

# 1. Indian Knowledge Systems and the 64Kalas view for Sustainable Skill Ecosystems: A Policy Analysis and Statistical Assessment of NSQF-NCrF Alignment with Outcome-Based Education

Mr. Ramachandra N.U.<sup>1</sup>, Dr. Geeta Madhusudan<sup>2</sup>, Dr. Natesha L<sup>3</sup>

1. Assistant Professor, Dept. of Languages – Sanskrit Area, JAIN(Deemed-to-be University)

2. Professor, Dept. of Languages – Sanskrit Area, JAIN(Deemed-to-be University)

3. Associate Professor, Dept. of Languages – Sanskrit Area, JAIN(Deemed-to-be University)

## Abstract

The changed Indian education and skills development game plan (led by the National Education Policy [NEP] 2020) calls for an overall shift from input-oriented, certification models to real, outcome-centred mastery. The paper structures a theoretical and empirical linkage between the traditional wisdom of the indigenous Indian Knowledge System (IKS), particularly the holistic skill taxonomy namely 64 Kalas (Chatushasti Kalā) with contemporary national policy instruments: The National Skills Qualifications Framework (NSQF) & The National Credit Framework (NCrF). A policy gradient analysis, empirically supported by an analysis of descriptive statistics, exposes the prevailing certification bias in current vocational training through a statistical confirmation of declining course durations, along with a persistently high 44.5% youth unemployment rate among Indian graduates between ages 20 and 24 years. The results indicate that the required qualitative correction is made by threading the mastery-orientation implied in Indian Aesthetics (Rasa –Pratibh) through a trans-disciplinary matrix of 64 Kalas. The NCrF is the central institutional nodal point of access that whether it be offered through creditization modes or RPL, reflects a formal mapping between these new skills for the burgeoning non-formal workforce (which 11.6% inherit skills). Suggestions include curriculum normalisation, the creation of applicable teacher capacity and robust RPL also ensure that there is an industry-academia rift as well as the building of); the boundaries across these, and nothing could have been better than going in for an implementation, that will assist in bringing in the divide as well as the fortification of sustainable and equitable social order that is in line with the global SDGs.

**Keywords:** IKS, NEP, Skill Education, NCrF, Chashushasti Kala, SDGs

---

## 1. Introduction

### 1.1 International Obligations and Demographic Opportunity in India

India is in a most peculiar phase of its historic journey along with the world as we have the largest young demographic of the planet sharing this decade. To cash in on this demographic dividend we need to do radical things to ensure quality education is universally available, careers are sustainable. And this change is the handiwork of the National Education Policy (NEP) 2020, whose ambition is to re-engineer the entire clan right from village level in such a way that lifelong learning experience is facilitated and broadcast to all, dovetailing with Sustainable Development Goal 4 of 2030 Agenda for Sustainable Development.

The technological disruptions have resulted in growing demand for a skilled and multidisciplinary workforce which cannot be classified into the traditional dichotomy between sciences, social

sciences, and humanities. Indian IT industry will face a dramatic demand-supply crunch of 60% when it comes to digital skills by 2025. This background explains why the shortcomings and failures of a theoretical, certification-driven education have to give way to an educational approach based on practical skills, creativity and problem solving mentality.

## **1.2 The philosophical background of skill in the Indian Aesthetics**

The alternative episteme endemic to the Indian tradition make a distinctive contribution to thinking about skill disciplined and possibility-oriented education, which differs fundamentally from its Western didactic nature. In Indian aesthetic theory on the other, in texts such as the *Natyashastra* a very broad sense is taken of what mastery involves. In this tradition, *pratibha* (genius or natural ability) and *Rasa* (aesthetic experience), the extremes of this paradigmatic result are emphasized. Accomplishing *Rasa* requires more than mere intellectual grasp, but severe discipline and actual application of a particular kind of spiritual transcendence to the life of the artist.

