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Gender, Wood Energy and Use in Hurungwe District, Mashonaland West Province, Zimbabwe and Its Determinants

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Abstract

The paper argues that there is an intricate relationship existing between gender, wood energy and use. Man, and women are affected differently when it comes to wood energy collection and use. The paper assesses the physical, mental and health status exerted on women, men and children by lack of adequate and energy services. The study used a case study of two villages in Kazangarare area, Hurungwe District which falls under Zimbabwe's Mashonaland West Province. This study revealed complex gender dimensions of wood energy collection and use in rural communities. The researchers observed that the lack of adequate, clean and safe sources/forms of energy affects women more than it affects men. Women, who have a larger population in rural areas, are traditionally expected to make available firewood for domestic use. Women face immense challenges of collecting and using firewood. They suffer from physical, mental and health problems because of over-reliance on firewood.

Keywords: gender, energy, firewood, rural, Zimbabwe, Hurungwe

1. Introduction and Background of the Study

In this paper, we examine the relationship between gender, wood energy collection and use by rural communities. We argue that there is an intricate relationship existing between gender, wood energy and use by men and women. Men and women are affected differently by inadequacy of fire-wood in rural areas. It is this difference that this paper investigates looking at the gender variance in wood energy collection demand of, access to firewood and marginalization of women. The paper will also assess the physical, mental and health burdens brought by lack of adequate and safe energy services on women, men and children. In achieving this, we explore the new and existing alternative sources of energy which are accessed by the local population in a gender differential manner. This, we do in the context of different international agreements, SDGs and poverty reduction programme on addressing women and men's differential access to affordable and cleaner energy sources and technologies. For the purposes of this analysis, we used a case study of a rural community in two villages in Kazangarare area, namely Dzokamushure and Masawu in Hurungwe district which falls under Zimbabwe's Mashonaland West Province. This area, which is predominantly women populated, was chosen because of its remoteness and relative backwardness. Electricity supply is sparse and resultantly, women are exposed to the drudgery and challenges associated with traditional fuels provision and use.

Women face distinct challenges in the collection, use and availability of fuels and energy in household and

economic studies. Studies indicate that the majority of the rural population in sub-Saharan Africa do not have electricity but rely on traditional fuels, such as wood, charcoal, dug and agricultural residues for cooking and heating (Longe, 2021; Wassie et al., 2021).

India, China and Sub-Sahara are singled out as major users of biomass in the world (Li et al., 2022). The grid-based electrical power does not reach many rural and poor urban areas in these countries, nor is there adequate distribution of gas or other cooking and heating fuels. In many contexts, it is women who suffer the most from shortage of energy. Because of their traditional responsibilities for collecting fuel and water (Liu et al., 2024). Njenga et al. (2021) posit that the time at physical effort expended by women and girls in gathering fuel and carrying water seriously limits their ability to engage in educational and income-generating activities. Much of women's time is taken up with difficult and time consuming chores related to producing and processing food without mechanical or electrical equipment and to cooking clean-burning fuels and energy-efficient appliances (Abbas et al., 2021). Many women and girls suffer from health problems related to gathering and using traditional fuels (Zhang et al., 2022). In addition to the time and physical burdens involved in gathering fuel, women suffer serious long-term physical damage from strenuous work without sufficient recuperation time. Women worry about threats of assault, snake bites, and other dangers during firewood collection (Okyere et al., 2024). They are also exposed to a variety of health hazards from cooking, over poorly ventilated indoor fires which results in respiratory infections, eye diseases and at times cancer (Gofa & Egbendewe, 2021). The unique and often difficult situation faced by women in the poorest developing countries has been recognized in different international fora, such as the Beijing Platform for Action in 1995, the Millennium Summit in 2000, and the World Summit on Sustainable Development in 2002. These and other for a have called for the empowerment of women through increased economic opportunities and enhanced access to clean affordable fuels and energy technologies (Robinson, 2019). A special emphasis is also given in the Millennium Development Goals, now the Sustainable Development Goals, and poverty reduction programme of many developing countries. Different countries have also designed and implemented various forms of projects, programmes and policies that explicitly address the gender and energy nexus and expect to result in better outcomes in terms of the sustainability of energy services as well as the human development opportunities available to women and men (Arachchi & Managi, 2021). Some of the measures, include increasing access to electricity, through extension of power grids as well as installation of decentralised small-scale energy systems powered by diesel fuel or by renewable technologies using solar, micro-hydro, wind, or biomass resources; distribution and marketing of energy-efficient end-use technologies to reduce overall fuel and electricity requirements, making widely available liquefied petroleum gas (LPG) and other cleaner fuels to provide affordable alternatives to traditional biomass-based cooking and heating fuels, low-cost lightning options using battery power, small stand-alone home systems, or decentralized village power systems (Bednar & Rrames, 2020).

1.1 Theoretical Framework

This paper is informed by an Eco-feminist Theoretical Theory which contents that women have a close relationship with nature. Ecofeminism is a collection of feminist and environmentalists' ideologies which seek to explain the relationship between women's oppression and environmental degradation (Lovenduski, 2005). The main goal is to save the environment from degradation whilst simultaneously altering the unequal relationship existing between men and women. Women are believed to be victims of a patriarchal system which also threatens the sustainability of nature. Ecofeminism therefore aims to recover, to regenerate an 'ancient wisdom' as a means to liberate women and nature from patriarchal destruction (Lovenduski, 2005).

A feminist ideology states that gender inequality predates industrialism. Women's predicament was first noted in early feminist writings by people like Mary Wollstonecraft. Wollstonecraft (1972) saw women as heavily excluded and oppressed in society. She therefore staunchly campaigned for their visibility and liberation from the hegemonic tendencies of patriarchy. Women are conceivably subordinated to men and their access to resources is not equal with that of men (Wollstonecraft, 1972). Women are seen as victims of skewed power relations emanating from patriarchal ideologies peddled by men. And it is these patriarchal ideologies that define women's access to resources, their place in society and their roles both in society and in the family or household.

1.2 Literature Review

Fuel wood is the dominant source of energy in rural areas of Zimbabwe, with about 70% of households depending on it as their cooking fuel (Longe, 2021). Excessive fuel wood consumption jeopardizes the natural environment. It hastens the speed of desert encroachment, escalate soil erosion and causes loss of soil fertility (Gafa & Egbendewe, 2021). The majority of communities in rural areas of developing countries such as Zambia, Malawi, and Mozambique, just to mention a few, have adopted fuelwood to meet domestic energy needs due to high levels of poverty, inadequate infrastructure, low supplies of fossil fuels to some areas, and a lack of political will to address energy challenges (Nsenyire et al., 2024).

Fuel wood is consumed in diverse ways and at different levels, the majority of the rural dwellers depends

directly or indirectly on fuel wood. However, meeting rural household fuel wood energy needs in most countries has become herculean task due to the enormous quantity of wood required (Wassie et al., 2021). Daily consumption of firewood by rural communities in Zimbabwe in particular is estimated 18 million kilograms per day (Makumborenga et al., 2022). In the drive to satisfy fuel wood requirements, most lands in Africa have been stripped bare of vegetation cover. This has resulted in soil exposure and erosion thereby placing a heavy burden on the environment and the resource base (Njenga et al., 2021). The demand for fuel wood has resulted in massive destruction of many wood resources leading to deforestation and increasing desertification in parts of Zimbabwe and other parts of sub-Saharan Africa (Wassie et al., 2021; Zvobgo & Tsoka, 2021).

2. Materials and Methods

2.1 Study Area

The study was conducted in Hurungwe District, Mashonaland West Province, Zimbabwe. The district is found in agro-ecological Natural Region 3 (Makumborenga et al., 2022). Natural Region 3 is characterised by high altitude, moderate temperature range with 500-700 mm of rainfall per annum. The district's climate and vegetation support various agricultural activities, including crop farming and livestock production. Tobacco, maize, cotton, and wheat are major crops grown in the area and intensive livestock are dominant (Chivuraise et al., 2016). The savannah type of vegetation is common in the area, consisting of short, scattered trees and tall grass. Miombo woodlands, with tree species such as *Brachystegia* and *Julbernardia*, dominate the area. These trees are umbrella-shaped in order to protect their roots from the scorching sun. Savannah grasslands with scattered trees are also common in areas with moderate rainfall.

The specific study areas were Dzokamushure and Masawu villages located in administrative Ward 22.

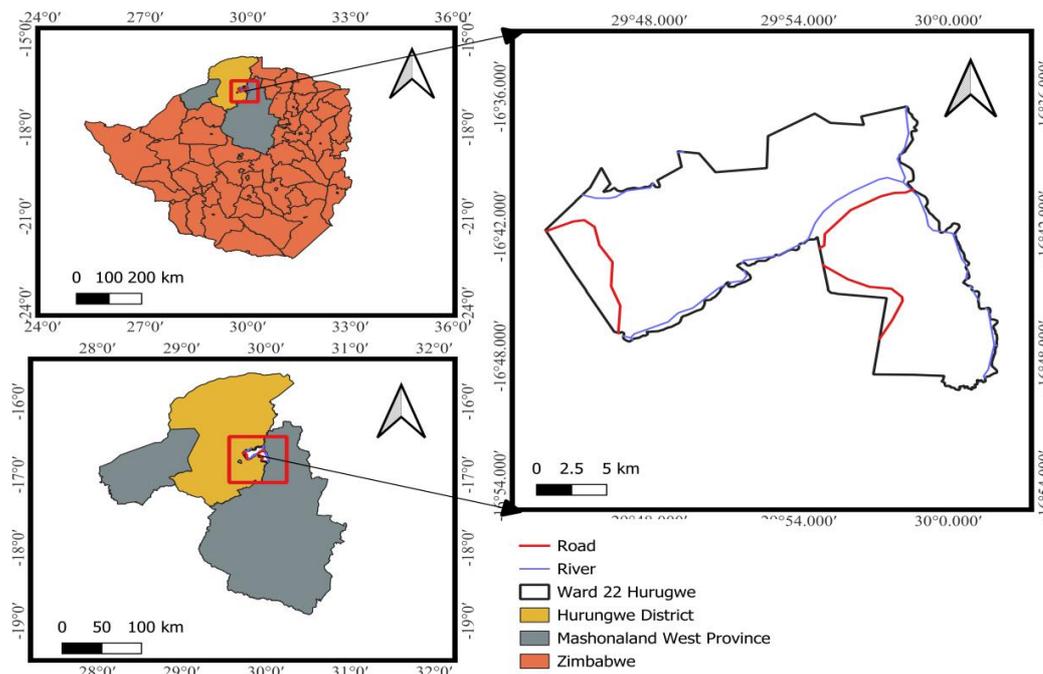


Figure 1. Study Area

The study areas fall under Natural Farming Region 3, which are associated with relatively high temperature and unreliable rainfall ranging from 500-700 mm per annum. Unreliable rainfall received across the study area contribute to decreased agricultural production which result in lifetime food insecurity (Makumborenga., 2022). Prolonged dry winter seasons and low rainfall contribute to the drying of the majority of water sources. Lack of water particularly during the dry season increased human diseases outbreaks and livestock deaths. Human beings are forced to rely on unprotected water sources which result in Cholera and Typhoid out breaks (Chivuraise et al., 2016).

2.2 Methodology, Methods and Data Analysis

The study was achieved through the utilization of both quantitative and qualitative approaches, as well as

adopting a temporary approach to understanding changes taking place on the environment because of the use of wood fuel. Primary and secondary sources of data were used. Key informant interviews and semi-structured interviews were utilised with some randomly selected women from the selected villages who depend most with their immediate environment. These were complemented with four focus group discussions, two in each selected villages. This enabled the researchers to get much relevant data as quickly as possible. Secondary information was used and this included some government public reports, documents, policies, newspapers, magazines, articles and journals. The main reason for use of such documents was to comprehend the nature and extend of the problem from the policy dimension. The researchers selected two villages in the district based on accessibility and suitability for the research. These were Dzokamushure and Masawu villages. Masawu is close to mountains while Dzokamushure is relatively on an adulating ground relatively a distance from mountains. The researchers intended to tap into different villages' situation in as far as energy use and accessibility was concerned.

3. Results

3.1 Demographic Characteristics of Informants

The case study sample comprised 39% and 61% male and female headed households respectively. Demographic statistics indicated that the majority of these respondents were females accounting for 60% of the respondents. This is because women are mostly custodians of their households as they are tasked with home managed. On marital status, 70% of the respondents are married, 12% single, 10% divorced and 8% separated.

On education and professional qualifications 53% attended Primary Education, 3% never attended any form of informal education, and 35% did Secondary Education but did not complete it up to ordinary level (Form 4). Only 6% managed to attend tertiary education. In terms of sources of livelihoods, reliance on wood fuel is dominant at 77% other sources of energy used were 7%.

The age group of the sampled population showed that most of the individuals sampled fell within the age group of 40-49 years, 29% were in the age group of 29-39 years, and 7% were in the age group of 50 years and above. Therefore, the population sampled were mostly the productive, independent and vibrant which showed that the 40-50 years and the 28- 39 age distribution use more wood fuel than the others. Subsistence agricultural practice is dominant and other non-agricultural sources of livelihood which includes small scale mining, cross boarder trading, petty trading, seasonal/permanent employment, remittances, and fishing.

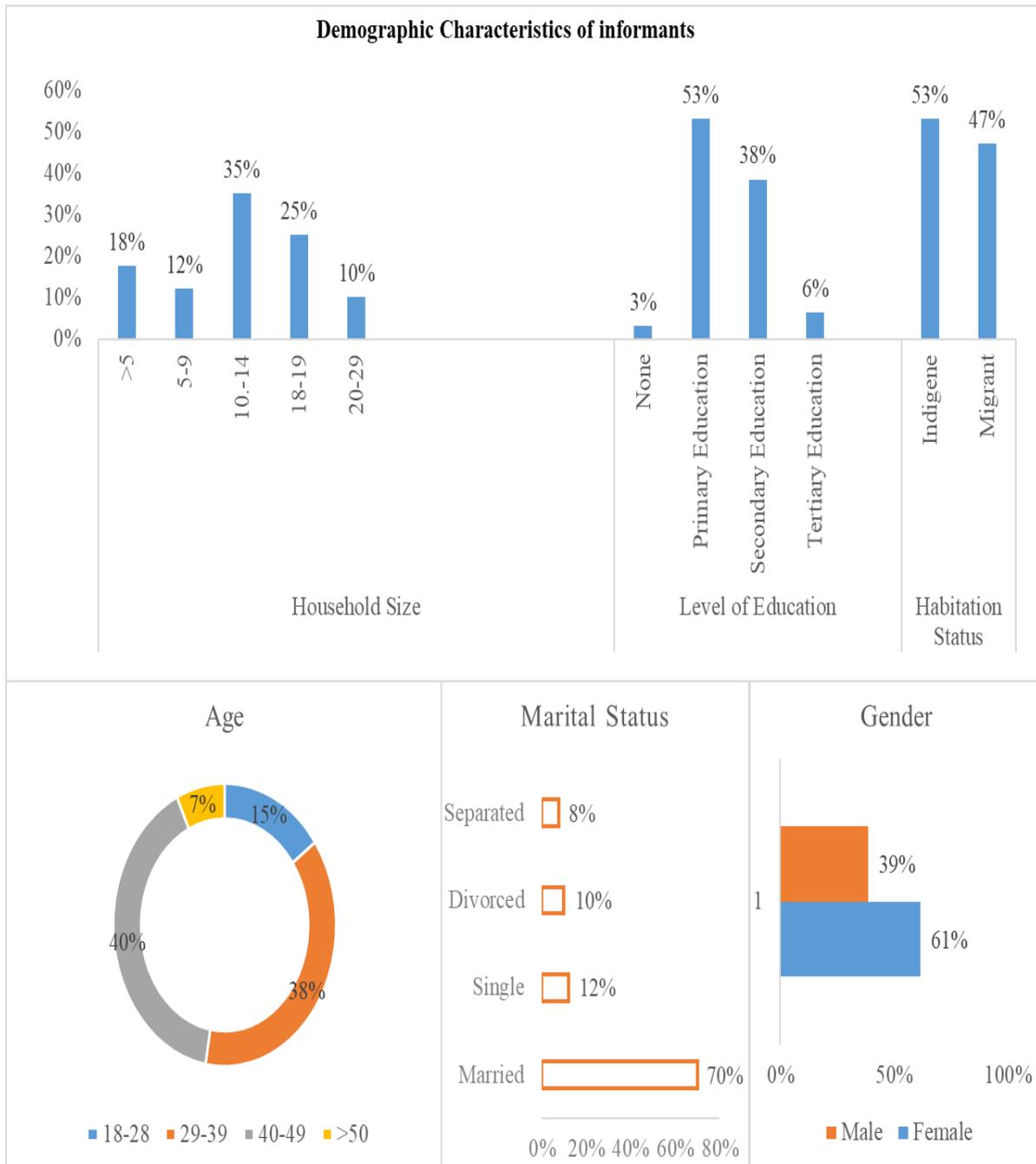


Figure 2. Demographic Characteristics of informants

3.2 Access to Sources of Energy

Figure 3 shows enumerates of the available sources of energy in Dzokamushure and Masawu villages. The researchers found out that sources of energy available for the people in Dzokamushure and Masawu villages range from grid electricity provided by the Zimbabwe Electricity Supply Authority (ZESA), generator power sources that are individually run at different households, solar energy as well as bio-mass energy sources. From the household that were surveyed in this study, it emerged clearly that of the 400 households that were targeted in this study had grid electricity provided for by ZESA.

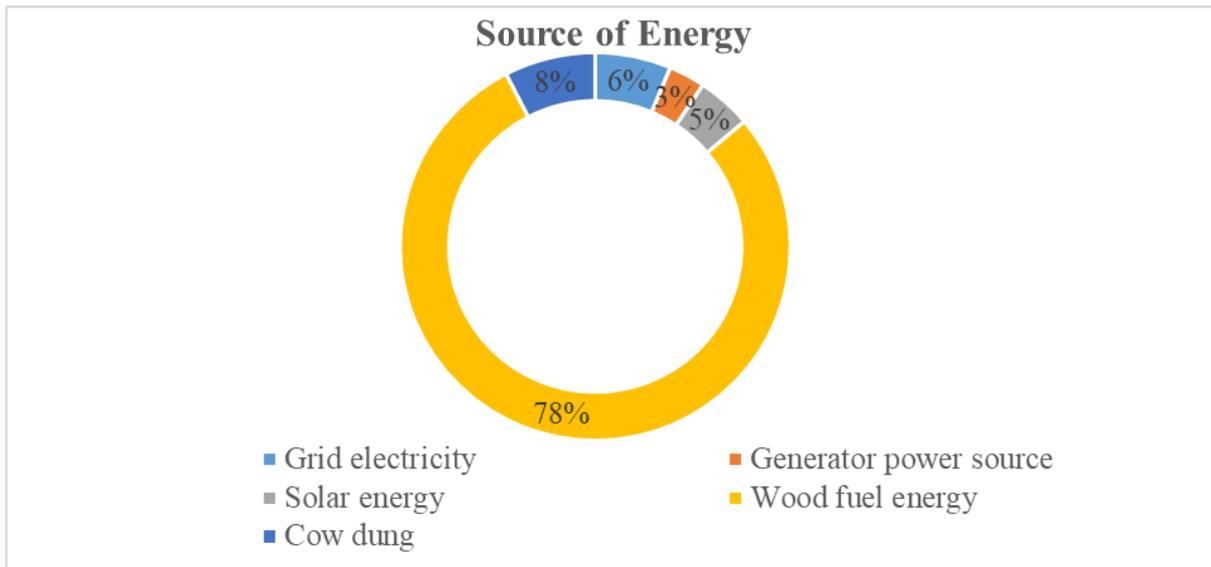


Figure 3. Access to available sources of energy

Another 3% of the households had generators which they used for small electronic gadgets such as radios, television, as well as lighting in the home. Of all the households with generators, there was not a household that used generators for cooking. A total of 5% of the households owned a range of solar panels that differed in size but the major use of such panels was to power small gadgets like radios and televisions. Charging of cell phones was also another use of solar panels. All the respondents indicated that they use firewood for cooking, lighting and tobacco curing as well as burning bricks. With regards to the availability of energy sources, it was established that firewood is openly accessible to all community members at no different cost. However, some respondents indicated that the continuous growing of the population in the area and an increase in the growing of tobacco had accelerated deforestation and making it harder to find firewood. Firewood was increasingly becoming scarce in the area, and some locals were taking that as a business opportunity.

Interviewed women and participants in discussion generally agreed that with the levels of unemployment in the locality, many of the youth were indiscriminately cutting down trees for firewood to sell to those people who cannot cope with the increased stress of fetching firewood. Even though by law it is forbidden, people still need to survive and this firewood scarcity is an opportunity situation for many to earn a living.

Access to firewood emerged to be dependent on capacity to get firewood from the forest. Fetching firewood is a strenuous activity which many indicated to be a challenge for the villagers. Respondents indicated that access was increasingly becoming a challenge and there were more impediments characterising the fetching of firewood. Women in particular, they proved to be struggling to cope with the increasing obstacles associated with firewood fetching. It also emerged from the study that there were local rules that made it difficult to cut the trees without permission from the village head. From focus group discussions and key informant interviews, it was pointed out that some people were bribing village heads in order to get permission to cut trees. This resulted to some people cutting trees even without permission from the village head. One of the respondents said the following:

‘These days even our local leaders are being bribed by certain people who would want to cut tree. It is no longer transparent as it used to be. Favouritism has led to some people defying local rules because they feel the rules are being applied selectively.’

The majority of the respondents’ perceptions were that access to solar power and generators was determined by one’s economic status. The ability of one to buy these was the only key to access such sources of energy.

3.3 Gendered Nature of Energy Mobilization and Use

Table 1 below shows the uses of the energy sources.

Table 1. Uses of energy sources

Name of source of Energy	Uses	Frequency	Percentage

Grid electricity	Cooking, heating and lightning	23	7%
Generator power source	Powering small gadgets, like radios, televisions and charging cell phones	10	3%
Solar energy	Powering small gadgets like radios, televisions and charging cell phones.	12	4%
Wood fuel energy	Cooking, heating, lightning, curing tobacco and burning bricks	241	77%
Cow dung	Cooking and heating	30	9%
Total		400	

Women and children are the key actors responsible for gathering firewood which emerged to be the key source of energy. Key informants pointed out that 90% of the energy requirements in each household is for cooking and subsequently for heating the house. Cooking was seen as a routine activity that occurs on a daily basis. This meant that the fetching of firewood which is the main source of energy is a routine business. From the responses gathered from focus group discussions, it was established that there is division of labour in each household and this informs the daily duties done by each member of the household. One respondent had this to sum up the allocation of duties in a household:

'The responsibility to make sure that the family has had food in the home lies in the hands of the father. The mother of each household makes sure that the food available by the father is well prepared in order to feed everyone. This means there is need to have firewood to prepare the food. The mother of the household can also delegate some duties to gather firewood to children.'

