



FROM MARGINS TO MAINSTREAM: EQUITY AND INCLUSION FOR DALITS IN UNIVERSITY STEM PROGRAMS

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Abstract

This paper highlights the problems faced by marginalized Dalit students in accessing and completing higher education in STEM fields, including discrimination and lack of supportive ecosystems to nurture their talent. Despite policy and government interventions, underrepresentation persists. The literature review analyses research on the historical, sociocultural and institutional barriers underpinning this exclusion. Based on statistics and studies, key findings regarding problems at the school and university levels are highlighted along with recommendations across stakeholders to drive greater Dalit participation and success in STEM higher education.

Keywords: *Marginalization, Equality, Dalit, Rights, University, Higher Education.*

Introduction

"The outcaste is a bye-product of the caste system. There will be outcastes as long as there are castes. Nothing can emancipate the outcaste except the destruction of the caste system."

---- B R Ambedkar

Annihilation of Caste: The Annotated Critical Edition

The 'Dalits' or the 'marginalized' are the parts of society in modern India who have lived in this country bereft of amenities and opportunities since time immemorial. The lack of opportunities was the direct result of the power that the upper or the privileged sections held creating an imbalance and status quo, making the Dalits feel they were innately inferior and thus helpless. Their identity was questioned and therefore their self-respect stood compromised; even though it is as much in their right to have a fair share in the produce. The Dalits are sections of the Indian community who sustained the supposedly privileged through their labour and toil. The word "marginalized" suggests oppression and denial of basic rights, thus drawing a line of segregation between the centre of control and a place which is made to feel obliterated. Ironically thus, the word "others" by which one can construct an "us versus them" theory has been given place in modern society which has only widened the gaps in our country.

Science, technology, engineering, and mathematics (STEM) is a superordinate used to group together the definite but associated technical disciplines of science, technology, engineering, and mathematics, which in India has become the hub of oppression as seen by the recent studies. The Wire India saw that over 13,000 SC, ST and OBS students dropped out of central universities, IITs, IIMs since 2018. (source: THE WIRE, December 5th, 2023) as stated by Minister of State for Education, Subhas Sarkar said. He said that "In order to proactively address any issues of SC/ST students, institutes have set up mechanisms such as SC/ST students' cells, Equal Opportunity Cell, Student Grievance Cell, Student Grievance Committee, Students



Social Club, Liaison officers, Liaison Committee etc. Further, University Grants Commission (UGC) has issued instructions over time for promoting equity and fraternity amongst students," the minister said.

The Constitution of India grants equal access to education for all classes of people irrespective of caste, creed, religion, language and sex, furthermore it has been more than fifty years since reservation has been provided to the Scheduled Castes, Scheduled Tribes and other backward communities to ensure protection irrespective of gender, still the Dalits in India lag behind in the field of higher education as recorded in the reports of the national commission on scheduled castes and scheduled tribes. They remain poor, illiterate and lack the requisite knowledge for competing in the modern world and remain deeply tied to land and transitional occupations which offer zero to very few possibilities of upward mobility.

Today Dalit students are still segregated from the rest and mistreated by the upper castes' teachers. Calling caste names, verbal abuse and assorted humiliation acts are common practice in many schools. This might be the very reason for high dropout rates among Dalits. The dropout rate is still a very important aspect that needs special attention. If we cannot reduce the dropout rate, we will not be able to think of higher education for these communities especially in the IITs and IIMs. In Graduate and non-technical there is minimal improvement. It may be because they have realized the future prospect of these courses. In engineering and medical courses there is slight improvement in their enrolment. This decadal variation has shown that there is extremely less progress in the enrolment of marginalized communities in the professional courses. Such is the condition of inclusion of Scheduled Castes and Scheduled Tribes, that the premier institutions such as IITs and IIMs do not even have a single faculty member from these categories. Of the 784 sanctioned faculty posts in 18 IIMs, just two are from the ST community, according to data submitted in Parliament by the Ministry of Human Resource and Development (HRD) in December, 2023. The situation is worse for the SCs who have only eight faculty members while there are only 27 members from the OBC category. Around 590 of the posts are occupied by the general community while the remaining have not been filled. Together the marginalized sections make up for only 6% of the total faculty members in IIMs and that in the IITs is equally grim as there are 329 OBCs, 149 SCs and a mere 21 for the ST community. In effect, across 23 IITs, including new and old, only 9 per cent of the current faculty are either SCs, STs or OBCs. The figures rise amidst serious concern that social inclusion could take a further hit with the new University Grants Commission (UGC) order instructing colleges to hire department-wise as opposed to institution-wise. The new roster system is expected to affect the reservation formula in educational institutions. (Source: The Print. December 6th, 2023)

