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AI in Education: Bridging the Gap between Theoretical Knowledge and Practical Implementation in Indian Higher Education

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Abstract**—***Indian education system has long emphasized theoretical knowledge over practical application, often leaving students unprepared to deal with real-world problems. This research paper explores how AIBL (Artificial Intelligence- Based learning can bridge the gap between textbook knowledge and real-world application. Integrating AI in tools into curriculum, AIBL offer personalized self-paced and practical learning experience to the students which help them in growth and development in all aspects. The study emphasizes the results of the survey that reveals a significant gap between theory and practice and proposed step-by-step implementation of AIBL at ground level. It also emphasizes the evolving role of teacher as facilitator, mentor and ethical guide in AI-supported classroom. The results indicate that AIBL can potentially transform Indian education system into more student-centric, inclusive and future ready system.*

Keywords**—** *Artifical Intelligence Based Learning (AIBL); Blended learning; Digital pedagogy; Multilingual learning platforms; Theory-practice gap; Personalized learning*

I. INTRODUCTION

The Indian education system has long been centred around rote learning and theoretical concept building, often lacking practical application and real-world relevance. As a results students struggle to apply their theoretical knowledge in real-world which hinders the ability to face real-world challenges and workplace demand. So to overcome the gap between theory and practice, this paper give an idea to integrate AI in Indian education system which can bring the revolutionary change in Indian education system.

a. Defining the key concepts

This study focuses on Artificial Intelligence Based Learning (AIBL), a method to integrate AI into today's education system to make the learning more student centric and practical application. The study emphasizes on blended learning approach, integrating AI tools in traditional education system. The research addresses the gap between theoretical knowledge and practical implementation in Indian education system. Key elements such as personalized learning, digital pedagogy, multilingual platforms, ect; are explored by AIBL to show how it can transform traditional education system to AI based education system.

b. Brief literature review

Previous research highlights that Indian education system is heavily focused on rote-learning, often lack in practical knowledge studies suggested that AI can address this issue by providing personalized learning paths. Researches also emphasized the importance of blended learning, teacher facilitation and digital access in successful integration of AI in education system. However, there is limited implementation in India, especially in rural setting, indicating need for inclusive AI models which aligned with curriculum goals.

c. Research gap

The Indian education system mainly lack in practical implementation. Students are not able to apply their theoretical knowledge in real-world problems. There is very little use of AI to make learning practical and skill based. Also, not much research has been done on how AI can help solve this problem.

d. Contribution of the paper

This paper highlights how AI can transform Indian education system by making learning more practical, personalized and student centric. It provides step-by-step strategies for implementation of AI in Indian education system. This paper also explain the role of teachers and give recommendations on infrastructure, content and teachers' training. Overall, it offers a new and practical approach of education.

e. Aim of the study

The main aim of this study is to explore how AI can be used to bridge the gap between theoretical knowledge and practical implementation in Indian education system and also to provide effective strategies for implementation of AIBL.

f. Summary of results

The survey reports find that students lack in practical application of their knowledge which give an urgent call to a revolutionary change in Indian education system. Survey reports finds that integrating AI with traditional education system can solve this problem and bridge the gap. AIBL is the solution for this problem which provides personalized learning platforms and skill based learning. It supports better student engagement, teacher assistance and real-world application of the knowledge, especially when combined with teacher training, infrastructure and blended learning methods.

II. OBJECTIVE

The objective of this study is to explore how students in higher education are able to apply their theoretical knowledge in real world. It aims to identify the gap between the

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theoretical knowledge and its practical implementation in Indian education system. It also provides the detailed analysis about the problems and offer recommendations for improving the application of theoretical knowledge.

III. Literature Review

Studies shows that Indian education system heavily focus on theory, often neglecting practical application (Kumar and Aithal, 2020). This gap between theory and practical often limits the ability of students to deal with real-world problems. The research also emphasized the importance of blended learning and need of teacher training and digital infrastructure (Singh and Chopra, 2021). Blended learning model that integrate AI with traditional teaching methods have proven effective, especially when paired with proper teacher training and infrastructure (Patel and Joshi, 2022).

However, limited research exist on implementing AI at grassroots level in India, especially in alignment with NCERT and rural areas. This paper aims to fill that gap.

IV. Methedology

The purpose of this study is to explore how students in higher education are able to apply their theoretical knowledge in real world scenario. This study also examines the students experience in application of their theoretical knowledge. The study follows the quantitative research design and utilizes an online survey to conduct data. A Google form with structured questionnaire was created to collect the responses from the students pursuing higher education. The students were collected through random sampling technique in which more than 120 students were participated from various disciplines. After the collection the analysis of data was done through descriptive statistics method. This methodology section is divided into several stages, including survey design, participants selection, data collection, and data analysis.

A. Survey Design

To collect data for this study, a structured questionnaire was prepared focusing on the practical implementation of theoretical knowledge by students in higher education. The questionnaire consisted of 9 close-ended questions, all directly related to the research topic. No demographic questions (such as age, gender or academic background) were included, in order to maintain the strict focus on the responses regarding participants' personal experience on practical application of theoretical knowledge.