Women make sure that there is enough firewood in the home and children can help their mothers to make sure that firewood stocks are there. The researchers also noted that men in the home can also play a role in ensuring that there is enough firewood in the home by either bringing home huge logs or buying supplementary firewood. Men also have the responsibility of buying candles, generators and solar panels that are used to power home gadgets and lighting the space. Study results highlighted that there is clear distribution of duties between mothers, fathers and children of each household. The researchers noted also that the economic fortunes of households differ and so is there sourcing of energy. Some households had some domestic workers would double as livestock minders and firewood providers. Under such situation, the burden of sourcing firewood was reduced for women. Despite this alternative, it was clear that women are the managers in providing firewood in their homes. One respondent indicated the following:

'Women can never be relieved of the duties of fetching firewood. Men can bring home bigger logs but still need for tsoiso (thin firewood) to facilitate the lighting of the bigger logs.'

The division of labour in rural African home is so entrenched such that despite the seemingly unfair practices, it has survived for a long time. This was evident in the villages investigated. Socialisation of children from early days of life was meant to cement such norms and values such that when children grow old, will be aware of the societal expectations. Women will know that they cook for the family and cooking means that they need to look for firewood.

Table 2 shows cross tabulation for energy source used versus gender.

Table 2. Gender versus energy source used.

		Energy Source Used					
		Grid Electricity	Solar Energy	Cow Dung	Generator Power Source	Wood Fuel	Total
Gender	Male	12	30	22	20	55	139
	Female	30	45	65	22	99	261
	Total	42	75	87	42	154	400

Chi square test for association revealed statistically significant association between gender and energy source used. The p value obtained was 0.0042 which was significant at 5% level of significance.

3.4 Health Challenges Associated with Rural Energy Sources

Study results highlight an active role that women play in the fetching of firewood. They are the managers in the sourcing of energy in the households investigated. However, interviewed women and participants in discussion generally agreed that most women were ignorant of the potential health hazards that may be caused by the energy sources available to them. This was also supported by key informants who pointed out that women did not attribute their previous respiratory illnesses to the energy sources they used. One respondent indicated that she did not think that the use of firewood had any impact on her health as she was aware of the specific types of trees that are safe to use in the household. However, the smoke that is emitted from the burning of firewood has long term effects to their health. The involvement of women in fetching firewood from the forests exposed them to snake bites and various other physical injuries. Most women would normally carry firewood on their heads further exposing themselves to some back strains.

The researchers noted that at least 40% of respondents had suffered from a respiratory related illness for the past year. This could be attributed to their sources of energy which is mainly unprocessed firewood. The other source of problem that women face is stress caused by the increased scarcity of firewood due to deforestation. This means that women now need more time to get the same amount of firewood because of scarcity caused by deforestation. They are now travelling long distances in search of firewood a situation that will drain their energy and expected to do other duties such as cultivating the fields or small gardens.

3.5 Possibilities of Alternative Sources of Energy

Survey results highlighted that firewood is a major source of energy for the respondents who participated in the study. Despite the many challenges that were faced narrated by respondents in relation to firewood use that range from its availability, access and dangers associated with its use, many respondents indicated that firewood was their preferred source of energy. This was discovered by the researchers who also attributed the lack of other alternatives in Hurungwe district to the cost of such alternatives. Firewood is regarded as free good (public good) in rural areas of Zimbabwe as it is seen as a communal resource that any member of the community has access to though within agreed regulatory frameworks. This makes access to firewood relatively easy and affordable. The other alternative sources of energy that respondents numerated awareness of, include bio-gas energy. Respondents indicated that there was a Non-Governmental Organization (NGO) that once trained them on how to tap into bio-gas from household use from cow dung. This initiative was welcome by villagers but could not take off at full scale for reasons that could not be established. The use of cow-dung as a source of cleaner energy was hailed by many villages especially women who bemoaned the challenges they are facing in securing firewood.

Rural electrification was another possibility as was noted by key informants who pointed out that the government has launched a rural electrification programme in the year 2002 that targeted to equitably distribute electricity in rural areas. However, the programme has started at slow pace in all districts of the country including Hurungwe. Respondents indicated that efforts to register for rural electrification were done but normally took a political dimension. Such projects or programmes were mainly talked about towards election and hence they become politicised with little progress. This meant that rural electrification was a pipe dream for women in Dzokamushure and Masawu villages. For those who would shoulder the costs of installations, it was normally difficult to mobilise enough people who would put resources together to meet the costs of installation.

4. Discussions of Findings

Energy has been dubbed one of the most essential 'things' needed to sustain people's livelihoods. It is generally believed that energy is central in human existence. Energy provides lighting, cooked food, boiled water, and warmth. Energy sources are quite broad (including biogas, biomass, fuel, petroleum products, solar, electricity, etc.) most rural poor families rely on biomass energy (that is firewood, charcoal, agricultural waste, and dung). Many studies done in many African countries including Zimbabwe, Kenya, Mozambique, Tanzania and South Africa have shown that the vast majority rural households rely on extensively upon firewood as their basic energy source (Wassie et al., 2021). These observations are consistent with the energy situation obtaining in Hurungwe District as evidenced by study results.

There is now an increasing shortage in supply of firewood, and this has added burden to women whose responsibility is to collect it. More so, of the approximately 1.3 million people living in poverty, it is estimated that 70% are women, many of who live in female headed households in rural areas (Makumborenga, 2022). Apart from increasing shortage of firewood and the burden with which this puts on women, the use of biomass fuel has adverse effects on women's health. It is therefore means that there is need to move towards healthier and sustainable sources of energy which help women move out of poverty and its effects. Electricity is one of the safe and efficient energy that can be used by women, but unfortunately is not within the reach of most rural households (Makumborenga, 2022).

Rural areas continue to face marginalization in the access of electric power. Villages in Kazangarare area is

typical example of rural electricity shortage. Most households are without electricity despite government's push for rural electrification. Most notably rural areas continue to lack modern sources of energy which are safe and clean.

5. Conclusion

This study has revealed interesting and complex gender dimension on firewood collection and use in rural communities. The researchers observed that the lack of adequate and clean and safe sources of energy affects women more than it affects men. Women, who constitute a bigger percentage of the rural population, are traditionally expected to make available firewood for domestic use. Since biomass energy, mostly involving firewood, is the most common source of energy for rural households, women find themselves grappling with challenges associated with accessing and using firewood. Women tend to suffer from physical, mental and health strains due to their over-reliance on firewood.

Other available options of energy, which are clean and safe, such as electrical generators, solar, biogas, and electricity are not easy to access due to the costs involved in installing them. Electricity is not common in rural households and electrification a household is very costly hence a pipe dream for most rural households.

Having presented the findings of the study and forged a conclusion thereof, the researchers wish to note that there is need for the government to have a more clear and humane policy on access and use of energy in rural areas. The government is implored to grant the issue of energy in rural areas the weight it deserves. Access to adequate, clean and safe energy for rural households must be considered a right and the government should take up the mandate of facilitating this. It is also incumbent of the government to speed up and further subsidise its rural electrification to make sure that all including poor households in rural communities access the electricity grid.

There is need for the government to protect to protect the environment in rural areas. The growing populations are now making it difficult for people to be able to access firewood thereby causing serious deforestation. This deforestation has turned some areas to become semi-deserts which are unproductive. The government should seriously enforce laws on tree and firewood harvesting so as to protect the environment. Other alternative sources of energy should be provided by the government at affordable prices so as to reduce dependence on the environment. Last but not least, rural communities must make efforts to reduce the burden put on women and children by lack of adequate, clean, and safe sources of energy through sharing duties.

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Sant Sri Sevalal's Principles for a Peaceful Life

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Abstract

Indigenous ethical traditions offer powerful ways to address modern challenges, including peace, justice, and sustainability. Sant Sri Sevalal, a respected spiritual leader among the Banjara people, established moral principles to promote peace, equality, self-control, environmental stewardship, and respect for everyone. This study examines the principles underpinning Sevalal's vision for peaceful coexistence and how they can advance gender equality, environmental protection, and moral leadership. It examines Sevalal's 21 precepts of moral principles with respect to honesty, nonviolence, acceptance of others, respect for women, care for nature, clear thinking, and social duty. The article employs a qualitative, interpretive approach, drawing on secondary sources and academic literature, to situate Sevalal's teachings within broader discussions of indigenous ethics, peace, and sustainability. The research suggests that Sevalal's ideas provide a comprehensive and practical moral framework for addressing today's conflicts, inequalities, environmental damage, and moral decline.

Keywords: Sant Sri Sevalal, tribal ethics, living in peace, nonviolence, social harmony, environmental ethics

1. Introduction

In a rapidly changing world of economic shifts, social inequality, environmental challenges, and moral uncertainty, the search for a path to peaceful living is more crucial than ever. Indigenous wisdom and tribal principles are underutilised, despite their significance in shaping sustainable peace. These systems influence individual behaviour, relationships with others, and interactions with nature. In this context, Sevalal's teachings assume particular significance.

Sant Sri Sevalal served as a spiritual and moral leader of the Banjara, a disadvantaged, nomadic tribe in India. His teachings emphasised personal development, environmental care, and spiritual and community upliftment. Unlike organised religion, his philosophy shaped daily actions, family relationships, community connections, and attitudes toward nature.

This paper carefully examines Sevalal's ideas on living in harmony as a single moral framework. It shows that his teachings include compassion, honesty, equality, respect for women, reason, environmental care, and nonviolence. The study connects Sevalal's ideas to current academic discussions on peace, indigenous ethics, and sustainability, demonstrating their continued relevance.

Violence, inequality, moral decline, and environmental crises hinder social harmony. Indigenous ethics offer alternative routes to peace and sustainability, building on collective wisdom (Bétéille, 2012; Gadgil & Guha, 1995). Sevalal's teachings are significant within this context. Sant Sri Sevalal guided the Banjara community in ethical living, equal treatment, and respect for nature. His teachings extend beyond rituals, serving as everyday principles for life. This dissertation presents his ideas as a systematic foundation for peace and development today.

2. Conceptual Framework: Ethics, Spirituality, and Social Order

The ethical principles cover morality, honesty, nonviolence, personal discipline, and respect for others. Spiritual philosophy emphasises the interdependence of humanity and nature. Social order encompasses social responsibility, respect for gender roles, equality, and community harmony. Sen (2009) notes that Sevalal's philosophy integrates these elements for peaceful living.

Sevalal's philosophy emphasises honesty, nonviolence, discipline, refraining from actions that harm others, and living with respect. These traits tell people how to act and help them become better people. According to Sharma (2006), moral character is what makes society work and people aware.

Being fair, treating everyone equally, being friends, respecting your elders, and being honest in your conversations are all part of social ethics. These values are intended to foster collaboration, prevent conflict, and ensure that everyone feels welcome. Most of what Sevalal teaches is about gender ethics. For moral progress and stability, it is important to respect women, have self-control in relationships, and respect family life.

Ecological ethics say we should use natural resources wisely, conserve water, protect living things, and keep forests healthy. These ideas derive from indigenous perspectives on human dependence on nature. These parts comprise a comprehensive moral framework aligned with both traditional indigenous values and modern ideas of sustainable living (Sharma, 2006).

3. Review of Literature

Research shows that indigenous moral traditions are crucial for maintaining balance in society and the environment. Gadgil and Guha (1995) say that tribal communities often live in ways that protect the environment because they believe it is the right thing to do, not because the law requires it. Bêteille (2012) says that tribal moral systems prioritise the well-being of the group, giving back, and social solidarity.

There has been extensive study of nonviolence as a means of changing society. Gandhi (1960) said that Ahimsa was both a moral principle and a means of changing society. Johansen (1979) demonstrated that nonviolent methods of conflict resolution and peacebuilding are effective. There has been much discussion in both moral philosophy and social theory about the importance of honesty and integrity. According to Rawls (1971), trust and fairness are the most important things for a just society. Sen (2009) also connected moral reasoning to the worth and capacity of individuals.

People believe that treating women with respect and adhering to gender ethics are essential for social harmony and progress. Nussbaum (2000) says that gender equality is necessary for moral and human growth. Environmental ethics stress the duty to protect forests and water so that future generations can have equal opportunities (UNESCO, 2019). There has been extensive research on these topics, but little direct academic research on the teachings of Sant Sri Sevalal. This study seeks to fill this gap by placing his ideas within well-known moral and social frameworks.

4. Objectives of the Study

The study aims to examine the moral and intellectual foundations of Sant Sri Sevalal's ideas regarding a peaceful life. To find out how honesty, nonviolence, and moral discipline might help people get along with each other. To see how Sevalal's teachings stress the importance of treating everyone equally, not discriminating, and being a brother. To examine gender ethics, particularly the treatment of women and the moral standards governing interpersonal relationships. To look at the parts of Sevalal's worldview that have to do with the environment, like protecting forests and saving water, and Sevalal's ideas about building peace and sustainable development are still useful in present today scenario.

Research Questions

- 1) What are the main moral and intellectual ideas that Sant Sri Sevalal's rules for living in harmony are based on?
- 2) How do values like honesty, nonviolence, and moral discipline help people get along and settle their differences?
- 3) How does Sevalal's work talk about treating everyone equally, not being mean to others, and being a brother?
- 4) What does Sant Sri Sevalal's moral code say about how to treat women and deal with gender issues?
- 5) What environmental values are included in Sevalal's emphasis on saving water and protecting forests?
- 6) How useful are Sant Sri Sevalal's ideas in today's conversations about building peace, protecting the environment, and making society more fair?

Bhagwan Sant Sri Sevalal Maharaj was born on Monday, 15th February 1739. His parents, Bheema Naik and Dharmini Bai, belonged to the Rathod clan and Ramavath Gotra. During their nomadic life, while trading cargo

on bullocks, the family settled around the fort in Gutti in the Anantapur district of the erstwhile state of Andhra Pradesh. Sevalal was the eldest child of Bheema Nayak. Their tanda was located at the foot of Chowdewari Hill, situated between Guttikota and Ramachandrakonda. Sant Sevalal never married and ate only vegetarian food. He advocated against superstition and addressed it, and he preached 21 principles of the Banjara community life. The Banjara community prays to Sant Sri Sevalal Maharaj for the protection of their livestock and the cure of illness. On the 15th of February, all Banjara community members worldwide perform Maha Bhog Bandaro, offering jaggery and pancake rice with ghee (Lal, 2016).

Banjaras have a unique culture of their own and play an important role in Indian culture. Their lifestyle is unique and has nothing in common with either the population of plain areas or with local tribes, such as the Banjara, Lambadi, Sugali, or Lambani, in different parts of India. They speak a dialect known as Gor Boli, which has no script and is a mix of Sanskrit, Hindi, Marathi, and Gujarati (Lal, 2016).

5. Methodology and Data Sources

The study uses a qualitative, descriptive, and interpretive framework to examine Sant Sri Sevalal's ideas for a peaceful life. This method is great for learning about ethical philosophies, indigenous knowledge systems, and value-based frameworks when understanding the ideas is more important than measuring them.

The study is based primarily on secondary data, such as Biographies, oral histories, and written narratives about Sant Sri Sevalal. Books and journal articles that other experts have read and are about tribal ethics, peace studies, and native beliefs. Reports by government agencies and other groups on tribal culture, intercultural relations, and environmental stewardship. Writings from the past and the present about social justice, nonviolence, and taking care of the environment.

We can use thematic analysis to put Sevalal's ideas into four groups: ethical, social, gender, and ecological. Interpretive analysis examines these ideas within major theoretical frameworks, including indigenous ethics, Gandhian nonviolence, human rights discourse, and sustainable development. We use comparative contextualisation to demonstrate that Sevalal's teachings remain relevant today.

6. Results of the Study

A qualitative study of Sant Sri Sevalal's ideas yields several noteworthy insights. They are Practice non-violence to solve social problems, Speak the truth, Uphold ethics and values, Refrain from stealing others' property, Avoid speaking ill of others, Avoid harming others, Respect your parents, Respect women, Treat everyone equally without discrimination, Protect forests and the environment, Pray to the Goddess, Love humanity, Befriend your fellow beings, Abstain from alcohol, Protect water and help those who are thirsty, Reject and avoid superstitions, Help poor people, Avoid illegal relationships with other women, Live with dignity, Respect elders, Maintain brotherhood.

These precepts are broadly categorised into: Ethical Foundations of Peaceful Living; Social Harmony and Interpersonal Ethics; Gender Ethics and Moral Discipline; Lifestyle Discipline and Social Responsibility; Ecological Ethics and Environmental Stewardship; Rationality, Spirituality, and Social Welfare.

6.1 Ethical Foundations of Peaceful Living

Nonviolence as a Social Solution: Nonviolence (Ahimsa) is a central component of Indian moral philosophy and the ideal of peace (Gandhi, 1960). Sevalal believed that violence was bad for people and wrong. His emphasis on patience, forgiveness, and talking is similar to conflict-resolution methods that stress peaceful change (Johansen, 1979).

Honesty and Moral Integrity: When people are honest, they trust each other and do the right thing in society. Ethical theorists argue that honesty helps maintain institutions and relationships (Rawls, 1971). This theory is supported by Sevalal's focus on truth, which shows that people need to be honest with one another to get along.

Respect for Property, Values, and Ethics: Respecting others' property demonstrates care for their work and dignity. In tribal moral economies, ownership is more about social duty than about acquiring more material goods (Polanyi, 1957). Sevalal's condemnation of robbery shows that fairness and happiness are important moral values.

6.2 Social Harmony and Interpersonal Ethics

Responsible Speech and Non-Harm: Language has a big effect on people. Hurtful speech keeps conflict and the breakdown of society going (Habermas, 1984). Sevalal's focus on careful speech underscores the importance of having moral conversations.

Equality and Non-Discrimination: Sevalal's stance against discrimination aligns with contemporary human rights principles that call for equality and respect for all (United Nations, 1948). His teachings are against caste-based systems and social inequality. They call for fairness and inclusion.

Brotherhood, Friendship, and Living Together: Communitarian ethics emphasise working together and interdependence more than individualism (Etzioni, 1993). Sevalal's call for brotherhood and friendliness exemplifies this communitarian ideal, fostering a sense of connection among people.

6.3 Gender Ethics and Moral Discipline

Respect for Women: In moral communities, it is very important to honour women. Feminist scholars argue that gender justice is important for social peace (Nussbaum, 2000). Sevalal is a moral thinker who is ahead of his time because he puts women's safety and dignity above all else.

Moral Limits in Relationships: People must be morally disciplined for families to remain together and for people to trust one another (Durkheim, 1897). Sevalal's advice on how to behave well in relationships indicates that he prioritises social peace over patriarchal control.

6.4 Lifestyle Discipline and Social Responsibility

Not drinking: People who abuse drugs and alcohol are often poor, violent at home, and have health problems (WHO, 2018). Sevalal's refusal to drink demonstrates that he understands the effects of alcohol on people and the economy.

Living with Dignity and Respecting Elders: According to Sen (2009), doing the right thing and working hard give you dignity. Respect for older people helps preserve cultural knowledge and pass it down from generation to generation. This is a key idea in anthropological studies of tribal cultures (Bose, 2001).

6.5 Ecological Ethics and Environmental Stewardship

Protecting Forests and Nature: Indigenous environmental ethics hold that we should live in harmony with nature rather than attempt to control it (Gadgil & Guha, 1995). Sevalal's call to protect the woods aligns with modern environmental values and actions that are beneficial in the long run.

Water Conservation and Humanitarian Responsibility: Water ethics are increasingly important for human rights and the environment (UNESCO, 2019). Sevalal's promise to protect water and help people who are thirsty demonstrates his concern for the environment and for others.

6.6 Rationality, Spirituality, and Social Welfare

Rejecting Superstitions: People who unquestioningly believe in superstitions are often afraid and hinder societal progress. Rational thought strengthens individuals and promotes their advancement (Ambedkar, 2014). Sevalal's focus on rational belief indicates a modern view of right and wrong.

Compassion for the Poor: Theories of social justice emphasise sharing, caring, and inclusivity (Rawls, 1971). Sevalal's desire to help those who are less fortunate strengthens moral duties to people outside of one's immediate circle.

Love and devotion for all people: Sevalal thought that devotion meant serving all people. This fits with ethical humanism and spirituality, which stress the importance of service (Schweitzer, 1952).

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6.8 Present Day Relevance

Sevalal's ideas align with modern global frameworks that promote peace, protect the environment, advance gender equality, and support sustainable development. His lessons demonstrate that traditional moral systems remain highly useful in contemporary discussions of ethics and policy.

7. Discussion

The results show that Sant Sri Sevalal's teachings constitute a moral philosophy, not just a bunch of disconnected moral rules. His focus on nonviolence aligns with Gandhi's ideas about peace (Gandhi, 1960), and his support for equality aligns with modern human rights values (United Nations, 1948).

His teachings on the environment align with contemporary ideas of sustainability, which prioritise environmental stewardship and responsibility to future generations (Gadgil & Guha, 1995). Sevalal's rejection of superstition

and focus on moral reasoning are important because they show a kind of rationalism that is not always present in depictions of tribal spirituality.

8. Suggestions and Conclusion

As part of peace studies and value-based education, teach about the ideas of Sant Sri Sevalal.

Apply ethical frameworks relevant to the field when working on community development and environmental projects. Encourage real-world research on how people use Sevalal's teachings in their daily lives. Encourage participants to record their findings on tribal moral ideas.

Sant Sri Sevalal's rules for living in peace provide a comprehensive, enduring moral framework that encompasses personal ethics, social justice, respect for gender, environmental stewardship, and intellectual spirituality. His teachings are timeless and apply to everyone. They can help us address problems such as violence, unfairness, environmental destruction, and moral decline in today's world. Recognising and using these indigenous ideas can improve academic debate and help build peaceful, long-lasting societies.

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Assessment Model and Empirical Study of Students' STEM Innovation Ability in Virtual Simulation Environment

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Abstract

To address the core issue of the “emphasis on operational accuracy but neglect of innovative thinking” and the lack of a scientific quantification model in the application of virtual simulation technology in STEM education, this study aims to construct an assessment system for STEM innovation ability that is compatible with the virtual simulation environment and to verify its effectiveness. The study first combed through the components of STEM innovation ability and the theories of virtual simulation teaching through literature research methods. Combined with the Delphi method (12 STEM education experts, technical engineers, and front-line teachers participated), it determined 12 assessment indicators across four dimensions: “problem discovery, solution design, interdisciplinary integration, and outcome optimization”. Subsequently, the Analytic Hierarchy Process (AHP) was used to calculate the weights of the indicators, and a quantification assessment model was constructed by integrating the Fuzzy Comprehensive Evaluation method. An automatic scoring system was also developed to achieve real-time conversion from “operational data to innovation scores”. Finally, 200 students from two middle schools (one urban and one rural) and one vocational college in Ningbo were selected to conduct a comparative experiment over one semester (virtual simulation group vs. traditional teaching group), and SPSS was used for reliability and validity tests and difference analysis.

