



Silk Threads of Empowerment: Integrating Sericulture into Vocational Education under National Education Policy 2020

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Abstract

This research paper investigates the prospects and challenges of integrating sericulture, the art and science of silk production, into vocational curricula within the framework of the National Education Policy (NEP) 2020 of India. With a focus on skill development, entrepreneurship, and rural empowerment, the paper explores the relevance, feasibility, and potential impact of incorporating sericulture as a vocational subject. The convergence of NEP's aspirations for skill development and rural empowerment with the rich heritage of sericulture presents a compelling opportunity to reimaging vocational education in India. Drawing from policy analysis and stakeholder perspectives, this study aims to provide insights and recommendations for educational institutions and policymakers seeking to harness the economic and educational potential of sericulture.

Keywords

Development National Education Policy 2020, Rural Empowerment, Sericulture, Vocational Education, Vocational Curricula

Introduction

Vocational education encompasses educational components beyond general education, focusing on the study of technologies, related sciences, and the development of practical skills, attitudes, understanding, and knowledge relevant to various occupations within the economy (UNESCO & ILO, 2002). Okoro (1993) defines vocational education as a form of education whose primary purpose is to prepare persons for employment in recognized occupation. Generally, the term Technical and Vocational Education and Training (TVET) is utilized to describe a broad category that includes formal and non-formal education and training programs conducted in Technical and Vocational institutes (JICA, 2001). Vocational Education and Training (VET), encompassing Vocational Education, Career and Technical Education (CTE), or Technical and



Vocational Education and Training (TVET), is a specialized form of education designed to prepare individuals for specific trades, occupations, or vocations (AICTE, 2022). Rooted in hands-on, practical activities, vocational education equips learners with the skills, knowledge, and attitudes necessary for effective employment, emphasizing the development of expertise in particular techniques or technologies. Historically, vocational education was viewed as a pathway primarily for individuals from lower social classes, leading to the perpetuation of a stigma surrounding these occupations. However, as economies have become more specialized and industries demand highly skilled workers, the importance of vocational education has gained widespread recognition (AICTE, 2022). Oranu (2010) noted various factors that have led to the increasing demand for skills in the job market. These factors encompass technological advancements, changes in organizational structures, international trade, the deregulation of significant industries, and the diminishing influence of labor unions. In response to evolving job markets, governments and businesses have increased investments in vocational education, facilitating the development of tailored training programs and apprenticeship initiatives. These programs not only enhance employability but also contribute significantly to economic growth by meeting the specific demands of diverse industries, fostering innovation, and encouraging entrepreneurship.

For more than a decade, vocational education and training (VET) in India has been of particular interest for different protagonists. Countries and international organisations engaging in foreign aid and economic development have been active in the field, trying to push skill development by different means and initiatives (see e.g., Dar, 2008; World Bank, 2017). Significant investments in formal vocational training and education are deemed essential to address the challenge of imparting skills to a substantial segment of the population (Rao et al., 2014). However, the existing system fails to meet the demands of both employers and students, marked by subpar quality (King, 2012) and substantial quantitative deficiencies (Mitra, 2005). Government of India has initiated various measures to modernize the formal vocational education and training sector, intending to tackle both quantitative and qualitative issues (British Council, 2016). Despite the implementation of a skill development policy in 2009, the overall endeavours have not met the government's ambitious target of increasing the percentage of skilled personnel from 2% in 2007 to 50% in 2022. Consequently, the proportion of population with any form of formal vocational education and training remains below 3 percent (MSDE, 2018). The 12th Five-Year Plan (2012–



2017) underscored the significant disparity, noting that a meager fraction of the Indian workforce in the 19–24 age bracket (less than 5%) was engaged in formal vocational education. In stark contrast, the United States records a rate of 52%, Germany demonstrates a substantial 75%, and South Korea exhibits an exceptionally high 96%. These figures underscore the imperative for an expeditious proliferation of vocational education in India.

Acknowledging the urgency of addressing the shortage of skilled workers, the Indian government has proactively pursued solutions. Introduction of National Education Policy (NEP) in 2020 stands as a pivotal moment in India's efforts to transform its education landscape placing a strong emphasis on vocational education. In the NEP 2020, vocational education refers to a crucial component of the educational framework that focuses on equipping students with practical skills and knowledge relevant to specific trades, crafts, or professions. NEP 2020 emphasizes the integration of vocational education from the early stages of schooling, enabling students to develop expertise in various fields alongside academic learning. National Education Policy embraces the Education 2030 Agenda and commits to expanding vocational education considerably across India starting from Grade 6 onwards to enable students to acquire necessary skills for further education and training. This integration of vocational education programmes into mainstream education in all educational institutions would ensure that every student learns at least one vocation and is exposed to several more including those involving Indian arts and artisanship constituting an important pillar of 'Lok Vidya'. This approach aims to prepare students for the workforce by offering hands-on training, fostering creativity, problem-solving abilities, and entrepreneurial skills. NEP 2020 advocates for a holistic approach to education, where vocational courses are designed to enhance employability, encourage self-employment, and contribute to the overall socio-economic development of individuals and the nation.

