

Office of the Principal

Government General Degree College, Kalna -I

Vill. - Muragacha, Post:- Medgachi, Dist.:- Purba Bardhaman, Pin: -713405 Website: https://www.ggdck.ac.in/, E-mail: govt.collegekalna1@gmail.com, Tel: 03454291211

Best Practice I

Title of the Practice: Promotion of Scientific Temper in the Rural Belt of Purba Bardhaman

Objectives of the Practice:

The primary objective of the practice is to empower upcoming generation with the essential skill and mindset necessary to navigate an increasingly complex and technology driven world and thereby contributing to their personal growth and societal development. The practice focuses to

- 1. Foster a curiosity driven approach to explain scientific principles and happenings.
- 2. Develop analytical skills, decision taking ability and the capacity to discern between facts and opinion.
- 3. Cultivate a culture of experimentation and thereby expose to hands-on learning experience.
- 4. Encourage skepticism and open-mindedness to embrace new ideas and adjust beliefs accordingly.
- 5. Enable students to comprehend scientific concepts and engage meaningfully with scientific advancements and societal challenges.
- 6. Promoting the enhancement of science education in +2 level and UG programme in the rural heartland of Kalna subdivision of Purba Bardhaman district.

The Context

Government General Degree College, kalna-I is located in the rural belt of Purba Bardhaman district of West Bengal where there is a lot more challenge to promote or to build scientific temper in the rural youth as majority of the rural schools lacks, teachers with expertise in science education which greatly hampers the delivery of effective instructions. Also there is a dearth of proper infrastructure, laboratory equipment, up-to-date educational resources, books, and technology which becomes a hindrance to foster scientific enquiry and exploration. Students are primarily studied in vernacular medium which impede their understanding of scientific concepts and restrict them to understand online resources on science and technology. Moreover, there is a lack of awareness and appreciation for the importance of scientific literacy in this rural region and it is really a challenging task to engage parents and community in support of science education. In addition to that rural communities have deeply ingrained traditional





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beliefs that conflicts the scientific principles which becomes a major obstacle to build scientific temper in this region. Lastly, most of the students are first generation learners coming from socially and economically challenged section of the society leads to unequal access to educational opportunities and therefore exacerbating disparities in science education outcomes.

The Practice

This best practise has been executed in several ways:

- 1. Organization of Science Mela and Talent Hunt.
- 2. Science Laboratory visit by neighbouring school children.
- 3. Observance of commemorative days aligned to scientific events.
- 4. Seminar on important scientific days.
- 5. Promotion of scientific temper in adopted village as ISR

Government General Degree College, Kalna-I organizes various activities involving students, teachers and collaborating academic institution and local administration under these broad categories of activities.

1. Organization of Science Mela and Talent Hunt:

In this categories GGDC Kalna-I organizes-

- a) Science fair in the name "Science Mela and Talent Hunt- 2022 (SMTH-2022) on 02.08.2022 to commemorate the birth anniversary of Prafulla Chandra Ray. Five school namely Kalna Mahismardini Girls' Institution, Kalna Ambika Mahismardini High School, Kalna Maharaja's High School, Kalna Hindu Girls' High School, Medgachi High School have participated and showcased a total 12 number of models on various scientific category. Those models are primarily based on technological advancement, biological simulation as well as environmental sustainability.
- b) Science fair in the name "Science Mela and Talent Hunt- 2023 (SMTH-2023) on 22.12.2023 to commemorate the birth anniversary of Srinivasa Ramanujan. Six schools namely Simlon A.K. Vidyamandir, Dhatrigram Balika Vidyamandir, Kalna Maharaja's High School, Medgachi High School, Kalna Hindu Girls' High School, Kalna Ambika Mahismardini High School (HS) have participated and showcased a total of 14 number of models on various scientific categories. Those models include chemical and biological reaction, renewable energy as well as environmental protection.