Keywords: virtual simulation environment, STEM education, innovation ability assessment, assessment model, Analytic Hierarchy Process (AHP), fuzzy comprehensive evaluation, empirical study, automatic scoring system, interdisciplinary integration ability, K12 education, vocational education, STEM curriculum

1. Introduction

1.1 Research Background

Virtual simulation technology, with its characteristics of “repeatable trial and error, multi-scenario simulation, and low risk and cost”, has become a core means to break through the pain points in STEM education, such as “difficulties in conducting high-risk experiments, high costs of large equipment, and the inability to reproduce complex processes”. It is widely applied in STEM teaching scenarios such as physical experiments, chemical synthesis, and industrial robot operations. However, the current academic and practical communities have significant shortcomings in assessing students' STEM innovation ability in the virtual simulation environment: First, the assessment indicators focus on “operational accuracy” (such as the compliance of experimental steps and proficiency in equipment operation), neglecting “innovative thinking and ability” (such as the keenness of problem discovery, the innovation of interdisciplinary solution design, and the iterativeness of outcome optimization). Second, the assessment method is mainly based on “subjective teacher scoring”, lacking a scientific quantification model based on data, which makes it difficult to accurately measure the improvement effect of virtual simulation technology on STEM innovation ability and to provide clear guidance for teaching optimization. Therefore, constructing a scientific and quantifiable assessment model has become a key demand to promote the deep integration of virtual simulation technology and STEM education.

1.2 Research Significance

1.2.1 Theoretical Significance

This study compensates for the insufficiency of existing STEM innovation ability assessment in terms of “technological scenario adaptability”, enriches the theoretical association between “virtual environment and innovation ability”, and provides a new theoretical perspective for STEM education assessment research.

It integrates the Analytic Hierarchy Process (AHP), Fuzzy Comprehensive Evaluation, and virtual simulation data acquisition technology, expanding the methodological system of educational assessment models and providing theoretical references for the quantification assessment of complex skills (such as innovation ability).

1.2.2 Practical Significance

It provides front-line STEM teachers with operable assessment tools (such as the indicator system and automatic scoring system), solving the teaching pain point of “difficulty in measuring innovation ability” and assisting in the precise feedback of teaching effectiveness.

It provides a basis for the development and optimization of virtual simulation STEM courses (such as adjusting task difficulty and supplementing innovation guidance modules according to assessment results), promoting the efficient application of virtual simulation technology in the STEM fields of K12 and vocational education.

1.3 Literature Review

1.3.1 International Research Status

Reviewing international research on STEM innovation ability assessment reveals that a “core literacy-oriented” assessment framework (such as the “Science and Engineering Practices” dimension in the U.S. Next Generation Science Standards) has been formed. However, there is a lack of specialized assessment research for virtual simulation environments, with most studies focusing on “operational skills” rather than “innovation ability”. Research on virtual simulation teaching mainly focuses on “the impact of immersion on learning motivation”, lacking integration with innovation ability assessment.

1.3.2 Domestic Research Status

Domestic research is concentrated on “development of virtual simulation teaching resources” (such as the construction of university virtual laboratory platforms) and “design of STEM innovation ability indicators” (such as experimental innovation scoring standards based on disciplines). However, there are two major limitations: First, the indicators are disconnected from the virtual simulation environment (not considering the role of “trial and error” in stimulating innovative thinking). Second, the assessment models are mostly “qualitative descriptions”, lacking quantification and empirical verification, making it difficult to promote and apply them widely.

2. Theoretical Foundations

2.1 Theories Related to STEM Education and Innovation Ability

2.1.1 Components of STEM Innovation Ability

Based on the “Core Literacies for Chinese Student Development” and the core goals of STEM education, this study clarifies the four core components of STEM innovation ability: “problem discovery ability” (identifying potential problems in experiments or tasks), “solution design ability” (designing innovative pathways to solve problems), “interdisciplinary integration ability” (integrating knowledge from science, technology, engineering, and mathematics to solve complex problems), and “outcome optimization ability” (iteratively improving solutions based on feedback).

2.1.2 The “Learning by Doing” Theory in STEM Education

Dewey’s “Learning by Doing” theory emphasizes that “practical operations stimulate innovative thinking”, providing theoretical support for the association between “operation and innovation” in the virtual simulation environment. It clarifies that the “trial and error” nature of virtual simulation can enhance students’ willingness to explore innovation.

2.2 Theories Related to Virtual Simulation Teaching

Flow theory indicates that when an individual is fully engaged in a particular activity, they enter a psychological state of “flow”, characterized by high concentration, distorted sense of time, and diminished self-awareness. Virtual simulation environments, with their multi-sensory, highly interactive, and realistic “high immersion” features, can quickly immerse students in this state, significantly enhancing their focus and desire to explore. This provides the necessary environmental foundation for the emergence and continuation of innovative ability. In line with this, constructivist learning theory posits that knowledge is not passively received but actively constructed by learners in real contexts. Virtual simulation, with its core mechanisms of “multi-scenario

simulation and autonomous operation”, allows students to continuously trial and error, integrate, and reconstruct interdisciplinary knowledge in a safe, controllable, and repeatable practice space. This generates personalized and context-specific innovative thinking. This “learner-centered” construction process not only lays the theoretical foundation for the design of assessment indicators but also ensures that the indicators can truly reflect the dynamic trajectory of students’ innovation ability generated in the virtual context.

2.3 Theories Related to Educational Assessment Models

The weight allocation and quantification strategy rely on the combined advantages of AHP and Fuzzy Comprehensive Evaluation. The Analytic Hierarchy Process first decomposes the complex STEM innovation ability assessment into a multi-level structure of “goal – criterion – indicator”. It constructs a judgment matrix through pairwise expert comparisons and checks consistency to clearly derive the weights of each indicator through a mathematical path. This ensures scientific validity in a multi-indicator context while maintaining feasibility in operation. On this basis, Fuzzy Comprehensive Evaluation, targeting the naturally fuzzy boundaries and rich language descriptions of “innovation ability”, introduces membership functions to map qualitative descriptions such as “novelty of the problem” and “feasibility of the solution” into computable quantitative data (Qi, Z., 2025). This effectively resolves the gray information that traditional scoring methods fail to capture. The final score can reflect subtle differences while conforming to human language habits. The combination of these two methods provides a complete methodological support for innovation ability assessment in the virtual simulation environment, from weight determination to fuzzy quantification.

3. Construction of the Assessment Indicator System for STEM Innovation Ability in Virtual Simulation Environment

3.1 Principles of Indicator Design

Indicator design adheres to three major principles: scientificity, operability, and adaptability. First, it is rooted in the theory of STEM innovation ability components and closely aligns with the unique attributes of virtual simulation teaching, such as “high immersion, interactivity, and immediate feedback”, ensuring that each item resonates with the core goals of innovation. Second, it insists on behavioral and quantifiable expressions, such as “number of innovative solutions proposed” and “frequency of interdisciplinary knowledge application”, discarding abstract descriptions like “strong innovation awareness” to make the assessment directly measurable and observable. Finally, it fully leverages the advantages of the virtual environment by setting characteristic indicators such as “number of times a solution is optimized based on simulation results”, differentiating from traditional classroom assessments and achieving deep integration of the evaluation tool with the virtual simulation scenario.

3.2 Preliminary Screening of Assessment Indicators

The construction of indicators begins with a literature review, systematically searching CNKI and Web of Science for 50 studies on STEM innovation ability and virtual simulation teaching. From these, 18 high-frequency and representative candidate indicators such as “novelty of problem posing” and “feasibility of solution design” are extracted. Then, returning to the theoretical context, indicators loosely related to the core of innovation ability, such as “operation speed”, are eliminated in accordance with the framework of STEM innovation ability components clarified in Chapter 2 and the essence of constructivism “active construction and context generation”. Ultimately, 15 indicators closely related to cognitive construction and innovation performance are refined, laying a broad and theoretically deep foundation for subsequent expert arguments.

3.3 Indicator Argumentation and Optimization Based on the Delphi Method

Expert selection adheres to a hard threshold of “more than five years of STEM teaching or virtual simulation development experience”, ultimately forming a diverse team of 12 members, including three university professors, four corporate engineers, and five front-line teachers. A two-round argumentation loop is designed: In the first round, focusing on the connotation of indicators, experts are free to add, delete, and modify items. As a result, “frequency and rationality of interdisciplinary knowledge application” are merged, and redundant items such as “completeness of lab reports” are eliminated, reducing the candidate pool to 13 items. In the second round, a 1-5 point importance scale is used to score the remaining indicators. Items with an average score below 3.5 (Li, W., 2025), such as “equipment operation proficiency”, are eliminated, ultimately locking in 12 core indicators that are both representative and operable, laying a solid content foundation for subsequent weight calculation and model validation.

Table 1.

Stage	Key Actions
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Expert Selection	“Hard Threshold + Diverse Combination”
First Round of Argumentation	“Open-Ended Addition, Deletion, and Modification”
Second Round of Argumentation	“Scoring with Importance Scale”
Result Confirmation	“Solidification of Core Indicators”

4. Development of the Assessment Model for STEM Innovation Ability in Virtual Simulation Environment

4.1 Determination of Indicator Weights Based on the Analytic Hierarchy Process (AHP)

First, a three-level hierarchical structure of “goal – criterion – indicator” is constructed: The top layer is the comprehensive score of STEM innovation ability in the virtual simulation environment. The middle layer is divided into four capabilities: problem discovery, solution design, interdisciplinary integration, and outcome optimization. The bottom layer is further detailed into 12 measurable indicators. Subsequently, 12 domain experts are invited to compare the importance of elements at the same level using a 1-9 scale to construct judgment matrices for both the criterion layer and the indicator layer. The maximum eigenvalue is calculated using MATLAB to determine the consistency ratio (CR), ensuring that $CR < 0.1$ to pass the consistency test. On this basis, hierarchical single sorting and total sorting are performed to simultaneously obtain the weights of the criterion layer (e.g., 0.25 for problem discovery ability) and the synthesized weights of each indicator for the overall goal (e.g., 0.08 for “novelty of problem posing”). Ultimately, a clear hierarchical weight system of “criterion layer – indicator layer” is formed from the top down, providing precise quantitative support for the subsequent Fuzzy Comprehensive Evaluation. (Zhong, Y., 2025)

4.2 Construction of the Assessment Model Based on Fuzzy Comprehensive Evaluation

In the core calculation section of the assessment model, first, a five-level evaluation set is determined: “excellent (9-10 points), good (7-8 points), medium (5-6 points), poor (3-4 points), and poor (1-2 points)”. Membership functions are designed for each of the 12 indicators to convert qualitative descriptions such as “proposing three or more innovative solutions” into quantitative scales with a membership degree of 1 for the “excellent” level, achieving precise mapping from linguistic variables to numerical space. Subsequently, the fuzzy synthesis operator is used to synthesize the weight vector of indicators obtained by AHP with the membership matrix of all students. After weighted synthesis, the final score is output and automatically matched with a grade. For example, a score of 8.2 is judged as “good”, thus completing the seamless transition from raw performance to quantitative score to interpretable grade in one step. This ensures that the evaluation results of STEM innovation ability in the virtual simulation environment are both nuanced and credible as well as intuitive and usable.

4.3 Supporting Assessment Tool: Development of the Automatic Scoring System

4.3.1 System Architecture Design

A system architecture comprising four modules is designed: “data acquisition – weight calculation – score generation – result feedback”. The data acquisition module captures students’ operational data in the virtual simulation environment in real-time (e.g., number of solution designs, records of interdisciplinary knowledge application). The weight calculation module embeds the AHP weight system. The score generation module calculates innovation scores using Fuzzy Comprehensive Evaluation. The result feedback module provides teachers with reports containing “scores – indicator weaknesses – improvement suggestions”.

4.3.2 System Function Testing

Twenty students were selected for system testing to verify the accuracy of data acquisition (match between operational data and acquired data) and the rationality of score calculation (consistency between system scores and expert scores). The system functions were optimized based on the test results (e.g., adding a data anomaly warning module).

5. Empirical Verification of the Assessment Model for STEM Innovation Ability in Virtual Simulation Environment

5.1 Design of the Empirical Study

5.1.1 Selection of Research Subjects

A total of 200 students from two middle schools in Ningbo, Zhejiang Province (urban school: Ningbo Yinzhou Middle School; rural school: Liangnong Middle School, Yuyao City, Ningbo) and one vocational college (Ningbo Yinzhou Vocational Education Center) were selected as research subjects. These included 80 students in Grade 11 (physics course), 60 students in Grade 12 (chemistry course), and 60 students in Grade 2 of the vocational college (industrial robot course).

5.1.2 Grouping and Experimental Design

A “controlled experiment” was adopted, dividing students in each course into a “virtual simulation group” (50 students) and a “traditional teaching group” (50 students). The virtual simulation group used the STEM virtual simulation platform for teaching (e.g., physics circuit design simulation, chemical synthesis simulation). The traditional teaching group followed the “teacher demonstration + student manual operation” model. The experimental period was one semester (18 weeks), with consistent teaching content, teachers, and class hours for both groups.

5.1.3 Data Collection Indicators

Three core types of data were determined: assessment model scores (collected through the automatic scoring system for the virtual simulation group and through “expert scoring + work analysis” for the traditional teaching group), participation in science and technology innovation competitions (recording the number of students and award-winning rates for school-level and above STEM innovation competitions in both groups), and student questionnaire feedback (to understand students’ subjective perceptions of “innovation ability improvement”).

5.2 Data Collection and Processing

5.2.1 Data Collection Process

Assessment model scores were collected in the middle (Week 9) and at the end (Week 18) of the experiment. Within one month after the experiment, data on students’ participation and award-winning rates in science and technology innovation competitions were collected. Questionnaires were distributed at the end of the experiment (200 questionnaires were distributed, with 192 valid questionnaires recovered, resulting in a valid recovery rate of 96%).

5.2.2 Data Processing Methods

SPSS 26.0 software was used for data processing: descriptive statistics (mean, standard deviation) and independent sample t-tests (to compare score differences between the two groups) were conducted for the assessment model scores. Chi-square tests were performed on the award-winning rates of science and technology innovation competitions (to verify the significance of differences in award-winning rates between the two groups). Reliability and correlation analyses were conducted on the questionnaire data.

5.3 Validation of the Effectiveness of the Assessment Model

In terms of assessment model scores, the average STEM innovation ability score of the virtual simulation group at the end of the experiment was 8.12, while that of the traditional teaching group was 6.32. The t-test results showed a t-value of 5.87, with a p-value less than 0.01, indicating a statistically significant difference between the two groups. This demonstrates that the virtual simulation group performed more prominently in innovation ability improvement. Further examination of the award-winning rates in science and technology innovation competitions revealed that 38 students from the virtual simulation group participated, with a participation rate of 76%, and 22 students won awards, resulting in an award-winning rate of 44%. In contrast, the traditional teaching group had 21 participants (42%) and 8 award winners (16%) (Haoyang Huang, 2025). The chi-square test results showed a χ^2 value of 12.35, with a p-value also less than 0.01, further confirming the significant difference in award-winning rates between the two groups.

Table 2.

Specific Indicators	Virtual Simulation Group	Traditional Teaching Group
Final Experimental Average Score (/10)	8.12	6.32
Participants/Total Number	38/50 (76%)	21/50 (42%)
Award Winners/Participants	22/38 (44%)	8/21 (16%)

6. Conclusions and Future Work

6.1 Main Research Conclusions

This study constructed a scientific and feasible assessment indicator system for STEM innovation ability in the virtual simulation environment, comprising 12 specific indicators across four dimensions: problem discovery, solution design, interdisciplinary integration, and outcome optimization. The indicators were validated through expert arguments and empirical tests, meeting the expected standards of scientificity and operability. An effective quantification assessment model was also developed, integrating the Analytic Hierarchy Process (AHP) and Fuzzy Comprehensive Evaluation, along with an automatic scoring system. The model achieved a reliability

coefficient of 0.87 and good validity. Empirical results showed that the model could accurately measure students' STEM innovation ability in the virtual simulation environment. The study further verified the significant positive effect of virtual simulation technology on STEM innovation ability. In the empirical study, the innovation ability score of the virtual simulation group increased by an average of 28.5% compared to the traditional teaching group (Xiaoying Yang, 2025), and the award-winning rate in science and technology innovation competitions increased by 28 percentage points. This fully demonstrates the positive impact of virtual simulation technology on stimulating students' STEM innovation ability. Based on this, targeted suggestions for optimizing virtual simulation STEM teaching were proposed. According to the "indicator weaknesses" feedback from the assessment model, it is recommended to add a "cross-disciplinary task guidance module" in teaching to enhance students' interdisciplinary integration ability and a "problem inspiration module" to improve their problem discovery ability, thereby continuously optimizing teaching effectiveness and promoting the comprehensive development of students' innovation ability.

Table 3.

No.	Research Module	Key Achievements
1	Assessment Indicator System	Developed a framework of "12 indicators – 4 dimensions"
2	Quantitative Assessment Model	Integrated AHP-Fuzzy Comprehensive Evaluation model
3	Effectiveness of Virtual Simulation Teaching	Significant improvement in innovation ability scores
4	Performance in Science and Technology Innovation Competitions	Substantial increase in award-winning rates
5	Teaching Optimization Suggestions	Added "Interdisciplinary Task Guidance Module"
6	Teaching Optimization Suggestions	Added "Problem Inspiration Module"

6.2 Research Limitations

The study has obvious limitations in terms of sample scope. The empirical research only selected schools in Ningbo as research objects, and the geographical representativeness of the sample is insufficient. It is difficult to cover educational scenarios in different economic regions comprehensively, which may affect the universality and scalability of the research results. In terms of experimental duration, the study only conducted a one-semester experiment. Although short-term effects were fully verified, there was a lack of in-depth exploration of the stability of the assessment model and the long-term (e.g., 1-2 years) impact of virtual simulation technology, limiting the accurate assessment of the long-term educational effects of virtual simulation technology.

6.3 Future Research Outlook

Future research can first expand the sample and scenarios by selecting schools across the eastern, central, and western economic zones and incorporating more STEM disciplines such as biology and information technology into the validation scope to test the universality of the assessment model in diverse geographical and disciplinary contexts. Prospectively, the deep integration of virtual simulation and artificial intelligence can be explored. For example, AI can be used to real-time capture and analyze students' innovative thinking trajectories in virtual tasks, achieving intelligent upgrades in process assessment. In terms of model functionality, the automatic scoring algorithm can be further optimized by embedding a "personalized learning recommendation engine" to dynamically push differentiated virtual simulation tasks based on students' innovation weaknesses. Additionally, a "home-school collaborative assessment module" can be developed to allow parents to view their children's innovation ability growth curves and specific performances in real-time through mobile devices, forming a data loop for home-school co-education. Ultimately, the assessment model can be seamlessly integrated with virtual simulation teaching resources to build a "teaching – assessment – optimization" closed-loop system. This system can be scaled up and promoted in primary and secondary schools as well as vocational colleges, providing a replicable, scalable, and sustainable practical tool for the high-quality development of STEM education.

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Study on the Current Status and Cultivation Path of Professional Feelings of General Practice Medical Students

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Abstract

Objective: This study investigates the current situation of general practice medical students' professional feelings from the perspective of professional feelings, discusses the main factors affecting professional feelings, and provides more scientific and reasonable countermeasures for the training of general practice medical students, so that more general practice medical students can go down and stay. **Methods:** The general practice medical students enrolled in Wenzhou Medical University from 2019 to 2023 were surveyed, and SPSS25.0 statistical software was used for data analysis. **Results:** The professional feelings of general practice medical students were at an upper moderate level. There were significant differences in professional feelings between gender, grade, motivation for applying and whether they had participated in internship/practice ($p < 0.05$). The professional feelings of boys, juniors, students who voluntarily applied for the exam due to personal interests, and students who participated in internships/practices were significantly higher than other students. There was no statistical significance for variables such as political appearance, student source, household registration type, father's occupation, annual family income, college entrance examination scores, university academic performance, and whether they had studied medical humanities courses ($P > 0.05$). Gender, grade, and whether they have participated in internships/practices are the main factors affecting students' professional feelings. **Conclusion:** Strengthen the value guidance and incorporate the elements of emotional education into the talent training program. highlight practical education and build a "early clinical" practical teaching system; Strengthen humanistic care and build an infiltration emotional cultivation model.

Keywords: general practice medical students, professional feelings, cultivation path

1. Problem Raising and Concept Definition

1.1 Question Raising

Since the launch of the new medical reform in 2009, comprehensively strengthening the construction of grassroots medical and health teams has become the focus of medical and health reform. The report of the 20th National Congress of the Communist Party of China proposed to develop and expand the medical and health team, focusing on rural areas and communities. (Xi Jinping, 2023) At present, positive progress has been made in the training of general practice medical students, with the initial formation of the general practitioner training system, the basic establishment of the training model, the continuous increase of training efforts, and the increasing number of teams (Wu Ning, Cheng Mingxi, Yan Lina, et al., 2018). However, at present, the overall willingness of general practice medical students in our country to leave is high, and the phenomenon of "not being able to go down" and "not being able to stay" is still more prominent, and the loss of general practice medical students is still continuing (Feng Jing, Shen Xin & Gan Yong, 2021). How to realize that general practice medical students can "go down and stay" and be willing to contribute to the grassroots is the primary problem facing the current grassroots medical and health reform.

In 1993, the British Medical Association promulgated the “Doctors of Tomorrow”, which proposed that medical students must meet the requirements of knowledge, skills and professional attitude before they can engage in medical work. The primary and foremost professional attitude of physicians is the professional feelings of physicians. Marxism believes that human consciousness has subjective initiative, and in the face of a series of practical challenges such as material scarcity, general practice medical students with professional feelings can mobilize their strong internal driving force, which drives them to work with enthusiasm in primary medical services.

It can be seen that the growth of general practice medical students is not only closely linked to national policies, but also deeply influenced by their personal spiritual beliefs and values. Therefore, starting from the level of professional feelings, discussing the education of general practice medical students can not only promote the construction of the general practitioner team, but also have a positive role in promoting the rural revitalization strategy.

1.2 Concept Definition

The definition of occupation in the Modern Chinese Dictionary is: “(1) Work that serves society and serves as the main source of livelihood for individuals. (2) Professional, non-amateur.” It (Ruan Zhifu & Guo Zhongxin (eds.), 2009) can be seen that occupation has dual attributes: first, occupation is a way for individuals to obtain livelihood, and in professional activities, individuals can not only serve society, but also achieve the dual goal of self-worth. Second, the profession is professional. The definition of feelings in the Modern Chinese Dictionary is: “(1) Mood. (2) Mind (Ruan Zhifu & Guo Zhongxin (eds.), 2009).” The Chinese Dictionary believes that feelings also have “interest; Interest” (Luo Zhufeng, editor-in-chief, 1986).

For comprehensive research on professional feelings, refer to Tang Zhisong (2019) in the definition of the concept of professional feelings for rural teachers (Tang Zhisong, 2019). The study shows that the professional feelings of general practice medical students cover their professional emotions, attitudes and positions on primary medical services, as well as their understanding of work responsibilities, life missions and pursuits. Specifically, it includes: first, professional love, that is, the love of general practice medical students for the work of general practice medical students; second, professional responsibility, that is, general practice medical students can be serious and responsible in their future work; third, professional self-confidence, that is, the optimistic and positive attitude that general practice medical students can have in their future work; fourth, the sense of professional mission, that is, the persistent pursuit of the ideal doctor in the future work of general practice medical students; fifth, the sense of professional innovation, that is, general practice medical students can take the initiative to research in the future work process and actively seek breakthroughs and progress.