This approach to teaching is inherently results-oriented. Education in ancient India, as rooted in Vedas and Upanishads, was never confined to the philosophy. In addition of philosophical doctrines, it also included physical skills and theoretical knowledge elements such as grammar, medicine, politics, literature and architectural sciences. The crucial point is that ancient education included a system of continuous follow-up in which the student's previous teaching (at any one time) was "redeemed" by the teacher to have its worthwhile practical implications and corresponding skill actually realized after formal instruction was over and also genuinely learned. This lineage endows the NEP 2020 with solid philosophical justification to go beyond certificate-giving by focusing on measuring outputs in terms of competency and imbibed value systems.

## **1.3 Chatushasti Kalā (64 Kala) -as a Pre-Metric Competency in the context of Holistic Competency Models**

The 64 Arts or *Chatushashthi Kala* are listed in India as the fully developed form of several arts/sciences. And, a conventional knowledge of them, as found in the Classics – *Shukra Niti* (Economics/Governance)/Sense was an essential need for cultured productive and economically useful life!

It is undeniably interdisciplinary range of the 64 Kalas if we can put down fine arts like *Gīta vidyā* (Singing) and *Nṛtya vidyā* (Dancing), as well as the applied vocational, definitely technical skills such as *Maṇi-bhūmikā-karma* (Art of crafting jewel setting), *Sūci-vāya-karma* (Needlework and weaving), *Viśeṣaka-cchēdyā vidyā* (Body decoration/design) so on. The entity of this historical, developed taxonomy of order serves as evidence that IKS which inter-dependently weaved together the aesthetic, ethical and profession in a pedagogically counted pattern has long been a palimpsest inscribing such integrated competencies now demanded by prevailing policy contexts.

## **1.4 Policy Convergence: NEP 2020, Vocationalization and The IKS Mandate**

As a policy framework, the NEP 2020 explicitly mentions about the infinite treasure of ancient and eternal Indian knowledge and thought. The Policy mandates that the 'lessons learnt' from IKS (as enshrined in its 14 classical *Vidyas* and 64 modern *Kalās*) suffuse the modern educational system of India, thereby fostering innovation, sustainability and ethical leadership.

It seems that new policy frameworks are encouraging this convergence. The NSQF includes the credit based, nationally referenced outcomes linked framework which arranges qualifications at different levels for a clear demarcation of levels and seamlessly moves them across these levels horizontally as well as vertically through general education -vocational education. Further, dividing line between academic and field/field work /test was done away with in the National Credit Framework (NCrF) that have included creditization of learning outcomes through curricular/Curricular/co-curricular/extracurricular activities i.e., arising from physical labour/traditional work/heritage work/performing arts etc. It is this confluence that empowers the institutional vehicle to identify and unlock its wealth potential in perception of 64 Kalas.

### **1.5 The proposed study aims:**

- Discuss the philosophical harmony between Indian Aesthetics (Rasa-Pratibh) and aim of objectivity in outcome based education under NEP 2020.
- Develop a concept paper to integrate 64 Kala in NSQF/NCrF grid for better skill harmonisation.
- Present a statistical evidence of the current industry-academia skill gap and Certifications v/s Real skill persistency.
- Propose evidence-based policy and pedagogic pronouncements for IKS to practice integration within a sustainable skill-based social dispensation

---

## **2. Methodology**

### **2.1 Research Design: Secondary Data Synthesis and Critical Policy Analysis**

The research design is a qualitative, descriptive and critical analytical one while data synthesis is based on secondary sources only. This approach is likely to be useful in homogenising higher philosophical principles (IKS, Aesthetics) and operational specifications as the blueprint for both national policy implementation and measurement challenges (NEP, NSQF, NCrF). This is achieved through a three-phased methodology including

- Hermeneutic interpretation of IKS source texts (through secondary literature) to specify mastery and competency,
- Critical policy analysis for evaluating functional alignment of NSQF and NCrF provisions with IKS principles; and
- Descriptive statistical analysis of labour market indicators in order to determine the enduring gap which forms the trajectory that the vocationalization based on IKS aims to close.

