

CHARTING A ROAD MAP FOR IKS ON THE EDUCATIONAL LANDSCAPE: WHERE SKILL OUTSHINES DRILL

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Abstract.

The integration of Indian Knowledge Systems into the present-day curriculum as emphasized by the NEP 2020 envisages an overhauling of the existing educational landscape. It presents a pivotal opportunity to re-define education in India by re-instilling pride in India's legacy in the heart of every learner, nurturing critical thinking and a spirit of inquiry and innovation. It is time Gen Z transcended the boundaries of the classroom by beginning to explore not just text books but the book of life itself. In keeping with this thinking the present research endeavors to evaluate one such co-curricular activity in terms of its potential benefits in imbuing student-teachers with traditional wisdom and skills in a bid to make education a comprehensive and culturally relevant learning experience. The sample comprised of 98 B.Ed. students of a private-aided Teacher Education college partaking in the capacity of hosts, participants or observers. On completion of the initiative an IKS test was administered and any differences In Skill-Driven Learning identified. Partial correlation analysis was conducted to assess which of the 3 domains of learning exhibited the strongest interrelationship in student teachers' skill-driven learning achieved through the IKS related activity. Findings revealed that the interrelationship of Affective and Psychomotor development exhibited the highest association with students' Skill-Driven Learning, followed closely by that between Cognitive and Psychomotor Development. This implies that when learning is reinvigorated with 21st century skills it would meet its intended objective of holistic student development charting out a promising avenue for IKS on the educational horizon.

Key words: Indian Knowledge Systems (IKS), Skill-Driven Learning (SDL), Domain-Based Development (DBD)

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Introduction:

Robert Greene has rightly stated, “The future belongs to those who learn more skills and combine them in creative ways.” It is in the heart of experiential learning that skills are developed in learners. And what better way to embark on this journey of Experiential Learning in an Indian learner's repertoire of educational memories than by familiarizing him/her with the cultural heritage of his/her very own motherland. The National Education Policy (NEP) 2020 paved the way for a paradigm shift in the country's educational system by ushering in the

advent of Indian Knowledge Systems as a key component of the curriculum. This initiative stressed on the significance of protecting and promoting India's rich legacy of knowledge systems, embodying traditions in philosophy, language, science and the arts. The Indian Knowledge Systems (IKS) is an enormous and rich reservoir cradling ideas from India's glorious past and traditions, integrating theory with practice and amalgamating practical skills with ideas about spirituality and religion. The NEP 2020 makes it imperative to discover a path to usher IKS into Indian classrooms. It is believed that in doing so Indian education would transcend the limitations of textbook learning. Integrating traditional Indian Knowledge Systems into the existing educational framework has shown to rejuvenate contemporary Indian education (Amani, 2024). The NEP also explores the possibility for the inclusion of modules on the principles and practices of IKS in teacher education curricula to train aspiring teachers in skill sets of the 21st century preparing them to be agents of change and holistic educators who uphold values of head, hand and heart in a society driven by change (Ambika and Priya, 2024). The restoration of the connection between ancient ideas and contemporary problems has been proposed to be very instrumental in creating a sustainable and peaceful society (Sharma and Maheshwari, 2024). Research suggests that Indian Knowledge Systems, when integrated into skill-based education, can positively impact student learning outcomes by fostering higher-order thinking skills, holistic problem-solving abilities, and employability through innovative curriculum frameworks and pedagogical approaches, helping graduates make smooth transitions from the world of education to the world of work (Sawant and Fernandes, 2021).

Though the invaluable worth of IKS has been explored, there exists a paucity of research establishing the impact of domain based development on Skill-Driven Learning achieved by weaving IKS into the curriculum. This research paper delves into the significance of leveraging IKS for the all-round development of prospective teachers. Additionally, it outlines experiential strategies for incorporating IKS into teacher education curricula, emphasizing the importance of imbuing skill-sets of the 21st century such as communication, collaboration, critical thinking, creativity and computer literacy (digital expertise) in every aspiring teacher emerging from teacher training institutions. Most importantly, this research endeavours to establish the role of Domain Based Development as a path finder for incorporating IKS in the teacher education curriculum.

Objectives:

- To gain valuable insights into the potential benefits of incorporating IKS into the curricular framework for promoting a more holistic and culturally-relevant learning experience for student teachers.
- To analyse Student Feedback on an IKS related Skill-Driven Learning Activity in terms of Domain Based Development of student teachers
- To compare any likely difference in the interrelationship between the development of the 3 domains of learning and Skill-Driven Learning achieved through the IKS related activity.

Null Hypothesis:

There is no significant difference in the interrelationship between the development of the 3 domains of learning and Skill-Driven Learning achieved through the IKS related activity.