2. Study Design

2.1 Research Objects

In 2024, the research group conducted a questionnaire survey on the current status of professional feelings among general practice medical students of Wenzhou Medical University. A total of 881 questionnaires were collected, of which 657 were valid, and the effective response rate of the questionnaires was 74.6%. The basic characteristics of the sample were as follows: 354 boys (53.9%) and 303 girls (46.1%); 169 freshmen (25.7%), 205 sophomores (31.2%), 113 juniors (17.2%), 110 seniors (16.7%), and 60 seniors (9.1%); 98 CPC members/CPC preparatory party members (14.9%), 400 Communist Youth League members (60.9%), and 159 (24.2%) masses; 231 urban students (35.2%) and 426 rural students (64.8%); 160 (24.4%) had college entrance examination scores above the first line/special control line and above, and 497 (75.6%) had a first-class line/special control line and above; Among the reasons for applying for general medicine, 189 people (28.8%) voluntarily chose personal interest, 80 (12.2%) were required by family members, 88 people (13.4%) were guaranteed to have school, 255 people (38.8%) were considered for employment prospects, it didn't matter, 15 people (2.3%) were randomly chosen, and 30 others (4.6%). 36 (5.5%) had a weighted average score of 90 points or above in the previous academic year, 295 (44.9%) had a score of 80-89, 258 (39.3%) had a score of 70-79, 65 (9.9%) had a score of 60-69, and 3 (0.5%) had a score of less than 60. 549 (83.6%) have studied medical humanities courses (such as medical humanities, medical ethics, doctor-patient communication, medical humanities literacy, etc.), and 108 (16.4%) have not studied. 626 (95.3%) had participated in general practice, and 31 (4.7%) had not participated in it, as shown in Table 1.

2.2 Research Methods

The questionnaire used in this study was designed based on the questionnaire on professional feelings in domestic and foreign academic journals, and after in-depth interview analysis with a number of experts in different fields. Before official use, we conducted a pre-survey of the questionnaire to assess its reliability and validity, and based on feedback, several rounds of revision were carried out to finalize the final version of the questionnaire. The questionnaire used in this study was scored on a five-point Likert scale (5=strongly agree;

4=Agree; 3=neutral; 2=disagree; 1=strongly disagree). After calculation, the internal consistency reliability of each dimension of the occupational sentiment questionnaire was high, and the Cronbach's α value was 0.975. Specifically, the professional passion dimension contains 4 items, with a Cronbach's α coefficient of 0.938, the professional responsibility dimension contains 4 items, and Cronbach's α coefficient is 0.916, the professional mission dimension contains 4 items, and Cronbach's α coefficient is 0.938, the professional confidence dimension contains 4 items, and Cronbach's α coefficient is 0.910, and the professional innovation dimension contains 4 items, Cronbach's The α coefficient is 0.848. These results indicate that the questionnaire has high reliability.

2.3 Questionnaire Testing Method

On the basis of obtaining the consent of the participants, the investigator explained in detail the purpose of the survey, the scope of sampling and the survey process, and conducted a systematic questionnaire survey on the selected group of respondents within a given time. This process ensures transparency in the survey and informed consent from respondents.

2.4 Statistical Processing Methods

SPSS25.0 statistical software was used for data analysis. The metering data is expressed in $\bar{x} \pm s$, and the counting data is expressed as frequency (percentage). The independent sample t-test was used for comparison of data between the two groups. Univariate analysis of variance was used for comparison between multiple groups. Multiple linear regression analysis was used for the analysis of influencing factors. $P < 0.05$ was a statistically significant difference.

Table 1. Basic characteristics of samples (n=657)

variable	Value [person (%)]
Gender [Person (%)]	
man	354 (53.9)
woman	303 (46.1)
Grade [Persons (%)]	
Freshman	169 (25.7)
Sophomore	205 (31.2)
Junior	113 (17.2)
Senior	110 (16.7)
Big five	60 (9.1)
Political Landscape [People (%)]	
Member of the Communist Party of China/Preparatory Party member of the Communist Party of China	98 (14.9)
League member	400 (60.9)
masses	159 (24.2)
Household registration type [person(%)]	
town	231 (35.2)
countryside	426 (64.8)
Father's occupation [person(%)]	
Heads of party organs, state organs, mass organizations, social organizations, enterprises and institutions	87 (13.2)
Professional and technical personnel	53 (8.1)
clerks and relevant personnel	24 (3.7)
Social production service and life service personnel	84 (12.8)
Agriculture, forestry, animal husbandry, fishery production and auxiliary personnel	65 (9.9)
Manufacturing and related personnel	118 (18.0)
Military personnel	1 (0.2)

Other practitioners who are inconvenient to classify	182 (27.7)
No job	43 (6.5)
Whether the father is a medical worker [person(%)]	
be	37 (5.6)
not	620 (94.4)
Mother occupation [person (%)]	
Heads of party organs, state organs, mass organizations, social organizations, enterprises and institutions	58 (8.8)
Professional and technical personnel	40 (6.1)
clerks and relevant personnel	33 (5.0)
Social production service and life service personnel	128 (19.5)
Agriculture, forestry, animal husbandry, fishery production and auxiliary personnel	49 (7.5)
Manufacturing and related personnel	90 (13.7)
Other practitioners who are inconvenient to classify	182 (27.7)
No job	77 (11.7)
Whether the mother is a medical worker [person (%)]	
be	44 (6.7)
not	613 (93.3)
College entrance examination results	
One line/special control line and above	160 (24.4)
Below a line/special control line	497 (75.6)
Reasons for applying for general practice [person (%)]	
Personal interest, voluntary choice	189 (28.8)
Family requests	80 (12.2)
Consider the admission score to ensure that you have a good education	88 (13.4)
Consider employment prospects	255 (38.8)
It doesn't matter, just choose whatever you want	15 (2.3)
other	30 (4.6)
In which score range is the weighted average score of compulsory courses in the previous academic year [persons (%)]	
90 points and above	36 (5.5)
80-89 points	295 (44.9)
70-79 points	258 (39.3)
60-69 points	65 (9.9)
60 points or less	3 (0.5)
Have you studied medical humanities courses (such as medical humanities, medical ethics, doctor-patient communication, medical humanities, etc.) [person (%)]	
be	549 (83.6)
not	108 (16.4)
Have participated in general practice internship/practice [person(%)]	
be	626 (95.3)
not	31 (4.7)

3. Findings

3.1 The Professional Feelings and Dimensions of General Practice Medical Students Are at the Middle and

Upper Level

The results showed that the professional feelings score of general practice medical students was (4.02±0.70), which was above average. From each dimension, from high to low, the sense of professional mission (4.13 points), professional responsibility (4.11 points), professional innovation (4.05 points), professional confidence (3.96 points), and professional love (3.82 points) are in order. Judging from the statistical results, the sense of professional love and professional confidence of general practice medical students is relatively low.

Table 2. Current status of professional feelings of general practice medical students

Professional feelings in various dimensions	N	minimum	maximum	average value	standard deviation
Sense of professional love	657	1.00	5.00	3.8238	.81972
Professional responsibility	657	1.00	5.00	4.1149	.72842
Sense of professional mission	657	1.00	5.00	4.1328	.73028
Professional confidence	657	1.00	5.00	3.9574	.77295
Professional innovation	657	1.00	5.00	4.0521	.70862
Professional feelings (general)	657	1.00	5.00	4.0162	.69655

3.2 Analysis of Differences in the Professional Feelings of General Practice Medical Students

The survey found that there were significant differences in the professional feelings of students of different genders, and men were significantly higher than women. There were significant differences in the professional feelings of students in different grades, and the higher the grade, the lower the professional feelings, and the professional feelings scores of first-year medical students were significantly higher than those of other grades. The difference in students' motivation for applying for the exam led to significant differences in their professional feelings scores. Those students who voluntarily chose to apply based on personal interests had significantly higher scores in terms of professional feelings than those who applied for the exam due to other factors, while students who blindly chose and were required by their parents to apply for the exam had lower scores on professional feelings. The professional feelings scores of students who have participated in general practice-related internships/practices are significantly higher than those who have not participated in internships/practices. The difference in maternal occupation will affect the professional sentiment score of their children, and the difference is statistically significant ($P < 0.05$). There were no significant differences in variables such as political appearance, student origin, household registration type, father's occupation, whether the father was a medical worker, whether the mother was a medical worker, family annual income, college entrance examination scores, university academic performance, and whether they had studied medical humanities courses (such as medical humanities, medical ethics, doctor-patient communication, medical humanistic literacy, etc.) ($P > 0.05$). See Table 3.

Table 3. Descriptive analysis of general practice medical students' professional feelings ($\bar{x} \pm s$)

Constituencies	Professional feelings score	t/F	P
gender		3.267	0.001
man	4.10±0.69		
woman	3.92±0.69		
grade		10.473	0.000
Freshman (Class of 2023)	4.22±0.65		
Sophomore (Class of 2022)	4.06±0.67		
Junior (Class of 2021)	4.02±0.64		
Senior (Class of 2020)	3.82±0.71		
Senior (Class of 2019)	3.66±0.77		
Political appearance		2.586	0.076
Member of the Communist Party of China/Preparatory Party member of the	3.95±0.60		

Communist Party of China			
League member	3.99±0.71		
masses	4.12±0.71		
Household registration type		0.527	0.599
town	4.04±0.73		
countryside	4.01±0.68		
Father's profession		1.101	0.360
Heads of party organs, state organs, mass organizations, social organizations, enterprises and institutions	3.97±0.84		
Professional and technical personnel	4.20±0.67		
clerks and relevant personnel	4.13±0.74		
Social production service and life service personnel	4.07±0.62		
Agriculture, forestry, animal husbandry, fishery production and auxiliary personnel	4.09±0.72		
Manufacturing and related personnel	3.99±0.64		
Military personnel	4.45±0.00		
Other practitioners who are inconvenient to classify	3.94±0.67		
No job	3.96±0.73		
Whether the father is a medical officer		1.057	0.291
be	4.13±0.87		
not	4.01±0.69		
Motherhood profession		2.532	0.014
Heads of party organs, state organs, mass organizations, social organizations, enterprises and institutions	4.11±0.87		
Professional and technical personnel	4.17±0.75		
clerks and relevant personnel	3.82±0.56		
Social production service and life service personnel	4.13±0.66		
Agriculture, forestry, animal husbandry, fishery production and auxiliary personnel	3.97±0.71		
Manufacturing and related personnel	4.12±0.54		
Other practitioners who are inconvenient to classify	3.92±0.67		
No job	3.90±0.76		
Whether the mother is a medical officer		1.106	0.269
be	4.13±0.83		
not	4.01±0.69		
College entrance examination results		-0.266	0.790
Special control line and above	4.00±0.75		
Below the special control line	4.02±0.68		
Reasons for applying for general medicine		14.507	0.000
Personal interest, voluntary choice	4.33±0.66		
Family requests	3.86±0.74		
Consider the admission score to ensure that you have a good education	3.91±0.67		
Consider employment prospects	3.92±0.62		
It doesn't matter, just choose whatever you want	3.28±0.93		
other	3.94±0.66		

In which score range is the weighted average score of compulsory courses in the previous academic year?		1.901	0.109
90 points and above	4.10±0.81		
80-89 points	4.03±0.66		
70-79 points	4.04±0.70		
60-69 points	3.80±0.76		
60 points or less	3.78±0.96		
Have you studied medical humanities courses (such as medical humanities, medical ethics, doctor-patient communication, medical humanities, etc.).		0.393	0.695
be	4.02±0.69		
not	3.99±0.74		
Whether they have participated in general practice internships/practices		2.910	0.004
be	4.03±0.68		
not	3.66±0.84		

3.3 Analysis of Influencing Factors of General Practice Medical Students' Professional Feelings

According to the requirements of multiple linear regression analysis for the inclusion of equation variables, disordered multi-categorical variables such as mother's occupation should be set as dumb variables, and the results showed that the P value of gender, grade, and whether they had participated in general practice internship/practice was less than 0.05, which had a significant impact on professional feelings. Compared with men, women's occupational feelings scores were lower, and the occupational feelings scores were negatively correlated with grades, and with the increase of grades, their occupational feelings scores were lower, and the scores of students who participated in the occupational feelings were higher than those who had not participated in general practice internships/practices. See Table 4.

Table 4. Multiple linear regression analysis of general practice medical students' professional feelings

constant and independent variables	B	S.E.	Beta	t	P
constant	4.367	.109		40.212	.000
gender	-.155	.050	-.111	-3.090	.002
grade	-.115	.020	-.212	-5.691	.000
Mother occupation (Reference: Other practitioners who are inconvenient to classify)					
Heads of party organs, state organs, mass organizations, social organizations, enterprises and institutions	.097	.100	.039	.971	.332
Professional and technical personnel	.127	.113	.044	1.125	.261
clerks and relevant personnel	-.154	.121	-.048	-1.269	.205
Social production service and life service personnel	.135	.074	.077	1.824	.069
Agriculture, forestry, animal husbandry, fishery production and auxiliary personnel	.072	.104	.027	.696	.487
Manufacturing and related personnel	.186	.083	.092	2.243	.025
No job	.025	.087	.012	.290	.772
Reasons for your application for general practice (Reference: Considering employment prospects)					
Personal interest, voluntary choice	.395	.063	.257	6.311	.000
Family requests	-.003	.083	-.002	-.038	.969
Consider the admission score to ensure that you have a good education	.067	.080	.033	.841	.401
It doesn't matter, just choose whatever you want	-.537	.173	-.115	-3.094	.002

other	.142	.125	.043	1.138	.256
Have you participated in a general practice internship/practice?	-.422	.119	-.129	-3.554	.000

4. Discussion and Suggestions

4.1 Strengthen Value Guidance and Incorporate Emotional Education Elements into General Practice Training Courses

The results show that there are significant differences in the professional feelings of students with different motivations, and the professional feelings of students who voluntarily choose general majors out of personal interest are significantly higher than those who apply for general majors for other reasons. Qiao Xue et al. (2024) also proposed that the original intention of career choice will affect medical students' professional identity to a certain extent. (Qiao Xue, Yin Yongtian, Luo Wenjun, et al., 2024) The statistics of this study found that only 28.8% of students voluntarily chose the major out of personal interest. Most students choose general practice majors due to employment prospects, parental requirements, score restrictions, etc., and externally driven application motivation may weaken the performance intention of medical orientation students and affect their professional feelings (Wang et al., 2022). Wan Sizhi et al. (2022) also pointed out that many students only view their careers from the perspective of making a living, resulting in low professional feelings.

Therefore, how to strengthen value guidance and help general practice medical students activate their identity after enrollment is an effective way to enhance their professional feelings. Ma Duoxiu (2017) also proposed that the generation of internal emotions is based on the understanding of specific things, and without corresponding cognition as a premise, the corresponding emotions are difficult to stimulate (Ma Duoxiu, 2017). In other words, if GP students lack a basic understanding of the profession and its working environment, it will be difficult for them to develop a corresponding professional feeling. Based on this, it is crucial to offer courses on emotional education. **First, in terms of educational goals**, the connotation of cultivating the professional ability of general practice medical students with "feelings" is further enriched. The training of general practice medical students should highlight the value guidance, establish the concept of emotional education, focus on the training goals of general medical talents, and clearly elaborate the teaching objectives and specific requirements in the guidance of the talent training program, and must pay attention to the three elements of knowledge, ability, and emotional attitude. **The second is to integrate** "emotional education" into the curriculum system of general practitioner training. General practice medical students can inspire and awaken their professional feelings by learning courses on the significance of the general practitioner profession, the current status and future development of primary care. **The third is to activate** identity with "case teaching" in terms of educational methods. Implement the "invite in" strategy, invite outstanding general practice medical students to explain general practice cases, and invite the Health Bureau to interpret social conditions and public opinion, so as to help general practice medical students establish local identity, value recognition and mission practice of their own identity, professional role and social role.

4.2 Highlight Practical Education and Build an "Early Clinical" Practical Education System

The results show that the professional feelings of students who have participated in internships/practice are significantly higher than those who have not participated in internships/practice. This is consistent with the results of relevant studies. Wang Fengqian et al. (2018) also pointed out that students have entered the clinical internship of the hospital and are learning under the guidance of the teacher, and the teaching method that combines theory and practice can enhance students' enthusiasm for learning and perceive the value of the medical profession more deeply to a certain extent (Wang Fengqian, Qu Naiqiang & Niu Qichao, 2018).

In the process of professional socialization of medical students, the internship stage plays a crucial role and is also the golden period for shaping their professional identity. By allowing students to experience doctor-patient communication firsthand, they can deeply understand and respect the value of life, which helps to enhance their sense of identity with their profession (Zhang Lina & Ma Xiaoling, 2016).

On the basis of strengthening professional knowledge training, focusing on the teaching of practice and internship of general practice medical students can not only promote them to seriously devote themselves to primary medical work in the process of internship and practice, but also deepen their experience and recognition of primary medical care, stimulate their sense of mission and responsibility as future general practice medical students, and greatly affect their future employment intentions. Most general practice medical students lack the opportunity and conditions to go deep into the grassroots for normalized practice and experience, which will lead to general practice medical students being emotionally indifferent to the grassroots to a certain extent, and they are reluctant to work at the grassroots level after graduation. Relying on the practical teaching concept of "early general practice, multi-grassroots level, and repeated practice", medical schools enable general practice medical

students to enhance their situational professional ability through personal experience and practical insight by sinking the general practice education base, expanding educational activities and deepening training methods. In this process, cultivate professional emotions, knowledge systems, social interactions and living habits with grassroots characteristics, so as to establish the professional belief of “for the grassroots” and strengthen the professional identity and belief of general practice medical students to serve the grassroots.

4.3 Strengthen Humanistic Care and Build an Immersion Emotional Cultivation Model

The results show that grade is the main factor affecting the professional feelings of general practice medical students, which is consistent with the results of relevant studies. Ding Qinnan (2019) found that there were significant differences in students’ professional satisfaction with different grades, and the overall trend was decreasing year by year (Ding Qinnan, 2019). Li Rong et al. (2022) also found that the professional identity of general practice medical students was negatively correlated with grade, and the higher the grade, the lower the professional identity was lower (Li Rong, Wu Ge, Feng Gong, et al., 2022). Through further research, the study learned that after general practice medical students officially entered the professional study, they were affected by the environment around them and gradually reduced their professional self-confidence, which also affected their professional feelings. In the interview with general practice medical students, some students gave feedback: “At the beginning, I thought the general practitioner was very good, but then many people told me that the general practitioner was very hard and had no future in the future, so I slowly lost confidence in this profession.”

It can be seen that the cultivation of general practice medical students’ professional feelings should not only pay attention to the boost of “internal driving force”, but also need “external support” full of humanistic care. The famous educator Sukhomlinsky said: “Let every wall of the campus speak, and the whole campus is a big classroom of ideological and moral education, so that wherever students look, it is educational.” Through tangible and intangible forces, we integrate campus culture and medical ritual education, build an immersive education model, and achieve emotional education “moisturizing things silently”. The first is to dig deep into the emotional education resources contained in various general education and professional courses, and consciously integrate the concepts of respect for life, benevolence of doctors, and great health, so as to improve students’ humanistic quality. The second is to integrate the characteristics of medical majors, promote students’ understanding and growth of the value of life through ritualized educational activities, build professional ceremonial activities such as medical student oath ceremonies, and establish a ritual cultural system covering the entire university education cycle, so that students can enhance their sense of identity and enhance their sense of professional mission and responsibility in life-related ceremonies. The third is to set up campus cultural activities such as adaptation education, professional ideological education, and pre-graduation education for general practice medical students with the characteristics of general medicine.

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Addiction and Consumption of Cyber Pornography Have Increased Risk Factors and Harmful Effects Among Emerging Adults

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Abstract

The internet has revolutionized the human lives globally, and internet access has become easier and more affordable than ever before. The rise of the internet has increased concerns on various cybercrimes, such as child pornography, revenge porn, deepfake pornography, and non-consensual content. Cyber pornography is the creation, distribution, and consumption of pornographic materials, such as obscene writings, pictures, photographs, text, audio, and movies through the internet. It is a fast growing environment due to the absence of any concrete law against it, and its triple-A nature, such as accessibility, affordability, and anonymity. Negative social issues, such as child abuse, violence against women, rape, relationships, family breakdown, inequality, youth crime, promiscuity, and sexually transmitted diseases may develop due to the addiction of cyber pornography. Cyber pornography is now one of the most burning issues in media all over the world. International community has been trying for the safety and welfare of women and children of the world by passing laws regulating international actions.

Keywords: cyber pornography, cyber sexual law, sexual violence, pornography addiction, sex addiction

1. Introduction

At present the internet is an essential part of cultural, commercial, educational, global communication system, and social media. It is also used by the global community for the entertainment. The legitimate purpose of internet is to benefit and empower online users, while lowering the barriers to the creation and the distribution of expressions throughout the world (Ho, 2003). Increased cyberspace has become haven for the cyber criminals, and online pornography has increased alarmingly with the rise of cyberspace due to easy accessibility and anonymity, and it becomes a very sensitive issue (Angel et al., 2018). Cyber pornography has made sexually explicit materials more accessible to all level of people than ever before (Brown & L'Engle, 2009). Women and children are highly vulnerable to cybercrime, and have become victimization of easily for sexual exploitation through internet (Chitra & Basavaraju, 2019). Generally, children and young people are exposed to cyber pornography either deliberately or accidentally due to curiosity or interest in information about sexual and reproductive health or relations and a drive for sexual motivation (Flood, 2007).

When sexually suggestive materials, such as writings, pictures, photographs, text, audio, movies portraying sexual activity, stimulating behavior in a way that is premeditated to awaken sexual anticipation among people in digital environments is known as cyber pornography (Som et al., 2022). The cyber pornography is accessible over the internet through the websites, file transfer protocol (FTP) connections, peer-to-peer file sharing, and Usenet newsgroups. It also includes pornographic websites, online pornographic magazines, uploading, downloading, and transmitting pornographic materials unlawfully (Joshi, 2021). It increases child sexual abuse, rape, violence against women, family breakdown, crime among youth, sexually transmitted diseases, and other related criminal activities in the society. It is a punishable offence under criminal law (Golder et al., 2017). Rapid

surge in the usage of cyber pornography is promoting a severe negative impact on health and well-being throughout the world. The production and consumption of cyber pornography have increased alarmingly that result in functioning psychological problems (Vinnakota et al., 2021).

2. Literature Review

A literature review discusses published information in a particular subject area. It is a simple summary of the sources, but it usually has an organizational pattern and combines both summary and synthesis (Green et al., 2006). It discusses published information in a particular subject area within a certain time period, and tries to identify the gaps in the existing knowledge (Dellinger, 2005). It is written occasionally in the humanities, but mostly in the natural sciences and social sciences. It is often a part of a project, dissertation, and a journal article (Galvan, 2015). It attempts to synthesize and evaluate the material and information according to the research question, thesis, and central theme. The main types of literature reviews are evaluative, exploratory, instrumental, and systematic. A good literature review summarizes, analyzes, evaluates, and synthesizes the relevant literature within a particular field of research (Cooper, 1998).