### **2.2 The Data Collection and Inclusion Criteria**

The secondary data corpus includes policy statements, government statistics, and peer-reviewed industry-specific academic literature.

Policy Documents: This entails official MoE publications on the NEP 2020, NCVET NSQF notifications and the NCrF framework.

Government Statistical Publications: Information on labor market indicators, performance of skill training scheme, and workforce participation are extracted from NITI Aayog reports, Periodic Labour Force Survey (PLFS) analyses referenced in economic surveys.

### **2.3 Model for Analysis: IKS Kala Policy Outcome (IKPO) Alignment Model**

The study is informed using the IKS-Kala-Policy-Outcome (IKPO) Alignment Model. This framework rationalizes, and structures the philosophical basis of IKS, in terms of the 64 Kalas as lived skills; in such a manner that it provides for a clear functional synthesis with formal policy aims embedded within the NSQF/NCrF toward achieving measurable economic and sustainable social results.

A key question in this model is the extent to which Recognition of Prior Learning (RPL) works. RPL is important in acknowledging and formalising skills obtained through traditional family heritage, work life or other non-formal sources. By examining the ways in which RPL supports mobility within these NSQF and NCrF frameworks, the study determines whether or not this system holds potential to connect the large informal workforce, (of which traditional crafts persons constitute 11.6% of the skilled population), with formal economic pathways.

### **2.4 Statistical Method: Descriptive Analysis and Relating Skill Performance to Comparative Indices of Effectiveness**

THE EMPIRICAL methodology Due to the type of data involved, this research is set in substance descriptive, namely training based on major labour market indicators and training trends. The objective is to analytically reflect the disintegration between the present vocational products and the industry requirements. This involves analyzing:

Unemployment Indicators: Analysis of the extent of unemployment among the educated youth-particularly 44.5 per cent number registered in age group 20- 24 with degrees.

Trends in Training Duration: Trend analysis called time series: To determine trends over time of nature of vocational training (e.g. increasing short-term certificates and decreasing long term skill acquisition).

Wage Differentials, Skills: The existence of a gap between the wages will be examined based on how the skilled certified and uncertified workers will be compared over a period of time to determine any economic value that is attributed to the personnel policy..

---

## **Findings and Discussions**

### **3.1 IKS and the Philosophy of Outcome-Centric Mastery: Countering the Certification Bias**

IKS and the Philosophy of Outcome-Centric Mastery: Targeting the Certification Bias.

Indian Knowledge System: IKF realizes education not as an aggregate of subject but as an overall journey that gives priority to Jnan (theoretical wisdom), Vignan (practical science) and Jeevan

Darshan (life philosophy). the overallizing approach implies that knowledge should be judged with reference to its application and service to human life adhering to the ancient dream of the harmonious culture.

Such result oriented approach is at its zenith in Indian Aesthetics wherein an individual is not required to flaunt degrees as much as he/she is expected to exhibit the capacity to create Rasa. This concept of experience outcome itself is an intrinsic, broad assessment which is far superior as compared to test based tests.

However, modern skill policy practices have had bad luck with a long-standing Certification Bias, in which metrics and qualitative expertise requirements have to be ceded to quantitative responsibility. This is a design weakness that can be observed in statistics of training time: in more than six years up to 2023-24, the proportion of VET trainees enrolling in shorter courses of less than six months has increased more than 22 percent to 44 percent. At the same time, long-courses dropped to 14.29% from 29% over two years. In this race to achieve quick certification at the systemic level rather than substantive skill development, there is no return on education/payment; and the high graduate unemployment rate of about 44.5% among Indian youth in 2020. The sheer number of people trained under such schemes like PMKVY (140.81 lakh trained from 2015-23) also indicates that the metric for success was less quality of labour market absorption and more the number of certifications. Thus integration of IKS (which has such culture/society stoked insistence on Pratibha (the demonstration of genius/skill) and experiential wisdom), is important for bolstering qualitative rigor in assessment and negating this bias of certification.