Against the backdrop of NEP's vision, this research paper embarks on a journey to explore the integration of sericulture, the practice of silk production, into vocational curricula. The convergence of NEP's aspirations for skill development and rural empowerment with the rich heritage of sericulture presents a compelling opportunity to reimaging vocational education in India. The study aims to explore the possibility of integrating sericulture as a vocational subject, evaluating its potential impact on skill development, entrepreneurship, and rural empowerment. Additionally, the research seeks to identify challenges and opportunities associated with the implementation of sericulture education. It aims to analyze various stakeholder perspectives to



gain a comprehensive understanding of the subject's feasibility and potential implications. Through these objectives, the study endeavours to provide valuable insights into the practicality and benefits of incorporating sericulture into vocational education, addressing both its advantages and challenges in skill development and rural empowerment initiatives.

This research draws upon a comprehensive two-year fieldwork experience undertaken during my role as a researcher for MPhil research project titled "Politics of Knowledge in Development: A Study of Sericulture in Jammu and Kashmir." During this extensive research endeavor, I engaged in in-depth interviews with diverse stakeholders, including officials, silkworm rearers, traders, reelers, and weavers. Furthermore, I conducted on-site visits to silkworm rearing sites, reeling units, and local markets, employing observational methods to meticulously scrutinize the field and collect vital data for the study. In addition to this extensive fieldwork, my methodology benefits from a year-long engagement as a teacher, where I closely collaborated with fellow educators and students. Through numerous semi-structured face to face and telephonic interviews with various stakeholders and non-participant observation on the field, I gained insights into the intricacies of the sericulture, curriculum design (as a teacher) and potential of sericulture education within NEP 2020.

The paper is structured to unfold various dimensions of this integration, starting with an exploration of the background and context that led to the consideration of sericulture as a valuable component of vocational education under NEP 2020. The historical significance and economic relevance of integrating sericulture into vocational education are then examined, providing a foundational understanding of its potential impact. As we navigate through the intricacies, we address the opportunities and challenges associated with positioning sericulture as a key focus in vocational education. Delving into the practical aspects, we evaluate the feasibility of incorporating sericulture as a dedicated vocational subject, considering the pedagogical and logistical aspects. The subsequent section of the paper is dedicated to the intricacies of curriculum design for sericulture courses, emphasizing the need for a comprehensive and relevant educational framework. The research culminates in a set of policy recommendations aimed at seamlessly integrating sericulture into vocational curricula, with a particular emphasis on collaborative avenues with the Central Silk Board (CSB). Through this structured exploration, the paper aims to provide valuable insights into the potential benefits, challenges, and policy



considerations surrounding the incorporation of sericulture into vocational education, ultimately concluding with a synthesis of key findings and recommendations for future implementation.

National Education Policy 2020: *Background and Context*

Education serves as the linchpin of India's progress and development. Reforming the educational landscape is pivotal to the nation's advancement. The NEP 2020 envisions a comprehensive restructuring of the educational system, spanning regulatory reforms, alterations in governance mechanisms, pedagogical innovations, and shifts in assessment practices. The policy also underscores the significance of flexibility and the promotion of multilingualism, thereby fostering a more inclusive and adaptable educational framework. This structural overhaul is meticulously designed to realign the education system with the demands of the 21st century, where adaptability, innovation, and critical thinking hold paramount significance. The National Education Policy (NEP) of India, unveiled in 2020, signifies a pivotal moment in the context of Indian education, driven by the exigency to address evolving developmental imperatives. The goal of the NEP 2020 is to position the Indian education system among the world's foremost by the year 2040. This ambitious vision is predicated on the ideal of affording equitable access to high-quality education to all students, irrespective of their socio-economic backgrounds. The NEP is characterized by an aspiration to dismantle traditional barriers and pave the way for an inclusive, holistic, and multidisciplinary education paradigm. The historical backdrop against which the NEP 2020 is framed encompasses the shifting socio-economic dynamics of the nation, the burgeoning demands of globalization, and the exigency to harmonize education with the exigencies and opportunities of the 21st century. India's post-independence trajectory has witnessed the evolution of successive education policies, with the NEP building upon and refining the foundations established by the policies of 1968 and 1986. These policies have collectively played a pivotal role in shaping the course of education in India, and the NEP 2020 stands as the most recent benchmark in this continuum. The impetus underpinning the implementation of the NEP emanates from a constellation of developmental imperatives that India confronts. These include the imperative to modernize an archaic and rigid education system, ameliorate the rural-urban divide, rectify disparities in access to quality education, and cultivate creativity, critical thinking, and problem-solving capabilities. At its nucleus, the NEP 2020 accentuates its focus on the holistic development of learners. It recognizes that education transcends the mere acquisition of cognitive capacities and extends to the cultivation of social,



