिवेशीय साहित्यिक प्रतिबिम्बनलाई प्रस्ट्याइएको छ । नेपालको सुमेरु पर्वत, पर्खाल, मरुभूमि, समुन्द्र, आकाश जस्ता स्थानिक सन्दर्भ र ती स्थानका विविध कार्याव्यापारबाट प्रस्तुत कविताको स्थानिक परिवेश सिर्जना भएको छ । त्यस्तै जनयुद्धमा सर्वसाधारण नागरिकले भोग्नुपरेको सम्पूर्ण दुस्ख, कष्ट भोग्नुपरेका पीडा, कम्युनिस्टहरूले युद्धमा गरेको सङ्घर्ष, 'म' पात्रको व्यक्तिगत स्वतन्त्र विचार तथा भोगाइका विविध घटनाक्रमहरूले प्रस्तुत कविताको कालिक परिवेशको सिर्जना भएको छ । त्यसैगरी जनआन्दोलनले निम्ताएको युद्ध र युद्धको परिणामले त्रासदीपूर्ण र कारुणिक वातावरणको सिर्जना भएको छ । दुस्ख, भय, डर, त्रास, धाक, धम्की, बलिदान, विक्षिप्त मन आदिलाई कतै मूर्त तथा अमूर्त कतै वर्णनात्मक, व्यङ्ग्यात्मक तथा संस्मरणात्मक रूपमा सरल, सहज र सरस भाषाशैलीका माध्यमबाट उठान गरी कविताको वातावरण अत्यन्त विषादमय र कारुणिक बनाई पाठकीय प्रभावोत्पादकतामा वृद्धि गरेको छ । विभिन्न बिम्ब, अलङ्कार, प्रतीक, उपमा र रूपकको माध्यमबाट तथा विभिन्न वर्ण संरचना, आवश्यकतानुसार लेख्यचिन्हको प्रयोग र पङ्क्तिपुञ्जको विस्तारका माध्यमबाट कविता अभि सशक्त र प्रभावकारी बन्नपुगेको छ । यसरी परिवेशगत कुशल प्रस्तुतीकरण र त्यसको परिणामले कवितालाई साहित्यको विशिष्ट कविताका रूपमा स्थापित गरेको छ । त्यसैले यो कविता कविताको परिवेशको दृष्टिले महत्त्वपूर्ण देखिन्छ ।

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