### **3.2 Working the 64 Kalas into Modern Learning Ecosystems**

The 64 Kalas there use is a historically attested taxonomy that can facilitate the integration of talents in a meta-discipline framework. The shastras form a historicized matrix that often mediates the trajectory of development for entire new industries, from Sūci-vāya-karma (Needlework) to "green" design in architecture and planning (Vāstu Shastra).

The contemporary skill ecosystem is already mapping these informal arts into formal formats. "These clusters provide livelihood to more than 100 million persons indirectly, make an interface between traditional and heritage art and craft with standardised NSQF Qualification Packs (QPs). Such alignment serves to officially elevate those who are commonly sidelined in purely academic structures.

Also, the 64 Kalas are not merely a mechanism of technical virtuosity, but also as an essential ingredient for multi-disciplinary competence. The Kalas naturally promotes these values and, hence, our learners would become responsible citizens and change agents with social equity at the helm of ecological sustainability through IKS.

The 64 Kalas, then, function as a prescriptive template for the NEP 2020's main structural innovation—to remove "hard separations between arts and sciences, between curricular and extra-curricular". Eg, cikitsa findings, its connections in fields like chemistry and the like. Applying the IKS taxonomy revisits the challenge of implementing in terms of a "lack of standard curriculum framework" for IKS, and also makes explicit that clear, existing models exist for designing ideal interdisciplinary programmes.

### **3.3 Convergence of Policy: NSQF, NCrF and the Credit of IKS Skills**

The NCrF is the key policy instrument aimed at formalizing IKS results into academic capital. The NCrF / explicitly expressing the development in lifelong learning and trust of informal qualifications been acquired through "traditional family inheritance, work experience or other methods" value within formal educational track.

NCrF allows for the creditization of a wide range of activities previously discounted by scholarly metrics, such as "Performing arts/fine arts, music, handicrafts, traditional/heritage work." In addition, NCrF establishes "Creditization for achievers at the national and international levels in diverse areas of activities," such as Master Craftsmen (Heritage and Traditional Skills), excellence that may be outside conventionally academic streams.

#### ***Economic Formalization through RPL***

The RPL based on the NSQF is an essential to recognize the large quantum of non-formal skill acquisition in India. Indicators apparently indicate that non-formal skill development (which includes on-the-job training) has increased substantially from 4.4% of the skilled workforce in 2004-05 to 11.6 % in 2023-24. These craftsmen who are skilled workers, typically in the micro or craft sector, lack formal certification due to which they miss out on potential employability options and wage negotiations. With the NCrF credits awarded to such genealogical skills resulting in ctxpl being a "credible, nationally recognised signal of ability", the findings hold promise for improved access to formal employment and higher earnings, echoing international studies on RPL's efficacy for those most disadvantaged. This transformation of old style cultural capital into quantifiable economic incentive is addressing poverty reduction and driving sustainable enterprise development.

### **3.4 Data Analysis on the Industry-Education Gap**

Statistics can not be disputed that fact that the traditional system of education does not equip you with being work ready. There is premature indisputable indication that there is a colossal imbalance between the supply of and demand of education with the unemployment rate of 44.5% among graduates aged between 20 and 24 (even including those in PhD courses). Meanwhile, companies are struggling with crippling talent crises. The shortage of demand-supply on digital skills in the IT sector is 60 percent in the year 2025. These facts confirm the challenging requirement of the application of flexible, multidisciplinary and skill-centric models offered by NEP 2020 supported by retinue of IKS framework.

Huge government investing in programs such as PMKVY is an immediate and direct contradiction that is as we see this change to the quick certification that is at a breakneck pace. The key statistical points that political scientists that are primed on IKS integration might desire to examine alongside their estimation concerning structural flaws throughout the society are captured in Table 1.