ethical, and emotional dimensions. The policy underscores the importance of nurturing creativity, critical thinking, and problem-solving skills, inculcating a lifelong ardour for learning. Furthermore, the NEP places educators at the vanguard of reforms, aiming to empower and elevate their stature in society. The vision delineated is deeply rooted in India's cultural and intellectual heritage. It endeavours to draw inspiration from the nation's ancient traditions of knowledge and wisdom while adapting to the exigencies of the contemporary world. It envisages a future wherein India's educational framework nurtures well-rounded individuals endowed with the ability to navigate the intricacies of the 21st century, contribute to the global knowledge ecosystem, and safeguard the nation's cultural and philosophical legacy. This policy marks a substantial departure from conventional educational paradigms. Rooted in the philosophy of "learning for life," it endeavours to nurture well-rounded individuals equipped with the skills and knowledge needed to navigate the complexities of the 21st century. Central to NEP's ethos is the recognition of education not merely as an end in itself but as a means to empower individuals, foster critical thinking, and address the evolving needs of society. Within the NEP framework, vocational education takes centre stage as a key factor for employability, entrepreneurship, and sustainable livelihoods. It envisions a system that transcends rote memorization and embraces practical, hands-on learning that is directly relevant to the job market. In doing so, NEP aims to bridge the gap between academic knowledge and real-world application, unlocking new pathways to economic self-sufficiency and societal growth. The imperative of vocational education and skill development within NEP cannot be overstated. With an emphasis on nurturing "job creators" rather than just "job seekers," NEP seeks to equip learners with both employability skills and the ability to create their economic opportunities. It calls for a harmonious integration of academic and vocational streams, acknowledging that vocational education is not just an alternative but an essential component of a well-rounded education. This shift toward vocational education is in sync with the global discourse on the importance of skills. NEP's emphasis on skill development aligns with the United Nation's Sustainable Development Goal 4, which underscores the significance of quality education that prepares learners for life, work, and responsible citizenship.



Integrating Sericulture: Historical Significance and Economic Relevance in Vocational Education under NEP 2020

Sericulture is deeply rooted in India's cultural heritage and rural economy, presents a compelling case for integration into vocational curricula. The art and science of silk production offer a unique intersection of tradition and innovation, where learners can acquire practical skills while preserving an age-old craft. It aligns with NEP's vision by fostering entrepreneurship, rural empowerment, and sustainable economic growth. This integration taps into the economic potential of sericulture, with silk being a valuable commodity, while also addressing the NEP's call for localized vocational offerings relevant to local industries. Furthermore, sericulture provides an opportunity to nurture both traditional craftsmanship and modern practices, thereby offering a holistic educational experience.

Sericulture is the practice of production of silk. This process involves the cultivation of mulberry leaves, the primary food source for silkworms in case of mulberry silk, the feeding and nurturing of silkworm larvae, the collection of their cocoons, and the extraction of silk fibres from these cocoons. The silk fibres obtained are then processed and woven into various silk-based products, such as textiles, fabrics, and other valuable items (FAO, 1988). It is an age-old practice, and it has a very long and fascinating history. It is the meeting place for agriculture and art, with art in the hands of rural people, art and industry, ancient culture and civilization, the rich and the poor, reflecting this interdependence (Rangaswami et al, 1988). It occupies an important place in the cultural and economic tapestry of India. Silk's origin has long been a subject of scholarly debate. Ron Cherry asserts that silk production began in China around 2700 BC (Cherry, 1987). However, more recent archaeological findings challenge this timeline, pushing the inception of silk even further back, potentially over seven thousand years ago (Rangaswami et al., 1988). The exact location of silk's origin remains unclear and contentious. Ishrat Alam, in his analysis of historical texts such as Arthashastra, Harshacharita, Inscription of Kumargupta, and Amarkosa, reveals a diversity of opinions among scholars. Some, like NG Mookerji and DC Sarkar, argue that silk originated in the unidentified Himalayan slopes, while others advocate for China as its place of origin (Alam, 1999). The association of silk with China is deeply ingrained in historical accounts. The chronicles of China's Chou ruler, dating to around 2200 BC, offer credible mentions of silk (FAO, 1988). This evidence has contributed to the prevailing belief that silk indeed originated in China and subsequently disseminated globally. The history of India's silk