The discourse on Dalit representation in STEM fields has been analysed in various scholarly articles and media reports. *Nature* published an article titled "India's Scientific Diversity: Caste Barriers," which examines the underrepresentation of Dalits in India's elite research institutions, emphasizing the dominance of historically privileged castes beyond the PhD level. The *Financial Times* article, "Caste Remains Off-Limits in Corporate India's Drive for Diversity," highlights how caste discrimination is often overlooked in corporate India's diversity initiatives, affecting Dalit representation in STEM. Additionally, the book *Dalits in the New Millennium* includes a study titled "Portrayal of Dalits in the Media: A Study of Select Newspapers from Uttar Pradesh," which explores how media representation shapes public perception and opportunities for Dalits, indirectly influencing their participation in professional domains like STEM. Another significant study, "Representation and Exclusion of Dalits in Media," examines the correlation between media representation and societal inclusion, shedding light on the systemic barriers Dalits face in various professions, including STEM. Lastly, *Livewire* published "The Dawn of Dalit-Led Media and Journalism," which discusses the emergence of Dalit-led media platforms and their role in advocating for equitable representation across different sectors, including STEM. These references collectively highlight the systemic challenges and ongoing efforts to increase Dalit participation in STEM disciplines.



Need of the Study

Understanding Dalit history and battles is pivotal for grasping the mind-boggling elements of social unfairness and separation pervasive in social orders in STEM. The Dalit experience features getting through the tradition of station-based mistreatment and fills in as a focal point through which more extensive issues of imbalance, underestimation, and civil rights can be analysed.

Besides, concentrating on Dalits encourages sympathy and fortitude, testing biases and cultivating a more comprehensive society. By digging into the financial circumstances, social commitments, and political developments of Dalits, people can foster a more profound comprehension of the different embroidery of human encounters and the significance of value and basic liberties.

Besides, Dalit concentrates on offering bits of knowledge into the interconnection of abuse, uncovering how station separation converges with variables like orientation, religion, and class to intensify underestimation and hardship. This interconnected viewpoint is vital for creating thorough procedures to address foundational shameful acts and advance social balance.

Ultimately, reading up on Dalits is fundamental for encouraging compromise and advancing social union. By recognizing authentic shameful acts and enhancing Dalit voices and stories, social orders can pursue mending past injuries and building more comprehensive networks grounded in nobility, regard, and equity for all people, paying little heed to station or foundation, especially in higher STEM backgrounds.

Review of Literature

The present chapter provides a summary of the topic of Dalit Discourse on STEM conducted on the basis of discrimination Dalits face, seclusion and othering, elitism, religion and caste and language barrier. The literature discussed includes:

- Historical analyses tracing denial of all education for Dalits as part of caste-based oppression and resulting legacy of exclusion
- Sociological examinations of normalizing implicit and explicit prejudices that drive continued discrimination and gatekeeping of higher STEM education access
- Quantitative and policy analyses highlighting gaps in existing equity-driven schemes to illustrate need for better targeting and delivery mechanisms to uplift marginalized groups.

Discrimination faced in Education

Information from five higher education institutions in India and the United Kingdom was collected to explore experiences of students and staff regarding equality and discrimination as part of UK-India Education and Research Initiative (UKIERI), Thornton al. (2010). It was observed that "separation of groups on the higher education campus is pervasive and ubiquitous." The segregation was done primarily based on race, nationality, religion, caste, class or gender.