Research Methodology:

Subjects: The investigation was a Descriptive research of the quantitative paradigm. Further, the present study was of the correlational and comparative type because it sought to analyse the relationship between the development of the 3 domains of learning and Skill-Driven Learning achieved through the IKS related activity and compare any likely differences in the interrelationship between the different variables. The sample comprised of 98 student teachers of a private-aided Teacher Education college, affiliated to the University of Mumbai selected by the purposive sampling technique.

Methods: The Skill-Driven Learning module comprised of the ‘Make a Difference Week Initiative’, wherein all 98 student teachers enrolled for the B.Ed. course participated in this co-curricular activity as hosts, participants or observers. As part of the Make a Difference Week, teacher trainees were oriented to environmental concepts in sustainability and waste management that are popular today, but which historically, find their roots in the Ancient Vedic Scriptures, like understanding of ecosystems, forest and wildlife protection, circular economy, rainwater harvesting, use of solar energy, composting and organic farming to name a few. They were oriented to green practices such as organic composting, preparation of home-made fertilisers, manures, medicinal home remedies and insecticides using various herbs, spices and condiments available in the confines of their own homes. They organised Green Assemblies on diverse environmental issues using IKS as a reference point for evolving green solutions, remedies, do-it-yourself hacks and novel ideas to address challenges relating to their selected environmental themes.

The highlight of the endeavor was a ‘Green Tour’ of the campus wherein the hosts (Environmental Science senior students) were familiarized with a wealth of knowledge relating to the Green Cover on the college premises and the innate utility value of many of the plant species identified. Much of what they learnt on this Nature Trail had its roots in IKS. To motivate these student teachers in their learning, ‘The Green Lens Award’ competition was conducted wherein they prepared and submitted reports summarizing their observations and understanding of concepts, showcasing their creativity, critical thinking and digital expertise -all skill sets of 21st century learning.

Research Tools:

- A 4 point Likert Scale with a total of 6 items pertaining to student learning outcomes relating to the 3 domains of learning was administered.
- A test of 25 marks based on IKS practices covered during the theme-based assemblies and green activities served as a measure of Skill-Driven Learning.

Theoretical framework:

Domain Based Development was the Independent Variable and Skill-Driven Learning was the Dependent Variable.

Statistical Methods: The scores were tabulated and then analyzed using descriptive and inferential statistics.

Descriptive analysis:

This included magnitude of the learning outcomes relating to the 3 domains of learning achieved through the IKS related activity. The values of the same are depicted in Table 1. Table 2 shows the magnitude of IKS scores (Skill-Driven Learning) in the 3 sub-groups of students included in this study i.e. Hosts, Participants and Observers.

Inferential Analysis:

Partial Correlation Coefficients between the development of the 3 domains of learning and Skill-Driven Learning achieved through the IKS related activity were computed, considering any 2 variables at a time and controlling the effect of the other one or two for calculation of first order or second order partial correlation coefficients respectively. The difference was considered statistically significant when P value was found to be less than 0.05, and highly significant when P-value was less than 0.01 and 0.0001.

Results:

Table 1 shows the magnitude of Domain-Based Development for the total number of student teachers participating in the IKS-related activity.

The **Table 1: Magnitude of Domain-Based Development for the IKS Related Activity**

Activity	DOMAIN	N	MEAN	% MEAN	MAGNITUDE
Make a Difference Week	Cognitive	98	7.77	96.17	HIGH
	Affective	98	7.67	94.5	HIGH
	Psychomotor	98	7.66	94.33	HIGH

findings indicate that for all the 3 domains under study, the magnitude of development was high, thus indicating that Skill-Driven Learning led to holistic development of the teacher trainees.

The data in Table 2 reveals that the Skill-Driven Learning achieved through the IKS related activity was highest in the Hosts, followed by the Participants with the lowest level reflected in the Observers.

Table 2: Magnitude of Skill-Driven Learning (SDL) in the Hosts, Participants and Observers

Activity	GROUP	N	MEAN	% MEAN	MAGNITUDE
Make a Difference Week	Hosts	24	21.88	87.5	HIGH
	Participants	50	20.2	80.8	HIGH
	Observers	24	16.75	67	SUBSTANTIAL

Table 1 and 2 thus indicate two very important findings. Firstly, the IKS related activity led to holistic development of the student teachers with all the 3 domains of learning showing significantly high improvement. This could probably be attributed to the fact that the Make a Difference Week resulted in the teacher trainees developing qualities of head, hand and heart. Secondly, it is interesting to note that the highest Skill-Driven Learning (SDL) reflected in the IKS scores was seen in the Hosts (Environmental Science senior students) who were keenly

involved in hosting the programme. In organising it they developed a number of 21st Century skill sets. In researching on various Environmental issues to be included in their Green Assemblies, they gained a wealth of knowledge as well as honed their artistic and technical skills in preparing DIY videos on various sustainable practices. The SDL of the participants ranked next highest in terms of magnitude, which can be attributed to this group of Junior student teachers who played an active part in the quizzes, games, and DIY activities contributing to the development of all their 3 domains of learning which led them to score high on the IKS Test.