industry is a tapestry of rich and diverse narratives spanning centuries. While it is widely acknowledged that silk was introduced to India via Tibet, ancient Sanskrit texts such as the Arthashastra and Amarkosa provide substantiation of this historical connection (Singh, 2010). Nevertheless, there have been persistent claims asserting India as the possible birthplace of silk, prompting recent endeavours to establish this notion (Rani, 2006). The reference of sericulture in many ancient texts of India validates that the Indian silk industry is quite ancient and dates back around the second century BC (FAO, 1988). Silk occupied a significant cultural and commercial role even in pre-Vedic times, with records of its export to Rome during Kanishka's reign in 58 BC (Okhandiar, 2019). The Arthashastra further shed light on regions within India renowned for silk production, challenging the antiquity of silk cultivation in the subcontinent (Ganga & Chetty, 1986). Over time, the sericulture industry enjoyed patronage from various monarchs and rulers, including the British colonial administration, which sought to modernize and capitalize on this economically promising sector (Ganga & Chetty, 1986). This intricate historical backdrop underscores the enduring importance of sericulture in India's cultural, economic, and commercial fabric.

Beyond its historical allure, sericulture plays a pivotal role in contemporary India's rural and national economy. India stands as one of the world's largest producers of silk, contributing significantly to both domestic consumption and global trade (Okhandiar, 2019). The economic significance of sericulture extends far beyond the silk threads themselves, encompassing various stages of production, from mulberry cultivation to cocoon harvesting and silk weaving. Rural communities, particularly in traditional silk producing states like Karnataka, Andhra Pradesh, Tamil Nadu, West Bengal and Jammu and Kashmir, have embraced sericulture as a lifeline, generating livelihoods for millions of families. According to the Central Silk Board, the Indian silk industry, from farm to fabric, employs around 8.5 million people. In the broader context, sericulture provides diversification opportunities for rural economies, mitigating risks associated with monoculture agriculture. The sericulture sector stimulates employment in both upstream and downstream activities, encompassing mulberry plantation workers, cocoon farmers, reelers, weavers, and traders. The silk industry also thrives on innovation, with technological advancements enhancing cocoon quality, silk production efficiency, and fabric design. However, the sericulture sector is not without its share of challenges and opportunities. While India is a silk-producing powerhouse, it faces stiff competition from other silk-producing countries in



Asia. According to the International Sericulture commission, India's share of the world's silk production is just 13%, while China's is approximately 80%. The Indian silk industry grapples with many issues such as fluctuating silk prices, pest infestations, and outdated practices. Quality control, sericulture extension services, and market access also pose challenges for silk producers. Nevertheless, these challenges offer fertile ground for innovation, research, and modernization efforts that can align sericulture with the goals of the NEP 2020.

As India seeks to capitalize on the economic potential of sericulture, the sector presents opportunities for rural empowerment, entrepreneurship, and skill development, which resonate with NEP's vision. Sericulture can empower rural communities by offering sustainable livelihoods and income diversification. It fosters entrepreneurship, with opportunities for individuals to engage in silk production, weaving, and silk-related enterprises. Moreover, the intricate art of sericulture encompasses a multitude of skills, from mulberry cultivation to cocoon handling and silk processing, aligning with NEP's emphasis on skill development and vocational education. By examining sericulture's historical legacy, economic contributions, and the nuanced intricacies of the sector, we gain a holistic understanding of why sericulture stands as a promising entrant.

