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Catalyzing Young Innovators: Organizational Practices and Participation Patterns in INSPIRE–Manak

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Abstract- The INSPIRE–MANAK Scheme aims to promote innovation and scientific temper among school students; however, its effectiveness depends on awareness, institutional support, and stakeholder engagement. The present study examined the implementation of the INSPIRE–MANAK Scheme in District Pulwama by collecting primary data from students, teachers, and Heads of Institutions using structured questionnaires. The findings reveal a clear disparity between institutional awareness and student participation. While 85.71% of HOIs and 79.54% of teachers reported awareness of the scheme, only 42.40% of students were aware of INSPIRE–MANAK. Formal awareness initiatives reached merely 35.54% of students, and only 13.28% had attended any orientation or workshop, with just 12.89% expressing satisfaction. Student participation remained low, with only 16.10% having registered for the scheme, primarily due to lack of awareness (44.92%), time constraints (18.75%), and difficulty in understanding the process (11.70%). Although teachers demonstrated willingness to support innovation, with over 86% agreeing or strongly agreeing to motivating students, 75% reported mentoring as challenging due to limited resources and training. The study concludes that despite high awareness at administrative and teacher levels, inadequate training, weak institutional mechanisms, and insufficient outreach significantly constrain student engagement. Strengthening structured awareness programmes, teacher capacity building, and institutional support systems is essential to enhance the scheme's impact at the grassroots level.

Keywords: INSPIRE–MANAK Scheme, Innovation, Scientific Temper, School Students, Awareness, Institutional Support, Stakeholder Engagement, Teacher Mentoring, Student Participation, Capacity Building, Grassroots Implementation, Pulwama District.

I. INTRODUCTION

The Innovation in Science Pursuit for Inspired Research (INSPIRE) scheme is a flagship programme of the Department of Science and Technology (DST), Government of India, aimed at nurturing creativity, innovation, and scientific temper among school children. Launched by the Honourable Prime Minister on 13 December 2008 and implemented from 2009–10, the scheme seeks to identify and encourage young talent at the school level (DST, 2008). In 2016, the scheme was renamed INSPIRE–MANAK (Million Minds Augmenting National Aspirations and Knowledge), emphasizing its objective of generating one million original, science-based ideas addressing societal and local problems through student-led innovation (DST & NIF, 2016).

The National Education Policy (NEP)-2020 places significant emphasis on scientific temper as a fundamental principle guiding the education system. It asserts that the purpose of education is to develop individuals who possess rational thought and action, skill, compassion, empathy, courage, resilience, scientific temper, and creative imagination, along with sound ethical values. This recognition underscores the importance of fostering a society where scientific thinking is valued and encouraged.
The concept of scientific temper was initially articulated by Pandit Jawaharlal Nehru in his book "The Discovery of India" (1946). Nehru described it

as not just a trait for scientists but as a way of life and a method of thinking and interacting with others. Scientific temper encompasses traits such as healthy skepticism, objectivity, intellectual honesty, rationality, perseverance, freedom from superstition, curiosity, open-mindedness, and keen observation. These characteristics enable individuals to approach problems and inquiries with a critical and analytical mindset.

Innovation is crucial for organizations aiming to compete effectively in the global landscape of the 21st century. It involves implementing creative ideas to enhance organizational efficiency, productivity, and competitiveness (Kremer et al., 2018). In the education sector, there has been a notable shift from traditional methods to more technologically advanced systems that incorporate 21st century skills. This innovative approach is seen as vital for improving learning outcomes, enhancing the quality of education, promoting equity and equality, increasing efficiency, and reducing costs while maximizing revenues (OECD, 2016). However, despite its importance, the education system is often regarded as conservative and resistant to change, particularly due to opposition from teachers.

Despite the robust structural architecture of the scheme, its real impact is shaped by how effectively awareness, mentoring, institutional leadership, and resources align within schools. Earlier empirical inquiries (Mir, 2026; Mir et al., 2026; Mir & Lone, 2026) examining the implementation dynamics of INSPIRE–MANAK across diverse educational contexts in the region revealed notable variations in institutional preparedness. The studies observed differences in awareness levels, teacher engagement, mentoring support, and the translation of orientation into active student participation. While some institutions demonstrated deeper policy penetration and procedural facilitation, others reflected gaps in outreach, guidance mechanisms, and resource provisioning. Together, these findings affirm that innovation policy succeeds not merely through structural design, but through the vitality of local institutional culture, leadership commitment, and systemic readiness.

