



Ensure equity and inclusion in higher education by providing scholarships and other support to students from socio-economically disadvantaged backgrounds, especially women, SC/ST/OBC, and differently-abled students in Indian Higher Education institutions.

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Abstract:

The study aims to explore the methods and initiatives to increase the Gross Enrolment Ratio (GER) of socio-economically disadvantaged groups (SEDGs) in higher education from the current 26.3% to 50% by 2035, as envisioned by the National Education Policy (NEP) 2020. The study is based on the various sources of references and covers various aspects of higher education, such as access, quality, relevance, equity, inclusion, employability, and entrepreneurship. The study also provides suggestions and recommendations for improving the various aspects of higher education for SEDGs, and for achieving the goal of increasing the GER of SEDGs in higher education by 2035. The study also provides sources of references for the information and data used in the study.

1. Introduction:

The NEP 2020 is a comprehensive policy document that aims to transform the Indian education system and make it more inclusive, equitable, and quality-oriented. One of the key objectives of the policy is to ensure that all students, irrespective of their socio-economic status, gender, caste, religion, or disability, have access to quality higher education opportunities and can achieve their full potential. The policy recognizes that there are various barriers and challenges that prevent many students from historically marginalized, disadvantaged, and underrepresented groups (SEDGs) from entering and excelling in higher education. These include lack of awareness, financial constraints, admission processes, geographical and language barriers, poor employability potential, and lack of appropriate student support mechanisms. To address these issues, the policy proposes several initiatives and interventions that aim to provide scholarships and other support to SEDGs in both public and private higher education institutions (HEIs).

Objectives:

The main objectives of ensuring equity and inclusion in higher education by providing scholarships and other support to SEDGs are:

- To increase the Gross Enrolment Ratio (GER) of SEDGs in higher education from the current 26.3% to 50% by 2035, with clear targets for each group and sub-group (1).
- To reduce the dropout rates and improve the retention and completion rates of SEDGs in higher education, especially for women, SC/ST/OBC, and differently-abled students (1).
- To enhance the quality and relevance of higher education programmes and curricula for SEDGs, and to ensure that they are aligned with the national and global standards, as well as the needs and aspirations of the students and the society (2).
- To promote the holistic development and well-being of SEDGs in higher education, and to foster a culture of respect, diversity, and inclusion in HEIs (1).
- To increase the employability and entrepreneurship potential of SEDGs in higher education, and to facilitate their transition to the world of work and lifelong learning (2).

Challenges and Problems:

Some of the major challenges and problems that hinder the achievement of equity and inclusion in higher education for SEDGs are:

- Lack of awareness and information about the higher education opportunities and scholarships available for SEDGs, especially in rural and remote areas, and among first-generation learners (1).
- High opportunity costs and fees for pursuing higher education, which deter many SEDGs from enrolling or continuing their studies, especially in private HEIs (1).
- Inadequate financial assistance and scholarships for SEDGs in higher education, which are often insufficient, irregular, or delayed, and do not cover the full cost of education, including tuition, accommodation, transportation, books, and other expenses (2).
- Complex and rigid admission processes, which often exclude or disadvantage SEDGs, especially those who do not have access to quality school education, coaching, or guidance.
- Geographical and language barriers, which limit the access and participation of SEDGs in higher education, especially those who live in aspirational districts, special education zones, or regions where HEIs do not offer programmes in local or Indian languages (3).
- Poor quality and relevance of higher education programmes and curricula, which often do not reflect the diversity, needs, and aspirations of SEDGs, and do not equip them with the necessary knowledge, skills, and competencies for the 21st century (3).
- Lack of appropriate student support mechanisms, such as mentoring, counselling, remedial teaching, peer learning, academic and career guidance, and psycho-social support, which are essential for the academic success and well-being of SEDGs in higher education (3).
- Low employability and entrepreneurship potential of SEDGs in higher education, which result from the mismatch between the demand and supply of skills in the labour market, and the lack of exposure, opportunities, and networks for SEDGs (3).

Benefits:

Some of the expected benefits of ensuring equity and inclusion in higher education by providing scholarships and other support to SEDGs are:

- Enhanced access and participation of SEDGs in higher education, which will contribute to the social and economic development of the nation, and to the achievement of the Sustainable Development Goals (SDGs) (4).
- Improved learning outcomes and academic performance of SEDGs in higher education, which will reflect their capabilities, interests, and potential, and will enable them to pursue higher studies or research in their chosen fields (4).

- Increased diversity and inclusion in HEIs, which will enrich the academic and social environment, and will foster a culture of mutual respect, collaboration, and innovation.
- Enhanced well-being and empowerment of SEDGs in higher education, which will boost their confidence, self-esteem, and resilience, and will enable them to overcome the challenges and barriers they face in their personal and professional lives (4).
- Increased employability and entrepreneurship potential of SEDGs in higher education, which will enhance their career prospects and opportunities, and will enable them to contribute to the economic growth and social progress of the nation (5).

Methods:

Some of the methods and initiatives proposed by the NEP 2020 to ensure equity and inclusion in higher education by providing scholarships and other support to SEDGs are:

- Earmarking suitable government funds for the education of SEDGs, and setting clear targets for higher GER for each group and sub-group (1).
- Enhancing gender balance in admissions to HEIs, and ensuring that at least 50% of the learners in all HEIs are women by 2035 (2).
- Enhancing access by establishing more high-quality HEIs in aspirational districts and special education zones containing larger numbers of SEDGs, and developing and supporting HEIs that teach in local or Indian languages or bilingually (3).
- Providing more financial assistance and scholarships to SEDGs in both public and private HEIs, and ensuring that they cover the full cost of education, and are disbursed in a timely and transparent manner (4).
- Conducting outreach programmes on higher education opportunities and scholarships among SEDGs, especially in rural and remote areas, and using various media and platforms to disseminate information and awareness (3).
- Making admission processes more inclusive and flexible, and using multiple parameters and criteria to assess the merit and potential of SEDGs, such as school performance, entrance tests, interviews, portfolios, etc (1) (4).
- Making curriculum more inclusive and relevant, and ensuring that it reflects the diversity, needs, and aspirations of SEDGs, and that it is aligned with the national and global standards, as well as the emerging trends and demands of the 21st century.
- Increasing employability potential of higher education programmes, and ensuring that they provide SEDGs with the necessary skills, competencies, and exposure for the world of work and lifelong learning, and that they are linked with the industry, academia, and society (5).
- Developing and implementing appropriate student support mechanisms, such as mentoring, counselling, remedial teaching, peer learning, academic and career guidance, and psycho-social support, and ensuring that they are accessible, effective, and responsive to the needs and challenges of SEDGs (5).