Md. Razwan Hasan Khan Chowdhury and his coauthors have examined the correlations between online pornography addiction and socio-behavioral factors, such as socializing habits, nature of interactions, university attendance and study focus, sleeping habits, and consumption of main meals. They have suggested that it is necessary to provide pornography addiction education programs to educate students about the adverse effects of pornography. Furthermore, targeted treatment programs for sexual addiction, sexual abuse, and pornography abuse are needed to support the individuals who are addicted to pornography (Chowdhury et al., 2018). Komal Razzaq and Muhammad Rafiq have explored psychosocial, social, and mental health issues of adults viewing pornography on the internet that will help the psychologists in establishing management strategies like to overcome the adult issues regarding internet pornography (Razzaq & Rafiq, 2019). Verlya Poerbaning Astika and his coauthors have aimed to determine and analyze law enforcement efforts against cyber pornography in Indonesia, where the data are collected through literature study, interviews, and documentation (Astika et al., 2018).

Hesti Septianita and Synthiana Rachmie have tried to propose a notion on new category of transnational organized crime that is cyber child pornography by analyzing the elements of crime of transnational online child pornography. An immediate action by promulgating an international legal instrument in effect should be taken by considering the severity of the crime against the children's future life (Septianita & Rachmie, 2024). David P. Fernandez and Mark D. Griffiths have presented systematic review to i) identify psychometric tools that have been developed to assess problematic pornography use, ii) summarize key characteristics, psychometric properties and strengths and limitations of instruments for problematic pornography use, iii) compare the instruments' theoretical conceptualizations of problematic pornography use, and iv) evaluate each instrument on their ability to assess various core components of addiction. Five of the most commonly assessed addiction components across the different instruments are i) impaired control, ii) salience, iii) mood modification, iv) interpersonal conflict, and v) general life conflict (Fernandez & Griffiths, 2019).

3. Research Methodology of the Study

Research is searching for knowledge and searching for truth. It is a systematic, organized, and creative process of inquiry to discover new knowledge, answer questions, and expand understanding of a topic. It is the systematic investigation of materials and sources to establish facts and reach new conclusions (Groh, 2018). There are three major types of empirical research: qualitative research, quantitative research, and mixed methods research (Cohen & Arieli, 2011). Qualitative research is a type of research that aims to gather and analyze non-numerical data in order to gain an understanding of individuals' social reality, including understanding their attitudes, beliefs, and motivation (King et al., 2021). It focuses on experiences, perceptions, and social phenomena that seeks to understand the "how" and "why" behind human behavior and interactions (Grover, 2015). Quantitative research focuses on quantifying the collection and analysis of data that involves systematic empirical investigation of quantitative properties and phenomena and their relationships, by asking a narrow question and collecting numerical data to analyze it utilizing statistical methods (Creswell, 2008). This methodology uses tools, such as surveys, experiments, and polls to test hypotheses and examine specific variables. Fields like sociology, psychology, healthcare, education, and marketing frequently use quantitative research to identify patterns, validate theories, and make predictions based on statistical evidence (Muijs, 2010). It is formed from a deductive approach where emphasis is placed on the testing of theory, shaped by empiricist and positivist philosophies (Bryman, 2012). Mixed methods research blends qualitative and quantitative approaches to offer a more comprehensive understanding with strengths than either method alone through the minimizing their weaknesses (Sharma et al., 2023). It allows the researchers to use qualitative data to interpret quantitative results and test hypotheses generated from qualitative exploration (Shorten & Smith, 2017).

Methodology is a system of methods used in a particular area that encompasses the overall strategy, specific data

collection methods, and the procedures for data analysis (Howell, 2013). It refers to the methods themselves or to the philosophical discussion of associated background assumptions. It focuses on the overall strategy and rationale, while methods are the specific tools, such as surveys, experiments, etc. (Babbie, 2010). Research methodology is the systematic framework of methods, procedures, and techniques a researcher uses to design and conduct a study to answer a research question (Soeters et al., 2014). It is a process by which researchers design their study so that they can achieve their objectives using the selected research instruments. It includes research design, data collection methods, data analysis methods, and the overall framework within which the research is conducted (Andiappan & Wan, 2020). In this review study we have tried to discuss basic concept of cyber pornography for the new readers. Then we have discussed types of cyber pornography, such as child pornography, revenge porn, and deepfake pornography. Finally, the effects and laws of cyber pornography are discussed very briefly.

4. Objective of the Study

World-class English sociologist Anthony Giddens has described that the late-modern world as one in which personal life as well as intimate relationships have become open and self-reflexive projects that involve everyday social experiments by the individual (Giddens, 2013). Cyber pornography indicates the creation, distribution, and access of sexually explicit content using digital platforms, such as websites, social media, emails, and mobile applications (Hald & Mulya, 2013). The “Triple A Engine” of accessibility, affordability and anonymity factors the internet possess that make accessing pornography online particularly convenient (Cooper, 1998). At present cyber pornography has become a big industry. Many competing pornography sites reduce pricing, even as much as to offer free pornography (Carroll et al. 2008). The largest pornography site on the internet PornHub has reported that more than 42 billion people worldwide visit cyber pornography website (Pornhub.com, 2025). Main objective of this study is to discuss the production and consumption of cyber pornography. Some other minor objectives of the study are as follows:

- 1) basic concept and types of cyber pornography,
- 2) effects of cyber pornography, and
- 3) cyber laws for pornography.

5. Basic Concept of Cyber Pornography

The term “cyber” was coined by American speculative fiction writer William Gibson in his 1984 fictional novel “Neuromancer” that is used as a prefix to the worldwide field of electronic communication. On the other hand, crime is an action that is punishable by law (Giacomini & Zaidi, 2012). The term “porne” refers to “indecent sexual stuff” which means prostitute, and ‘graphein’ means write or record; and the term “pornography” comes from the Greek letter “pornographos” literally meaning writing about prostitutes that signifies to movies on all kinds of sexual activities outside the bonds of marriage (Vithayathil, 2021).

Sexual attraction is inborn in humans, and sexual desire remaining the primary driver of reproductive health. Both men and women enjoy a balanced sex life (Vinnakota et al., 2021). Developing, distributing, and propagating the films designed to be sexually exciting over the internet is termed as cyber pornography. The cyber pornography also transmits obscene pornographic pictures, photos, writings, etc. It is extensively produced, distributed, and used around the world as a medium of entertainment mainly for men (Abell et al., 2006). It is produced through coercion, seduction, coaxing, photographed covertly, and violently. It is done by online solicitation, the exchange of gifts, and promises of romance (Wolak, 2012).

At present cyber pornography has become a big industry and the size is about \$100 billion per year, and also becomes the threat to the internet users all over the world (Grubbs et al., 2010). American nude model Danni Ashe has started an online pornographic website named Danni’s Hard Drive in 1995 that is considered as the earliest cyber pornography. Now cyber pornography is produced and distributed many countries of the world. It is open in some countries, restricted in some countries, and banned in some countries (Fritz et al., 2022).

6. Types of Cyber Pornography

Production, distribution, and consumption of cyber pornography are considered as criminal offense worldwide. Some common types of cyber pornography are child pornography, revenge porn, deepfake pornography, forced pornography, and obscene and morally offensive content (Hald & Malamuth, 2008). These are spread through the pornographic websites, online pornographic magazines, uploading, downloading, and transmitting pornographic materials unlawfully. Normally females are victimized through the humiliation and embarrassment by the posting of pornographic images, pictures, and videos (Schuz, 2014).

6.1 Child Cyber Pornography

Sale of children, child prostitution, and child pornography are considered as the child sexual abuse, whose obscene materials come in many forms, such as photographs, negatives, slides, magazines, books, drawings,

movies, videotapes, and computer disks (UNODC, 2015). Cyber child pornography is a global cybercrime against the most vulnerable populations that is increasing in the present society alarmingly due to easy accessibility, affordability, and anonymity (De Jong & Cook, 2021). It is an erotic material that depicts persons under the designated age of majority that varies by criminal jurisdiction. There is no consensus in international law regarding the precise meaning of child pornography (Gillespie, 2018). The materials that are harmful to child and obscene cannot host, display, upload, modify, publish, transmit, store, update, and share; these violate cyber security law (Flood, 2009). Sometimes pornographic pictures of minors are produced by children and teenagers themselves without the involvement of an adult. Child pornography is illegal and censored in most jurisdictions in the world (Wortley & Smallbone, 2006).

Cyber child pornography has been causing harm to children for centuries, and it is not just one offence, rather it is a series of offences and harsh consequences (Bhadury, 2022). The United Nations Economic and Social Council (UNESCO) took vital initiatives to combat cyber sexual abuse, child pornography, and pedophilia; and took initiatives to adopt uniform preventive and controlling measures especially on 18-19 January, 1999 at Paris with 150 participants (Verma, 2012). In 2001, the European Council's Committee on Crime Problems and Cyber Crimes adopted the draft convention with the initiatives of 41 nations that deals with the content related offences, and try to prohibit child pornography and cyber pornography (UNODC, 2010). In 2006, the International Centre for Missing & Exploited Children (ICMEC) published a report of findings on the presence of child pornography legislation in the then-184 INTERPOL member countries, and later updated this to include 196 UN member countries. Among 196 UN member countries, only 69 countries had legislation needed to deal with child pornography offenses, while 53 did not have any legislation specifically addressing the problem (Schuz, 2014). It is a punishable crime of producing, distributing, disseminating, importing, exporting, offering, selling, and possessing of child pornography (Akdeniz, 2013).

6.2 Revenge Porn

Revenge porn is a type of digital abuse by a perpetrator that distributes sexually explicit photos or videos of an ex-partner from a previous romantic relationship without victim's consent, with the punitive intention to create public humiliation out of revenge against the victim (Starr & Lavis, 2018). It is a form of ongoing relationship abuse and control. It is typically done to extort money from the victim and for blackmail. It is a relatively new phenomenon that has grown substantially in the past few years (Bates, 2015). It is particularly harmful for women due to the stigma attached to naked photos that create patriarchal values of purity, modesty, and conservatism of the women (Citron & Franks, 2014). About 18.3% of women did not know that they were victims of revenge porn. Revenge porn materials can reach to the number of viewers in seconds in the era of booming internet, and can create huge impact on the victim (Mohammed et al., 2023).

Alyse Dickson has pointed that "revenge pornography" is a media-generated term that is used to describe the non-consensual distribution of nude, sexual or sexually explicit images in the digital era (Dickson, 2016). Sometimes psychoactive chemicals, such as date rape drugs are used to reduce sense and for the involvement in the sexual act (Bloom, 2014). Revenge porn is often a form of domestic violence and mostly common among criminal gangs and it is used for revenge or harassment. It has been linked to negative mental health outcomes among victims, such as trust issues, post-traumatic stress disorder (PTSD), anxiety, depression, elevated fear, and loss of confidence and self-esteem (Bates, 2017). Many revenge porn victims face difficulties in their present and future employment, as they can be fired from their jobs. At present there is no specific law against revenge porn (Matsui, 2015).

6.3 Deepfake Pornography

Deepfake is a blend of the words "deep learning" and "fake" that describes the hyper-realistic digital falsification of images, video, and audio. Deepfake pornography is a type of synthetic pornography that is created via altering already-existing photographs and videos by applying deepfake technology to the images of the participants, and overwhelmingly the targeted women (Alanazi et al., 2025). The technology is getting easier to use and accessible to everyone, and about 96% of deepfakes available online are pornographic, and 99% targets women. It is a new means of degrading, humiliating, harassing and abusing women, and the vast majority of deepfake porn is created by men (Toparlak, 2022). The term "deepfake" was coined in 2017 on an American proprietary social news aggregation and forum social media platform, Reddit forum where users shared altered pornographic videos created using machine learning algorithms, computer vision techniques, and artificial intelligence (AI) software, where "fake" meaning the videos are not real, and since then the phenomenon of deepfakes has developed rapidly, both in terms of technological sophistication and societal impact that affects our perception of the world (Gaur & Arora, 2022). Total number of deepfake videos online is 14,678 that views across top four dedicated deepfake pornography websites is 134,364,438 (Ajder et al., 2019).

This phenomenon is a new form of misogynistic gender-based violence. It has complex social, legal, and ethical implications, particularly related to privacy violations, sexual exploitation, and legal vulnerabilities. The

deepfake sexual materials are developing rapidly that can edit images to remove an individual's clothes and create fake nude images (Delfino, 2019). These are often created using tools and artificial intelligence (AI) that can flawlessly blend the facial features of unsuspecting individuals onto explicit images or videos, and can make it difficult to detect editing and manipulation (Safi et al., 2024). These are most often created and distributed without the consent of the individual depicted, and can be used to humiliate, extort, silence an individual, and for sexual gratification. Women, girls, gender diverse people, persons with disability, and First Nations peoples are disproportionately targeted by such content. Sometimes politicians and celebrities are targeted to deepfake pornography (McGlynn, 2024). In 2017, the first deepfake pornographic video of famous Israeli actress Gal Gadot was created by a Reddit user that is quickly spread online (Powell et al., 2024). Lawmakers around the world are turning their attention to deepfake sexual abuse to reduce its prevalence and provide redress to victims (McGlynn & Toparlak, 2025).

7. Effects of Cyber Pornography

Frequent and increased consumption of cyber pornography may addict to pornography develops over time that is a chronic and relapsing condition due to anonymity, accessibility, and affordability of the internet pornography (Joshi, 2021). The cyber pornography can create both positive and negative social issues; where positive effects are increasing of sexual knowledge and improving of sex life; and negative effects are unrealistic sexual expectations, develop of sexual impulsivity, rape, compulsive sexual behavior, hypersexual disorder, child abuse, violence against women, inequality, relationship problems, family breakdown, youth crime, promiscuity, addiction of gambling, and sexually transmitted diseases (Verma, 2012).

Sometimes it can develop an adverse impact on family life, marriage, sexual risk-taking behaviors, and values of an individual. As a result, pornography addiction can isolate a person from his family, coworkers, and the broader community (Chowdhury et al., 2018). Pornography addiction is sexual dysfunction, where males are more likely than females viewing pornography repeatedly either alone or in same-sex group (Cameron et al., 2005). In the USA, 79% of males and 76% of females watched online pornography; among them 58% are college students. When young adults are becoming addicted to cyber pornography, some of them become addicted to gambling, drugs, and alcohol (Diamond, 2009).

8. Cyber Law for Pornography

Cyber pornography should be in the form of enticement, unlawful soliciting, and illegally exposing of a minor to sexually explicit behavior. It has become one of the most complicated issues in law enforcement due to its massive spread, and its difficulties to handle; and it has become a challenge for law enforcers to eradicate it (Abimbola, 2017). Three general types of cyber pornography offenders are i) the dabbler, ii) the preferential offender, and iii) the miscellaneous offender. They use computers and other electronic devices to view, store, produce, send, receive, and distribute child and other forms of pornography; to communicate, groom, and entice children and others for victimization; and to validate and communicate with other sex offenders (Bowker & Gray, 2004).

At present there is no global cyber law that can be applied in every country for the punishment of cyber criminals. Dabblers are curious adults with a newly found access to pornography who are profit-motivated to deal in child pornography (Fatima & Husain, 2020). The preferential offenders are the sexually indiscriminate individuals with a wide variety of deviant sexual interest preference for children. The miscellaneous offenders are misguided individuals conducting private investigations who have been found in possession of child pornography (Astika et al., 2018). Due to the global accessibility, jurisdiction problem, differences in standard of morality and law in different countries, the enforcement of law has become impossible. The enforcement of law on cyber pornography has become impossible due to the global accessibility, jurisdiction problem, differences in standard of morality and law in different countries (Duffy et al., 2016).

9. Conclusions

At present the internet becomes the key component of global communications and information infrastructure in our daily lives. Therefore, exploitation and suppression of women and children through internet are increasing. Cyber pornography involves obscenity, child exploitation, and unauthorized distribution that can lead to severe legal consequences. It is affecting the lives of all levels of people of the society. Governments, law enforcement, and individuals must work together to create a safer digital space and prevent cyber exploitation. Also, these organizations must arrange the treatment programs for sexual addiction, sexual abuse, and pornography abuse for the individuals who are addicted to cyber pornography. These organizations must ensure an open, safe, trusted, and accountable internet for all its users worldwide.

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Resilient Growth Through Cultural Empowerment: Mediatized Reading Practices and Constrained Agency Among Older Accompanying Migrants in China — An Audio-Mediated Reading Case

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Abstract

With the integration of big data, algorithms, and platform infrastructures, mediatized reading is increasingly shaped by platform rules, social relations, and content ecosystems. Audio-mediated reading has become a low-threshold and highly companionable pathway for older adults to access cultural resources, and it is now deeply embedded in short-video and news-feed platforms. Focusing on older accompanying migrants in China, this study draws on in-depth interviews with nine older accompanying migrants in Chengdu and a 30-day micro ethnographic follow-up of one typical case. Using a dissemination-reception analytic framework, we show that older migrants enter audio-mediated reading through the intertwined mediation of adult children, peer word-of-mouth in weak-tie networks, and platform recommendation and incentive mechanisms. In reception, they develop stable preferences for family-ethics narratives, local cultural materials, and nation-centred political and historical content, while constructing a platform-based hierarchy of trust as an everyday risk-governance strategy. We further find that their agency is not limited to passive exposure: through tactical domestication of time-space arrangements and small scale recreation, some participants shift from receiver to producer. We conceptualize this process as “resilient growth through cultural empowerment”, while also highlighting its structural limits under algorithmic distribution and commercial incentive logics.

Keywords: cultural empowerment, older accompanying migrants, mediatized reading, audio-mediated reading

1. Introduction

With the integrated development of big data, algorithms, and platforms, cultural production, distribution, and consumption are becoming deeply platformized and datafied. Mobile Internet and smart devices embed reading into online, everyday life, while recommendation systems further reorganize the visibility, accessibility, and pathways of meaning-making for texts. Reading, therefore, shifts from a relatively private individual practice to a mediatized practice jointly shaped by platform rules, social relations, and content ecosystems. In this sense, mediatized reading refers not only to the digital migration of reading carriers but also to the reorganization of reading modes under media logics. Audio-mediated reading, such as “listening to books” and “listening to novels”, has attracted broad attention because of its immersion, low cost, and strong companionship, and it is increasingly replacing classic “deep reading” as an everyday pathway for audiences to access cultural resources (ZHANG, Y., 2025; XU, L., & ZHOU, Y., 2021). At the policy level, strategic initiatives such as “Digital China”, “smart society construction”, and “nationwide reading” have brought reading rights and cultural participation into the scope of public governance, further accelerating the expansion of mediatized reading (YAN, S., 2025).

Meanwhile, China is rapidly entering a stage of deep population ageing. Within the large older population, a group with distinctive mobility has increasingly become a focus of scholarship and governance. Researchers typically use the term “older accompanying migrants”, also colloquially “older drifters,” in the Chinese context to refer to older adults who move to unfamiliar cities for reasons such as caring for grandchildren, reuniting with adult children, or seeking out-of-town eldercare. Among more than 13 million older accompanying migrants, about 43% migrate primarily for intergenerational caregiving (National Bureau of Statistics, UNICEF, 2018). Because of cultural and environmental in daily life, this group faces notable barriers to social interaction and heightened interpersonal tensions (MU, G., 2017; HU, X., & HAN, X., 2022). Compared with local older residents, older accompanying migrants are spatially separated from their original acquaintances, are based in different communities and cultural settings, and, institutionally, often remain at the margins of public cultural services and community networks in destination cities. They shoulder intensive caregiving and domestic responsibilities, while also confronting fractured social circles, ambiguous identity positions, and a thin spiritual life (XU, J., & HUA, X., 2018). Existing research primarily focuses on family care, intergenerational relations, mental health, and social support; only a few studies examine social-media empowerment in their social interactions. As Yang Juhua and Lu Ruipeng (2023) note, studies remain scarce on how older accompanying migrants rebuild everyday life worlds and cultural belonging through media practices (YANG, J., & LU, R., 2023).

Among different media forms, audio-mediated reading has developed rapidly because it allows “reading with the ears”, requires relatively low skills, and offers strong companionship; furthermore, it is increasingly popularized on short video platforms. Although audio-mediated reading may constitute an important entry into digital culture for older adults, existing research primarily concentrates on platform industries, knowledge payment models, or young users. Even where the affordances of audio-mediated reading among older adults have been discussed (LI, L., & QIU, X., 2025), fine-grained depictions of the practices and experiences of older accompanying migrants who combine the attributes of both ageing and mobility remain limited. From an audience-centred perspective, this study asks through what digital media pathways older accompanying migrants connect with cultural content, and why and how they incorporate audio-mediated reading into everyday life. By treating older migrants’ audio-mediated reading as an analytic entry point into digital cultural space, the study offers a new lens on how digital media participate in “cultural eldercare” in an ageing society.

Therefore, within a dissemination-reception analytic framework, we address three research questions: (1) Under the combined influence of digital technologies and social relations, through what pathways do older accompanying migrants engage in audio-mediated reading practices? (2) In these practices, how do they obtain emotions and negotiate meanings? (3) How do their audio-mediated reading practices display tactical technology domestication and small scale cultural reproduction, and what are the possibilities and limits among these?

2. Key Concepts and Literature Review

2.1 Defining “Audio-Mediated Reading” and “Listening to Books”

The National Committee for the Approval of Scientific and Technical Terms defines audio-mediated reading as the acquisition of information by listening to audiobooks or to others reading published content aloud, corresponding to traditional reading on paper carriers. To ensure conceptual rigour, we define audio-mediated reading here as script-based audio narrative content, including audiobooks, audio novels, traditional storytelling (pingshu), and radio dramas.

By contrast, the everyday term “listening to books” foregrounds an action or process: receiving book content through the auditory channel, emphasising a practice of reading with the ears (Yi, C., 2025). In the field, participants were more accustomed to the colloquial expression “listening to books,” which serves as an experiential, situated label for what they do. Therefore, to balance analytical precision and field experience, we use audio-mediated reading in theoretical discussion, while retaining “listening to books” when presenting participants’ words and everyday scenes.

To avoid conflating general auditory media use, such as scrolling short videos or listening to live streams, with “reading”, we adopt the following operational criteria. Included: older accompanying migrants continuously listen, via smartphones or similar devices, to script-based audio content dominated by narrative or knowledge telling; this also includes audio narratives on short video platforms that can be understood without images and have a clear narrative structure. Excluded: pure music, non-scripted ambient sounds for companionship, general video watching, and livestream companionship.

2.2 Cultural Communication and Reception in the Digital Era

Digital technologies, including big data, artificial intelligence, cloud computing, and the internet, have profoundly transformed the modes and ecologies of cultural communication (HAN, R., 2020; YUAN, G., 2024). As global networks become communication infrastructures, Van Dijck and colleagues proposed the notion of the

platform society, arguing that data and algorithm-driven platforms have penetrated key public domains such as education, journalism, and culture. Public values are reconfigured in platformization processes (McGowan, A., 2021), thereby reshaping users' cultural habits and identity formation (LV, Z., & DAI, H., 2024; Valtysson, B., 2022).