The current study was conducted to evaluate student engagement and participation in the INSPIRE-MANAK scheme across Pulwama district of Kashmir Division, with a focus on student registrations, project submissions, and involvement at each stage of the programme. The study also aims to assess the role of educational institutions, teachers, and mentors in the scheme, as well as to identify constraints that may limit students' ability to address societal needs through innovative solutions.

II. METHODOLOGY

Study Area: Educational institutions (Middle stage & Secondary stage) across District Pulwama of Kashmir Division (Jammu and Kashmir) were selected for the study.

Sample Size: A total of 07 (Seven) educational institutions comprising a total of 256 students, 44 teachers and 07 Heads of the Institutions from District Pulwama of Kashmir Division were selected for carrying out the study of impact of INSPIRE MANAK programme. A duly framed questionnaire for students, teachers and head of the institutions were used to ascertain the impact of INSPIRE MANAK scheme.

Statistical Analysis: The retrieved copies of questionnaire were subjected to statistical analysis using Statistical Package for the Social Sciences (SPSS) for proper analysis. The data of the study was analyzed through descriptive and inferential statistics.

III. RESULTS

In the current section, the data received from students, teachers and Heads of Institutions from different schools of district Pulwama were statistically analyzed using appropriate descriptive techniques. Based on this analysis, the following **category-wise findings emerged:**

Student responses: The analysis of students' responses revealed a generally low level of awareness, participation, and institutional support with respect to the INSPIRE-MANAK Scheme in District Pulwama. Only 42.40% of students reported being aware of the INSPIRE-MANAK Scheme, whereas a majority (57.03%) were not aware. A

negligible proportion (0.57%) of students did not respond or remained neutral. Exposure to formal awareness initiatives was found to be limited, as only 35.54% of students reported having received an awareness programme, while 62.89% indicated that they had not received any such programme, with 1.57% providing no response.

Schools emerged as the primary source of information, with 51.56% of students learning about INSPIRE-MANAK through school-level communication, followed by SCERT-JK (21.87%), while parents (2.34%) and social media platforms (1.95%) played a minimal role. Participation in orientation programmes was notably low, with only 13.28% of students reporting attendance, whereas 86.72% had not attended any orientation or workshop. Among those who attended orientation programmes, only 12.89% expressed satisfaction, suggesting concerns regarding the effectiveness and reach of these sessions.

Actual student participation in the scheme was found to be extremely limited. Only 16.10% of students had ever registered for the INSPIRE-MANAK Scheme, while 83.90% had not registered. Among the registered students, 45.31% participated up to the district level, and only 1.95% progressed to the state level, with the remaining respondents not reporting advancement. The primary reasons for non-registration included lack of awareness (44.92%), time constraints (18.75%), difficulty in understanding the process (11.70%), and lack of interest in innovation (10.93%), while 13.70% cited other or unspecified reasons.

With regard to teacher support, 53.90% of students agreed that teachers motivate and inspire them to participate in the INSPIRE-MANAK Scheme; however, 29.28% disagreed, and 16.82% remained neutral. In terms of guidance during brainstorming and idea-generation stages, 42.18% of students agreed that teachers provide adequate guidance, whereas 47.65% disagreed, and 10.17% were neutral. Institutional support through school-level orientation sessions was also perceived as inadequate, with only 44.14% of students agreeing that their schools conduct such activities, while 50.00% disagreed and 5.86% remained neutral.

Parental involvement in supporting student innovation under the INSPIRE-MANAK Scheme was found to be minimal. Only 16.40% of students reported active parental involvement, while 60.56% disagreed, and 23.04% indicated occasional involvement. Notably, all students (100%) suggested the need for holistic and regular awareness programmes and workshops to be conducted annually at the school level, emphasizing the demand for structured and sustained institutional interventions.

While awareness of the INSPIRE-MANAK Scheme is relatively high at the institutional (85.71% HOIs) and teacher levels (79.54%), this awareness weakens considerably at the student level, where only 42.40% of students report being aware of the scheme. This progressive decline across stakeholders indicates a break in the communication and implementation chain, with institutional awareness not translating into effective student-level outreach.

This awareness gap is further reflected in the limited exposure to formal awareness programmes. Only 35.54% of students reported having received any awareness programme related to INSPIRE-MANAK, while 62.89% had not, despite 57.14% of HOIs reporting that their schools organize seminars or orientation programmes. This mismatch suggests that such initiatives are either infrequent, poorly structured, or not inclusive enough to reach the broader student population. Correspondingly, just 13.28% of students reported attending any orientation or workshop, and among them, only 12.89% expressed satisfaction, reinforcing concerns about the quality and effectiveness of these interventions. A similar trend is observed among teachers, where only 22.72% had attended any INSPIRE-related training, indicating inadequate capacity building even among mentors.