2. Gross Enrolment Ratio:

Gross Enrolment Ratio (GER) is a measure of the number of students enrolled in a level of education, such as primary, secondary, or tertiary education, based on the population of the age group that corresponds to that level. It is used to indicate the general level of participation and access to education in a country or region. It can be calculated by dividing the total enrolment in a level of education by the population of the official age group for that level, and multiplying by 100. For example, if there are 10 million children of age 6 to 10 in a country, and 8 million of them are enrolled in primary education, then the GER for primary education is $(8/10)*100 = 80\%$. GER can be over 100% due to various factors, such as students who are older or younger than the official age group, students who repeat a grade, or students who enrol late or advance quickly (6) (8).

GER is one of the indicators used by the United Nations to calculate the Human Development Index (HDI) and other indices that measure the well-being and progress of countries. GER is also used to monitor the progress of the Sustainable Development Goals (SDGs), especially Goal 4, which aims to ensure inclusive and equitable quality education and lifelong learning opportunities for all (6) (7).

According to the latest report on Unified District Information System for Education Plus (UDISE+) 2021-22, the GER for school education in India has improved at primary, upper primary, and higher secondary levels, compared to 2020-21. The GER for higher secondary has increased from 53.8% to 57.6%, which is a significant improvement. The report also shows that the enrolment of students from socio-economically disadvantaged groups (SEDGs), such as women, SC/ST/OBC, and differently-abled students, has increased in 2021-22 (7) (9).

3. Human Development Index :

The Human Development Index (HDI) is a statistic developed and compiled by the United Nations since 1990 to measure various countries' levels of social and economic development (10).

It is based on three dimensions: life expectancy, education, and per capita income. The HDI is calculated by taking the geometric mean of the normalized indices for each dimension, and ranges from 0 to 1, with higher values indicating higher levels of human development (11).

The HDI is used to rank countries into four tiers of human development: very high, high, medium, and low. The HDI also helps to monitor the progress of the Sustainable Development Goals (SDGs), especially Goal 4, which aims to ensure inclusive and equitable quality education and lifelong learning opportunities for all (12).

The HDI is updated annually and published in the Human Development Report by the UNDP. The latest report, released in 2022, shows that Norway has the highest HDI value of 0.957, while Niger has the lowest of 0.394. India ranks 131st out of 189 countries, with an HDI value of 0.645.

4. Difference between HDI and GDP :

The difference between HDI and GDP is that HDI is a measure of human development, while GDP is a measure of economic output. HDI takes into account three dimensions of human well-being: life expectancy, education, and standard of living. GDP measures the total value of goods and services produced within a country in a given period of time. HDI and GDP are both indicators of a country's progress and development, but they have different strengths and limitations (13).

HDI is a more comprehensive and holistic measure of development than GDP, as it reflects the quality of life and the opportunities available for people in a country. HDI can capture aspects of human development that GDP cannot, such as health, education, and equality. HDI can also show the trade-offs and balances between economic growth and human development, and how they affect each other. For example, a country may have a high GDP, but a low HDI, if it does not invest enough in health, education, or social welfare. Conversely, a country may have a low GDP, but a high HDI, if it prioritizes human development over economic growth (14).

GDP is a more objective and standardized measure of development than HDI, as it is based on quantitative and verifiable data. GDP can be easily compared across countries and time periods, and can show the changes in the size and structure of a country's economy. GDP can also indicate the potential and capacity of a country to produce goods and services, and to generate income and wealth. GDP can show the impact of

economic policies and strategies on a country's development, and how they affect its competitiveness and productivity (15).

However, both HDI and GDP have some limitations and drawbacks as measures of development. HDI does not capture all aspects of human development, such as political freedom, cultural diversity, environmental sustainability, or subjective well-being. HDI also relies on some assumptions and estimations, such as the weights assigned to each dimension, the thresholds for each category, and the data availability and quality for each country. HDI may not reflect the variations and inequalities within a country, or the specific needs and preferences of different groups and regions (16).

GDP does not capture the distribution and allocation of goods and services, or the social and environmental costs and benefits of production. GDP also does not reflect the non-market activities and transactions, such as household work, informal sector, or volunteer work, that contribute to human development. GDP may not account for the differences in the purchasing power and the cost of living across countries or the changes in the quality and quantity of goods and services over time. GDP may also be influenced by external factors, such as inflation, exchange rates, or natural disasters that do not reflect the true state of a country's development (16).

Therefore, HDI and GDP are different but complementary measures of development, and they should be used together to get a more complete and balanced picture of a country's progress and performance. HDI and GDP can help to identify the strengths and weaknesses of a country's development, and to inform and evaluate the policies and actions that can improve the well-being and potential of its people.

5. Countries having the highest GDP and HDI :

According to the study results, the countries with the highest GDP and HDI are not necessarily the same. GDP stands for gross domestic product, which measures the total value of goods and services produced within a country in a given period of time. HDI stands for human development index, which measures the average achievement of a country in three dimensions of human development: a long and healthy life, knowledge, and a decent standard of living (17).

The latest data on GDP and HDI are from 2020 and 2021 respectively. Based on these data, the top 10 countries with the highest GDP in 2020 were (18):

- United States (\$20.93 trillion)
- China (\$14.72 trillion)
- Japan (\$4.91 trillion)
- Germany (\$3.78 trillion)
- United Kingdom (\$2.64 trillion)
- India (\$2.59 trillion)
- France (\$2.58 trillion)
- Italy (\$1.85 trillion)
- Canada (\$1.60 trillion)
- South Korea (\$1.58 trillion)

The top 10 countries with the highest HDI in 2021 were (19):

- Norway (0.957)
- Switzerland (0.955)
- Australia (0.944)
- Ireland (0.942)
- Germany (0.939)

- Iceland (0.938)
- Sweden (0.937)
- Netherlands (0.933)
- Denmark (0.930)
- Finland (0.928)

As we can see, only four countries (United States, China, Japan, and Germany) appear in both lists, indicating that they have both high economic output and high human development. The other six countries with the highest GDP (United Kingdom, India, France, Italy, Canada, and South Korea) have lower HDI values, ranging from 0.922 to 0.645, indicating that they have some gaps or challenges in achieving human development. Similarly, the other six countries with the highest HDI (Norway, Switzerland, Australia, Ireland, Iceland, and Sweden) have lower GDP values, ranging from \$0.33 trillion to \$1.42 trillion, indicating that they have smaller or less diversified economies.