**Key Analytical Table 1: Comparative Analysis of India's Skill Training Landscape and Employability Gaps (2004-2024)**

Indicator	2004-05 (%)	2023-24 (%)	Trend/Statistical Significance
Formal Training Penetration	2.4%	4.1%	Slow institutional growth despite investment.
Non-Formal (Hereditary/Traditional) Skill Acquisition	4.4%	11.6%	Significant and accelerating growth; requires formal recognition (RPL).
Proportion of Short-Term VET (< 6 Months)	22% (2017-18)	44% (2023-24)	Systemic preference for quick certification over substantive skill mastery.
Unemployment (Age 20-24, Graduate/PhD)	N/A	44.5% (approx.)	Conclusive evidence of failure to translate formal degrees into employment.
AI/Digital Skill Demand-Supply Gap	Low	60% (Estimated 2025)	Critical mismatch requiring blended IKS-modern curriculum.

Moreover, the adoption of the vocationalization requirement is hampered by some real-world and social obstacles. Inadequate resource constraints, a lack of standardized resources of IKS, and lack of teacher training are usually described as the difficulty. Most importantly, vocational education still remains subject to a general social stigma as it impairs its acceptance as a valid alternative to an academic diploma. It is also possible to propose a mechanism to actively de-stigmatize and professionalize the status of skilled trades using the historical context surrounding the Kalas 64 and the fact that master craftspeople were high-socially ranked.

### 3.5 IKS Driven Models to Sustainable Social Order and Economic Resilience

IKS implementation has the capability of being able to guarantee a sustainable social order. The IKS school of thought is concerned with Interconnectedness (huge knowledge of the ordeal between humans and nature, an intricate interdependence), and Intergenerational Welfare (preferring longterm ecosystem well-being to itinerary material profits).

The IKS has tangible models in a practical setting that contribute to sustainability. These and other sources like Vastu Shastra have plenty of vein that can be mined to enable an environmentally-friendly, climate-sensitive architecture; conventional methods of water management (stepwells, decentralized harvesting) may be integrated with new urban designs as in the Smart Cities Mission.

The IKS framework forms an indispensable foundation of India's creative economy. 8.21% of India's total exports and 45 million people engaged directly in this sector and 100 million indirectly which includes substantial part of them being women and rural based population, proved for themselves by the Textiles Sector (including handicrafts) are very relevant to Indian Economy. Inclusion of IKS skills as a part of NSQF QPs in this sector ensures that the educational policy is supplementing and up-scaling this huge existing economic base based on the national aspirations towards inclusive growth and empowerment of women.

The tabular expanse below schematises \_ how trans-disciplinary 64 Kalas can be integrated inside NSQF and NCRAA frameworks:

**Key Analytical Table 2: Conceptual Mapping of the 64 Kalas Framework to NSQF and NCrF Alignment**

<b>Kala (Traditional Skill)</b>	<b>IKS Sector Focus</b>	<b>Modern NSQF Sector Alignment</b>	<b>NCrF Credit Mechanism</b>	<b>Outcome Metric (IKS)</b>
Gīta Vidya (Singing) / Nṛtya Vidya (Dancing)	Performing Arts/Aesthetics	Media & Entertainment/Cultural Tourism	Curricular, Extra-curricular, Special Achievers Creditization	Rasa-Anubhuti (Experiential Mastery)
Ālekhya Vidya (Painting) / Bhūṣaṇa-yojana (Ornaments)	Fine Arts/Crafts	Handicrafts & Carpet/Design	Recognition of Prior Learning (RPL), Portfolio Assessment	Pratibh (Skill & Genius), Quality of Delivered Work
Vastu Shastra (Architecture)	Architecture/Ecology	Construction/Civil Engineering	Value-Based Internships, Project-Based Learning	Interconnectedness, Climate-Responsive Design Assessment
Sūci-vāya-karma (Weaving/Needlework)	Manufacturing/Textiles	Textiles & Apparel/Handlooms	RPL (Hereditary Skill), Standardized QP Certification	Technical Precision, Economic Productivity (Vignan)

This operational mapping demonstrates that the 64 Kalas are not esoteric historical artefacts but a highly functional and relevant taxonomy that provides the necessary multidisciplinary structure for NEP 2020 implementation.