These technologies have also introduced new paradigms for cultural creation, distribution, and reception. Depending on attitudes toward technology, some studies emphasize empowerment and efficiency gains, suggesting that AI-assisted creation and virtual reality can enhance dissemination efficiency while strengthening interactivity and immersive experience (GAO, X., 2025). Digital technologies can also shift communication from one-way transmission to multi-directional interaction, opening innovative pathways for the inheritance of Chinese traditional culture and strengthening its global circulation and recognition (DU, C., 2025). Other studies, however, discuss challenges from the perspectives of ideology and public opinion security: algorithmic recommendations in traffic competition can amplify emotionally charged and fragmented content, squeezing space for in-depth interpretation of mainstream values (JIANG, W., 2025; JIANG, J., 2024). Scholars also note that algorithmic "hit-product logics" may marginalise cultural diversity and deep content (WANG, D., 2021). Peng Lan (2021) argues that, as algorithms and intelligent machines are unavoidable, algorithm literacy education must be advanced and citizens' algorithm literacy improved (PENG, L., 2021).

Overall, Chinese scholarship has offered relatively deep macro level discussions on how platformization and algorithmization reshape cultural communication structures, public opinion dynamics, and cultural industries. However, from an audience perspective, especially for structurally disadvantaged older groups and marginal populations such as older accompanying migrants, research remains scarce on how they encounter, interpret, and reproduce cultural content in platform environments.

2.3 Audio-Mediated Reading Among Older Accompanying Migrants

Research on older accompanying migrants has accumulated in sociology and demography. Drawing on the separation of person and household registration and structural change, Xu Jiaming and Hua Xuecheng (2018) define older accompanying migrants as those who move from their original communities to cities where their adult children reside, mainly for family reunion or grandchild care (PENG, L., 2021). They argue that the phenomenon is shaped by marketization, social security, state institutions, and cultural factors, and that older migrants face multiple role dilemmas such as being "surplus persons in the nuclear family" and "strangers in urban life" (XU, J., & HUA, X., 2018). Subsequent studies further focus on rural older migrants' out-of-town eldercare, spiritual care, and social integration difficulties, finding low cultural adaptation, thin social relations, and insufficient community attention (MU, G., 2021; CHI, S., 2021; XU, J., & HUA, X., 2018).

In communication and media studies, existing studies primarily focus on macro-level discussions of social support, mental health, and adaptation. Some studies report that social-media use is positively associated with subjective well-being but negatively associated with social integration among older migrants (LEI, S., 2023). Lei Sihan (2023) examines WeChat use and shows differentiated empowerment across relationship contexts (ZHUANG, X., 2024). Zhuang Xi (2024) finds that WeChat can partially re-aggregate and extend offline ties through "social substitution", thereby empowering social interactions (LI, H., 2021).

Although a small number of studies adopt a management perspective and treat audio-mediated reading as a pathway for the digital transformation of senior magazines (HU, D., & HE, M., 2025), systematic cultural-practice analyses of how older accompanying migrants rebuild cultural belonging and spiritual worlds through specific media forms remain rare. Therefore, taking older migrants' audio-mediated reading as the object, this study aims to extend existing research in three ways: (1) from the perspective of dissemination logic, analyzing how audio-mediated reading becomes embedded in older migrants' everyday life; (2) from the perspective of reception logic, mapping their pathways of cultural reception; and (3) theorizing these practices as "resilient growth through cultural empowerment", enriching cultural-communication research in an ageing society.

3. Research Design and Methods

Because this study examines a group situated in specific life contexts and media practices, we adopted purposive sampling. From October to December 2024, we conducted in-depth interviews with nine older accompanying migrants in Chengdu. Each interview lasted about 45 minutes.

To address the limitations of retrospective interview data, we also selected one typical participant for a 30-day follow-up observation (1 ~ 30 November 2024). Using a micro-ethnographic approach, we documented participants' whole process of technology use in natural settings, focusing on how older adults domesticate technology and engage in cultural production within mediatized reading practices.

We employed a question-driven thematic analysis. Through repeated reading of interview transcripts and field notes, we extracted recurring images and meaning patterns from participants' vernacular expressions,

summarized core themes, and interpreted them through theoretical lenses such as technology domestication and cultural production.

Table 1 provides participant information. Participant P01, who can skillfully edit and post short videos using AI tools and editing apps, is also the one for the follow-up observation.

Table 1. Participant information

Participant ID	Gender	Age	Education	Reason for migration	Self-rated smartphone proficiency
P01	Female	68	Junior middle school	Family reunion with adult children	Proficient
P02	Female	61	Illiterate	Grandchild care	Beginner
P03	Male	61	Junior middle school	Grandchild care	Intermediate
P04	Male	65	University	Grandchild care	Intermediate
P05	Female	62	Primary school	Grandchild care	Beginner
P06	Female	75	Primary school	Family reunion with adult children	Beginner
P07	Male	73	Primary school	Family reunion with adult children	Beginner
P08	Female	63	Junior middle school	Grandchild care	Beginner
P09	Male	63	Junior middle school	Grandchild care	Intermediate

4. Findings

4.1 From Technological Access to Everyday Embedding Section

4.1.1 Adult Children as Technological Intermediaries in the Family

In older accompanying migrants' entry into listening-to-books practices, adult children function as the most critical technological intermediaries. Most participants did not explore or install apps on their own. In contrast, their children installed and configured devices and applications in advance, including buying a new phone or passing down an old one, and pre-installing apps such as Douyin, audiobook apps, and casual games, so that older users could "just tap and use".

Participant P06 said: *"My daughter was afraid I would be bored, so she downloaded for me a Chinese-idiom game, Douyin, and Tomato Novel. My eyesight is not good; I cannot figure out the idiom game even after thinking all night, and Douyin is too noisy. I like listening to novels; no matter what the platform recommends, I will listen. Before sleeping, I even listen with my eyes closed."*

Among the apps installed on children's devices, P06 gradually developed her own listening preferences and even turned listening into a fixed bedtime ritual. P08's situation was similar: *"This phone is my son's old phone. I need to open it. I scroll Douyin; sometimes when I am coaxing my grandkid, Douyin also has stories you can listen to."* With the device and app environment set up in advance by her son, she integrated platform resources into her caregiving practice.

These accounts indicate that children's mediation provides convenience and significantly lowers the threshold for older migrants to access digital enabled environments. It makes listening to books a plausible daily option and lays the groundwork for subsequent diffusion through peer networks and platform recommendation mechanisms.

4.1.2 Peer Word-of-Mouth and Recommendations in Weak Tie Networks

Beyond children's mediation, peer word-of-mouth is another important pathway through which older accompanying migrants learn about listening to books and related apps. This diffusion often occurs in loosely connected informer social networks, such as "taking kids out for sunbathing". The information carries both a safety endorsement verified by gatekeepers and a practical promise.

P05 illustrates this process particularly clearly. As she explained, *"My son told me that I can do tasks to earn some money on Douyin. Later, I realized that I can both listen to audiobooks and make money, so I recommended it to my neighbour, my grandson's grandma."* She further added, *"I can earn money while doing housework. It is such a good deal. Everyone can use it."*

In this case, P05's son first acted as a gatekeeper by providing a credibility endorsement, reducing perceived risk and legitimizing the application. Through subsequent use, P05 discovered a compelling value proposition and then shared this experience with a semi-familiar contact. In this sense, the practice became framed as a shareable good thing within a grandparenting network, circulated with an explicit promise of practical benefit.

P02, by contrast, foregrounded the role of neighbourhood mutual aid in learning and use: *"It was my neighbour who recommended it to me. After I told my daughter and son-in-law, they showed me, step by step, where to tap on the phone. When they are not at home, I ask my neighbours."* For her, neighbours functioned simultaneously as an information source and as an important source of situated technical support, filling the operational gap when adult children were absent.

Taken together, peer word of mouth enabled audiobook-related practices to diffuse through an adult children-to-neighbourhood peers pathway within weak-tie networks. In doing so, what might otherwise have remained a relatively private form of media use became embedded within the everyday social infrastructure of mutual help and shared grandchild care. The practice was collectively experienced and circulated.

4.1.3 Algorithmic and Commercial Incentives

Once adult children and peers have helped migrant older adults gain basic access to technology, what often keeps them using it is the platform itself, especially its recommendation algorithms and task-based reward system. On the one hand, features such as autoplay and continuous recommendations turn what might have been a one-off listening session into an endless stream of content. As P06 put it: *"There are apps I did not even install. Sometimes when I am listening, I accidentally tap somewhere, and it takes me in — I can still listen. When this one finishes, it automatically plays the next. It never ends."* It reflects the effect produced by feed-like delivery and auto-play mechanisms.

On the other hand, platforms bundle listening with "doing tasks" and "collecting coins," using low monetary rewards to nudge older users to stay online longer. P05 was frank about the appeal: *"There are lots of tasks you can do on the phone, and it's not hard. And you get something lively to listen to."* For her, audiobooks are both entertainment and an effortless way to earn money.

Compared with the interpersonal intermediaries discussed earlier, grounded in family ties and neighbourhood trust, platforms "taskify" and lightly monetize audiobook listening through autoplay, gamified incentives, and cash-out features. Without adding much operational burden, these mechanisms steadily extend listening time, turning a once-tricky task into a routine folded into everyday rhythms. At the same time, listening rhythms become more deeply embedded in algorithmic distribution and commercial incentive logics. Personalized recommendations and autoplay may intensify repetitive exposure and content homogenization, heightening the risk of filter bubbles; reward systems can also recast companionable listening into a sustained capture of time and attention. These dynamics, in turn, provide a structural backdrop for the negotiated forms of reception that older adults develop around content in the sections that follow.

4.2 Content Preferences and Negotiated Reception Under Platform Stratification

4.2.1 Content Preferences and Listening Motivations: From Family Ethics to Public Affairs

Participants' listening practices were not reducible to entertainment; their preferences clustered into three types: family ethics and emotional disputes, local cultural materials that sustain rural memories, and nation-centred political and historical narratives.

First, family ethics content provides resources for emotional resonance and experiential comparison. P05 explained: *"It is all about family matters. I want to learn how others handle conflicts."* For her, such stories are less pure pastime than a way to compare others' marital, in-law, and intergenerational conflicts with her own drifting life. Participants like P05 and P06 often remain within emotional narratives, treating listening as a means to learn principles for handling tasks in childcare and housework.

Second, local culture emerged as a salient line of content. P03 said: *"I like listening to opera. Back home, I even played strings; now I can only listen to people sing on the phone."* For him, opera listening is not a new interest, but a means of sustaining continuity with hometown culture and a prior identity while living in an unfamiliar city.

Third, participants favoured audio content on historical biographies, national narratives, and public affairs. P09 stated: *"I love listening to political news. I also care about our country's history and how it is developing."* P01 emphasised the learning function of biographies: *"I like listening to people's biographies, which broaden my knowledge."* These listening practices help older migrants not only pass the time but also reaffirm imaginaries of home and nation, continually locating themselves within narratives of national development.

Overall, older migrants' listening preferences combine needs for emotional comfort and ethical reference with memories of local culture and attachments to home and nation. Under algorithmic recommendation, these

elements together build an audio-mediated reading experience through which older migrants reconstruct everyday emotions, historical time, and a sense of spatial belonging in digital environments.

4.2.2 Platform-Based Trust Hierarchies: Risk Governance and Negotiated Cultural Reception

In complex online information environments, participants were not simply credulous. On the contrary, they displayed strong risk awareness and defensive judgment tendencies, frequently using expressions such as “not daring to click links randomly” to describe their baseline stance toward online information. They reflect everyday self-protection strategies under information overload. Research on online credibility notes that networked environments reshape traditional trust formation; recipients rely more on low-cost cognitive shortcuts to make credibility judgments and manage risk (Metzger, M. J., & Flanagin, A. J., 2013).

In listening-to-books practices, this risk governance appears as a platform-based hierarchy of trust. Instead of verifying truth claim by claim, participants tended to use platform type as a shortcut for rapid authorization and meaning filtering. In general, news-feed platforms such as Toutiao were regarded as more credible; WeChat Moments, with mixed sources, attracted more cautious expectations; and short video platforms were categorized as lively entertainment spaces suitable for pastime and companionship but were discounted for the credibility of public information.

However, the belief that Toutiao is more trustworthy does not mean participants possess rigorous fact-checking abilities. Instead, it is shaped by heuristic cues provided by platforms. Platform names, interface designs, columnized presentations, and experiences are perceived as indicators of credibility. Because heuristic processing is lower-cost (Chaiken, S., 1980), participants rarely differentiate account types within a platform and instead link credibility directly to platform attributes.

More specifically, elevating news-feed platforms in trust rankings results from several interrelated factors. First, situational categorization: participants interpret different apps as different scenarios. News feeds are for authoritative information and national affairs, WeChat for maintaining relationships, and short-video apps for entertainment.

Second, institutionalized was created by a news-like presentation. The name “Toutiao”, the news-feed structure, columnized interface, and stylistic conventions make content more easily recognized as “news reporting”, producing a simulated cue of authority and reducing uncertainty.

Third, relational pressure. Moments content often mixes advertisements, jokes, and chain forwarding, and is constrained by face and relationship norms. Even when encountering questionable information, participants feel it is inconvenient to challenge it publicly, producing a cautious strategy. As P04 said: *“For content posted in Moments, I open it and take a look. Some I disagree with, but I will not leave comments.”*

Fourth, algorithmic repeated exposure brings both a felt sense of credibility and the risk of homogenization. Personalization may strengthen subjective feelings through value consistency and repeated exposure, thereby solidifying interpretive frames. This indicates that participants gain a sense of order and identity, anchored in their migration lives, while also carrying the risks of homogeneity and filter bubbles.

Overall, the platform-based hierarchy of trust reflects a negotiated reception of mediatized reading contexts. Participants balance platform rules with lived experience, using selective exposure and trust stratification to control risk and build meaning. This resembles the negotiated reading emphasised in Hall’s encoding-decoding model (LIN, Y., 2023). While it sustains listening practices, it also implies that agency is primarily exercised as negotiation and a bounded breakthrough within platform-defined boundaries.

4.3 Technology Domestication: Daily Rhythms and Productive Practices in a Focal Case

We selected P01 (female, 68) as a focal case for a 30-day follow-up. From a micro ethnographic perspective, we examine how her listening to books and broader smartphone practices are embedded in the temporal organization and spatial arrangement of everyday life. P01’s practice suggests that digital media are consciously planned and used as tools for organizing everyday life.

Temporally, P01 divided media use across the day. After waking, she typically listened to the news while still in bed, and then used WeChat to send morning greetings to friends before starting breakfast and chores. During the day, especially while cooking, doing laundry, and tidying up, she switched to family-ethics stories and news commentaries. She filled tedious domestic time with sound. In the afternoon, she often visited local “check-in spots” recommended on Douyin, taking photos and videos. At night, her media practice moved from listening to creating: field notes show that almost every evening she edited, added music, and posted videos on her phone, and she wrote captions or titles to express emotion.

This case shows that listening and short-video use did not simply intrude on or disrupt P01’s routine. Instead, they were embedded in different life fragments along a “morning-daytime-night” rhythm. Such rearrangement of time and space is a typical domestication process (YAN, Q., & LI, N., 2022): older migrants are not merely led

by technology, but domesticate digital media as tools for organizing life and expressing the self, integrating them into everyday routines and rituals. Meanwhile, her shift from listening and browsing to shooting, editing, and posting also indicates a transition from receiver to producer, highlighting the productive and creative dimensions of listening practices.

4.4 From Reception to Production

In sum, older accompanying migrants first enter the listening-to-books field through multiple forms of mediation by children, peers, and platform mechanisms. They develop relatively preferences around family ethics, local culture, and national politics, and they form negotiated schemes of reception through platform-based trust hierarchies. Importantly, they do not always remain in passive listening positions; along a pathway from reception to production, they gradually release agency and creativity.

At the level of everyday interaction, listening content becomes a tellable and shareable cultural resource. Some participants reported recounting stories, biographies, or historical fragments to family members, neighbours, or caregiving peers to mediate conflicts, educate younger generations, or enliven conversations, completing small scale re-circulation and meaning making.

In P01, this agency shift becomes more concentrated and visible. Her listening practice evolves from alleviating loneliness and passing time toward resilient growth through cultural empowerment: under constraints of mobility, role burden, and institutional marginality, she obtains emotional comfort and meaning support through listening to family-ethics, rural/local, and national narratives, and through re-telling, recommending, and even producing digital content she transforms external cultural resources into expressive capital that she can use and output (see Figure 1).

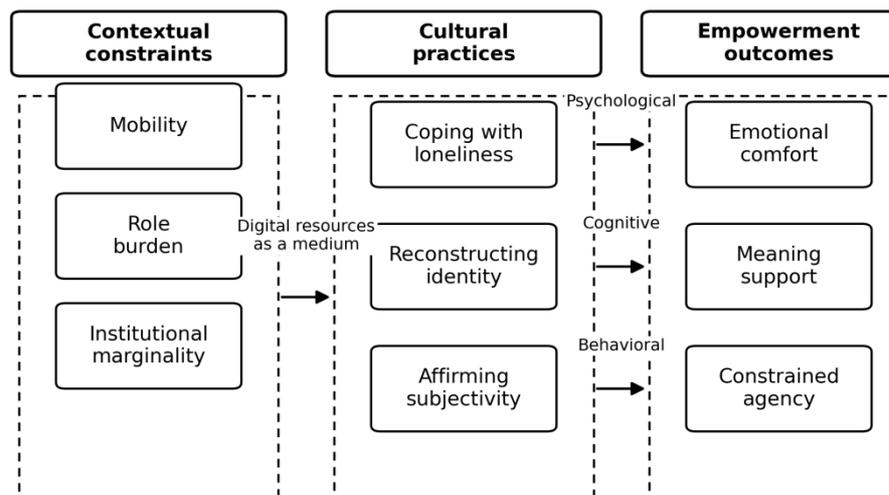


Figure 1. Cultural empowerment mechanism of mediatized reading among older accompanying migrants

These findings suggest that listening practices have become an engine of cultural eldercare, helping older migrants sustain a sense of self and reorganize social connections in later life. They provide a vivid micro level case for understanding digital empowerment and cultural eldercare in an ageing society.

5. Conclusions

Situated at the intersection of digitalisation and population ageing, this study draws on in-depth interviews with nine older migrants in Chengdu and a longitudinally followed case. Using dissemination and reception analysis maps, audiobook listening is a form of audio-based reading. Three findings stand out. First, dissemination is co-produced by family, peers, and platform logics. Second, reception combines clear content preferences with negotiated trust. Third, the tracked case shows that use is not purely passive or recreational. Some older migrants actively reorganise daily time-space and cultural resources, and, under certain conditions, even extend this to light content production — an insight best treated as a mechanism rather than a generalisable pattern.

These results complicate the dominant framing of older migrants primarily as vulnerable and isolated. Their participation is better understood as bounded agency, an ongoing negotiation between everyday needs and platform rules. We conceptualise this as “resilient growth through cultural empowerment”: expanded access to

cultural resources, emotional support, and room for action, continuously shaped by algorithmic distribution and commercial incentives.

The study has some limitations, including the small, single-city sample and the focus on audiobooks. Future research should adopt cross-platform and cross-city comparisons and test how platform mechanisms, family support, and peer networks jointly shape reading trajectories and credibility judgements.

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Challenges and Countermeasures for Ideological and Political Education of College Students in the Context of the Short Video Trend

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Abstract

With the rapid development of the internet and the widespread adoption of mobile smart devices, short-video platforms have gained immense popularity among college students due to their brevity, visual appeal, and immersive nature. However, this phenomenon poses significant challenges to the systematic, authoritative, serious, and relatable nature of ideological and political education. This study analyzes the deep coupling relationship between short videos and ideological and political education for college students from multiple dimensions, including the alignment of media characteristics with educational approaches, the contest for discourse space and ideological ground, the internalization of online behavior and value recognition, and the transformation of knowledge sources and educational evaluation. It systematically elaborates on the challenges posed by short videos to ideological and political education, including undermining its systematic nature, weakening its educational guidance, eroding the authenticity of information, dissolving the seriousness of education, and diluting students' willpower. On this basis, the study proposes systematic countermeasures across four dimensions: content supply reform, technological algorithm empowerment, discourse expression innovation, and subject competency enhancement. These aim to establish a comprehensive ideological and political education framework characterized by multi-stakeholder participation, balanced emphasis on content and form, and integrated online-offline engagement. The objective is to transform short videos' dissemination and influence into guiding and shaping power for ideological and political education, thereby enhancing its effectiveness among college students.

Keywords: short videos, ideological and political education, college students

1. Introduction

The global digital landscape is undergoing profound transformation driven by short-video platforms such as TikTok, Instagram Reels, and YouTube Shorts. These platforms, characterized by brevity, immediacy, high immersion, and algorithmic targeting, have particularly captivated Generation Z users — including hundreds of millions of college students worldwide. According to the 54th Statistical Report on China's Internet Development released by the China Internet Network Information Center, as of June 2025, China's internet user base reached nearly 1.123 billion, with an internet penetration rate of 79.7%. Short video users surpassed 1.085 billion for the first time, achieving a usage rate of 96.7%¹. Short videos serve not only as entertainment tools but also as vital platforms for information acquisition, social interaction, and identity construction, subtly shaping college students' worldviews, values, and ways of thinking. While short videos offer college students a new

¹ China Internet Network Information Center. (2025). The 54th statistical report on internet development in China. China Internet Network Information Center.

platform for immersive social entertainment and open up fresh avenues for knowledge acquisition, they also exert negative influences on students' thinking patterns, academic lives, and behavioral habits to some extent, posing risks and challenges to ideological and political education. Against this backdrop, how to effectively leverage short videos for ideological and political education has become a pressing issue in contemporary college student ideological work.

2. The Intrinsic Connection Between Short Videos and Ideological and Political Education for College Students

The intrinsic connection between short videos and ideological and political education for college students has transcended simple tool application, evolving into a deep coupling of the digital era's media ecosystem, cognitive patterns, and educational objectives.

2.1 Alignment of Media Characteristics with Educational Methods

The fragmented, visual, and highly transmissible nature of short videos precisely aligns with contemporary students' information consumption habits. These characteristics facilitate the use of short videos for ideological and political education by transforming grand narratives into everyday, contextualized micro-stories and light interpretations, enabling targeted delivery of educational content. This approach partially compensates for the shortcomings of traditional classroom education, which often relies on a one-size-fits-all approach. Simultaneously, their immersive and emotionally resonant narrative style transforms dry abstract theories into vivid, tangible experiences, significantly enhancing educational effectiveness.

2.2 The Battle for Discourse Space and Ideological Grounds

Currently, short video platforms serve as one of the frontlines for ideological clashes, where a vast sea of content harbors intense collisions of diverse values. If educators fail to actively engage on these platforms, the mixed bag of information will erode students' minds. Educators must recognize this reality, moving beyond traditional lecturing to engage students through relatable approaches that frame topics and interpret reality in ways appealing to young adults. This is crucial for securing a foothold on this vital platform. More importantly, short video platforms' interactive nature transforms information dissemination from one-way transmission into multi-subject dialogue. Educators can also observe students' thought patterns through platform interactions and content engagement, guiding their thinking within discussions to make the educational process more interactive and targeted.

2.3 Online Behavior and the Internalization of Value Identification

Short videos serve not only as information platforms but also as social spaces where young college students project themselves and seek validation. The actions of the subjects, which include the creation and sharing of content, liking, commenting, and following others, can be considered as implicit expressions of their values. By showcasing positive role models and their deeds, short video content subtly reshapes students' worldviews, outlooks on life, and values. This transition is most evident when students transition from passive viewers to active creators, documenting social practices through their own perspectives and narrating compelling Chinese stories. This process internalizes values and concepts at the deepest level, propelling students from cognitive "observation" to behavioral "practice."