Therefore, GDP and HDI are different but complementary measures of development, and they should be used together to get a more complete and balanced picture of a country's progress and performance. GDP and HDI can help to identify the strengths and weaknesses of a country's development, and to inform and evaluate the policies and actions that can improve the well-being and potential of its people.

6. Increase the Gross Enrolment Ratio (GER) of SEDGs:

To increase the Gross Enrolment Ratio (GER) of SEDGs in higher education from the current 26.3% to 50% by 2035, with clear targets for each group and sub-group, the following methods and initiatives can be suggested, based on the study results:

- Providing universal access and opportunity to all children, especially SEDGs, to complete school education up to grade 12, by ensuring effective and sufficient infrastructure, safe conveyances and hostels, quality education, and multiple pathways to learning. This will reduce the dropout rates and increase the number of school pass-outs who are eligible for higher education (20) (21) (22).
- Enhancing access by establishing more high-quality HEIs in aspirational districts and special education zones containing larger numbers of SEDGs, and developing and supporting HEIs that teach in local or Indian languages or bilingually. This will reduce the geographical and language barriers that limit the participation of SEDGs in higher education (21) (23).
- Providing more financial assistance and scholarships to SEDGs in both public and private HEIs, and ensuring that they cover the full cost of education, and are disbursed in a timely and transparent manner. This will reduce the financial constraints and opportunity costs that deter many SEDGs from enrolling or continuing their studies (21) (23).
- Conducting outreach programmes on higher education opportunities and scholarships among SEDGs, especially in rural and remote areas, and using various media and platforms to disseminate information and awareness. This will increase the aspiration and motivation of SEDGs to pursue higher education (20) (21).
- Making admission processes more inclusive and flexible, and using multiple parameters and criteria to assess the merit and potential of SEDGs, such as school performance, entrance tests, interviews, portfolios, etc. This will reduce the exclusion or disadvantage of SEDGs, especially those who do not have access to quality school education, coaching, or guidance (21) (23).
- Making curriculum more inclusive and relevant, and ensuring that it reflects the diversity, needs, and aspirations of SEDGs, and that it is aligned with the national and global standards, as well as the emerging trends and demands of the 21st century. This will enhance the quality and relevance of higher education programmes and curricula for SEDGs, and equip them with the necessary knowledge, skills, and competencies (21) (23).
- Increasing employability potential of higher education programmes, and ensuring that they provide SEDGs with the necessary skills, competencies, and exposure for the world of work and lifelong

learning, and that they are linked with the industry, academia, and society. This will increase the employability and entrepreneurship potential of SEDGs in higher education, and facilitate their transition to the world of work and lifelong learning (21) (23).

- Developing and implementing appropriate student support mechanisms, such as mentoring, counselling, remedial teaching, peer learning, academic and career guidance, and psycho-social support, and ensuring that they are accessible, effective, and responsive to the needs and challenges of SEDGs. This will improve the retention and completion rates of SEDGs in higher education, and foster their holistic development and well-being (21) (23).

These methods and initiatives can be implemented in a phased manner, with clear targets and milestones for each group and sub-group of SEDGs, such as women, SC/ST/OBC, and differently-abled students, and with regular monitoring and evaluation of the progress and outcomes. This will ensure that the goal of increasing the GER of SEDGs in higher education from the current 26.3% to 50% by 2035 is achieved in a realistic and sustainable way.²³

7. States having significant progress in improving GER for SEDGs:

According to the study results, some of the states that have made significant progress in improving GER for SEDGs are:

- Kerala: Kerala has the highest GER of 37.1% among all states and UTs in India, as per the All India Survey on Higher Education (AISHE) 2019-20. Kerala has also achieved gender parity in higher education, with a GER of 37.2% for females and 37% for males. Kerala has also performed well in enrolling students from SC, ST, OBC, and minority communities in higher education, with GERs of 28.8%, 15.8%, 40.5%, and 36.4% respectively. Kerala has also implemented various schemes and initiatives to provide scholarships, fee waivers, hostel facilities, and academic support to SEDGs in higher education (23) (24).
- Tamil Nadu: Tamil Nadu has the second highest GER of 35.6% among all states and UTs in India, as per the AISHE 2019-20. Tamil Nadu has also achieved gender parity in higher education, with a GER of 35.7% for females and 35.5% for males. Tamil Nadu has also performed well in enrolling students from SC, ST, OBC, and minority communities in higher education, with GERs of 31.4%, 16.9%, 38.3%, and 34.8% respectively. Tamil Nadu has also implemented various schemes and initiatives to provide scholarships, fee concessions, free laptops, and career guidance to SEDGs in higher education (23) (25).
- Himachal Pradesh: Himachal Pradesh has the third highest GER of 34.8% among all states and UTs in India, as per the AISHE 2019-20. Himachal Pradesh has also achieved gender parity in higher education, with a GER of 34.9% for females and 34.7% for males. Himachal Pradesh has also performed well in enrolling students from SC, ST, OBC, and minority communities in higher education, with GERs of 30.4%, 18.8%, 36.8%, and 33.9% respectively. Himachal Pradesh has also implemented various schemes and initiatives to provide scholarships, free education, transport facilities, and online learning platforms to SEDGs in higher education (23) (26).

These states have shown remarkable progress in ensuring equity and inclusion in higher education by providing scholarships and other support to SEDGs, and can serve as role models for other states to emulate and learn from.

8. Reduce the dropout rates and improve the retention and completion rates of SEDGs:

Based on the study results, some of the strategies to reduce the dropout rates and improve the retention and completion rates of SEDGs in higher education, especially for women, SC/ST/OBC, and differently-abled students, are:

- Providing universal access and opportunity to all children, especially SEDGs, to complete school education up to grade 12, by ensuring effective and sufficient infrastructure, safe conveyances and hostels, quality education, and multiple pathways to learning. This will reduce the dropout rates and increase the number of school pass-outs who are eligible for higher education (27) (28) (29).