The New Education Policy (NEP) 2020 seeks to create pathways for individuals to acquire not just theoretical knowledge but also hands-on expertise, aligning education with the demands of the contemporary world of work. This approach recognizes that vocational education is not a mere alternative to mainstream academic pursuits but a complementary avenue that empowers learners with diverse skills and capabilities. NEP's vision of holistic education finds a natural ally in the integration of sericulture into vocational curricula. Sericulture embodies a holistic approach to learning by bridging the gap between theoretical knowledge and practical application. It aligns with NEP's call for experiential learning and a curriculum that prepares learners not just for jobs but for life. Sericulture encompasses a spectrum of skills, from scientific practices in mulberry cultivation to the artistic intricacies of silk weaving. These skills resonate with NEP's objectives of nurturing well-rounded individuals capable of critical thinking, problem-solving, and innovation. Moreover, the integration of sericulture into vocational curricula reflects NEP's emphasis on localized and regionally relevant education. By incorporating sericulture, educational institutions can tailor their offerings to cater to the unique economic and cultural contexts of their regions. This aligns with NEP's recognition that



education should be sensitive to the aspirations and needs of local communities. Sericulture is deeply ingrained in the cultural and economic fabric of several Indian states, making it an ideal candidate for localized vocational education that can enhance employability and contribute to the sustainable development of rural areas. In essence, the confluence of NEP 2020's vision for vocational education and the inclusion of sericulture into vocational curricula represent a synergistic opportunity. It is a step towards realizing NEP's objectives of skill development, employability enhancement, and holistic education. By embracing sericulture as a vocational subject, educational institutions can empower learners with practical skills, rural communities with sustainable livelihoods, and the nation with a workforce prepared for the challenges and opportunities of the 21st century. In the subsequent sections of this paper, we delve deeper into the feasibility, challenges, and implications associated with the incorporation of sericulture into vocational curricula, aligning with the National Education Policy (NEP).

Sericulture as a Key: Opportunities and Challenges

Sericulture unfolds a multitude of opportunities, and this section critically examines and elucidates these potential avenues, providing valuable insights for educational institutions and policymakers to consider. In the context of skill development and entrepreneurship, as discussed earlier, sericulture emerges as a versatile domain where a range of skills converges. These skills span scientific expertise in mulberry cultivation and silkworm rearing, extending to the artistic finesse required in silk weaving and dyeing. As vocational subjects, sericulture courses uniquely offer learners the chance to acquire practical, job-ready skills while immersing themselves in the rich tradition of silk production. Through hands-on training, students gain expertise and develop problem-solving abilities, adaptability, and attention to detail, fostering a workforce equipped for innovation and entrepreneurship across sectors. Beyond the classroom, sericulture vocational training has profound impacts on rural communities, deeply embedded in the social and economic fabric of sericulture. By empowering rural communities with a sustainable livelihood option, students become skilled sericulturists, contributing to local economic development and reducing rural-urban migration. The infusion of sericulture expertise revitalizes traditional silk-producing areas, augmenting rural income and addressing regional disparities. The integration of sericulture into vocational curricula also presents economic and social empowerment opportunities, aligning with the goals of NEP 2020. From an economic standpoint, sericulture offers learners a pathway to self-reliance, enabling engagement in entrepreneurial ventures such



as sericulture farms or silk-based industries. The resulting economic empowerment extends beyond individual success, catalyzing community development and breaking traditional gender barriers. Women, often central to sericulture activities, emerge not only as active contributors to household income but also as leaders in their communities. Sericulture vocational training programs foster gender equality by providing women with opportunities to enhance their skills, self-esteem, and socio-economic status. This transformation has a profound impact on the social fabric, leading to more equitable and inclusive communities. In this context, sericulture becomes a catalyst for both individual growth and societal progress, mirroring the holistic aspirations of NEP 2020. However, the integration of sericulture into vocational curricula is not without challenges and barriers. The intricate nature of sericulture demands specialized knowledge and resources, posing challenges in identifying educators with expertise and ensuring access to state-of-the-art infrastructure. Infrastructure, training, and resource constraints present substantial barriers, requiring investments in facilities, equipment, teacher training, and capacity building. Additionally, addressing societal and cultural perceptions of sericulture as a traditional, labor-intensive occupation is crucial. Overcoming these challenges necessitates a collaborative approach involving government support, industry partnerships, and innovative pedagogical strategies. By addressing these obstacles, educational institutions and policymakers can unlock sericulture's potential as a tool for skill development, entrepreneurship, and rural empowerment in alignment with the vision of NEP 2020.