2.4 Transformation of Knowledge Sources and Educational Evaluation

The short video environment has eroded traditional educational authority, where educators are no longer the sole source of knowledge. This necessitates a shift in teachers' roles to become companions and guides in students' learning and growth. Simultaneously, this transformation is driving a change in the evaluation standards for ideological and political education. The focus has shifted from emphasizing knowledge assessment to placing greater emphasis on students' media literacy, value judgment capabilities, and rational expression skills demonstrated in online practices. The assessment of educational effectiveness has partially shifted from a sole emphasis on test scores to evaluating whether students can produce objective and rational content and discern the authenticity of online information.

3. Key Challenges Short Videos Pose to College Students' Ideological and Political Education

3.1 Fragmented Information Undermines Educational Systemicity

The "fragmentation" of information is a defining characteristic of short videos, which conflicts with the systematic and in-depth nature required for ideological and political education.

3.1.1 Undermining the Systemic Nature of Ideological Education

Ideological education demands systematic continuity, whereas short videos often fragment complex content into isolated viewpoints or emotional snippets. While this facilitates dissemination, it sacrifices overarching frameworks and logical arguments. Some short videos lack thorough argumentation, featuring incoherent or

selectively quoted content. Superficial, fragmented expressions disassemble students' cognitive structures, while fleeting emotional peaks disrupt their mental agility and hinder cognitive continuity. This often leads to superficial problem-solving, undermining students' capacity for deep thinking and holistic logical reasoning¹.

3.1.2 Weakening the Effectiveness of Ideological and Political Education

The effectiveness of ideological and political education for college students lies in whether the actual impact of disseminated content aligns with expectations. Short videos, through high-intensity sensory stimulation and instant feedback, shape users' browsing habits of frequent updates and rapid scrolling. This leads students to lose the ability to critically evaluate and reflect on educational content and social phenomena that require discernment and deep deliberation, thereby weakening the effectiveness of ideological and political education for college students.

3.2 The "Information Cocoon" Weakens Educational Guidance

While enhancing user experience, the algorithmic recommendation systems of short video platforms create "information silos," significantly diminishing the guiding power of ideological and political education.

3.2.1 Solidifying Student Preferences and Narrowing Horizons

Short video platforms continuously push homogeneous content based on user preferences, inadvertently reinforcing existing interests and cognitive biases. Algorithms confine students to their preferred topics, reducing or even blocking their exposure to mainstream ideological content and other subjects. This diminishes the influence and penetration of mainstream ideologies. Simultaneously, this mechanism amplifies cognitive biases among college students, solidifying their existing stances and leading to rigid thinking patterns. This hinders the development of students' ability to view issues comprehensively and engage in dialectical thinking.

3.2.2 Erosion of Traditional Educators' Authority

In traditional ideological education, educators served as the sole source and primary voice for political information. However, within algorithm-driven personalized information ecosystems, the content students encounter on short-video platforms is largely determined by their interests and algorithms. This shifts the balance of authority, diminishing the traditional influence of ideological educators and weakening their position as primary discourse providers.

3.3 Mimetic Environments Undermine Information Authenticity

A mimetic environment refers to the information landscape shaped by mass communication activities. It is not a mirror-like reflection of the objective environment but rather an environment restructured and presented to the public through the selection, processing, and reporting of news and information by mass media.²

3.3.1 Disseminating False Information and Breeding Online Rumors

The immersive experience offered by short video mimetic environments is highly appealing, intensely stimulating users' curiosity. Short videos replace students' opportunities to engage deeply with real-world scenarios through virtualized usage contexts, yet they struggle to deliver authentic, in-person realism. In terms of content characteristics, these "manufactured" short videos cannot substitute for genuine social life scenarios.³ Within this online simulacrum environment, the massive content supply on short video platforms enables certain users to spread misinformation and propagate online rumors under the guise of "authority," misleading others. The "group polarization" effect further subtly erodes people's steadfast beliefs, undermines national spirit and culture, and severely disrupts social order, posing ideological concerns for ideological and political education among college students.

3.3.2 Erroneous Ideologies Like Historical Nihilism Frequently Emerge

Within the online mimetic environment, certain short videos distort historical facts and heroic figures through sensationalist gimmicks. Such content is often packaged under the guise of "independent thinking," possessing strong deceptive and inflammatory qualities. It readily undermines the already incomplete historical understanding of college students, allowing historical nihilism to steadily erode their worldview.

3.4 Entertainment-Oriented Styles Dissolve Educational Seriousness and Student Willpower

The fundamental challenge of ideological and political education lies in transforming moral understanding into

¹ Li, D. (2011). Opportunities and concerns for mobile media in a fragmented context. *Journalism Enthusiast*, (23), 38–39. <https://doi.org/10.16017/j.cnki.xwahz.2011.23.024>

² Lippmann, W. (2018). *Public opinion* (Y. Kewen & H. Jiang, Trans.). Shanghai People's Publishing House.

³ Xu, G., & Zou, Z. (2022). Practical issues and countermeasures in educating through online short videos in the new era. *Guide to Ideological and Theoretical Education*, (12), 142–147. <https://doi.org/10.16580/j.sxlljydk.2022.12.012>

corresponding behaviors and habits¹, with willpower playing a pivotal role in this process. As commercial entities driven by profit, short video platforms prioritize maximizing traffic to generate revenue. This incentivizes them to recommend highly viral, entertainment-oriented, and vulgar content to users, severely undermining the solemnity of the lofty ideals and patriotic sentiments inherent in ideological and political education.

3.4.1 The Trivialization of Noble Themes

Some creators, driven by traffic, present serious subjects like heroic deeds and revolutionary history in an entertaining manner. While this approach superficially bridges the gap with young college students, it diminishes the gravity and educational value of these events, making it difficult for students to develop the proper reverence for historical moments and heroic figures.

3.4.2 Hindering the Development of Resilient Character

The entertainment-driven style of short videos tends to reinforce college students' desire for instant gratification, leading them to become overly immersed in the high-stimulus, high-sensation virtual world constructed by these videos, thereby disconnecting them from real life. Simultaneously, it fuels the pursuit of abnormal values like overnight fame and get-rich-quick myths, causing individual values to diverge from mainstream ideology². This obscures the value orientation of ideological and political education behind entertainment. The series of negative, pessimistic "pseudo-entertainment" phenomena stemming from short video entertainment severely impedes the development of strong willpower among college students.

4. Countermeasures for Ideological and Political Education of College Students in the Context of the Short Video Trend

Currently, short videos pose profound challenges to ideological and political education for college students. Educators must recognize the situation and respond proactively. A systematic approach can be developed along four key dimensions: content development, technological empowerment, discourse innovation, and competency enhancement. This approach aims to construct an educational model that effectively integrates with short-video platforms while aligning with the cognitive patterns of college students.

4.1 Content Supply Reform: Building a "Concise Yet Profound, Refined Yet Dynamic" Ideological and Political Content Matrix

To counter the impact of fragmented short-video content, the core lies in shifting from passive adaptation to proactive action. This involves promoting innovative presentations of ideological and political education content on short-video platforms, establishing a model that combines systematic guidance with fragmented delivery.

4.1.1 Thematic Focus and Serialized Breakdown

Centered on teaching and educational objectives, we aim to scientifically "fragment" and deconstruct the grand theoretical framework of ideological and political education. This breakdown is not a simple division but involves designing serialized, thematic clusters of short video micro-courses around core concepts and major theme, such as "Chinese Modernization," "Common Prosperity," and "New Quality Productivity". Each short video should focus on a single sub-point or case study, standing independently while maintaining logical connections between series to form a "string of pearls" knowledge map. Aggregate content through collections, dedicated pages, and hashtags to guide students from individual "fragments" into a systematic learning pathway.

4.1.2 Deep Narrative and Visual Presentation

Moving beyond superficial information dissemination, we commit to crafting "thoughtful visual stories" to counteract the tendency toward shallow cognition. By integrating diverse formats, including documentaries, micro-films, situational dramas, data visualization, and VR/AR immersive experiences, facilitates the transformation of abstract ideological theories into tangible, relatable narratives. We delve deeply into historical details, contemporary achievements, and the spiritual essence behind exemplary figures. The integration of fundamental Marxist theories with contemporary social development practices is guided by a three-part creative logic, which is comprised of "principle, case study, and insight." This approach yields premium content rich in both emotional resonance and intellectual depth, enabling ideological and political education to subtly instill values through pervasive influence.

4.1.3 Establish Authoritative "Resource Pools" and Co-Creation Platforms

Universities should collaborate with mainstream media, outstanding faculty, and student leaders to build

¹ Wang, M. (2002). *Theory of ideological and political education reception*. Hubei People's Publishing House.

² Wei, P. (2023). Challenges and countermeasures of short video entertainmentization to ideological and political education in higher education institutions. *Media*, (7), 81–83.

institutional, regional, and even national-level short-video ideological and political content repositories and distribution platforms, ensuring the authority and professionalism of content supply. Encourage faculty to transform academic research findings and classroom teaching highlights into short videos, enriching the repository's scholarly depth. Simultaneously, establish a co-creation mechanism encompassing "topic provision – student creation – professional guidance – promotion of outstanding works," integrating students into content production. This approach leverages authoritative guidance while infusing vibrant youth perspectives and creativity, achieving precise alignment between supply and demand.

4.2 Technology and Algorithm Empowerment: Achieving Dual Effects of "Precision Targeting" and "Expanding Reach"

Algorithms are the core operational mechanism of short video platforms. Rather than viewing them as adversaries, we should study, utilize, and guide them to become "amplifiers" and "navigators" for mainstream value dissemination.

4.2.1 Intervene in Algorithmic Logic to Strengthen Mainstream Weighting

Educational institutions should proactively establish effective cooperation mechanisms with short video companies, promoting the inclusion of authoritative government accounts, official university channels, and outstanding ideological and political works into the "mainstream value content pool." This should grant them higher recommendation weighting and "public welfare traffic" support. Algorithms should implement a certain proportion of "benevolent recommendations" or "necessary exposure" to break through the barriers of purely interest-driven "information silos." This allows college students to encounter more diverse and high-quality ideological and political content within short video feeds, guiding them to transcend their cognitive silos.

4.2.2 Optimize Platform Algorithms and Leverage Algorithmic Recommendations Wisely

While intelligent recommendation algorithms efficiently address short video supply-demand issues, they also risk creating information silos. Effective regulation of algorithmic technology is essential. Further refine algorithmic techniques to develop specialized recommendation algorithms centered on ideological and political education. Leverage the Heterogeneous Data Fusion Platform¹ to push ideologically valuable videos to college students via algorithmic recommendations. This achieves scientific integration and precise delivery of ideological and political education resources, enhancing the targeted effectiveness of such education.

4.2.3 Implement "Algorithm Literacy" Education

Integrate algorithmic principles, the information bubble phenomenon, and its impacts into media literacy courses and ideological education modules. Instructors should employ case studies and group discussions to help students intuitively grasp the strengths and limitations of algorithmic operations. Simultaneously, cultivate students' ability to proactively search for and cross-verify information from multiple sources, encouraging them to consciously engage with diverse information channels. This transforms students from passive recipients into active constructors of knowledge.

4.3 Innovative Discourse Expression: Transforming Ideological and Political Discourse from "Didacticism" to "Resonance"

In the short-video era of scarce attention spans, ideological and political education must creatively transform its discourse system while upholding content integrity, building communication bridges through approaches resonating with young audiences.

4.3.1 Master Youth-Oriented Language and Internet-Savvy Expressions

The essence of short-video social interaction lies in emotional connection and bonding, with warmth and inspiration being the primary emotions evoked by popular short videos.² Educators must deeply study Gen Z's communication methods, symbolic systems, and aesthetic preferences, delving into the dissemination patterns of youth subcultures like bullet-screen culture, internet slang, and meme-based expressions. Ideological educators should adopt a style that is relaxed yet not frivolous, fashionable yet dignified, transforming political and academic discourse into vivid, relatable online language to resonate with students and bridge the generational gap. University short videos should balance grand narratives with micro-narratives, using relatable people and events from students' lives to illustrate profound truths. Compelling stories should resonate emotionally with

¹ Wang, Y., & Cui, J. (2025). Algorithm-driven transformation of ideological and political education: Discourse reshaping, hidden risks, and optimization pathways. *Research on Ideological and Political Education*, 41(2), 124–131. <https://doi.org/10.15938/j.cnki.iper.2025.02.019>

² Luo, Q. (2020). Mainstream media's short video content production and dissemination strategies: A case study of People's Daily's Douyin account. *Media*, (22), 44–46.

individual students, amplify collective sentiment, foster emotional resonance, and reinforce mainstream value pursuits.¹

4.3.2 Cultivate Personified IPs and Approachable Figures

Encourage ideological and political educators, counselors, and outstanding student party members to establish authentic, multidimensional presences on short video platforms, developing influential and trustworthy “ideological influencers” or specialized knowledge-sharing IPs. Through interview-style videos, vlogs, and other formats, they interpret current political hot topics, share personal growth insights, and address student concerns. This establishes an approachable, equal, and friendly interactive relationship, anchoring value guidance in relatable and credible personal charisma. This enhances the persuasiveness and empathy of ideological theories.

4.3.3 Foster Interactive Ecosystems to Guide Diverse Dialogue

Leverage short video features like comments, bullet screens, and live connections to transform one-way communication into multi-directional discourse. Educational institutions should actively monitor comment sections and engage with discussions. Open-ended topics should be introduced to guide rational debates, enabling students to discern truth from falsehood and build consensus through interactive exchanges. Additionally, organizing themed activities can inspire students to express their understanding of mainstream values through short videos. By fully leveraging the platform’s interactive ecosystem, educators can construct online practice classrooms for students.

4.4 *Enhancing Core Competencies: Building a Protective System Combining “Individual Immunity” and “Healthy Online Environment”*

Faced with the diverse ideologies and complex content on short video platforms, efforts must focus on enhancing the digital literacy of both teachers and students. Through multi-party collaboration, we should strive to cultivate a healthy and wholesome online cultural environment.

4.4.1 Comprehensively Enhance the “Digital Ideological and Political Capabilities” of the Educational Workforce

It is essential to cultivate the fundamental competencies of frontline ideological and political educators in planning, producing, and operating short video content, as well as guiding public sentiment, particularly for ideological and political course instructors and counselors. In terms of assessment, digital literacy and the effectiveness of utilizing new media for ideological and political work should be incorporated into the evaluation system. Additionally, integrate campus resources to establish cross-disciplinary ideological and political new media teams, combining expertise from journalism, information technology, humanities, and arts to continuously produce outstanding content.

4.4.2 Systematically Cultivate Students’ “Critical Media Literacy”

Integrate digital media literacy education into required courses, focusing on developing four core competencies: information discernment, value judgment, rational expression, and digital citizenship responsibility. This enables students to identify misinformation, uphold correct values amid diverse information, engage responsibly in online discourse, and proactively disseminate positive energy. Additionally, specialized lectures and practical activities can be utilized to enhance students’ media literacy and fortify their ideological “firewall.”

4.4.3 Strengthen Campus Account Governance and Positive Content Supply

Enhance the registration and management of campus self-media accounts, establishing robust content review, proofreading, and error-correction notification mechanisms. Regularly recognize outstanding content creators and commend faculty and students who actively disseminate wholesome material. Organize themed events like “Campus Short Video Positive Energy Competitions” and “Most Beautiful Campus Story Collections” to foster a campus culture that honors excellence and emulates role models. This cultivates a positive campus microenvironment to counteract negative influences from broader short-video platforms.

In summary, the short video craze presents both a formidable challenge to traditional ideological and political education and a historic opportunity for its innovative development. Universities should adopt an open yet prudent approach, proactively entering this new domain. Through systematic and innovative strategic adjustments, they can transform the dissemination power and influence of short videos into the guiding and shaping power of ideological and political education. Ultimately, this will enable them to firmly grasp the initiative in education during the digital age and cultivate a new generation capable of shouldering the great

¹ Gao, J. (2023). Empowering college ideological and political education through mainstream short videos: Values, mechanisms, and optimization pathways. *Research on Ideological and Political Education*, 39(5), 143–149. <https://doi.org/10.15938/j.cnki.iper.2023.05.023>

responsibility of national rejuvenation.

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Challenges and Opportunities for Integrating into the Belt and Road Initiative After the Changes in Afghanistan

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Abstract

Since the Belt and Road Initiative was proposed, Afghanistan has been willing to join. However, due to the political instability in Afghanistan and the worrying domestic security environment, China has not officially responded to Afghanistan's accession to the Belt and Road Initiative. In 2021, the Afghan Taliban announced that they would take control of state power and form a new government, and although Afghanistan still faces many challenges, there is a trend of improvement. The first part of this paper discusses the significance of Afghanistan's accession to the Belt and Road, and then the second part discusses the challenges of integrating into the Belt and Road Initiative after the changes in Afghanistan and some urgent issues that need to be solved. Then discuss the opportunities faced by joining the "Belt and Road" initiative after the changes in Afghanistan, and what are the benefits for achieving domestic development and strengthening cooperation with other countries. Finally, certain policy suggestions are given.

Keywords: Afghanistan, The Belt and Road Initiative

1. Introduction

As one of the first countries to respond to the Belt and Road Initiative, Afghanistan should have joined the Belt and Road family as soon as possible, but due to decades of war and the unstable domestic political situation, its official accession has not been conclusive. Since the Taliban came to power in Afghanistan in 2021, its domestic political situation has been temporarily stable, and economic and social reconstruction needs to be urgently put on the agenda. This article discusses the new changes in this landmark event and some long-standing problems, and analyzes the challenges and opportunities that Afghanistan will face after the changes to integrate into the "Belt and Road" initiative.

2. The Significance of Afghanistan's Accession to the Belt and Road

In 2013, Chinese President Xi Jinping proposed the "Belt and Road" initiative, which was warmly welcomed and supported by relevant countries along the Belt and Road, and it is a win-win choice for China and relevant countries along the Belt and Road. The "Belt and Road" originated in China, but belongs to the world. The Belt and Road Initiative is not a "small circle" that belongs only to China, it is a bridge connecting countries and a cooperation platform that provides development opportunities at the national level. We are good at seizing opportunities for cooperation and creating opportunities for common win-win results, which will surely enable both sides to achieve a win-win situation and carry out a larger range of cooperation and higher level of development.

As an important hub region on the ancient Silk Road, Afghanistan became one of the first countries to actively respond to the cooperation concept of the "Belt and Road" initiative. Afghanistan has been turbulent and rarely peaceful since the 19th century. After experiencing drastic changes in the international landscape, the situation facing Central Asia and Afghanistan has become more complex. Since the beginning of the new century, the

United States and Russia have also intensified regional competition, increasing regional instability. In August 2021, the Afghan Taliban declared that they had taken control of the state and formed a new government. The change in identity has brought some uncertainty to Afghanistan's domestic development. For the people who have been affected by the war, on the premise of ensuring safety, improving the living environment and resuming economic and social reconstruction as soon as possible is the top priority. The Belt and Road Initiative itself has this attribute. Afghanistan's recognition and demand for the Belt and Road Initiative stems from its urgent need for domestic economic development and its positive attitude towards opening up. In recent years, the Afghan economy has faced many challenges, including poor security environment required for project construction, weak infrastructure, and prominent poverty in people's livelihood. The Belt and Road Initiative aims to promote economic cooperation and connectivity among countries along the route, providing Afghanistan with rare development opportunities. Specifically, the Belt and Road Initiative will provide Afghanistan with broad space and opportunities for cooperation. By participating in the Belt and Road Initiative, Afghanistan can strengthen economic and trade cooperation with neighboring countries, promote infrastructure construction, and improve connectivity. At the same time, the Belt and Road Initiative can also bring more investment and technical support to Afghanistan to promote industrial upgrading and economic development.

Afghanistan's integration into the Belt and Road Initiative can play an important strategic role in successfully connecting Central Asia, South Asia and West Asia, and the extension of the China-Pakistan Economic Corridor to Afghanistan will help the reconciliation process between Afghanistan and Pakistan after the Taliban government in Afghanistan, promote domestic social reconstruction and economic development. Afghanistan is also rich in natural resources and human resources, and the huge development potential of these resources provides a wide space for investors. At the same time, for China, Afghanistan's accession to the Belt and Road Initiative is also of considerable strategic significance. Currently, China's exchanges with Europe, the Middle East and North Africa mainly rely on sea freight. However, although the cost of sea freight is low, it has the disadvantages of long cycles and easy interference. Therefore, China urgently needs to find more stable and safer transportation routes. If the railway can be built in cooperation with Afghanistan through the "Belt and Road" framework, it will greatly shorten the transportation distance and time between China and Europe, the Middle East and North Africa. It will not only drive the economic development of cities along the way, but also bring unprecedented strategic advantages to China.

3. Challenges in Integrating into the Belt and Road Initiative After the Changes in Afghanistan

3.1 The Legitimacy of the Regime and the Domestic Security Situation

The security challenges facing Afghanistan are complex and multiple, with issues such as regime legitimacy and the threat of domestic and foreign terrorism affecting the security situation in Afghanistan. Since the Taliban came to power in Afghanistan, the domestic security environment has improved to a certain extent compared to the past. In order to gain the international community's recognition of the legitimacy of its regime, the Afghan Taliban has also continued to engage in diplomatic interaction. In terms of its effectiveness, although the violence has decreased to a certain extent, the overall security situation in Afghanistan has not improved significantly. At this stage, the outstanding security challenges in Afghanistan mainly come from the Khorasan branch of the Islamic State in Afghanistan and the possible armed resistance launched by former government forces.

The first is the legitimacy of the Taliban regime. Although the Afghan Taliban came to power and established a new Afghan government, the new regime is currently the only country in the international community that has recognized its legitimacy on July 3, 2025.¹ In addition, some countries, including China, have not recognized the legitimacy of the Taliban government in Afghanistan, but have cooperation with it in various fields. Local practice on August 20, 2025, Wang Yi, member of the Political Bureau of the CPC Central Committee and Minister of Foreign Affairs, visited Afghanistan on the occasion of the 70th anniversary of the establishment of diplomatic relations between China and Argentina, and in Kabul, he and Afghan Foreign Minister Mutaki focused on "economy-centered", inherited China-Arab friendship, deepened political mutual trust, strengthened exchanges and cooperation between the two sides in the fields of economy and trade, agriculture, poverty alleviation, water conservancy, connectivity, and people-to-people, so that the tree of China-Arab friendship continued to thrive and better benefit the two countries and their peoples. Friendly talks were held to make new contributions to regional peace, stability and development.² Since the Afghan Taliban was previously targeted by other countries and regions as a terrorist organization, a change in its identity after coming to power, from

¹ Ding Xinting, Zhu Yueyao. (2025). Why did Russia take the lead in recognizing the Taliban regime in Afghanistan? *China Academy of Contemporary International Relations*, (07), 17.