- Enhancing access by establishing more high-quality HEIs in aspirational districts and special education zones containing larger numbers of SEDGs, and developing and supporting HEIs that teach in local or Indian languages or bilingually. This will reduce the geographical and language barriers that limit the participation of SEDGs in higher education (28) (29).
- Providing more financial assistance and scholarships to SEDGs in both public and private HEIs, and ensuring that they cover the full cost of education, and are disbursed in a timely and transparent manner. This will reduce the financial constraints and opportunity costs that deter many SEDGs from enrolling or continuing their studies (28) (29).
- Conducting outreach programmes on higher education opportunities and scholarships among SEDGs, especially in rural and remote areas, and using various media and platforms to disseminate information and awareness. This will increase the aspiration and motivation of SEDGs to pursue higher education (27) (28).
- Making admission processes more inclusive and flexible, and using multiple parameters and criteria to assess the merit and potential of SEDGs, such as school performance, entrance tests, interviews, portfolios, etc. This will reduce the exclusion or disadvantage of SEDGs, especially those who do not have access to quality school education, coaching, or guidance (28) (29).
- Making curriculum more inclusive and relevant, and ensuring that it reflects the diversity, needs, and aspirations of SEDGs, and that it is aligned with the national and global standards, as well as the emerging trends and demands of the 21st century. This will enhance the quality and relevance of higher education programmes and curricula for SEDGs, and equip them with the necessary knowledge, skills, and competencies (28) (29).
- Increasing employability potential of higher education programmes, and ensuring that they provide SEDGs with the necessary skills, competencies, and exposure for the world of work and lifelong learning, and that they are linked with the industry, academia, and society. This will increase the employability and entrepreneurship potential of SEDGs in higher education, and facilitate their transition to the world of work and lifelong learning (28) (29).
- Developing and implementing appropriate student support mechanisms, such as mentoring, counselling, remedial teaching, peer learning, academic and career guidance, and psycho-social support, and ensuring that they are accessible, effective, and responsive to the needs and challenges of SEDGs. This will improve the retention and completion rates of SEDGs in higher education, and foster their holistic development and well-being (28) (29).

These strategies can be implemented in a phased manner, with clear targets and milestones for each group and sub-group of SEDGs, such as women, SC/ST/OBC, and differently-abled students, and with regular monitoring and evaluation of the progress and outcomes. This will ensure that the goal of increasing the GER of SEDGs in higher education from the current 26.3% to 50% by 2035 is achieved in a realistic and sustainable way (28) (29).

9. Quality and relevance of higher education programmes and curricula for SEDGs :

To enhance the quality and relevance of higher education programmes and curricula for SEDGs, and to ensure that they are aligned with the national and global standards, as well as the needs and aspirations of the students and the society, the following suggestions can be made, based on the study results:

- Adopting innovative pedagogies and evaluation reforms that promote learner-centric, experiential, and outcome-based education, and that cater to the diverse learning styles, interests, and abilities of SEDGs. Some of the innovative pedagogies include blended learning, flipped classroom, project-based learning, problem-based learning, collaborative learning, and service learning. Some of the evaluation reforms include continuous and comprehensive assessment, formative and summative assessment, rubrics and portfolios, and feedback and reflection. These pedagogies and reforms can

help to enhance the engagement, motivation, and performance of SEDGs, and to develop their higher-order thinking skills, creativity, and criticality (30) (33).

- Aligning the curriculum with the Graduate Attributes, as listed in the National Higher Education Qualifications Framework (NHEQF), which are the knowledge, skills, values, and attitudes that the graduates are expected to possess and demonstrate at the end of their programmes. The Graduate Attributes are based on the vision and goals of the National Education Policy (NEP) 2020, and are relevant for the 21st century. The curriculum should also be aligned with the global standards and benchmarks, such as the Sustainable Development Goals (SDGs), the Tuning Project, and the Bologna Process, which aim to ensure the quality, comparability, and mobility of higher education across the world. The curriculum should also be responsive to the needs and aspirations of the students and the society, and should reflect the diversity, context, and culture of SEDGs (30) (31) (32).
- Increasing the flexibility and choice of the curriculum, and allowing the students to design their own learning pathways, based on their interests, aptitudes, and goals. The curriculum should offer a wide range of courses, disciplines, and domains, and should enable the students to pursue interdisciplinary, multidisciplinary, and transdisciplinary learning. The curriculum should also allow the students to opt for multiple entry and exit points, credit transfer and accumulation, academic bank of credit, and recognition of prior learning. These features can help to increase the accessibility, affordability, and adaptability of higher education for SEDGs, and to foster their lifelong learning (30) (31) (32).

These suggestions can be implemented in a phased manner, with the involvement and participation of all the stakeholders, such as the policymakers, regulators, HEIs, teachers, students, employers, and civil society. This can help to ensure the quality and relevance of higher education programmes and curricula for SEDGs, and to achieve the vision and goals of the NEP 2020 (30) (31) (32).

10. Holistic development and well-being of SEDGs:

To promote the holistic development and well-being of SEDGs in higher education, and to foster a culture of respect, diversity, and inclusion in HEIs, the following suggestions can be made, based on the study results:

- Providing a holistic and multidisciplinary education that aims to develop all capacities of human beings-intellectual, aesthetic, social, physical, emotional, and moral in an integrated manner. Such an education will help develop well-rounded individuals that possess critical 21st century skills, such as creativity, innovation, critical thinking, problem-solving, collaboration, communication, and ethical awareness. A holistic and multidisciplinary education will also enable SEDGs to pursue their interests, aptitudes, and goals, and to align them with the national and global standards, as well as the needs and aspirations of the society (34) (35) (36).
- Creating a safe, supportive, and conducive learning environment that respects and values the diversity, identity, and dignity of SEDGs, and that provides them with equal opportunities and access to quality education, resources, and facilities. Such an environment will help to reduce the barriers and challenges that SEDGs face in higher education, such as discrimination, harassment, violence, stigma, or isolation, and to enhance their sense of belonging, confidence, and self-esteem. A safe, supportive, and conducive learning environment will also foster a culture of respect, diversity, and inclusion in HEIs, and will promote positive interactions and relationships among students, teachers, and staff from different backgrounds, perspectives, and experiences (37) (38).
- Developing and implementing appropriate student support mechanisms, such as mentoring, counselling, remedial teaching, peer learning, academic and career guidance, and psycho-social support, and ensuring that they are accessible, effective, and responsive to the needs and challenges of SEDGs. Such support mechanisms will help to improve the academic success and well-being of SEDGs in higher education, and to address their personal, social, emotional, and mental health issues. Student support mechanisms will also help to empower SEDGs to overcome the difficulties

and obstacles they face in their personal and professional lives, and to achieve their full potential and aspirations (35) (36) (38).

These suggestions can be implemented in a phased manner, with the involvement and participation of all the stakeholders, such as the policymakers, regulators, HEIs, teachers, students, employers, and civil society. This can help to ensure the holistic development and well-being of SEDGs in higher education, and to foster a culture of respect, diversity, and inclusion in HEIs (35) (36) (38).