Feasibility of Incorporating Sericulture as a Vocational Subject

The integration of sericulture into vocational curricula transcends mere theory; it stands as a tangible pathway aligning with the holistic vision of the New Education Policy (NEP) 2020. To embark on this transformative journey, exploring the pragmatic aspects of integrating sericulture into vocational education is imperative. The feasibility of introducing sericulture as a vocational subject necessitates a meticulous examination of critical factors. The initial step in assessing feasibility involves a comprehensive evaluation of existing infrastructure and resources within educational institutions. This encompasses a spectrum of factors, including the availability of suitable land and facilities for sericulture activities. Essential components such as ample space for mulberry cultivation, silkworm rearing and post-cocoon processing units are crucial. Additionally, evaluating the accessibility of mulberry plantations, the primary resource for silk



production, is paramount. Ensuring educational institutions possess the requisite physical infrastructure forms the bedrock for the success of sericulture programs. A pivotal consideration in the feasibility analysis is the availability of trained instructors and technical experts proficient in sericulture. The quality of vocational training programs hinges significantly on the expertise of the teaching staff. Given the specialized knowledge integral to sericulture, having instructors well-versed in its intricacies is crucial. A comprehensive feasibility study must confirm whether educational institutions can access or provide the necessary training expertise, ensuring comprehensive sericulture education. Another critical aspect of feasibility revolves around the economic viability of sericulture as a vocational subject. This entails a thorough assessment of the potential for income generation through silk production and trade. Learners, enticed by tangible economic incentives, often seek viable opportunities. Consequently, conducting a rigorous economic analysis becomes imperative to determine if sericulture can offer lucrative income prospects. This economic aspect serves as a compelling motivator for students contemplating sericulture as a promising career path. Additionally, evaluating the market dynamics of silk and its related products is vital. The feasibility analysis delves into the demand for silk products regionally and beyond, scrutinizing market trends, consumer preferences, and potential marketing avenues for silk products. A robust silk market significantly enhances the attractiveness of sericulture as a vocational subject. Furthermore, exploring collaborative initiatives with the sericulture industry is instrumental. Partnering with industry stakeholders provides educational institutions with invaluable insights, resources, and support, bridging the chasm between academia and practical application. This collaborative synergy enhances the feasibility of sericulture education, fostering a mutually beneficial relationship between academia and industry. By meticulously assessing these factors, educational institutions can make well-informed decisions regarding the integration of sericulture into their vocational curricula. This ensures that students gain access to a valuable and sustainable vocational education pathway, aligning seamlessly with the vision set forth by the NEP 2020.

Curriculum Design Considerations for Sericulture Courses

Effectively integrating sericulture into vocational education relies on meticulous curriculum design, demanding a comprehensive approach to address critical aspects. A well-rounded sericulture education necessitates striking a harmonious balance between theoretical knowledge



and practical application, covering the entire silk production cycle—from mulberry cultivation to post-cocoon processes such as reeling, weaving, and dyeing.

To assess the viability of integrating sericulture into vocational curricula, understanding the perspectives of key stakeholders—educators, students, and sericulture industry experts—is fundamental. Educators, being the driving force behind curriculum development and implementation, provide valuable insights into pedagogical aspects, design considerations, and potential challenges. Informal discussions with educators reveal a generally positive outlook, with many recognizing sericulture's potential to enhance skill development and entrepreneurship among students. However, concerns about resource constraints and the need for specialized teacher training are expressed. Students, as beneficiaries of vocational education, offer unique perspectives on the relevance and acceptability of sericulture courses. Their views are predominantly optimistic, with many acknowledging the practical skills and economic prospects sericulture offers. While informal conversations with students indicate a growing interest in sericulture as a vocational subject, they stress the importance of up-to-date training and exposure to modern sericulture practices. Industry experts, possessing a profound understanding of the sector, contribute critical insights into aligning vocational education with industry needs. Conversations with them highlight the demand for skilled sericulturists and the positive impact of vocational education in bridging the skills gap. Emphasizing the need for curriculum flexibility and market-oriented training, these experts provide essential perspectives. These insights into the acceptance and effectiveness of sericulture in vocational education are pivotal considerations. Stakeholder perspectives collectively underscore the potential of sericulture as a valuable vocational subject, capable of enhancing skill development, promoting entrepreneurship, and empowering rural communities. However, addressing challenges such as resource constraints, teacher training, and curriculum design is imperative to fully realize sericulture's potential in vocational education.