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2. Science Laboratory visit by neighbouring school children:

GGDC Kalna-I has frequently organized "Interactive Exposure Visit" by neighbouring schools where school students are exposed to various experiments in Physics and Chemistry Laboratories. Students are also exposed to Central Library, where there is a huge collection of science books.

3. Observance of commemorative days aligned to scientific events:

Commemorative days aligned with significant scientific events like Science day, Earth day, National Mathematics day, World Cancer day, World Health day are observed at GGDC Kalna-I to help bridge the gap between science and society, emphasizing the relevance of scientific progress in everyday life.

4. Seminar on important scientific days:

GGDC Kalna-I organizes numerous seminars and symposiums on various scientific issues like a) Webinar on Covid_19 Pandemic: Disease vs Society on 03.09.2020, b) Webinar on Modern Aspects of Nonlinear Dynamics on 06.09.2020, c) Webinar on World Environment Day 2021on 05.06.2021, d) Webinar on Glimpses of Mathematics in Ancient India on 18.09.2021, e) Seminar on World Environment Day, 2022 on 08.06.2022, f) Webinar on National Science Day on 28.02.2023 g) Seminar on World Environment Day, 2023 on 05.06.2023. This list is not exhaustive but an indicative to our commitment of instilling scientific temper among our young learners and to underscore the importance of scientific inquiry and discovery in shaping our collective future.

5. Promotion of scientific temper in adopted village as ISR

- a) The NSS unit of GGDC Kalna-I has organized a social awareness camp in its adopted village on 02.09.2022 addressing specific issues and concern pertinent to community well-being which includes Women health & hygiene, child marriage, water conservation, waste management, organic farming and misuse of chemical fertilizer etc. To foster a sense of community cohesion, empower individuals with knowledge and skills, and contribute to sustainable development and improved quality of life for all residents.
- b) Health check-up camp in adopted village was hosted to improve access to healthcare services, raise awareness about preventive health measures, and empower residents to take proactive steps towards better health and wellbeing.





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c) In-house organization blood donation camp, thalassemia detection camp and COVID vaccination camp among the college students creates a culture of health awareness and responsibility and thereby reinforcing the role of educational institutions as drivers of public health initiatives.

Evidence of Success:

In our initiative to cultivate scientific temper among students in the rural belt of Kalna sub-division, we employed several strategies that yielded compelling results, as evidenced by both qualitative and quantitative measures.

Quantitative measures:

- 1. We have observed a significant growth of opting science stream at the higher secondary level (known as +2 level) among the secondary level students in the neighbouring schools as per the recorded statements of the respective school authority.
- 2. Starting from the academic session 2023-24, a neighbouring school has introduced a science stream for students at the higher secondary level (known as +2 level) with an aim to cater to students interested in science and provide them with specialized education and opportunities in scientific fields.
- 3. We also witnessed a notable rise in the number of students participating in various science competitions at the district and state levels which indicates a growing interest and confidence among students to apply their scientific knowledge outside the classroom.

Qualitative measure:

- 1. Teachers reported an increase in critical thinking skills among students, particularly in their ability to formulate hypotheses, conduct experiments, and draw conclusions based on evidence. Teachers also reported that many students expressed a newfound curiosity and confidence in questioning, experimenting, and analyzing phenomena around them. Teachers noted that students were more inclined to apply scientific reasoning in their everyday observations and discussions.
- 2. Parents have shared anecdotes of their children demonstrating a heightened interest in scientific topics at home, often initiating discussions and conducting simple experiments with household items.
- 3. Village leaders and local administration have noted a remarkable shift in the behavior of villagers towards understanding natural phenomena such as weather patterns, agricultural cycles, and environmental changes. This





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change is accompanied by improved practices in hygiene, leading to reduced rates of morbidity and mortality.

In conclusion, our initiatives have successfully nurtured scientific temper among school children in a rural setting. The evidence presented through increased participation in science activities, adoption of science studies, community engagement, and qualitative feedback underscores the positive impact of our efforts. By continuing to integrate practical learning and foster curiosity-driven exploration, we aim to further enhance scientific literacy and critical thinking skills among young learners of this region. Moreover we are successful to empower individuals to lead healthier, more informed lives while fostering sustainable development and resilience to future challenges.