The low levels of awareness and training directly influence student participation. Only 16.10% of students have ever registered for the INSPIRE-MANAK Scheme, while 83.90% have never participated. Even among registered students,

participation remains limited, with 45.31% reaching only up to the district level and a mere 1.95% advancing to the state level. The predominant reasons cited for non-registration—lack of awareness (44.92%), time constraints (18.75%), and difficulty in understanding the process (11.70%)—further underline systemic shortcomings in guidance and institutional facilitation.

Teacher motivation and support, although present, appear inconsistent and insufficiently structured. While 53.90% of students acknowledged teacher motivation for participation, a substantial 29.28% disagreed, and 16.01% remained neutral. Moreover, only 42.18% of students felt that teachers provided guidance during brainstorming and idea-generation stages, whereas 47.65% disagreed. Teachers themselves corroborate these challenges, with 75% (strongly agree + agree) stating that guiding students in INSPIRE-MANAK is challenging. The primary constraints identified by teachers include lack of resources (56.81%) and lack of awareness (25%), revealing structural limitations beyond individual effort.

Institutional support mechanisms also show partial effectiveness. While 54.54% of teachers reported receiving support from Heads of Institutions, nearly 45.45% did not. HOIs rated teacher involvement as mostly "sufficient" (57.14%), yet student responses suggest that this involvement does not consistently translate into hands-on mentoring. Parental engagement remains notably weak, with only 16.40% of students reporting active parental involvement, further limiting reinforcement beyond the school environment.

Collectively, the findings reveal a systemic disconnect: high awareness at leadership and teacher levels does not culminate in effective awareness generation, participation, or innovation outcomes among students. The data consistently point toward the need for regular, high-quality orientation programmes, teacher capacity building, and institutional accountability mechanisms. Notably, students, teachers, and HOIs unanimously recommend holistic, school-level awareness programmes and workshops conducted annually, emphasizing a shared recognition of current implementation gaps.

Teacher responses: The analysis of teachers' responses indicates a relatively high level of awareness of the INSPIRE programme, though gaps persist in training exposure and implementation support. A substantial 79.54% of teachers reported being aware of the INSPIRE programme, while 20.45% were not aware. Similarly, 81.81% of teachers reported awareness of the objectives of the INSPIRE programme, whereas 18.19% lacked awareness of its objectives.

Regarding sources of information, school-level communication emerged as the primary source, with 63.63% of teachers learning about the INSPIRE programme through their schools. This was followed by SCERT-JK (13.63%) and discussions with other teachers (9.09%), while 13.65% did not specify any source. Despite high awareness levels, participation in professional development activities related to INSPIRE was limited. Only 22.72% of teachers had attended an orientation or workshop, whereas a significant 77.27% had not attended any training programme related to INSPIRE-MANAK.

In terms of institutional support, 54.54% of teachers reported receiving support from the Head of Institution (HOI) in guiding students for INSPIRE-MANAK, while 45.45% reported a lack of such support, indicating variability in administrative facilitation across schools.

Teachers demonstrated a strong motivational inclination towards student participation. A large majority either strongly agreed (45.45%) or agreed (40.90%) that they actively encourage students to participate in the INSPIRE programme. Only a small proportion expressed neutrality (4.54%) or disagreement (9.08% combined).
However, despite teachers' motivation, student participation levels remained low. 70.45% of teachers reported that none of their students had ever participated in the INSPIRE-MANAK Scheme. Meanwhile, 25.00% reported student participation ranging from one to five times, and only 4.54% reported participation exceeding five times,

indicating limited student engagement and continuity.

Guiding students under the INSPIRE programme was perceived as challenging by most teachers. A majority either agreed (56.81%) or strongly agreed (18.18%) that mentoring students for INSPIRE-MANAK is challenging. In contrast, 22.71% of teachers disagreed or strongly disagreed, while 2.27% remained neutral.

Teachers identified several factors that hinder students from effectively showcasing their innovative potential. The lack of resources was cited as the primary constraint by 56.81% of teachers, followed by lack of awareness (25.00%) and time constraints (15.90%). Only 2.27% identified insufficient guidance and support as the main barrier.

Regarding suggestions for improvement, 45.45% of teachers emphasized the need for more training sessions for teachers, while 36.36% highlighted enhanced availability of resources and materials. A smaller proportion (6.81%) suggested regular feedback and evaluation of projects, and 11.36% did not specify any particular recommendation. Notably, all teachers unanimously suggested the need for regular, holistic orientation programmes and workshops to strengthen implementation and student participation in the INSPIRE-MANAK Scheme.