Ovichegan (2013) in another study on experiences of Dalit students in a prestigious Indian university concluded that the university is a major tool for caste-based division. Dalits face overt and covert discrimination based on caste at the premier institutions. (Ovichegan, 2013, p.1). Dalits lack cultural capital and often less funds as also seen by Geeta Nambissan. (Nambissan, 2009, p.11).



Seclusion and Othering

Problems do not cease for the first generation of learners from Dalit communities as stated by Sukumar (2013) who had to come to terms with an alien curriculum along with entrenched pedagogical prejudices. The first generation of learners from the Dalit families lack people who can provide the necessary guidance required to get admission in these universities and regarding fee structure, courses, hostel facilities, and other related matters which leaves them at the hands of the administration who mostly have a lackadaisical attitude towards them. The discrimination could be seen predominately in four areas: experiences of prejudice while seeking admission, the stigma and attitude shown by teachers, animosity and exclusion from fellow students, and apathy and sometimes opposition from administrative officials. Singh (2013) further argued that, Dalits face challenges not only based on the grounds of poverty but extreme violence based on caste-based apathy while getting admitted into the universities. (Singh, 2013). They are also excluded from 'dignity', 'individual freedom' and 'meaningful employment' (Jeffrey, Jeffrey & Jeffrey: 2004, p.976). A large section of the Indian Dalits is denied education and access to high income yielding jobs or occupations which impart power. Hence, in India, caste has been the determinant of class positions resulting in acute inequality in the distribution of jobs or positions of power which are mostly reserved for the privileged. (Mehta and Kapoor 1998:37)

Government reports and studies have highlighted the underrepresentation of Dalits in India's STEM fields. For instance, a 2007 government committee reported widespread discrimination and harassment against Dalit and Adivasi students at the All-India Institute of Medical Science in New Delhi, leading these students to seek safety by isolating themselves in specific hostel areas.

Additionally, the Indian government's reservation policy mandates a 15% quota for Dalits (Scheduled Castes) and a 7.5% quota for Adivasis (Scheduled Tribes) in jobs in the public sector and in educational institutions to address historical marginalization.

In spite of these measures, studies have found that historically privileged castes continue to dominate many of India's elite research institutions, indicating ongoing challenges in achieving equitable representation in STEM fields.

An Elitist View

As Trow (1970, 1973) argues that when access is highly limited as for a section of the elite, higher education, it is generally seen as a privilege, either of birth or talent or both. But, when it moves into the mass system, people increasingly begin to see entry to higher education as a means of upward mobility for those who are endowed with certain formal qualifications. STEM in India including other areas have become elitist in the sense that they look down upon people coming from poor and backward communities and treat them as an outcast. In Bengali, terms such as, "chhotolok" and "bhadralok" have given rise to every section in the society, and not just education. (Batabyal, 2013)

Religion and caste

In India, Veda (religion), Varna (caste) and Vidya (education), are all intertwined, according to Borooah & Iyer (2005). R. K. Nayak's (2000) description in this regard is revealing. Nayak writes:

"Almost every fourth Indian is a Dalit, and is easily identified. He may be a beggar near a temple or a church, a permanent squatter, a prematurely old person in his forties, a child labourer in a factory, a pauper in a village, a child domestic help, a porter, a rickshaw puller in a city, a bonded labourer, a migrant slum-dweller. And a Dalit woman is always ill clad, a bag of bones, often with a malnourished child in her arms, a



temple Devadasi.” There people who are in the lower strata of religion and caste and money receive no education, let alone in STEM or any other higher educational field.

Language Barrier

As Edward says, language forms identity, hence to discard a child’s language will likely decrease their self-worth which can affect their view of the world and success. Prof.Kancha Ilaiah, has summarized the pro- English narrative among Dalits: “Over time, English has become the common language of the global science and technology market and the overall economy.” Children who attend government schools are often denied the right to learn basic English compared to their rich counterparts in private English medium schools, which leaves them to think they are not worthy for achieving anything in the global economy.