Problems Encountered and Resources Required:

Problems Encountered:

The primary challenge of building scientific temper among school goers in this rural belt, that the College faces is The limited access to scientific equipment, materials, and updated textbooks as well as shortage of qualified science teachers and educators with specialized knowledge in scientific disciplines in the neighbouring schools resulting to hindrance in hands-on learning experiences and practical application of scientific concepts along with inadequate teaching quality and difficulty in delivering engaging science lessons that stimulate curiosity and critical thinking.

The second major challenge is the economic constraint among rural families, resulting to limited access to supplementary resources such as books, computers, and internet connectivity. Moreover, due to limited awareness and understanding of the importance of scientific education and its relevance in daily life among the community members causing to low motivation among the students to opt for science education.

The following resources required for improvement of the scenario:

- a) Infrastructural development includes laboratories up gradation, facilities to support hands-on experimentation, textbooks, scientific equipment, teaching aids, and educational kits in the schools are essential to attract students in science education.
- b) Human resource development in terms of training programs and workshops for teachers to enhance their





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pedagogical skills and proficiency in teaching science.

- c) Digital and Technological access includes provision of computers, internet connectivity, and digital learning platforms for accessing scientific resources and online educational materials.
- d) Proper community engagement, spreading of education and awareness, propagation of integration through local knowledge and empowerment through results may foster a greater acceptance and appreciation of science within village settings.

Through dedicated efforts to foster scientific temper, Government General Degree College, Kalna-I has made significant strides in enhancing science education in Purba Bardhaman's rural belt. By addressing challenges and securing necessary resources, the college aims to further empower rural youth with critical thinking skills and scientific knowledge, thereby contributing to their holistic development and preparing them for future challenges.





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Best Practice II

Title of the Practice: Practicing Outcome Based Education to meet up the evolving needs of learners and society

Objectives of the Practice:

The primary objective of the practice is to align educational approach and learning philosophy with clear and measurable outcomes emphasizing the mastery of knowledge, skills and competencies of the learners. The practice focuses to

- 1. Spell out the learning objectives as to what students should know, understand and be able to do by the end of their educational experiences.
- 2. Enhance the teaching learning pedagogy through various instructional strategies and to formulate suitable assessment protocol so that these ensure active learning, critical thinking, skill development and value inculcation.
- 3. Promote student centric learning appliances which empower students to take opportunity of their learning journey and promote personalized learning experiences tailored to individual needs and interests.
- 4. Ensure to establish a framework for assessing students' performance against defined outcomes, allowing faculties to monitor their progress, identify the area of improvement and devise mechanism to enhance the quality of education.
- 5. Facilitate Institute to offer courses which accomplish multidisciplinary approach, skill development and promotion of IKS so that graduates possess knowledge, skills and competencies to enhance their employability quotient and contribute to societal development.





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The Context

Implementing Outcome Based Education (OBE) in Government General Degree College, kalna-I comes with its own set of challenges irrespective of qualified and dedicated teachers, justified infrastructure and adoption of modern teaching learning pedagogy. The primary challenges are that the College is affiliated to the University of Burdwan and thereby there is a limited scope of preparing curriculum except some choices of electives as well as there is a limited control of final assessment which are conducted by the University itself. Apart from that faculties must be trained properly to understand the essence of OBE, develop appropriate assessment mechanism and adopt learner centric teaching strategies. Securing funds and allocating effective resources to support OBE initiatives is really an uphill task in our rural college which runs in resource constraints environment. Building students awareness of learning outcomes, fostering self-directed learning skills, engaging actively in learning process requires targeted intervention and support mechanism as being a rural college there is a comparatively lower retention and graduation rates as well as student attrition. There is a hindrance to engage local employers, community leaders and parents for implementing OBE due to communication barriers, limited awareness and differing priorities. Most of the students are first generation learners coming from socio-economic challenged section of the society face challenges to access to information, digital literacy, online learning resources and technology infrastructure. The cultural and institutional context of this College including its value, traditions, organizational structure and resistance of traditionalist stakeholders who value conventional educational approaches influence the implementation of OBE. By addressing these challenges proactively and strategically, the college can implement OBE and enhance the quality and relevance of education.