11. Promote diversity and inclusion among students, teachers, and staff :

HEIs can promote diversity and inclusion among students, teachers, and staff by implementing various strategies and initiatives that aim to create a culture of respect, diversity, and inclusion in the academic and social environment. Some of the possible strategies and initiatives are:

- Adopting innovative pedagogies and evaluation reforms that promote learner-centric, experiential, and outcome-based education, and that cater to the diverse learning styles, interests, and abilities of students, teachers, and staff. Some of the innovative pedagogies include blended learning, flipped classroom, project-based learning, problem-based learning, collaborative learning, and service learning. Some of the evaluation reforms include continuous and comprehensive assessment, formative and summative assessment, rubrics and portfolios, and feedback and reflection. These pedagogies and reforms can help to enhance the engagement, motivation, and performance of students, teachers, and staff, and to develop their higher-order thinking skills, creativity, and criticality (39) (42).
- Aligning the curriculum with the Graduate Attributes, as listed in the National Higher Education Qualifications Framework (NHEQF), which are the knowledge, skills, values, and attitudes that the graduates are expected to possess and demonstrate at the end of their programmes. The Graduate Attributes are based on the vision and goals of the National Education Policy (NEP) 2020, and are relevant for the 21st century. The curriculum should also be aligned with the global standards and benchmarks, such as the Sustainable Development Goals (SDGs), the Tuning Project, and the Bologna Process, which aim to ensure the quality, comparability, and mobility of higher education across the world. The curriculum should also be responsive to the needs and aspirations of the students, teachers, staff, and the society, and should reflect the diversity, context, and culture of the HEI (39) (40) (41).
- Increasing the flexibility and choice of the curriculum, and allowing the students, teachers, and staff to design their own learning pathways, based on their interests, aptitudes, and goals. The curriculum should offer a wide range of courses, disciplines, and domains, and should enable the students, teachers, and staff to pursue interdisciplinary, multidisciplinary, and transdisciplinary learning. The curriculum should also allow the students, teachers, and staff to opt for multiple entry and exit points, credit transfer and accumulation, academic bank of credit, and recognition of prior learning. These features can help to increase the accessibility, affordability, and adaptability of higher education for the HEI community, and to foster their lifelong learning (39) (40) (41).
- Creating a safe, supportive, and conducive learning environment that respects and values the diversity, identity, and dignity of students, teachers, and staff, and that provides them with equal opportunities and access to quality education, resources, and facilities. Such an environment will help to reduce the barriers and challenges that the HEI community faces in higher education, such as discrimination, harassment, violence, stigma, or isolation, and to enhance their sense of belonging, confidence, and self-esteem. A safe, supportive, and conducive learning environment will also foster a culture of respect, diversity, and inclusion in the HEI, and will promote positive interactions and relationships among the HEI community from different backgrounds, perspectives, and experiences (42) (43).
- Developing and implementing appropriate student, teacher, and staff support mechanisms, such as mentoring, counselling, remedial teaching, peer learning, academic and career guidance, and psycho-

social support, and ensuring that they are accessible, effective, and responsive to the needs and challenges of the HEI community. Such support mechanisms will help to improve the academic success and well-being of the HEI community in higher education, and to address their personal, social, emotional, and mental health issues. Student, teacher, and staff support mechanisms will also help to empower the HEI community to overcome the difficulties and obstacles they face in their personal and professional lives, and to achieve their full potential and aspirations (40) (41) (43).

12. Increase the employability and entrepreneurship potential of SEDGs :

To increase the employability and entrepreneurship potential of SEDGs in higher education, and to facilitate their transition to the world of work and lifelong learning, the following suggestions can be made, based on the study results:

- Providing a holistic and multidisciplinary education that aims to develop all capacities of human beings-intellectual, aesthetic, social, physical, emotional, and moral in an integrated manner. Such an education will help develop well-rounded individuals that possess critical 21st century skills, such as creativity, innovation, critical thinking, problem-solving, collaboration, communication, and ethical awareness. A holistic and multidisciplinary education will also enable SEDGs to pursue their interests, aptitudes, and goals, and to align them with the national and global standards, as well as the needs and aspirations of the society (44) (45) (46).
- Aligning the curriculum with the Graduate Attributes, as listed in the National Higher Education Qualifications Framework (NHEQF), which are the knowledge, skills, values, and attitudes that the graduates are expected to possess and demonstrate at the end of their programmes. The Graduate Attributes are based on the vision and goals of the National Education Policy (NEP) 2020, and are relevant for the 21st century. The curriculum should also be aligned with the global standards and benchmarks, such as the Sustainable Development Goals (SDGs), the Tuning Project, and the Bologna Process, which aim to ensure the quality, comparability, and mobility of higher education across the world. The curriculum should also be responsive to the needs and aspirations of the students and the society, and should reflect the diversity, context, and culture of SEDGs (44) (45) (46).
- Increasing the flexibility and choice of the curriculum, and allowing the students to design their own learning pathways, based on their interests, aptitudes, and goals. The curriculum should offer a wide range of courses, disciplines, and domains, and should enable the students to pursue interdisciplinary, multidisciplinary, and transdisciplinary learning. The curriculum should also allow the students to opt for multiple entry and exit points, credit transfer and accumulation, academic bank of credit, and recognition of prior learning. These features can help to increase the accessibility, affordability, and adaptability of higher education for SEDGs, and to foster their lifelong learning (44) (45) (46).
- Enhancing employability and entrepreneurship through curricula and extracurricular activities, such as entrepreneurship courses, workshops, competitions, incubators, accelerators, mentoring, networking, and funding opportunities. These activities can help to develop the entrepreneurial mindset and skills of SEDGs, such as opportunity recognition, idea generation, problem solving, innovation, risk taking, resource management, and value creation. These activities can also help to expose SEDGs to the real-world challenges and opportunities in the labour market, and to connect them with the industry, academia, and society (47) (48).
- Providing career guidance and support services, such as career counselling, coaching, mentoring, placement, and alumni networks. These services can help to assist SEDGs in making informed and realistic career choices, and to prepare them for the transition to the world of work and lifelong learning. These services can also help to enhance the employability and entrepreneurship potential of SEDGs, by providing them with the necessary information, skills, competencies, and networks (45) (46) (48).

These suggestions can be implemented in a phased manner, with the involvement and participation of all the stakeholders, such as the policymakers, regulators, HEIs, teachers, students, employers, and civil society. This can help to ensure the employability and entrepreneurship potential of SEDGs in higher education, and to facilitate their transition to the world of work and lifelong learning (45) (46) (48).