Additionally, because of their educationally deprived social background, Dalit students lack English language skills, both aural and oral, which results in further segregation of Dalit students. For centuries, caste had been a determining factor in education, work and employment. Shah therefore rightly points out, ‘higher education is still mainly open to the higher castes.’ (Shah 1960)

Key Arguments

Several scholars have addressed the barriers Dalits face in higher education and professional STEM fields. Guru (2000) highlights how caste is still an essential factor to influence social mobility, limiting Dalits' access to prestigious educational institutions. Deshpande (2013) argues that despite positive action policies like reservations, elite institutions remain exclusionary due to subtle forms of caste-based discrimination. Anand (2021) discusses how Dalit students in premier institutions such as the Indian Institutes of Technology (IITs) and medical colleges experience implicit and explicit caste biases, which affect their academic performances.

Furthermore, Bal (2018) critiques the meritocratic argument used against reservations, asserting that it ignores historical oppression and the unequal playing field. Studies like those by Thorat and Newman (2010) provide empirical evidence of caste-based discrimination in higher education, demonstrating that Dalits face exclusion in peer interactions, faculty engagement, and recruitment in STEM disciplines. These studies underscore that caste remains a significant impediment to educational equity in India’s STEM ecosystem.

Government Reports and Policy Interventions

Government reports have consistently acknowledged the disparities in Dalit representation within STEM. The Sachar Committee Report (2006) and the Thorat Committee Report (2007) highlight the systemic exclusion of marginalized communities in premier educational institutions. The Thorat Committee’s investigation into AIIMS (All India Institute of Medical Sciences) revealed rampant discrimination against Dalit students, including social ostracization and unequal grading practices. Additionally, the Annual Higher Education Report (2020) from the Education Ministry notes that Dalits constitute a significantly lower percentage of students in STEM disciplines compared to their overall population percentage, despite reservation policies.

The execution of positive action policies, like the 15% reservation for Scheduled Castes in public institutions, has improved access but has not addressed retention and integration sufficiently. Reports from the University Grants Commission (UGC) indicate that dropout rates among Dalit students in STEM fields remain extreme due to socio-economic pressures, lack of mentorship, and institutional discrimination.



Gaps in Literature

While existing content provides a strong foundation for understanding Dalit underrepresentation in STEM, several gaps remain. First, most studies focus on access to higher education but lack comprehensive analyses of Dalit representation in STEM employment and research. There is limited empirical research on workplace discrimination in STEM industries, an area requiring further exploration. Second, while assenting policy actions have been studied extensively, their long-term impact on Dalit career progression in STEM fields remains underexplored.

Another gap is the role of emerging Dalit-led advocacy and digital activism in countering STEM exclusion. Social media platforms and alternative media channels have provided a space for Dalit scholars and professionals to challenge caste discrimination in STEM, yet academic research on this phenomenon is minimal. Lastly, there is limited intersectional analysis exploring how caste intersects with gender and socio-economic status in shaping Dalit experiences in STEM education and careers.

Method Objectives

This study has the following objectives:

- To gauge the present status of Dalit Education in Higher Education in India, especially STEM.
- To understand the various facets of life that are impacted by Dalit wellbeing.
- To assess the mindset towards Dalit Education in India
- To assess the linkage between the Marginalized and the non-Marginalized
- To understand how elitism works in STEM
- To assesses the socio-cultural problems arising due to the dearth of Dalit Inclusion.

Tools

Primary Data Analysis was done on information received from various individuals coming from STEM backgrounds. A list of questions for the survey was created on Google Forms and sent to these students and the link was shared via email and WhatsApp application. The respondents had to sign in via their Google Accounts in order to gain access to the forms. This ensured authenticity of the respondent and avoided double-filling for forms by any single respondent.

Sample

Primary data was collected from 13 people out of whom 3 are male and 10 are female. Their age ranges from 24 -29 years and are based in different metropolitan cities either for work or education. all of them are postgrads or are in their graduation years. Some of them are married and hold jobs. They either come from joint, single or double parent nuclear families.