The substantial SDL value attained by the Observer category (Non-Environmental Science senior students) can be justified on the grounds that they were mere passive observers throughout the programme. They attended the assemblies, witnessed the games conducted, watched the DIY videos, but did not actively perform any of the activities organized. These findings suggest that more active the involvement of student teachers in the IKS related co-curricular activity, transcending the boundaries of classroom learning, greater will be their Skill-Driven Learning. The significant difference observed in the IKS scores of the hosts and participants v/s observers provide additional impetus for educators and policymakers to consider the implementation of more innovative, experience-based learning strategies in curricular transactions. The same has also been propounded by Mertayasa et al (2020).

Testing the Null Hypothesis:

The null hypothesis states that there is no significant difference in the interrelationship of the development of the 3 domains of learning achieved through the IKS related activity and Skill-Driven Learning in student teachers.

Correlation between Domain-Based Development and Skill-Driven Learning:

Table 3 shows the significance of 'r' for the original correlations between the variables of the study.

Table 3: Original Correlations between the Variables of the Study

Variables	r	r ²	t	P
C.D. x A.D.	0.714	0.51	9.992	<.0001
C.D. x P.D.	0.722	0.521	10.224	<.0001
C.D. x S.D.L.	0.025	0.001	0.245	0.807
A.D. x P.D.	0.872	0.76	17.454	<.0001
A.D. x S.D.L.	0.026	0.001	0.255	0.7993
P.D. x S.D.L.	0.041	0.002	0.402	0.6886

Where,

C.D.: Cognitive Development
A.D.: Affective Development
P.D.: Psychomotor Development
S.D.L.: Skill-Driven Learning

From the above data it is seen that the obtained 'r' values for different combinations of the development of the 3 domains of learning are positive, substantial/high in magnitude and significant at the 0.0001 level. Of all the interrelationships analysed, the 'r' value between Affective Development and Psychomotor Development was the highest i.e. 0.872, implying that a green mind-set and eco-friendly attitude coupled with skill sets of the 21st century play a prime role in promoting environmental stewardship in student teachers. The next in order of value was the

interrelationship between Cognitive Development and Psychomotor Development i.e. 0.722 implying that adequate knowledge and awareness about environmental conservation blended with the imbuing of various skills also contributes significantly to transforming student teachers into Green Warriors. The interrelationship of Cognitive and Affective Development followed closely behind in value i.e. 0.714. All this justifies that experiential learning used to familiarise student teachers with IKS brings about holistic development of all the 3 domains of learning with the Psychomotor Domain playing a pivotal role in their learning journey. Table 4 shows the First Order Partial Correlations between the variables of the study.

Table 4: First Order Partial Correlations between the Variables of the Study

Variables	r	r ²	t	P
WX.Y	0.249	0.062	2.506	0.0139
WX.Z	0.714	0.51	9.94	<.0001
WY.X	0.29	0.084	2.953	0.004
WY.Z	0.722	0.521	10.171	<.0001
WZ.X	0.009	0	0.088	0.9301
WZ.Y	-0.007	0	-0.068	0.9459
XY.W	0.736	0.542	10.597	<.0001
XY.Z	0.872	0.76	17.363	<.0001
XZ.W	0.012	0	0.117	0.9071
XZ.Y	-0.02	0	-0.195	0.8458
YZ.W	0.033	0.001	0.322	0.7482
YZ.X	0.037	0.001	0.361	0.7189

Where,

W: Cognitive Development
X: Affective Development
Y: Psychomotor Development
Z: Skill-Driven Learning

The First Order Partial Correlation coefficients summarised in Table 4 also highlight that the highest 'r' values of 0.872 and 0.736 are observed for the interrelationship between Affective and Psychomotor Development when Cognitive Development and Skill-Driven Learning are alternatively controlled. Table 5 shows the Second Order Partial Correlations between the variables of the study.

Table 5: Second Order Partial Correlations between the Variables of the Study

Variables	r	r ²	t	P
WX.YZ	0.249	0.062	2.493	0.0144
WY.XZ	0.29	0.084	2.0938	0.0042
WZ.XY	-0.002	0	-0.019	0.9849
XY.WZ	0.736	0.542	10.541	<.0001
XZ.WY	-0.018	0	-0.175	0.8615
YZ.WX	0.036	0.001	0.349	0.7279

Where,

W: Cognitive Development
X: Affective Development
Y: Psychomotor Development
Z: Skill-Driven Learning

The Second Order Partial Correlation coefficients summarised in Table 5 also reinforce the observation that the highest 'r' value of 0.736 is observed for the interrelationship between Affective and Psychomotor Development when Cognitive Development and Skill-Driven Learning are controlled.