HOI responses: The analysis of responses from Heads of Institutions (HOIs) revealed a high level of awareness regarding the INSPIRE-MANAK Scheme. A substantial 85.71% of HOIs reported being aware of the scheme, while 14.29% indicated a lack of awareness, reflecting relatively strong administrative-level familiarity with the programme.
Regarding the source of initial information, local education authorities emerged as the primary channel, with 42.85% of HOIs reporting this source, followed by SCERT-JK (28.57%). Additionally, 26.58% of HOIs reported learning about the INSPIRE-MANAK Scheme from other sources, highlighting the role of multiple dissemination pathways at the institutional level.

Participation in orientation programmes among HOIs was limited. Only 28.57% of HOIs reported having attended an orientation or workshop, whereas a significant 71.43% had not attended any formal orientation related to the INSPIRE-MANAK Scheme. Among those who attended, 42.85% perceived the orientation programmes as effective, while 28.57% rated them as neutral and 28.58% considered them ineffective, suggesting mixed perceptions regarding the quality and impact of these programmes.

In terms of institutional initiatives, 57.14% of HOIs reported organizing seminars, workshops, or orientation sessions related to INSPIRE-MANAK within their schools, while 42.86% had not conducted any such activities, indicating uneven institutional engagement across schools.
HOIs' perceptions of teacher involvement varied. A majority (57.14%) rated teacher involvement as sufficient, while 14.28% each rated it as good or excellent. However, 14.28% of HOIs perceived teacher involvement as insufficient, pointing to the need for enhanced mentoring capacity in some institutions.

Regarding measures for further improvement, 57.14% of HOIs emphasized the need for more workshops and training sessions, while 28.58% highlighted increased availability of resources, and 14.28% suggested the use of printed materials such as brochures and handouts. In addition, HOIs collectively recommended the organization of special training camps at the school level to strengthen student participation and innovation under the INSPIRE-MANAK Scheme.

Overall Findings: While awareness of the INSPIRE-MANAK Scheme is relatively high at the institutional (85.71% HOIs) and teacher levels (79.54%), this awareness weakens considerably at the student level, where only 42.40% of students report being aware of the scheme. This progressive decline across stakeholders indicates a break in the communication and implementation chain, with institutional awareness not translating into effective student-level outreach.

This awareness gap is further reflected in the limited exposure to formal awareness programmes. Only 35.54% of students reported having received any awareness programme related to INSPIRE-MANAK, while 62.89% had not, despite 57.14% of HOIs reporting that their schools organize seminars or orientation programmes. This mismatch suggests that such initiatives are either infrequent, poorly structured, or not inclusive enough to reach the broader student population. Correspondingly, just 13.28% of students reported attending any orientation or workshop, and among them, only 12.89% expressed satisfaction, reinforcing concerns about the quality and effectiveness of these interventions. A similar trend is observed among teachers, where only 22.72% had attended any INSPIRE-related training, indicating inadequate capacity building even among mentors.

The low levels of awareness and training directly influence student participation. Only 16.10% of students have ever registered for the INSPIRE-MANAK Scheme, while 83.90% have never participated. Even among registered students, participation remains limited, with 45.31% reaching only up to the district level and a mere 1.95% advancing to the state level. The predominant reasons cited for non-registration—lack of awareness (44.92%), time constraints (18.75%), and difficulty in understanding the process (11.70%)—further underline systemic shortcomings in guidance and institutional facilitation.

Teacher motivation and support, although present, appear inconsistent and insufficiently structured. While 53.90% of students acknowledged teacher motivation for participation, a substantial 29.28% disagreed, and 16.01% remained neutral. Moreover, only 42.18% of students felt that teachers provided guidance during brainstorming and idea-generation stages, whereas 47.65% disagreed. Teachers themselves corroborate these challenges, with 75% (strongly agree + agree) stating that guiding students in INSPIRE-MANAK is challenging. The primary constraints identified by teachers include lack of resources (56.81%) and lack of awareness (25%), revealing structural limitations beyond individual effort.

Institutional support mechanisms also show partial effectiveness. While 54.54% of teachers reported receiving support from Heads of Institutions, nearly 45.45% did not. HOIs rated teacher involvement as mostly "sufficient" (57.14%), yet student responses suggest that this involvement does not consistently translate into hands-on mentoring. Parental engagement remains notably weak, with only 16.40% of students reporting active parental involvement, further limiting reinforcement beyond the school environment.