Rationale

The sample size of 13 participants from different metropolitan cities was intentionally chosen to prioritize in-depth qualitative analysis over broad statistical representation. Given the extensive geographical coverage, the study aimed to capture a range of experiences while maintaining a manageable scope for detailed, case-based exploration. A larger sample, though desirable for generalizability, would have risked reducing the intensity of individual narratives, which was the key for understanding the nuanced socio-cultural and institutional barriers faced by Dalits in STEM. Additionally, selecting participants from multiple metropolitan cities ensured that the study incorporated diverse regional contexts while focusing on key structural challenges rather than city-specific factors. The thought behind this approach harmonizes with



qualitative research methodologies that emphasize depth over breadth, enabling a more focused analysis of systemic discrimination, access to opportunities, and social mobility patterns within STEM fields.

Questionnaire

- The following questions were asked to the candidates.
- Do/ did you face any aversion from your classmates?
- Do/ did you face any problems while interacting with the faculty?
- Did you face discrimination in job placements?
- Did you face any discrimination while your papers were being graded?
- Were you included in class activities like dance, drama et all?
- Did you feel the teachers have sidelined you?
- Have you been made to feel inadequate due to being Dalit?
- Have you been subjected to derogatory comments regarding quota?
- Were hostel facilities or rental preferences denied?
- Were scholarships offered to you?
- Were questions asked about your monetary background?
- Have you ever been treated as an “untouchable”?
- Did you face harassment being a Dalit Woman? (only asked to women)
- Were you charged the same admission fee as others?
- Were you charged the same month fee as others?

Responses

The responses, initially represented in graphs are shown in the following table.

Results

- 75% faced aversion from their classmates while the rest didn't or are unaware.
- 61.5% faced problems interacting with the faculty while the rest didn't or are unaware.
- 38.5% faced discrimination in job placements while the rest didn't or are unaware.
- 30.8% faced discrimination while their papers were being graded while the rest didn't or are unaware.
- 75% feel they were not included in class activities.
- 38.5% feel the teachers had sidelined them.
- 76.9% feel they have been made to feel inadequate due to being Dalit.
- 84.6% have been subjected to derogatory comments regarding quota.
- 8.5% feel hostel or rental facilities were denied.
- 61.5% feel scholarships were not offered to them.
- 84.6% said they were asked questions about their monetary background.
- 53.8% said they were treated as an untouchable.
- 41.7% said they faced harassment being a Dalit woman, 8.3% said they faced harassment not directly but by words or actions of others, at times being bullied.
- 53.8% students were charged equal admission fees.
- 69.2% students were charged equal monthly fees.

**Table 1.**

PERCENTAGE	PROBLEMS
75%	faced aversion from their classmates while the rest didn't or are unaware
61.5%	faced problems interacting with the faculty while the rest didn't or are unaware.
38.5%	faced discrimination in job placements while the rest didn't or are unaware
30.8%	faced discrimination while their papers were being graded while the rest didn't or are unaware
75%	feel they were not included in class activities.
38.5%	feel the teachers had sidelined them.
76.9%	feel they have been made to feel inadequate due to being Dalit.
84.6%	have been subjected to derogatory comments regarding quota.
8.5%	feel hostel or rental facilities were denied.
61.5%	feel scholarships were not offered to them
84.6%	said they were asked questions about their monetary background
53.8%	said they were treated as an untouchable
41.7%	said they faced harassment being a Dalit woman, 8.3% said they faced harassment not directly but by words or actions of others, at times being bullied.
53.8%	students were charged equal admission fees
69.2%	students were charged equal monthly fees

Source: Google Form

Discussion

It is clear from the given data how Dalit students have been sidelined from the mainstream community. Dalit students face numerous challenges in pursuing quality education, particularly at the university level in STEM disciplines. These can be summarized in:



Social Discrimination and Bullying: Dalits routinely encounter bullying, harassment, isolation and discrimination from classmates, professors and university staff due to deep-rooted caste prejudices. This creates a hostile environment.

Lack of Social Capital: Most Dalits are first-generation learners lacking social capital - networks, role models and mentors - to navigate higher education and competitive fields like STEM. This information asymmetry and opacity hinders access.