Interpretation:

Thus, from Tables 3, 4 and 5 it can be concluded that the 'r' value between Affective Development and Psychomotor Development is the highest and is significant at the 0.0001 level. Therefore, the null hypothesis is rejected implying that there is a significant difference in the interrelationship between the development of the 3 domains of learning and Skill-Driven Learning, of which the relationship between Affective Development and Psychomotor Development is the strongest.

Discussion:

An analysis of the results obtained in Tables 3, 4 and 5 indicate that there is a positive and substantial/high relationship between Affective Development and Psychomotor Development of student teachers. This research finding corroborates the fact that Skill-Driven Learning achieved through experiential pedagogies and approaches paves the way for incorporating IKS into the curriculum thereby fostering the much needed positive attitudes, 21st century skill sets and willingness to apply ancient Indian knowledge in student teachers to resolve contemporary challenges, transforming them into agents of change. It proves the ideology that skill surpasses drill when it comes to weaving IKS into the curricular tapestry. A study by Vaz (2024) has also suggested that the incorporation of environmental friendly approaches in the teaching-learning process contributes to building a sustainable mindset among students. This in turn serves to transform learners into stewards of the environment, capable of embracing practices that promote the long-term well-being of society and the planet at large. Singh and Rao (2024) concluded that experiential learning enhances cognitive, affective, and psychomotor development of learners through their increased active participation in classroom activities, thereby proving that it is the best pedagogical approach.

Sharma and Sharma (2021) have also established the invaluable benefits of Skill-Driven Learning. Chhinzer and Russo (2018) suggested that higher education institutions must put greater emphasis on skill-based education with a focus on developing students' requisite skill sets preparing them for the world of work.

Experiential Learning breaks the popular practice of rote memorization (Garnjost and Lawter, 2019) by enhancing classroom engagement through motivation. Andresen et al. (2020) opined that students should be allowed to gather various learning experiences by trying them out. It is only when students are given enough time to have hands-on experience, that they can take stock of any gaps in their learning and discover ways to improvise it. Nurturing critical thinking, problem-solving, communication and teamwork skills, as well as fostering creativity and invention, are indispensable components of learning and are fundamental for the advancement of society in the present century (Kurniawati et al., 2019). A study by Drissner et al. (2014) revealed that children who visited a 'Green Classroom' outdoor learning environment demonstrated significantly greater environmental knowledge in comparison to those who learnt in a traditional classroom setting. This finding justifies why the hosts (EVS students) in the present study benefited from the Green Tour they were exposed to in the present research endeavour.

The contribution of Affective Development of the student teachers to Skill-Driven learning can well be explained by the findings of several past researchers. The affective domain is known to be intimately linked to the cognitive

domain, and can serve to either heighten or inhibit learning if impacted positively or negatively, respectively. Informal learning settings help students discover the true joy of learning often leading to a much needed transition of their mindset, the development of a positive attitude to retain theoretical concepts as well as showcase the enthusiasm and interest needed to sustain their attention in the learning process without boredom setting in prematurely. Children who are taught through action, learning by doing, experiential learning, learning through discovery and exploration are more likely to be intrinsically motivated as they engage in an enjoyable activity and use it as a chance to discover, grow, and realise their potential (Bhardwaj, 2023). Experience alone, however, does not ensure meaningful learning. In order to be significant and relevant, it must be carefully planned with the learning objectives in mind, and it must be scaffolded by conceptualization and reflection. The Make a Difference Week Initiative abided by this proposition as the hosts, not only conceptualized the event and made it an invigorating learning experience but also sought the active involvement of the participants and reflected on their own experience by submitting a detailed reflective report of how it had benefitted their learning journey of IKS.

Conclusion:

The NEP 2020 proposes that if IKS is integrated into the curricular landscape, the student fraternity will gain a richer learning experience, a robust cultural identity and the potential to evolve into future innovators and agents of change. The present research suggests that Skill-Driven learning plays a pivotal role in both domain-specific and holistic development. With the advent of IKS in the curricular framework, ‘Drill will become history as skill will evolve to be the new watchword helping to unravel the learning mystery!’ and churning out a generation that takes pride in its rich cultural heritage, welcomes interdisciplinary learning, champions the cause of sustainable practices, and upholds the propagation of knowledge and innovation. In the wake of a new learning era, a learning journey of a thousand miles will now begin with a single skill!

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