² Minister of Foreign Affairs. (2025). Wang Yi holds talks with Afghan Foreign Minister Muttaqi. (2025-08-20) [2025-12-17]. https://www.mfa.gov.cn/wjzbhd/202508/t20250820_11693118.shtml.

illegal to legal, is a big challenge for the people of Afghanistan and neighboring countries. As a government once elected by the people, the former Afghan government may directly challenge the legitimacy of the Atta government, and most of the leaders of the previous government are no longer in Afghanistan, and they remotely command relevant armed forces to resist the Atta regime, causing a certain reduction in personnel to the Atta army, such as the “National Resistance Front” led by Masood Jr. is the main force of the former government’s armed forces. ¹At present, Afghanistan has also been engaged in ongoing diplomatic interaction. It is hoped that through friendly interaction with other countries, the new government will show its attitude, make some practical and effective actions to gain the recognition of the international community, and win international assistance to restore and develop the domestic economy and protect people’s livelihood. For example, the Afghan Taliban has expressed its willingness to make Afghanistan a drug-free country after coming to power, because it will help the Taliban gain recognition from the international community and create a favorable external international environment for it to firmly hold state power.²

In addition, Afghanistan’s internal security issues also need to be paid attention to, and terrorism remains a major factor affecting its internal security and stability. On August 24, 2021, local time, Afghan Taliban spokesman Mujahid held his second press conference at the Kabul Media Center. He stressed that no terrorist organization, including Al-Qaida, should use Afghan territory to carry out terrorist activities or activities against neighbouring countries. ³By 2025, there will still be many contradictions within the Taliban. In March this year, the Haqqani faction warned Taliban leader Akhundzada to his face, saying that his “authoritarian rule is alienating allies.” After the Afghan Taliban seized power in the country, a prominent security challenge was the Islamic State. Its Khorasan branch in Afghanistan is on the opposite side of Afghanistan. After the withdrawal of US troops from Afghanistan, a confrontation with Afghanistan was formed. The Islamic State Khorasan branch does not recognize the real results of the Afghan Taliban’s rise to power and believes that the Afghan Taliban are merely compromising with the United States. In August, the Khorasan branch also launched a terrorist attack on the Kabul airport, resulting in hundreds of casualties, which led to dissatisfaction among the Afghan people with the Taliban. The following month, the Taliban announced a crackdown on Islamic State terrorists. According to a news report by the Observer Network on October 4, 2021, the Taliban raided the stronghold of the extremist group “Islamic State” in Kabul on the evening of October 3, local time and cleaned up its members. Judging from the current complex situation within the Afghan state, in order to maintain social order and stability in Afghanistan, the Afghan Taliban must draw a clear line with terrorist organizations, which should be the most direct reason for Atta’s attack on ISIS.⁴

3.2 Afghanistan’s Livelihood Problems Need to Be Solved Urgently, and the Domestic Infrastructure Construction Is Not Perfect

Due to long-term armed confrontation and violent conflict, Afghanistan’s domestic infrastructure is imperfect and people’s livelihood problems need to be solved urgently, so that investors lack confidence in carrying out projects in Afghanistan. For a country that has been suffering from war for a long time and its domestic undertakings are in ruins, it is important to achieve a smooth transition and social reconstruction in Afghanistan. Afghanistan should improve infrastructure construction and form a convenient transportation network as soon as possible, and at the same time focus on solving domestic livelihood problems. Under the premise of ensuring Afghanistan’s internal security, the whole country should focus on economic development and alleviate investors’ concerns about projects in Afghanistan.

Afghanistan still faces the world’s largest humanitarian crisis, with a total of 14.8 million Afghans currently assessed as at IPC level 3 (crisis) and above levels of severe food insecurity, according to official World Food Program figures. Of the 14.8 million Afghans, 3.1 million are in the more critical IPC Level 4 (state of emergency), meaning they do not have access to adequate food and will face serious hardship or even deterioration in their livelihoods, livelihoods or nutritional status without humanitarian assistance. In 2024, the World Food Programme provided life-saving food, nutrition and livelihood support to 11.8 million people, including half of them women and girls, totaling more than 319,000 tonnes of food and 1\$4.9 billion in cash

¹ The then First Vice President of Afghanistan, Saleh and Ahmed Massoud (“Little Masood”), formed an anti-Tajikistan armed force. “Little Massoud” is the son of Ahmad Shah Massoud, a prominent Afghan national resistance leader.

² Wang Shida. (2022). The Great Changes in Afghanistan: The Evolution of Geopolitical and Security Pattern. *Russian, Eastern European and Central Asian Studies*, (01), 17-31+154-155.

³ World Wide Web. Taliban’s second press conference: No request to postpone withdrawal. (2021-08-24) [2024-05-15]. <https://world.huanqiu.com/article/44ULiu7mHvU>.

⁴ Observer.com. Afghan Taliban raid extremist group “Islamic State” members in Kabul hideout. (2021-10-04) [2024-05-15]. https://www.guancha.cn/international/2021_10_04_609612.shtml.

assistance.¹ At the same time, due to natural disasters, such as the strong earthquake in Afghanistan on September 4, heavy casualties and property damage were caused. At the request of the Afghan side, the Chinese government decided to provide Afghanistan with 50 million yuan of emergency humanitarian assistance for earthquake relief, mainly including tents, blankets, food and other urgently needed supplies in the disaster area.² In addition, people in parts of Afghanistan still do not have access to a continuous power supply. These objective infrastructure conditions limit Afghanistan's participation in the Belt and Road Initiative. The protracted war has led to serious dangers to Afghanistan's energy supply, with power generation, transmission and distribution infrastructure destroyed in most countries. According to Xinhuanet news reports on October 24, 2021, an explosion occurred in a transmission tower northwest of Kabul, the capital of Afghanistan, causing power outages in the capital and surrounding areas.³ Afghanistan's electricity production increased from 972.27 GWh in 2023 to 1530.69 GWh in 2024. Afghanistan's electricity production averaged 1,033.49 GWh from 2008 to 2024, reaching an all-time high of 1,530.69 GWh in 2024 and an all-time low of 827.10 GWh in 2008. The domestic growth rate is good, but there is still a huge gap compared with other countries in the world. Currently, Afghanistan's domestic electricity supply is mainly dependent on electricity imports from neighboring countries, and the operation of reliable local power generation projects as soon as possible is crucial for the country's economic growth. As a landlocked country with no access to the sea, Afghanistan mainly relies on roads and air for transportation, with about 44,000 kilometers of roads in Afghanistan as of 2018.⁴ The number of railway lines in Afghanistan is even more difficult, and at the same time, in the process of building new railways, it is also necessary to consider the problem of matching the track distance with different neighboring countries. But Afghanistan faces serious challenges in the aviation and road sectors, with largely no railway resources. The lack of sectoral planning, including plans to develop, maintain, and govern viable transportation infrastructure, limits the exploitation of some mineral deposits, such as its vast oil and gas reserves and other resources. Due to the low quality of existing roads and railways and the underdeveloped transportation network, Afghanistan's domestic economic development has been hindered.⁵

The main goal of Afghanistan's participation in the Belt and Road Initiative is to promote domestic social reconstruction, give full play to its strategic location advantages, and promote economic development. However, due to inadequate domestic infrastructure and livelihood issues, Afghanistan is still facing many difficulties in achieving this goal.

3.3 Great Power Game

At present, it is the United States and India that affect the implementation of the Belt and Road Initiative in Afghanistan. Among them, India is worried that due to the complex problems on the border between China and India, China may use the Belt and Road Initiative to infringe on its related interests. At the same time, due to the different strategic perceptions of India and China, India does not see the Belt and Road Initiative as an opportunity, but as a challenge that threatens its position. The Indian government's anxiety about the China-Pakistan Economic Corridor (CPEC) passing through the controversial Kashmir region also reflects its anxiety about the Belt and Road Initiative to some extent.

From the perspective of the United States, as the world's largest power, the United States has always had a clear negative attitude since the Belt and Road Initiative was proposed, and has constantly smeared the Belt and Road Initiative in various public places. Because it does not want to see China strengthen cooperation with countries along the Belt and Road in various fields through the Belt and Road Initiative, thereby increasing China's own international influence and weakening the strategic position of the United States. Both the Trump administration and the Biden administration regard China as a strong strategic competitor of the United States, and the Biden administration regards China as a "prominent competitor", which has led to a more severe situation in the great power game in the relevant regions. The United States interfered with China's Belt and Road construction process in Central Asia, and joined forces with Japan, India, Australia and other countries to form a suppression

¹ World Food Programme. (2025). Afghanistan. (2025-03-27) [2025-12-17]. <https://www.wfp.org/publications/annual-country-reports-afghanistan>

² China Belt and Road Network. (2025). China International Development Cooperation Agency: China provides emergency humanitarian assistance for earthquake relief to Afghanistan. (2025-09-04) [2025-12-17]. <https://www.yidaiyilu.gov.cn/p/00MH75AN.html>

³ Xinhuanet. (2021). Power outage in Afghan capital following transmission tower explosion; "Islamic State" claims responsibility. (2021-10-24) [2024-05-15]. <https://world.huanqiu.com/article/44ULiu7mHvU>.

⁴ Ministry of Foreign Affairs. (2025). Wang Yi visited Afghanistan and attended the Sixth Trilateral Foreign Ministers' Dialogue between China, Afghanistan and Pakistan. (2025-08-20) [2025-12-17] https://www.mfa.gov.cn/wjbzhd/202508/t20250820_11693118.shtml.

⁵ "Sector Assessment (Summary): Energy," Asian Development Bank, <http://www.adb.org/sites/default/files/linked-documents/46392-001-ssa.pdf>.

of the Belt and Road.

4. Opportunities for Integrating into the Belt and Road Initiative After the Changes in Afghanistan

4.1 Take the Opportunity of Joining the China-Pakistan Economic Corridor

As an open and inclusive cooperation initiative, China and Pakistan hope to promote extensive participation and in-depth exploration by third parties. At present, third-party participation in the China-Pakistan Economic Corridor is mainly divided into the following two forms. The first is third-party market cooperation under the framework of the CPEC, and the other is to extend the CPEC to third countries. Afghanistan's accession to the CPEC is mainly the second way. The governments of China and Pakistan have publicly stated on many occasions that they are willing to work with the Afghan side. Follow the principle of mutual benefit and win-win results, and actively promote the extension of the China-Pakistan Economic Corridor to Afghanistan in an appropriate way.¹

According to the website of the Ministry of Foreign Affairs, on May 21, 2025, Wang Yi, member of the Political Bureau of the CPC Central Committee and Minister of Foreign Affairs, presided over an informal meeting between the foreign ministers of China, Afghanistan and Pakistan, and Zhu Yongbiao, director of the Afghan Research Center of Lanzhou University, said in an interview with the Global Times on the 20th that the tripartite foreign ministers' meeting is not only a routine arrangement, but also has special significance. On the one hand, the mechanism of the China-Pakistan Tripartite Foreign Ministers' Meeting has been in operation for many years; On the other hand, this is the first meeting of the mechanism in Afghanistan since the Taliban took power in Afghanistan, coinciding with the eve of the SCO Tianjin summit, and the recent improvement in Pakistani-Arab relations — in this process, China has played an active role in promoting the easing of relations between the two sides. "Therefore, this meeting is both a continuation and a new starting point." On August 20, 2025, local time, Wang Yi, member of the Political Bureau of the CPC Central Committee and Minister of Foreign Affairs, went to Kabul to attend the sixth China-Afghanistan-Pakistan Trilateral Foreign Ministers' Dialogue. ²The three sides reaffirmed their support for Afghanistan to fully tap its potential as a regional connectivity hub and will promote trilateral cooperation between China, Arabs and Pakistan under the framework of the Belt and Road Initiative to promote the extension of the China-Pakistan Economic Corridor to Afghanistan. ³In 2021, less than a month after the Afghan Taliban seized power, they made a public statement clearly stating their desire to join the China-Pakistan Economic Corridor. After that, the Afghan Taliban put forward the hope of joining the Belt and Road Initiative, but the Chinese Ministry of Foreign Affairs responded at that time that the situation in Afghanistan can only achieve a smooth transition, the domestic society is rebuilt, and long-term peace and stability can be achieved. Therefore, the most important point is that Afghanistan should ensure domestic security and create an environment suitable for economic construction.

As a landmark cooperation project in the "Belt and Road" initiative, the China-Pakistan Economic Corridor connects our country's Xinjiang and Pakistan's Gwadar Port, and on this basis, radiates to neighboring countries, such as Afghanistan and other regional countries, which can not only promote Pakistan's economic development, but also drive the economic prosperity and development of neighboring countries and even the entire region. Afghanistan has large-scale natural mineral resources, etc., if the investment and help of China's "Belt and Road" and the help of countries along the route are added to the premise of ensuring a safe business environment, then Afghanistan's rich resources and energy can find a broader global market through the China-Pakistan Economic Corridor. Afghanistan can take this opportunity by participating in the China-Pakistan Economic Corridor and taking this as an opportunity to better join the Belt and Road Initiative.

4.2 Promote the Development of Mineral Resources

Afghanistan has a large number of high-quality natural resources and energy, and its investment potential is huge, including oil, natural gas, coal, precious metals, precious gemstones and other mineral deposits. In general, Afghanistan has more than 1,400 proven mineral types, and most of its minerals are undeveloped, and its copper and iron ore holdings are among the top in the world, which are mainly distributed in the northern and eastern regions of Afghanistan, providing unique conditions for local mining development. ⁴Afghanistan's iron ore

¹ Liu Le. (2023). The 10th Anniversary of the Construction of the China-Pakistan Economic Corridor: History, System and Enlightenment. *South Asian Studies Quarterly*, (04), 60-79+158.

² Ministry of Foreign Affairs. (2024). Country Overview of Afghanistan and Tanzania. (2024-04-30) [2024-05-15]. https://www.mfa.gov.cn/web/gjhdq_676201/gj_676203/yz_676205/1206_676207/1206x0_676209/

³ CCTV. (2023). Joint Statement on the Fifth China-Afghanistan-Pakistan Foreign Ministers' Dialogue. (2023-05-09) [2024-05-19]. <https://news.cctv.com/2023/05/09/ARTI8gLZj4m3dMflsDLT31cX230509.shtml>

⁴ Chu Wangtao, Shi Dani, Dong Xiaoqin, Wu Lanyu. (2021). Suggestions on China-Arab Energy and Mineral Cooperation Strategies after the Taliban in Afghanistan Comes to Power Again. *International Petroleum Economics*, 29(10), 42-47.

resources are also very considerable, and its iron ore quality and reserves have high development value. In terms of energy and minerals, Afghanistan is rich in coal resources, mainly distributed in the central and southern regions. These coal resources can not only be used for power generation and heating, but also as chemical raw materials, providing an important energy guarantee for Afghanistan's industrial development. At the same time, Afghanistan's oil and gas resources also have certain development potential, although the current degree of development is relatively low, but with the advancement of technology and the expansion of the market, its development prospects are very broad.

Due to decades of war and domestic technological restrictions, the Afghan government has not been able to rationally and effectively exploit these natural resources, resulting in a small contribution of abundant mineral resources to the country's economic development. And even if these minerals have been developed to a certain extent, most of their investment returns do not flow into Afghanistan to promote economic circular development, but to other countries, so Afghanistan's economic situation has not improved. With the continuous advancement of technology and the continuous expansion of the market, the potential for the development of mineral resources in Afghanistan will be further released, providing a more solid foundation for economic growth. At the same time, the development of mineral resources has also promoted economic and trade cooperation between Afghanistan and other countries, creating favorable conditions for the country's integration into the global economic system. The petrochemical industry has played an important role as a pillar industry in Afghanistan. ¹If Afghanistan truly integrates into the Belt and Road creative cooperation in the future, its mineral resources will be rationally developed and used to enhance domestic economic construction and ensure the good development of people's livelihood, which will be of great benefit to promoting the stability of its regime and obtaining recognition of the legitimacy of its regime by the international community as soon as possible.

4.3 Promote Domestic Economic and Social Development

One of the most important goals of the Belt and Road Initiative is to help countries along the Belt and Road improve their infrastructure construction and further boost their national economies on this basis, so as to cooperate with other countries in the region to promote regional economic integration and achieve a higher level of economic cooperation with other countries. The Belt and Road Initiative is not a simple economic cooperation channel, it provides a development platform for more countries and provides Chinese solutions for countries to cope with world-class challenges. In March 2022, the third meeting of foreign ministers of Afghanistan's neighbors was held in Tunxi, Anhui Province, China, attended by seven foreign ministers or high-level representatives. ²On June 17, 2025, on the occasion of the South China Expo, Syed Bilal Farouqi, a carpet merchant from Afghanistan, who is in full swing to prepare for the exhibition, told reporters: "This year, we exported 7 tons of carpets to China, almost doubling from last year." He hopes to use the platform of the South China Expo to further expand its market share in China. ³Through the expectations of this Afghan entrepreneur, it can be seen that the "Belt and Road" initiative has achieved remarkable results in helping countries along the route and the forward-looking development vision of our country's leadership group. Central Asian countries such as Turkmenistan, Tajikistan, and Uzbekistan have expressed their willingness to strengthen cooperation with Afghanistan on some infrastructure projects. ⁴In the process of implementing these cooperation projects between countries, a considerable number of jobs will be created, which will also help solve the livelihood problems in Afghanistan. At the same time, joining the Belt and Road Initiative will increase trade between other countries and Afghanistan, which can better flow into the global market with Afghan local products, and to a certain extent, it will help the Afghan people to start businesses and find employment. The gradual development of Afghanistan's domestic infrastructure will provide a foundation for future economic and trade cooperation and people-to-people exchanges. China's infrastructure level is obvious to all, and we have advanced technology and experience in infrastructure development. At the same time, the AIIB we established can also promote the construction of the Asian region and the connectivity of regional countries, and strengthen cooperation between

¹ Khamosh Khoshmorad. (2022). Research on the challenges and opportunities of Afghanistan's integration into the "Belt and Road". Harbin Institute of Technology. DOI: 10.27061/d.cnki.ghgdu.2021.004417.

² Ministry of Foreign Affairs. (2022). Tunxi Initiative on Supporting Afghanistan's Economic Reconstruction and Practical Cooperation in Afghanistan's Neighbouring Countries. (2022-04-01) [2024-05-22]. https://www.mfa.gov.cn/wjbzhd/202204/t20220401_10661820.shtml.

³ Xinhuanet. (2025). Doubling in ten years, China's economic and trade exchanges with South Asia have developed well. (2025-06-17) [2025-12-17]

⁴ Tajikistan will further develop and build a railway and freight center in the Tajikistan border Penchi Free Trade Zone. Turkey will continue to help Afghanistan develop transportation, transit and communication systems and increase transit passenger and freight volume by maintaining the operation of the "Atamila-Imam Nazar-Akina-Andjuy" railway line. Ukraine will continue to actively participate in the restoration of Afghanistan's domestic infrastructure, especially Mazar-i-Sharif International Airport.

China and other Asian regions and countries. Afghanistan's accession to the "Belt and Road" initiative will reap more development opportunities, its domestic high-quality minerals will be reasonably developed, and special commodities will better flow into the global market. Domestic livelihood problems will also be improved to a certain extent.

5. Respond to Suggestions

5.1 Actively Play the Role of Relevant International Organizations and Mechanisms

Actively play the role of relevant international organizations and mechanisms to solve the existing problems after the changes in Afghanistan and promote reconciliation with relevant countries. In addition to launching the organization's current regional security cooperation mechanism, the SCO has also established the SCO-Afghanistan Liaison Group at the level of deputy foreign ministers and the "China-Arabs and Pakistani Trilateral Foreign Ministers' 3+1" mechanism.

The SCO-Afghanistan Liaison Group, established in 2005 as a consultative mechanism between the SCO and Afghanistan on related issues, aims to make recommendations on promoting cooperation between the two sides. Since its establishment, high-level meetings have been held many times, and the spirit of each meeting emphasizes that all parties should give full play to the active role of the SCO-Afghanistan Liaison Group, continuously implement and practice the "Shanghai Spirit", and contribute to the long-term stability, development and prosperity of Afghanistan and the region. The "3+1" mechanism is a "small multilateral mechanism" formed among SCO member states led by China to promote regional security cooperation. The three foreign ministers agreed to continue cooperation in areas of common interest and reached the following consensus: first, to work together to combat terrorism in all its forms; second, it emphasizes that all parties should strictly resist the "double standards" of counter-terrorism and carry out counter-terrorism cooperation with a unified attitude; Third, no terrorist organization or individual is allowed to use their respective national territories to carry out terrorist activities against other countries. ²In the Sixth China-Afghanistan Tripartite Foreign Ministers' Dialogue to be held in 2025, the three countries should deepen good-neighborliness and mutual trust, understand and support each other, resolutely oppose interference by foreign forces in their internal affairs, and safeguard national sovereignty, security, integrity and territorial integrity. Foreign Minister Wang Yi expressed support for Afghanistan and Pakistan to improve and ease bilateral relations and promote good-neighborliness and friendship in order to achieve stability and long-term development. The two sides will deepen cooperation in the economic field, expand trade exchanges, strengthen connectivity, enhance people-to-people ties, and promote regional peace, stability, development and prosperity.³

5.2 Focus on the Role that Afghanistan's Neighbours Can Play

As neighbors of Afghanistan, Central Asian countries and China should help the Afghan government connect with the international community as soon as possible and consolidate national power. All countries should engage in rational contact and dialogue with the Afghan interim government, enhance political mutual trust, take the lead in the new Afghan government's contacts with all countries and regions of the world, support Afghanistan in combating all forms of terrorist organizations, and ensure that Afghanistan is no longer shrouded in the shadow of terrorism. Create a dialogue platform based on the SCO and a cooperation model with the Belt and Road Initiative as a booster to promote normal exchanges between Afghanistan and other countries. It is also necessary to focus on promoting national reconciliation in Afghanistan, achieving political stability in Afghanistan, and avoiding regional security instability.

China assumes responsibility as a regional power, and as a member of the SCO, China is also actively helping Afghanistan to recover its economy. Since 2018, China has opened a "pine nut route" directly imported from Afghanistan, directly or indirectly generating tens of millions of dollars in revenue for Afghanistan. In August 2021, the situation in Afghanistan changed dramatically, with the United States imposing financial controls on Afghanistan, and nearly 40 million Afghans facing a humanitarian crisis. As a neighbor and friend of Afghanistan, China will continue to help Afghanistan solve its economic difficulties and improve its ability to develop independently. Next, China will further strengthen economic docking relations with Afghanistan, encourage the import of agricultural products with Afghan characteristics to China, and effectively help Afghan

¹ Ministry of Foreign Affairs. (2018). Zhang Hanhui, Assistant Minister of Foreign Affairs, presided over the meeting of the "Shanghai Cooperation Organization-Afghanistan Liaison Group" at the level of deputy foreign ministers. (2018-05-30) [2024-05-20]. https://www.fmprc.gov.cn/wjbxw_673019/201805/t20180530_386548.shtml.

² Xinhuanet. (2021). Joint Statement on Deepening Trilateral Cooperation between China – Afghanistan and Pakistan Tripartite Foreign Ministers Dialogue. (2021-06-04) [2024-05-20]. http://www.xinhuanet.com/2021-06/04/c_1127531442.htm.

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farmers and improve Afghanistan's economic and people's livelihood to a certain extent.¹

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