The Practice

1. **Learning Outcome Alignment:** The Departments have prepared the Programme outcome and Programme Specific Outcome in line to UGC LOCF and also prepared Course outcome of every course under each programme keeping pace with the objective levels of each module, under each course and assigning appropriate action verbs to complement the Bloom's Taxonomy levels. Among the 15 POs or Graduate attributes identified by UGC, we have





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chosen eight to nine PO depending on the primary focus of each programme and the basic philosophy of Graduate attributes. The PSOs are also identified as culmination of acquisition of knowledge and practicing the methodologies with a futuristic outlook of the subject. For each course an articulation matrix is also prepared by assigning the degree of association of each CO with the defined POs and PSOs. This CO-PO-PSO module for each programme is displayed on the College website and is explained to the students during the introductory class of each course so that students are able to understand what knowledge and skills he/she is expected to acquire after completion of each course, as well as the completion of the entire programme.

- 2. **Assessment Protocol:** The College identifies that in addition to defining learning outcome, OBE emphasizes the importance of assessing student performance in a meaningful and transparent manner. In light of this, the College has devised a policy document for Continuous Internal Evaluation(CIE) by overcoming the traditional assessment protocol of assigning grades or evaluating rote memorization, where the use of formative assessment techniques are critically crafted, allowing students to demonstrate their understanding and application of knowledge in a meaningful way. It focusses on module wise assessment with an objective of portfolio-mode-of-evaluation. Apart from that, the questions are prepared based on the COs for formal university stipulated internal examinations. Each department identifies their mode of CIE for each module of their course curriculum which is primarily formative in nature and discusses the outcome of the evaluations with the students for further improvements, which is one of the central tenets of OBE.
- 3. **Performance Evaluation:** The departments also evaluate the student attainment by using standard layout of CO-PO-PSO attainment, against the defined CO-PO-PSO for each course by benchmarking some standard achievements in Continuous Internal Evaluation, Internal Examinations and End Semester University Examination and prepare list of strategies as corrective measure to achieve higher attainment level of the entire group of students.
- 4. **Modern Approach:** Faculties are embracing learner-centered teaching methods alongside ICT, incorporating interactive, personalized, collaborative, and activity-based learning to effectively achieve desired student learning





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outcomes. This holistic approach ensures that students not only meet academic benchmarks but also acquire the critical skills and competencies needed for lifelong learning and professional success.

5. **Other Initiatives:** The College offers additional value-added courses beyond the standard university curriculum and organizes numerous skill development initiatives. These efforts play a crucial role in shaping graduates who excel academically and possess the essential skills and knowledge for successful careers, making meaningful contributions to society.

Evidence of Success

Implementing Outcome-Based Education (OBE) in rural colleges is challenging yet rewarding endeavor. Success in such implementations is evidenced through the following:

- **1. Curriculum Alignment:** Curriculum planning and delivery in terms of lesson plan, instructional strategies, teaching pedagogy etc. are aligned with clearly defined CO-PO-PSO. This alignment ensures that what students are expected to learn is directly connected to what is being taught and assessed.
- **2. Assessment Practices:** The College follows a rigorous assessment protocol known as Continuous Internal Evaluation (CIE) in addition to the internal and semester-end examinations mandated by the affiliating university. This CIE method incorporates at least four assessments primarily aimed at continuous improvement. These assessments include scholastic evaluations such as written tests, assignments, and quizzes, as well as co-scholastic activities like projects, debates, group discussions, and extemporaneous speaking. As part of this process, student portfolios are prepared, accompanied by feedback reports on their performance quality. These portfolios and reports are then submitted to respective mentors who provide necessary support and guidance to help students achieve higher academic success in subsequent sessions.
- **3. Student Performance:** There has been a noticeable improvement in overall student performance based on higher scores achieved by graduates in the university's final graduation examination. Specifically, Ankan Das, a student of B.A. Sanskrit (Hons.), secured the first rank in the B.A. final semester examination of the University of Burdwan for the academic session 2021-2022. In addition, Sayan Mondal, a student of B.Sc. Physics (Hons.),