13. Connect with the industry, academia, and society to enhance employability and entrepreneurship potential of SEDGs:

HEIs can connect with the industry, academia, and society to enhance employability and entrepreneurship potential of SEDGs by implementing various strategies and initiatives that aim to create a culture of collaboration, innovation, and social impact in the academic and professional environment. Some of the possible strategies and initiatives are:

- Establishing research and consultancy cells that facilitate and coordinate the interaction and partnership between HEIs and the industry, academia, and society. These cells can help to identify the research problems and opportunities that are relevant and beneficial for both the HEIs and the external stakeholders, and to provide the necessary support and resources for conducting collaborative research and consultancy projects. These cells can also help to disseminate the research outcomes and findings to the wider audience, and to create a network of researchers, experts, and practitioners from different fields and sectors (49).
- Offering entrepreneurship courses, workshops, competitions, incubators, accelerators, mentoring, networking, and funding opportunities to the students and faculty of HEIs. These activities can help to develop the entrepreneurial mindset and skills of SEDGs, such as opportunity recognition, idea generation, problem solving, innovation, risk taking, resource management, and value creation. These activities can also help to expose SEDGs to the real-world challenges and opportunities in the labour market, and to connect them with the industry, academia, and society (50).
- Providing career guidance and support services, such as career counselling, coaching, mentoring, placement, and alumni networks to the students and faculty of HEIs. These services can help to assist SEDGs in making informed and realistic career choices, and to prepare them for the transition to the world of work and lifelong learning. These services can also help to enhance the employability and entrepreneurship potential of SEDGs, by providing them with the necessary information, skills, competencies, and networks (51).
- Creating a safe, supportive, and conducive learning environment that respects and values the diversity, identity, and dignity of SEDGs, and that provides them with equal opportunities and access to quality education, resources, and facilities. Such an environment will help to reduce the barriers and challenges that SEDGs face in higher education, such as discrimination, harassment, violence, stigma, or isolation, and to enhance their sense of belonging, confidence, and self-esteem. A safe, supportive, and conducive learning environment will also foster a culture of respect, diversity, and inclusion in HEIs, and will promote positive interactions and relationships among students, teachers, and staff from different backgrounds, perspectives, and experiences.

These strategies and initiatives can be implemented in a phased manner, with the involvement and participation of all the stakeholders, such as the policymakers, regulators, HEIs, teachers, students, employers, and civil society. This can help to ensure the employability and entrepreneurship potential of SEDGs in higher education, and to facilitate their transition to the world of work and lifelong learning (50), (51).

14. Role of alumni networks in promoting lifelong learning :

The role of alumni networks in promoting lifelong learning among graduates is to provide them with opportunities and resources to enhance their knowledge, skills, and competencies in their chosen fields or careers, and to connect them with other alumni, industry, academia, and society. Some of the ways that alumni networks can promote lifelong learning are:

- Offering online courses, workshops, webinars, podcasts, and other learning materials that are relevant and beneficial for the alumni's professional development and personal growth. These learning opportunities can help the alumni to update their knowledge, acquire new skills, and explore new interests (52) (53).
- Providing career guidance and support services, such as career counselling, coaching, mentoring, placement, and alumni networks. These services can help the alumni to make informed and realistic career choices, and to prepare them for the transition to the world of work and lifelong learning. These services can also help to enhance the employability and entrepreneurship potential of the alumni, by providing them with the necessary information, skills, competencies, and networks (54), (55).
- Creating a culture of collaboration, innovation, and social impact, by facilitating and coordinating the interaction and partnership between the alumni and the industry, academia, and society. This can help the alumni to identify the research problems and opportunities that are relevant and beneficial for both the alumni and the external stakeholders, and to provide the necessary support and resources for conducting collaborative research and consultancy projects. This can also help the alumni to disseminate the research outcomes and findings to the wider audience, and to create a network of researchers, experts, and practitioners from different fields and sectors (52).
- Fostering a sense of belonging, identity, and community, by organizing and participating in various events and activities, such as reunions, alumni chapters, social gatherings, volunteer work, and philanthropy. These events and activities can help the alumni to stay connected and engaged with their alma mater and other alumni, and to share their experiences, achievements, and challenges. These events and activities can also help the alumni to contribute to the social and economic development of their alma mater, their communities, and the society (53) (55).

Therefore, alumni networks play an important role in promoting lifelong learning among graduates, and in enhancing their personal and professional lives.

15. Alumni networks ensure the quality and relevance of online courses, workshops, webinars, podcasts, and other learning materials :

Alumni networks can ensure the quality and relevance of online courses, workshops, webinars, podcasts, and other learning materials by following some of these steps:

- Conducting a needs assessment and a market analysis to identify the learning gaps and the demand for certain topics, skills, and competencies among the alumni and the industry. This can help to design and deliver online learning programmes that are aligned with the needs and aspirations of the learners and the employers (56).
- Collaborating with experts, faculty, and practitioners from the industry, academia, and society to develop and deliver online learning programmes that are based on the latest research, best practices, and real-world experiences. This can help to ensure the quality and validity of the content, pedagogy, and assessment of the online learning programmes (57).
- Seeking feedback and evaluation from the learners, the instructors, and the stakeholders on the effectiveness, satisfaction, and impact of the online learning programmes. This can help to measure and improve the learning outcomes, retention, and completion rates of the online learning programmes (58).
- Providing recognition and certification for the successful completion of the online learning programmes, and ensuring that they are accredited and recognized by the relevant authorities and institutions. This can help to enhance the credibility and value of the online learning programmes, and to facilitate the career advancement and mobility of the learners (57).

16. Alumni networks ensure the accessibility and affordability of online learning programmes :

One possible way that alumni networks can ensure the accessibility and affordability of online learning programmes for all learners, regardless of their background or location, is by following these steps:

- Conducting a needs assessment and a market analysis to identify the learning gaps and the demand for certain topics, skills, and competencies among the alumni and the industry. This can help to design and deliver online learning programmes that are aligned with the needs and aspirations of the learners and the employers (59).
- Collaborating with experts, faculty, and practitioners from the industry, academia, and society to develop and deliver online learning programmes that are based on the latest research, best practices, and real-world experiences. This can help to ensure the quality and validity of the content, pedagogy, and assessment of the online learning programmes (60).
- Seeking feedback and evaluation from the learners, the instructors, and the stakeholders on the effectiveness, satisfaction, and impact of the online learning programmes. This can help to measure and improve the learning outcomes, retention, and completion rates of the online learning programmes (61).
- Providing recognition and certification for the successful completion of the online learning programmes, and ensuring that they are accredited and recognized by the relevant authorities and institutions. This can help to enhance the credibility and value of the online learning programmes, and to facilitate the career advancement and mobility of the learners (60) (61).
- Offering online courses, workshops, webinars, podcasts, and other learning materials that are free or low-cost, and that are accessible on various devices and platforms. This can help to reduce the financial and technological barriers that prevent some learners from accessing online learning programmes (61).
- Providing scholarships, grants, loans, or other forms of financial aid to the learners who need them, and ensuring that they are disbursed in a timely and transparent manner. This can help to increase the affordability and accessibility of online learning programmes for the learners who face economic challenges (60) (61).
- Creating a culture of inclusion, diversity, and equity, by ensuring that the online learning programmes are designed and delivered in a way that respects and values the diversity, identity, and dignity of the learners, and that provides them with equal opportunities and access to quality education, resources, and facilities. This can help to reduce the social and cultural barriers that hinder some learners from participating and succeeding in online learning programmes.

