पेटेंट कार्यालय
शासकीय जर्नल

OFFICIAL JOURNAL
OF
THE PATENT OFFICE

निर्गमन सं. 16/2025	शुक्रवार	दिनांक: 18/04/2025
ISSUE NO. 16/2025	FRIDAY	DATE: 18/04/2025

पेटेंट कार्यालय का एक प्रकाशन
PUBLICATION OF THE PATENT OFFICE

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :27/03/2025

(21) Application No.202511029149 A

(43) Publication Date : 18/04/2025

(54) Title of the invention : METHOD FOR REIMAGINING BIOTECHNOLOGY EDUCATION USING MODERN TEACHING STRATEGIES

(51) International classification	:G06Q0050200000, G09B0007020000, G09B0019000000, G09B0007000000, G16B0030000000
(86) International Application No Filing Date	:NA :NA
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

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(57) Abstract :
The present invention relates to a biotechnology education method integrating theoretical instruction with audiovisual aids, project-based learning (PBL), and competency-based assessments, aligned with the National Education Policy (NEP) 2020. The approach enhances critical thinking, problem-solving, and interdisciplinary learning by incorporating real-world applications. A pilot study was conducted for B.Tech (Biotechnology) students in the "Advanced Bioinformatics" course, involving mini-projects on sequence similarity search and homology modeling using computational tools like BLAST P and Swiss-Model. Results demonstrated improved student engagement, conceptual understanding, and motivation through hands-on, inquiry-based learning. The method employs adaptive assessment formats, such as case-based and assertion-reasoning questions, to evaluate student competency beyond rote memorization. This scalable model modernizes biotechnology education by integrating technology, fostering research-oriented learning, and preparing students for industrial and academic challenges.

No. of Pages : 9 No. of Claims : 8