While designing the curriculum, several key aspects need to be considered. Beyond technical aspects, the curriculum must foster a holistic understanding of sericulture, transcending mere technical knowledge. It should nurture an appreciation for the artistic, cultural, and sustainable dimensions of silk craftsmanship, instilling in students a profound respect for the rich heritage and traditions associated with silk production. In today's context, sustainability is paramount. Infusing the curriculum with modules highlighting eco-friendly practices, such as



environmentally conscious mulberry cultivation and responsible reeling, weaving, and dyeing techniques, is essential. This integration aligns with global ecological priorities and equips learners with skills for environmentally responsible practices. Additionally, an entrepreneurial perspective should be seamlessly woven into the fabric of the curriculum. Modules delving into the business aspects of sericulture, encompassing marketing, financial management, and the establishment of silk-related enterprises, empower students with valuable knowledge. Graduates not only become skilled sericulturists but also possess the confidence to embark on entrepreneurial ventures within the silk industry. Hands-on experience forms a vital component of sericulture education. Practical training in sericulture farms or facilities allows students to apply acquired knowledge in real-world settings, enhancing their skills and preparing them for industry challenges. Encouraging a culture of research and innovation becomes integral, exposing students to the latest advancements and inspiring research projects and innovative techniques. This dynamic approach ensures graduates are well-prepared to adapt to evolving industry trends. In essence, an effective sericulture curriculum seamlessly combines theoretical and practical knowledge, fostering a profound understanding of sericulture while nurturing entrepreneurial skills. Such a curriculum equips students with the expertise and mindset required to excel in the field, contributing significantly to the sustainable growth of the silk industry. The integration of sericulture into vocational curricula extends beyond theoretical endeavors; it aligns pragmatically with the transformative vision of NEP 2020. The groundwork laid by the feasibility analysis ensures the presence of essential resources and expertise, setting the stage for a meaningful educational journey. In the forthcoming sections of this paper, we explore opportunities and practical challenges emerging on the path to integrating sericulture into vocational education.

Policy Recommendations for Integrating Sericulture into Vocational Curricula

Drawing upon the comprehensive analysis presented in this paper, a set of imperative policy recommendations emerges for the effective integration of sericulture into vocational curricula. In light of the insights discussed herein, policymakers can consider the following key recommendations:

- ✚ **Curriculum Flexibility:** Develop flexible curriculum frameworks that allow educational institutions to adapt sericulture courses to their regional context and industry demands.

This will ensure that sericulture education remains relevant and responsive to changing



needs. Collaboration with Central Silk Board and sericulture industry representatives of educational experts can help to design a robust and up-to-date curriculum. This curriculum should encompass theoretical knowledge and practical skills, covering mulberry cultivation, silkworm rearing, cocoon harvesting, and post-cocoon processes like reeling, weaving, and dyeing.

- ✚ **Resource Materials:** Develop and disseminate comprehensive resource materials, including textbooks, instructional guides, and multimedia content, to support educators in delivering effective sericulture courses.
 - ✚ **Resource Allocation:** Allocate resources for the establishment and maintenance of sericulture infrastructure within educational institutions. This includes mulberry plantations, rearing centre, reeling and weaving units.
 - ✚ **Teacher Training:** Invest in specialized training programs for educators to equip them with the necessary knowledge and skills to deliver high-quality sericulture education. Collaboration with sericulture experts and institutions can facilitate this process. Conduct regular workshops and training sessions for educators to enhance their understanding of sericulture techniques, modern practices, and pedagogical approaches. Facilitate industry-academic interactions to expose teachers to real-world sericulture scenarios. Industry experts can provide valuable insights into the latest trends and demands.
 - ✚ **Market Linkages:** Foster collaborations between educational institutions and the sericulture industry to establish market linkages for students. Practical exposure to industry practices and market dynamics is crucial for vocational education.
 - ✚ **Industry Collaboration:** Foster partnerships between educational institutions and sericulture industry stakeholders. Encourage students to engage in internships and practical training within the sericulture sector, facilitating a seamless transition into the workforce.
 - ✚ **Entrepreneurship Focus:** Incorporate entrepreneurship modules into the curriculum to nurture student's business acumen. Encourage them to explore sericulture-related entrepreneurial ventures, such as silk production and value-added silk product manufacturing.
 - ✚ **Standardized Certification:** Develop a standardized certification system for sericulture courses to ensure quality and recognition across educational institutions. This will
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facilitate student's transition into the job market and higher education. Skill Development Programs: Integrate sericulture skill development programs with existing government schemes for vocational education and rural development. This synergy enhances the impact of such initiatives.

- ✚ **Research and Development:** Allocate funds for research and development in sericulture, encouraging innovation and sustainability in the sector. Promote student involvement in research projects to enhance their problem-solving and critical-thinking skills.
- ✚ **Government Support:** Collaborate with government agencies to align sericulture education with national policies and initiatives. Seek financial support for infrastructure development, research projects, and scholarships to incentivize student participation.
- ✚ **Monitoring and Evaluation:** Implement a robust monitoring and evaluation system to assess the effectiveness of sericulture education. Regularly review and update the curriculum based on industry trends and student outcomes.
- ✚ **Awareness Campaigns:** Conduct awareness campaigns to inform students, parents, and communities about the benefits of sericulture education. Highlight the potential career opportunities and economic benefits associated with the sericulture industry.
- ✚ **Incentives for Institutions and Students:** Provide financial incentives and grants to educational institutions that offer sericulture courses. This encourages institutions to invest in infrastructure and teacher training. Provide scholarships, grants, and incentives to students pursuing sericulture courses to attract talent and promote inclusivity, especially among marginalized and economically disadvantaged groups.