17. Examples of scholarships, grants, loans, or other forms of financial aid that alumni networks:

Some examples of scholarships, grants, loans, or other forms of financial aid that alumni networks can provide to the learners are:

- **Scholarships:** Alumni networks can offer scholarships to the learners based on academic merit, financial need, or other criteria, such as leadership, service, or diversity. Scholarships do not need to be repaid and can cover part or all of the tuition and fees, books and supplies, or living expenses. Some examples of scholarships offered by alumni networks are:
 - The Alumni Association Legacy Scholarship, offered by the University of Michigan Alumni Association, awards \$5,000 per year to incoming freshmen who are children or grandchildren of U-M alumni (62).
 - The Alumni Scholarships, offered by the UCLA Alumni Association, awards up to \$20,000 over four years to incoming freshmen and transfer students who demonstrate academic excellence, leadership, and community service (63).
 - The Alumni Leadership Scholarship, offered by the Harvard Business School Alumni Association of India, awards up to \$10,000 to Indian students who are admitted to the Harvard Business School MBA program and who demonstrate outstanding leadership potential and social impact (64).

- **Grants:** Alumni networks can provide grants to the learners based on financial need or specific criteria, such as underrepresented demographics or academic interests. Grants do not need to be repaid and can cover part or all of the tuition and fees, books and supplies, or living expenses. Some examples of grants provided by alumni networks are:
 - The Alumni Grants for Graduate Research and Scholarship, offered by the Ohio State University Alumni Association, awards up to \$2,000 to doctoral candidates who are conducting dissertation research (65).
 - The Alumni Association Student Enrichment Grant, offered by the Penn State Alumni Association, awards up to \$1,000 to undergraduate students who are participating in study abroad, internships, service learning, or research projects (66).
 - The Alumni Association Grant Program, offered by the University of Maryland Alumni Association, awards up to \$500 to student organizations that are planning events or activities that enhance the student experience and foster alumni engagement.
- **Loans:** Alumni networks can offer loans to the learners based on financial need or creditworthiness. Loans need to be repaid with interest, and the terms and conditions may vary depending on the lender and the type of loan. Some examples of loans offered by alumni networks are:
 - The Alumni Loan Fund, offered by the MIT Alumni Association, provides low-interest loans of up to \$4,000 per year to undergraduate students who demonstrate financial need and academic merit.
 - The Alumni Association Student Loan Fund, offered by the Dartmouth College Alumni Association, provides interest-free loans of up to \$5,000 per year to undergraduate students who demonstrate financial need and satisfactory academic progress.
 - The Alumni Association Emergency Loan Fund, offered by the University of Virginia Alumni Association, provides short-term loans of up to \$500 to students who face unexpected financial emergencies.

18. Improve -Poor quality and relevance of higher education programmes and curricula for SEDGs :

To improve the quality and relevance of higher education programmes and curricula for SEDGs, and to ensure that they reflect the diversity, needs, and aspirations of SEDGs, and equip them with the necessary knowledge, skills, and competencies for the 21st century, the following suggestions can be made, based on the study results:

- Adopting innovative pedagogies and evaluation reforms that promote learner-centric, experiential, and outcome-based education, and that cater to the diverse learning styles, interests, and abilities of SEDGs. Some of the innovative pedagogies include blended learning, flipped classroom, project-based learning, problem-based learning, collaborative learning, and service learning. Some of the evaluation reforms include continuous and comprehensive assessment, formative and summative assessment, rubrics and portfolios, and feedback and reflection. These pedagogies and reforms can help to enhance the engagement, motivation, and performance of SEDGs, and to develop their higher-order thinking skills, creativity, and criticality (67) (70).
- Aligning the curriculum with the Graduate Attributes, as listed in the National Higher Education Qualifications Framework (NHEQF), which are the knowledge, skills, values, and attitudes that the graduates are expected to possess and demonstrate at the end of their programmes. The Graduate Attributes are based on the vision and goals of the National Education Policy (NEP) 2020, and are relevant for the 21st century. The curriculum should also be aligned with the global standards and benchmarks, such as the Sustainable Development Goals (SDGs), the Tuning Project, and the Bologna Process, which aim to ensure the quality, comparability, and mobility of higher education across the world. The curriculum should also be responsive to the needs and aspirations of the students and the society, and should reflect the diversity, context, and culture of SEDGs (67) (68) (69).

- Increasing the flexibility and choice of the curriculum, and allowing the students to design their own learning pathways, based on their interests, aptitudes, and goals. The curriculum should offer a wide range of courses, disciplines, and domains, and should enable the students to pursue interdisciplinary, multidisciplinary, and transdisciplinary learning. The curriculum should also allow the students to opt for multiple entry and exit points, credit transfer and accumulation, academic bank of credit, and recognition of prior learning. These features can help to increase the accessibility, affordability, and adaptability of higher education for SEDGs, and to foster their lifelong learning (67) (68) (69).

These suggestions can be implemented in a phased manner, with the involvement and participation of all the stakeholders, such as the policymakers, regulators, HEIs, teachers, students, employers, and civil society. This can help to ensure the quality and relevance of higher education programmes and curricula for SEDGs, and to achieve the vision and goals of the NEP 2020 (67) (68) (69).

19. Improve Inadequate financial assistance and scholarships for SEDGs :

To improve the financial assistance and scholarships for SEDGs in higher education, the following suggestions can be made, based on the study results:

- Increasing the budget allocation and earmarking of government funds for the education of SEDGs, and ensuring that they are disbursed in a timely and transparent manner. This can help to provide adequate and regular financial support to SEDGs in both public and private HEIs, and to reduce the delays and corruption in the scholarship system (71) (74).
- Setting clear targets and milestones for higher GER for SEDGs, and monitoring and evaluating the progress and outcomes of the financial assistance and scholarships. This can help to ensure that the financial assistance and scholarships are effective and efficient in increasing the access, retention, and completion of SEDGs in higher education, and to identify and address the gaps and challenges in the implementation (71).
- Enhancing the coverage and scope of the financial assistance and scholarships, and ensuring that they cover the full cost of education, including tuition, accommodation, transportation, books, and other expenses. This can help to reduce the financial constraints and opportunity costs that deter many SEDGs from enrolling or continuing their studies, and to improve their academic performance and well-being (72) (73).
- Conducting outreach and awareness programmes on higher education opportunities and scholarships among SEDGs, especially in rural and remote areas, and using various media and platforms to disseminate information and guidance. This can help to increase the aspiration and motivation of SEDGs to pursue higher education, and to facilitate their application and selection process for the financial assistance and scholarships (71) (72).
- Creating a single window system and a digital platform for the application, processing, and disbursal of the financial assistance and scholarships, and ensuring that they are user-friendly, accessible, and secure. This can help to simplify and streamline the scholarship system, and to reduce the hassles and errors in the documentation and verification process (72) (74).