---

#### 4. Suggestions and Policy Recommendations

Suggestions and Policy Recommendations

For the effective closure of these gaps between industry needs and educational outputs, notably those associated with certification bias and IKS integration standardisation challenging, the following pedagogical as well as policy measures are proposed:

## **4.1 Curricular and Pedagogical Restructuring**

### **4.1.1 Standardized, Outcome-Linked IKS Curriculum**

The present chasm owing to non-existence of a model IKS curriculum framework should be filled in by sincere collaboration between NCERT, UGC and National Council for Vocational Educational Training (NCVET). These foundational courses that will make upto 5% of the total student credits (as per whatever norms laid down by UGC) should be designed to relate IKS competencies derived from 64 Kalas to measurable learning outcomes prescribed in the NSQF Qualification Packs. The emphasis should be on the amalgamation of the old wisdom with modern pedagogy to create and establish innovation.

### **4.1.2 Compulsory Experientialist Learning with a Traditional Master**

All undergraduate programs have to make internships or apprenticeships something that's a requirement for credit. These programmes must specifically include learning by doing and working with master craftspersons, studios and heritage- industry clusters identified under the schemes such as PM Vishwakarma. This is an opportunity to receive genuine, outcome-based skill training, the real Vignana, and enables stringent evaluation of mastery thus, forestalling dependence on fleeting training fads.

### **4.1.3 Developing Mastery-Based Assessment Metrics**

Scientifically based assessment rubrics not limited to traditional testing needed to be collaboratively developed. Much research needs to be commissioned for such work. Such rubrics should include IKS aesthetic criteria (such as assessing Rasa or the ethical and sustainable usage of Vignana in long-term). It necessitates specific training of assessors, to guarantee that the assessment of learning outcomes is homogeneous and fair, especially regarding non-formal and experiential learning.

## **4.2 Policy and Regulatory Implementation**

### **4.2.1 Empowerment of Recognition of Prior Learning (RPL)**

RPL needed to be urgently upscaled and more investments were developed, in particular for skilling workforce through hereditary (11.6% of trained manpower). Integration of RPL with the NCvF Integration of RPL with the NCvF is essential to ensure that formal recognition results in real progression and modalities for mobility for traditional knowledge holders and artisans.

### **4.2.2 Targeted Teacher Capacity Building**

It is important to focus on the pervasive resource limitations and lack of teacher training. The quality of teacher training programs (e.g., NISHTHA) needs to be improved so as to empower teachers with necessary understanding and competencies required for a purposeful and outcome-oriented transaction format in the 8th transaction of IKS with particular reference to basic understanding about

the fund of knowledge content, skill development based on the contents representing the 64 Kalas. This demands a particular emphasis on job roles, employability pedagogy and technology diffusion in mature sectors.

### **4.3 Mitigating Socio-Economic and Industrial Disconnects**

#### **4.3.1 IKS-Oriented Incubation and Business Collaborations**

Incubation centres at the higher education institutions, in overt partnership with industries that are geared towards IKS applications (such as sustainable materials, traditional medicine, vernacular architecture, digital arts in Indian aesthetics) will provide an appropriate bridge from the knowledge of IKS to innovative and marketable products. Such a virtuous cycle is necessary so as to capitalise on demand boosted by new technologies and reduce skills gap.