These policy recommendations, rooted in the insights and analysis presented in this paper, offer a strategic roadmap for educational institutions and policymakers to embrace sericulture as a valuable vocational subject within the National Education Policy framework.

Collaborative Avenues with the Central Silk Board (CSB)

In the context of advocating for the inclusion of sericulture as a vocational subject within the framework of the National Education Policy (NEP), it's essential to highlight the capacity-building and training initiatives of the Central Silk Board (CSB). Central Silk Board (CSB) is a statutory body established in 1948. It is working under the administrative control of Ministry of Textiles, Government of India. The Central Silk Board (CSB) is dedicated to advancing the sericulture sector. It offers a range of structured courses and training programs designed to



empower individuals with the knowledge and skills needed to excel in the sericulture sector. These programs include the Post Graduate Diploma in Sericulture (PGDS), Intensive Training in Sericulture (ITS), Entrepreneurship Development Programmes, and various short-term (1-2 weeks) skill and competence enhancement training courses. These training initiatives are strategically conducted in collaboration with various Research and Development (R&D) institutes of the CSB and their affiliated field units located across different regions of the country. These programs specifically focus on enhancing expertise in various silk sub-sectors, including Mulberry, Tasar, Eri, and Muga. Additionally, the Capacity Building & Training (CBT) division of the CSB, based in Bangalore, also conducts these training programs (Central Silk Board, 2022).

These capacity-building and training efforts align with the broader objective of integrating sericulture into vocational education. By providing individuals with access to structured training programs and skill development opportunities in sericulture, the CSB contributes significantly to the readiness of learners to engage in sericulture-related vocational activities, thereby fostering economic empowerment and industry growth.

An essential point to emphasize is the potential synergy that can be realized through collaboration between educational institutions, sericulture education, and the Central Silk Board (CSB). This collaboration holds the promise of bridging the gap between theoretical learning and real-world application, aligning educational curricula with the evolving demands of the sericulture sector. By fostering strong linkages, educational institutions can benefit from the CSB's expertise, resources, and market insights. Moreover, such collaborations facilitate a feedback loop, ensuring that vocational courses remain relevant and responsive to industry trends. The CSB can provide guidance on the latest sericulture practices, technological advancements, and market dynamics, enriching the educational experience for students. This linkage not only enhances the quality of sericulture education but also strengthens the employability of graduates, making them well-prepared for industry-specific roles. Incorporating this collaborative dimension into stakeholder perspectives underscores the potential for fruitful partnerships that can drive the successful integration of sericulture into vocational curricula. It aligns educational objectives with industry needs, ultimately benefiting students, rural communities, and the sericulture sector at large.



Conclusion

The integration of sericulture into vocational curricula within the framework of NEP 2020 presents a promising avenue. It signifies a transformative opportunity for India's education system, rural empowerment, and economic development. The holistic analysis presented in this paper highlights the historical significance of sericulture, its economic contributions, and educational implications. The diverse perspectives of educators, students, and sericulture experts have illuminated both the challenges and opportunities that lie ahead. Additionally, policy recommendations aimed at curriculum development, capacity building, and alignment with government initiatives offer a roadmap for effective implementation. The educational landscape in India stands to benefit greatly from the inclusion of sericulture as a vocational subject. Not only does it align with the country's rich tradition and knowledge systems, but it also addresses contemporary imperatives for skill development and entrepreneurship. The stakeholder perspectives gleaned from educators, students, and sericulture industry experts collectively affirm the potential and effectiveness of sericulture in vocational education. The analysis in this paper shows the role of sericulture in skill development, entrepreneurship, and rural empowerment, aligning seamlessly with the goals of NEP 2020. As India aspires to have an education system second to none by 2040, the incorporation of sericulture represents a step toward equitable access to high-quality education for all, regardless of background. It is imperative that the policymakers, educators, and institutions recognize the transformative potential of sericulture in vocational education and take concrete steps to realize this vision. Through strategic integration and thoughtful implementation, sericulture can contribute significantly to shaping a skilled, knowledgeable, and sustainable future for India's learners.

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