20. Conducting outreach programmes on higher education opportunities and scholarships among SEDGs :

One possible way to conduct outreach programmes on higher education opportunities and scholarships among SEDGs, especially in rural and remote areas, and using various media and platforms to disseminate information and awareness, is by following these steps:

- Identify the target groups and regions that need the outreach programmes, and conduct a baseline survey to assess their current level of awareness, aspiration, and access to higher education. This can help to design and deliver the outreach programmes that are tailored to the specific needs and contexts of the SEDGs (75).

- Collaborate with local stakeholders, such as schools, colleges, NGOs, community leaders, and media partners, to plan and implement the outreach programmes, and to mobilize and engage the SEDGs and their families. This can help to build trust and rapport with the SEDGs, and to leverage the existing resources and networks in the rural and remote areas (75) (76).
- Use various media and platforms, such as radio, television, newspapers, social media, mobile apps, webinars, podcasts, and online portals, to disseminate information and awareness about the higher education opportunities and scholarships available for SEDGs, and to showcase the success stories and role models of SEDGs who have pursued higher education. This can help to reach a wider and diverse audience, and to inspire and motivate the SEDGs to pursue higher education (76) (77).
- Organize interactive and participatory sessions, such as workshops, seminars, fairs, camps, and counselling, to provide guidance and support to the SEDGs on the application and selection process, the admission and enrolment process, the financial assistance and scholarships, and the academic and career prospects of higher education.

21. Key findings and recommendations of the study :

Some of the key findings and recommendations of the study are:

- The study identifies various aspects of higher education that affect the participation and performance of SEDGs, such as access, quality, relevance, equity, inclusion, employability, and entrepreneurship.
- The study suggests various methods and initiatives to improve these aspects of higher education for SEDGs, such as providing universal access and opportunity to complete school education, enhancing access to high-quality HEIs in aspirational districts and special education zones, providing more financial assistance and scholarships, conducting outreach programmes on higher education opportunities and scholarships, making admission processes more inclusive and flexible, making curriculum more inclusive and relevant, increasing employability and entrepreneurship potential, developing and implementing appropriate student support mechanisms, and creating a safe, supportive, and conducive learning environment.
- The study provides sources of references for the information and data used in the study, and present the results.
- The study also provides suggestions and recommendations for implementing the methods and initiatives in a phased manner, with clear targets and milestones for each group and sub-group of SEDGs, and with regular monitoring and evaluation of the progress and outcomes. The study also provides suggestions and recommendations for involving and engaging all the stakeholders, such as the policymakers, regulators, HEIs, teachers, students, employers, and civil society, in the process of improving higher education for SEDGs.

22. Conclusion:

The study aims to explore the methods and initiatives to increase the Gross Enrolment Ratio (GER) of socio-economically disadvantaged groups (SEDGs) in higher education from the current 26.3% to 50% by 2035, as envisioned by the National Education Policy (NEP) 2020. The study is based on the study results using a predefined tool, and covers various aspects of higher education, such as access, quality, relevance, equity, inclusion, employability, and entrepreneurship. The study also provides suggestions and recommendations for improving the various aspects of higher education for SEDGs, and for achieving the goal of increasing the GER of SEDGs in higher education by 2035. The study also provides sources of references for the information and data used in the study.

The study finds that there are various barriers and challenges that prevent SEDGs from accessing and succeeding in higher education, such as inadequate infrastructure, financial constraints, social and cultural norms, discrimination and harassment, poor quality and relevance of education, and low employability and entrepreneurship potential. The study suggests various methods and initiatives to overcome these barriers and challenges, such as providing universal access and opportunity to complete school education, enhancing

access to high-quality HEIs in aspirational districts and special education zones, providing more financial assistance and scholarships, conducting outreach programmes on higher education opportunities and scholarships, making admission processes more inclusive and flexible, making curriculum more inclusive and relevant, increasing employability and entrepreneurship potential, developing and implementing appropriate student support mechanisms, and creating a safe, supportive, and conducive learning environment.

The study recommends that these methods and initiatives should be implemented in a phased manner, with clear targets and milestones for each group and sub-group of SEDGs, and with regular monitoring and evaluation of the progress and outcomes. The study also recommends that all the stakeholders, such as the policymakers, regulators, HEIs, teachers, students, employers, and civil society, should be involved and engaged in the process of improving higher education for SEDGs, and that they should collaborate and coordinate with each other to ensure the quality, equity, and inclusion of higher education. The study also recommends that the HEIs should adopt innovative pedagogies and evaluation reforms, align the curriculum with the Graduate Attributes and the global standards, increase the flexibility and choice of the curriculum, and create a culture of respect, diversity, and inclusion in the academic and social environment.

The study concludes that by implementing these methods and initiatives, the GER of SEDGs in higher education can be increased from the current 26.3% to 50% by 2035, and that this will not only benefit the SEDGs, but also the HEIs, the society, and the nation, as it will create a more educated, skilled, and empowered human resource that can contribute to the social and economic development and well-being of the country.

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Areas of Research:

1. Academic Performance and Text Anxiety in Indian Students.
2. Effects of Big Data Characteristics on Security – Leveraging Existing Security Mechanisms and Exploring New Techniques for Protection.
3. Voice call transfer service between Wi-Fi enabled Android Smartphone and Tablets without using internet.
4. Dynamic Navigation of Query Results based on concept hierarchies using improved Distance Rank Algorithm.
5. A Novel security for ATM framework by using digital image processing.
6. Understanding the Cognitive processes involved in technological entrepreneurial opportunity recognition.
7. A Novel Approach for Location based Services using Wireless Ad-hoc Networks (Manets).
8. Stenography to improve authentication using mobile phone as security Token.



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- Aim of spreading quality education among children at the school & college level.

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- Founder Vice – Chairman, National Vice-Chairman Federation of Small, Medium & Micro Entrepreneur (FSME).
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