Collectively, the findings reveal a systemic disconnect: high awareness at leadership and teacher levels does not culminate in effective awareness generation, participation, or innovation outcomes among students. The data consistently point toward the need for regular, high-quality orientation programmes, teacher capacity building, and institutional accountability mechanisms. Notably, students, teachers, and HOIs unanimously recommend holistic, school-level awareness programmes and workshops conducted annually, emphasizing a shared recognition of current implementation gaps.

IV. DISCUSSION

The present study highlights a significant implementation gap in the INSPIRE-MANAK Scheme in District Pulwama, wherein institutional and teacher-level awareness does not effectively translate into student participation and innovation outcomes. Although a high proportion of Heads of Institutions (85.71%) and teachers (79.54%) reported awareness of the scheme and its objectives, student awareness remains considerably low (42.40%). This disparity indicates that awareness is largely confined to administrative and teaching cadres, with limited systematic dissemination to the primary beneficiaries—the students, a concern also emphasized in national implementation guidelines of INSPIRE-MANAK (DST, 2016).

The findings further reveal that formal awareness mechanisms are weak and inconsistently executed. Despite more than half of the HOIs (57.14%)

reporting that their schools organize orientation programmes or seminars, only 35.54% of students acknowledged receiving any such awareness initiative, and merely 13.28% reported attending an orientation or workshop. The low satisfaction level (12.89%) among those who attended suggests that existing programmes may lack depth, clarity, or practical relevance. This observation aligns with national literature, which stresses that quality and regularity of orientation programmes are critical for effective student engagement under INSPIRE-MANAK (DST & NIF, 2016). The limited teacher exposure to training, with only 22.72% having attended INSPIRE-related orientations, further undermines their capacity to effectively mentor students, a challenge also noted in studies on innovation-led education systems (OECD, 2016).

The consequences of these gaps are clearly reflected in poor student participation rates. Only 16.10% of students reported having registered for INSPIRE-MANAK, with the majority citing lack of awareness, procedural complexity, and time constraints as key barriers. Even among registered students, participation largely remained confined to the district level, with negligible progression to higher levels. These findings underscore that participation barriers are structural rather than motivational, as more than half of the students (53.90%) acknowledged teacher motivation, yet fewer received concrete guidance during idea conceptualization and prototype development. This gap contradicts the core objective of INSPIRE-MANAK, which seeks to nurture sustained innovation pathways from school to national platforms (DST, 2016).

Teacher perspectives corroborate these challenges. A substantial proportion of teachers (75%) perceived mentoring INSPIRE projects as challenging, primarily due to lack of resources and inadequate institutional support. Although HOIs rated teacher involvement as largely sufficient, student responses suggest that this involvement is uneven and insufficiently hands-on, pointing toward a perception gap between institutional leadership and learners (Kremer et al., 2018). Additionally, minimal parental engagement, reported by only 16.40% of students, further limits reinforcement beyond the school environment, despite NEP-2020 emphasizing community and parental involvement in holistic education (Ministry of Education, 2020).

Overall, the study indicates that INSPIRE-MANAK implementation in the district is awareness-heavy but action-light. While policy intent and stakeholder willingness are evident, the absence of structured training, regular mentoring frameworks, and adequate resource support hampers effective execution. The convergence of student, teacher, and HOI recommendations for holistic, school-level, and recurring awareness and training programmes reflects a shared recognition that sustainable improvement requires coordinated, system-level interventions rather than sporadic initiatives.

Taken together, national literature underscores that awareness, orientation, and structured mentoring frameworks are key precursors to high participation and successful student outcomes in INSPIRE-MANAK (DST, 2016; OECD, 2016). The present study's findings—where students cite lack of awareness, procedural difficulty, and limited guidance—resonate strongly with these national priorities and reveal that implementation gaps at the district level can significantly undermine the scheme's transformative potential. This highlights the necessity for strengthened communication, regular capacity building of teachers and HOIs, and systematic school-level engagement to bridge the gap between policy intent and on-ground outcomes.

V. RECOMMENDATIONS

1. Annual mandatory awareness programmes at the school level must be institutionalized to ensure that all students are systematically informed about the objectives, procedures, and benefits of the INSPIRE-MANAK Scheme.
2. Structured teacher training and certification of INSPIRE mentors need to be introduced to strengthen teachers' capacity in idea generation, documentation, mentoring, and prototype development.
3. Resource allocation need to be enhanced by providing printed guidelines, exemplars of

previously selected models, and access to low-cost materials to support hands-on innovation and reduce procedural barriers.

4. Implementation of parental sensitization programmes must be done to strengthen home-based support and encourage students' sustained engagement in innovative activities.
5. Special training camps and school-based innovation hubs may be established, as recommended by Heads of Institutions, to provide continuous mentorship, experimentation opportunities, and peer learning platforms.

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