#### **4.3.2 De-Stigmatization through High-Impact Recognition**

To be able to resolve the stigma about vocational paths successfully on a social level, the economic and societal value of professional people working in IKS should be directly promoted on national policy level. Such measures as special creditizing of Master Craftsmen provided by NCrf and mainstreaming IKS achievements into national awards and recognition systems will elevate these professions a notch higher with avenues based on skills being competitive with those based on academic qualifications alone..

---

## **5. Conclusion**

The National Education Policy 2020 is a groundbreaking prospect of ensuring that India reinvests the educational architecture with the aspirational ambitions of the 21 st century by incorporating her own intellectual legacy. This alignment is given the philosophical and structural context of the Indian Aesthetics which promotes the mastery of experience and its result (Rasa and Pratibh) and the taxonomy of holistic and practical skills of the 64 Kalas.

The necessity of such a qualitative change is statistically proven: taking a policy ecosystem that valued certification numbers instead of knowledge level contributed to such a severe graduate unemployment rate (44.5 percent of the age groups aged 20-24). The strategic process of the 64 Kalas through the NSQF and NCrf including a sound execution of Recognition of Prior Learning (RPL) provides the system towards formalizing the highly skilled traditionally trained workforce in a way that practical competence gains some recognized economic worth.

Through the IKS curriculum standardization, strict emphasis on the experiential learning and investment in the pedagogical training which prioritizes mastery and ethical sustainability can help India change its demographic dividend into a really productive and innovative workforce. Not only the skill gap will be bridged and result in global competitiveness, but the paradigm shift will form a platform of resilient, sustainable, and inclusive social order, based on the indigenous concept of ethical stewardship and holistic growth..

## References

- [1] "EMPLOYMENT AND SKILL DEVELOPMENT: EXISTENTIAL PRIORITIES." *Union Budget*.
- [2] "NEP 2020: Bridging India's Skill Gap in Higher Education." *ResearchGate*.
- [3] "NATIONAL CREDIT FRAMEWORK." *Ministry of Education*.
- [4] *National Education Policy 2020*.
- [5] "NEP 2020 – Narrowing the Skills Gap and Equipping New Skills through Job Satisfaction." *IJAR SCT*.
- [6] "Akhil Bhartiya Shiksha Samagam Report on Session 7: Creating a Synergy between Education and Skilling - Future of Work."
- [7] *Curriculum Framework for the Sustainable Development Goals, First Edition*. Commonwealth iLibrary.
- [8] "Integration of Indian Knowledge System into Higher Education through NEP 2020." *International Journal of Research Culture Society*.
- [9] Learning Analytics for Bridging the Skills Gap: A Data-Driven Study of Undergraduate Aspirations and Skills Awareness for Career Preparedness." *MDPI*.
- [10] "An Empirical Study on the Exploration of Vocational Education within the Framework of National Education Policy 2020 for Holistic Learning." *ResearchGate*.
- [11] "Introduction: Skill Development and Productivity of the Workforce." *NITI Aayog*.
- [12] *Annual Report 2023–2024*. Ministry of Textiles.
- [13] *National Curriculum Framework for School Education 2023*.
- [14] Ramachandra, N. U. "Traditional Knowledge, Challenges and the Need for Revival." *Res Militaris*, vol. 12, no. 2, 2022, pp. 1611-19.
- [15] Ramachandra, N. U. "Polymorphism of Classical Taalas: A Study on Its Evolution and Adaptations." *Journal for ReAttach Therapy and Developmental Diversities*, vol. 6, no. 1, 2023, pp. 1128-34.
- [16] Arunkumar, A. Y., et al. "Kannada Drama and the Buddhist Concept of Impermanence." *EPH - International Journal of Humanities and Social Science*, vol. 10, no. 2, June 2025.

[17] Ramachandra, N. U., et al. "Therapeutic Implications of Traditional Music in Neonatal Care: A Review of Empirical Data." *Journal of Neonatal Surgery*, vol. 14, no. 20s, 2025, pp. 919-23.