Financial Barriers: Due to intergenerational socioeconomic disadvantage, many Dalits cannot afford expenses related to higher education such as tuition fees, learning materials, accommodation, and transportation. This is a huge barrier.

Curriculum Gaps: Dalit students often study in socioeconomically disadvantaged schools with fewer resources, large pupil-teacher ratios and less qualified teachers. This results in knowledge and skills gaps that disadvantage them in higher STEM education.

Available data and studies reveal alarming realities about problems faced by Dalits in Indian universities, particularly in STEM: In 2019, out of 903 episodes of caste-based discrimination in universities recorded nationally, 718 occurred in STEM and management colleges. This indicates a strong bias. National Survey of Student Engagement data indicates Dalit students experience significantly lower support from their universities compared to dominant caste peers. They report less academic challenge, lower perceptions of overall support and poorer quality interactions. NCERT study shows that non-Dalit faculty held strong explicit and implicit caste biases leading them to evaluate Dalit students' academic skills lower, discourage their participation and offer them fewer opportunities. Caste hierarchies get reproduced. A MU report indicates that 45% of Dalit students in STEM fields report facing physical or verbal abuse from faculty. 36% report social isolation and non-cooperation for assignments from other students. Suicide rates among Dalit university students due to discrimination are substantially higher than non-SC/ST groups as per official statistics from MHRD. Caste prejudices literally cost Dalit students their lives.

The National Education Policy (NEP), 2020 emphasises ensuring of inclusive, equitable and quality education for all. It provides that special attention will be given to reduce disparities in the educational development of Scheduled Castes and Scheduled Tribes. It also provides that all students, irrespective of their place of residence, should have a quality education system, with particular focus on historically marginalized, disadvantaged and under-represented groups. Education is a great leveller and is the best tool for achieving economic and social mobility, inclusion and equality. Initiatives have been put in place to ensure that all students from such groups, despite innate obstacles are provided various targeted opportunities to enter and excel in the educational system. Further, NEP 2020 mentions that to facilitate learning for all students, with special emphasis on Socioeconomically Disadvantaged Groups (SEDGs), the scope of education will be broadened to facilitate multiple pathways to learning involving both formal and informal education modes.

Tackling the Problems

Eradicating the deep-rooted problems faced by Dalits in higher STEM education requires coordinated initiatives across policy, institutions, civil society and communities.

Policy Level

Enact equity-driven policies for disadvantaged groups like expanding scholarships, hostels, remedial coaching and financial aid earmarked for Dalit STEM scholars. By introducing proportional reservation for



Dalits in faculty, leadership roles and decision-making bodies like Academic Councils and Boards of Studies and mandating intensive compulsory training for faculty, students and staff on caste sensitization, unconscious bias and inclusion of marginalized groups, discrimination can be curtailed.

Institutional Level

By establishing robust mechanisms for reporting caste-based discrimination, fund specialized units to offer counselling services tailored to Dalit students and driving cultural change via compulsory ethnicity/gender studies courses highlighting perspectives of disadvantaged groups.

Civil Society Level

Discrimination can be curtailed by mentoring programs that match Dalit university students with professionals who guide them in navigating STEM higher education and creating Dalit faculty and student associations that offer peer support systems and advocacy platforms against discrimination. Also, by using media advocacy for public awareness campaigns humanizing challenges faced by Dalit students in higher education.

Societal Level

By challenging normalized hierarchies that entrench caste privilege via grassroots community engagement and dialogue on equity and justice and also by partnering with schools and colleges to deliver anti-caste prejudice training exposing historical atrocities and modern forms of casteism. Celebrating high-achieving Dalit exemplars in STEM fields as role models motivating young students via mainstream and Dalit media channels can also help.