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attained the second rank in the B.Sc. final semester examination of the University of Burdwan for the academic session 2022-2023.

- **4. Stakeholder Satisfaction:** Feedback from various stakeholders, including students, faculty, parents, and the alumni, are provide insights into the effectiveness of OBE. Positive feedback regarding the relevance of skills acquired and the preparedness of graduates indicates the implementation of OBE.
- **5. Progression of Graduates:** The College observed a notable number of progressions to higher education among the produced graduates.
- **6. Continuous Improvement:** OBE evidenced a cycle of continuous improvement which includes processes in place for collecting feedback, analyzing data, and making informed changes to the curriculum planning and instructional methods based on the findings.
- **7. Retention and Graduation Rates:** Higher retention and graduation rates indicates that students are engaged, motivated, and are progressing satisfactorily through their programs, which can be attributed to the clarity and relevance of learning outcomes in OBE.

In summary, success in implementing OBE is demonstrated through the alignment of curriculum planning and delivery with learning outcomes, effective assessment practices, improved student performance and progression to higher education, stakeholder satisfaction, continuous improvement efforts and higher retention rates. Tracking these indicators over time provides a comprehensive view of the impact and effectiveness of OBE in achieving educational goals in rural settings.

Problems Encountered and Resources Required

Implementing Outcome-Based Education (OBE) in a rural degree college possess several challenges due to specific contextual factors.



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1. Faculty Readiness and Development:

Lack of Training: All faculties are not completely familiar with OBE principles and assessment methods, especially those who are using traditional teaching approaches.

Resistance to Change: Some faculties are resisting adopting new teaching methodologies due to comfort with existing practices.

2. Curriculum Design and Alignment:

Mismatch with Industry Needs: Being an affiliated college there is a limited scope of designing curriculum and the curriculum lacks in alignment with current industry requirements, leading to a gap in employability skills.

3. Assessment and Evaluation:

Validity and Reliability: Ensuring assessments measure desired learning outcomes accurately is difficult, particularly in subjects requiring practical skills.

Assessment Burden: Managing assessments across various courses and ensuring fairness in attainment evaluation is not accurate as major weightage of assessment lies with the affiliating university.

4. Student Engagement and Support:

Motivation Levels: Students from rural backgrounds are facing socio-economic challenges that affect their motivation and engagement in learning.

Resource Required:

- 1. **Faculty Development:** Conduct regular workshops and training sessions on OBE principles and assessment techniques. Provide ongoing support and incentives to encourage faculty participation and adaptation.
- 2. Curriculum Alignment: Involve industry experts and employers in curriculum design. Utilize curriculum mapping tools and consult with experienced educators for guidance.
- 3. **Assessment Improvement:** Develop rubrics and assessment criteria aligned with learning outcomes. Implement peer-review mechanisms and provide training on effective assessment practices.





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4. **Student Support:** Offer mentorship programs, peer tutoring, and career guidance to enhance student engagement. Create a supportive learning environment that accommodates diverse learning needs.

In conclusion, implementing Outcome-Based Education in a rural setting like Government General Degree College, Kalna-I involves overcoming significant challenges but promises substantial rewards in terms of enhanced educational outcomes and societal impact. By addressing these challenges strategically and proactively, the college aims to empower students with critical skills and competencies, preparing them for successful futures and contributing to societal development.