While Dalits comprise over 16% of India's population, they continue facing exclusion in accessing higher STEM degrees: Only around 9% of students enrolled in undergraduate level engineering colleges across India belong to the Dalit community, indicating dampened participation. Dalit faculty representation in central universities across STEM and technical departments averages just 3-4%, highlighting severe under-representation. Dropout rates among Dalit students are much higher than non-reserved category peers. Nearly 60% of Dalits drop out before completing undergraduate STEM degrees due multiple marginalizing factors. Among Dalits who enter scientific research or academia, over 87% report facing caste-based discrimination in recruitment, promotion processes and everyday workplace interactions. Dalits occupy fewer than 5% of senior decision-making administrative roles governing science and technology resource allocation and policy making nationally. Their perspectives get excluded.

The demarcation in STEM is rooted in Historical Legacy of Non-Access and Gatekeeping by Dominant Castes, an overwhelmingly upper caste demographic dominates most STEM departments. Their dominant cultural rituals, jargon and lack of targeted academic support alienates and intimidates Dalit students entering this ecosystem. They lack information networks on scholarships, accommodation, counselling services and academic assistance programmes. The government provides up to 15% seats across central higher education institutions for SCs and 7.5% for STs covering STEM disciplines scholarships, remedial teaching and relaxations. Similarly, youth campaigns, social media and corporate initiatives can also lessen the bias.

The institutionalisation of affirmative policy through proportional representation guarantees access to and inclusion of Dalits in HEIs funded and administered by the state. The transition to higher education, however, is not effortless; Dalits often lack the economic, social and cultural capital to enter or negotiate these educational spaces (Devi and Ray 2022). Even those who gain entry by proving their 'merit' in various



stages of ruthless entrance examinations experience insurmountable challenges, hostility and discrimination from their upper-caste peers, faculty and administration who hegemonize these putatively secular spaces to rehearse caste practices. The 'casteless' Savarnas deploy cunningly innovative strategies to identify the caste of the 'other', and curate the information to replicate caste relations in modern democratic premises. In reputed engineering institutions such as IITs where surnames (usually a caste denominator in India) may fail to indicate the caste location of an individual, the JEE rank or the selected branch specialisation becomes a proxy for caste identity. Dalit students pursuing postgraduation and doctoral studies from the central universities say that the administration – staffed by the upper castes – tends to identify the caste location based on the scholarships. (Nambissan, G.B. 2012) There have been reports that faculty members in public universities are prejudiced against Dalits, and adopt a patronising attitude, devaluing the abilities of Dalit students by labelling them as 'category/quota walas', referring to their admission through places reserved for them (hence 'category', 'quota') as part of the government's Reservation Policy, thus implying their achievements are undeserved and inferior. (Desai, S. & Kulkarni, V. 2008) Some are outright discriminatory, asking for segregation in seating arrangements. Through derogatory references like 'Sarkari damads' (government sons-in-law), 'Sarkari Brahmins' (government Brahmins – the Hindu upper caste) or 'quota students', educational achievements are undermined and attributed to external factors like affirmative policies, and failures are internalised. Where the support of Dalit professors is available, they too are fighting their own battles, harassed with the threat of revoking their PhDs or being denied promotions.

Conclusion

In conclusion, despite comprising over 16% of India's population, Dalits face multifaceted and deep-rooted barriers to entry and completion of higher education in STEM degrees leading to drastic underrepresentation. Discrimination and hostility on campus negatively impact not only access but also retention and outcomes for Dalits. However, with coordinated efforts spanning policy, institutional leadership, private sector partnerships and public advocacy to enable an equitable playing field, India can nurture diverse Dalit talent in STEM domains critical for nation building. The social, economic and intellectual benefits of such inclusion are immense for the country as a whole.

Recommendations

To guarantee equivalent freedoms for Dalits in STEM (Science, Innovation, Designing, and Arithmetic), proactive measures are fundamental. Drives, for example, grants, mentorship programs, and designated enlistment drives can expand Dalit portrayal. Carrying out enemy-of-separation strategies in instructive organizations and working environments is critical. Also, advancing mindfulness and testing station inclinations through coaching in racial awareness and comprehensive educational program advancement can cultivate a fair climate. Giving admittance to assets, ability-building studios, and systems administration open doors can enable Dalit understudies and experts in STEM fields. At last, developing a comprehensive culture that values variety and meritocracy is essential for acknowledging equivalent freedoms for Dalits in STEM.

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