B. Participants Selection

The participants for this study were selected using a non-random sampling technique. The target population comprised students currently enrolled in higher education program across various institutions in India. There is no any specific inclusion and exclusion criteria apart from being a student in higher education. The survey questionnaire was distributed through Google form in which students from various disciplines participated in the survey. More than 120 students participated in the survey.

C. Data Collection

Data collection was conducted over the period of one week using Google Form. The survey link was shared through social media groups, emails, etc to encourage wide range participation. In this survey participants were informed about the purpose of the study. Ethical considerations were addressed by ensuring that responses were confidential and used only for academic research purposes.

D. Data Analysis

Once the data was collected it was analysed using descriptive statistics. Based on the analysis, pi-charts were created to give the comprehensive overview of the analysis. The results were then interpreted to provide insights into the practical application of theoretical knowledge in higher education.

In conclusion, this methodology enables a comprehensive understanding about the practical implementation of theoretical knowledge in higher education in Indian education system. The quantitative approach provides the valid data which help in taking the future decisions on practical approach of study using AI in higher education.

V. Results And Discussion

A. Survey Questionnaire and its analysis

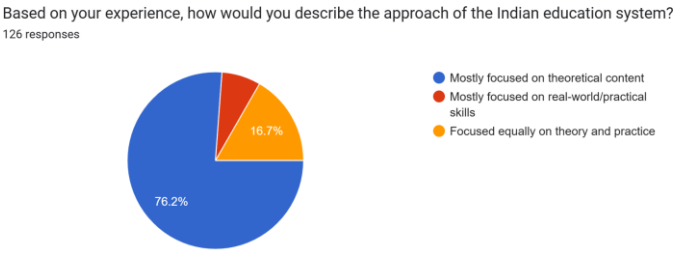
The data collected form students pursuing higher education regarding the practical application of their theoretical knowledge provides valuable insights into the practical implementation. Here's an analysis of the key points:

1. Students perception on the theoretical dominance in Indian Education

Question: Based on your experience, how would you describe the approach of the Indian education system?

Results: 76.2% of the respondents believed that the Indian education system is mostly focused on the theoretical content, whereas only 7.1% felt that it emphasizes real-world application of the knowledge. Around 16.7% believe there is a balance between theory and practice.

Conclusion: The survey data clarify that Indian education system is mainly focused on theoretical knowledge which highlights the urgency of reforming the Indian education system.



2. Application of theoretical concepts

Question: Are you able to apply the concepts you study in your textbooks to real life situations?

Results: According to 55.6% of students, the application of their textbook knowledge depends on the topic they deal with whereas 24.6% of respondents are rarely able to apply their theoretical knowledge in real world. Around 11.1% of

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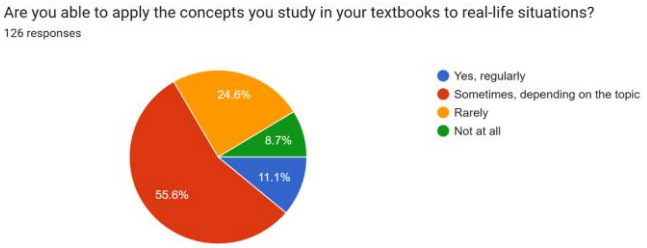
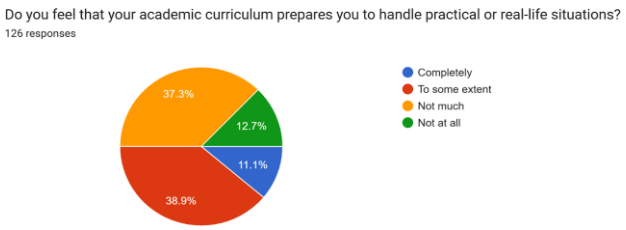
students are regularly able to apply whereas 8.7% of students are not at all able to apply their theoretical knowledge to real world scenarios.
Conclusion: The results indicate the gap between theory and practice as majority of students are able to apply their textbook knowledge depending on the topic or are rarely able to apply which indicates a need for more practical, real world learning in the curriculum.



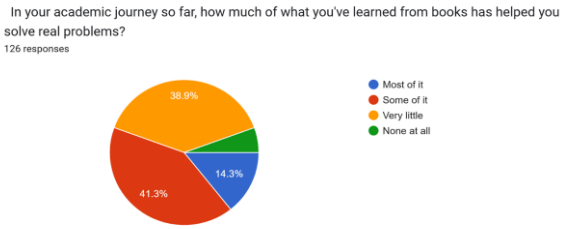
3. *Handling real-life situation through academic knowledge*

Question: Do you feel that your academic curriculum prepares you to handle practical or real-life situation?
Results: According to the survey results 38.9% of students are able to handle the real-life situations based on their academic curriculum to some extent while 37.3% of students are not able to apply it effectively. Around 12.7% of students are not at all capable whereas 11.1% of students are fully capable of handling the real-life situations based on their academic curriculum.
Conclusion: The result indicates that a significant number of the students struggle to apply their theoretical knowledge in real world while a small percentage of students are confident enough to apply.



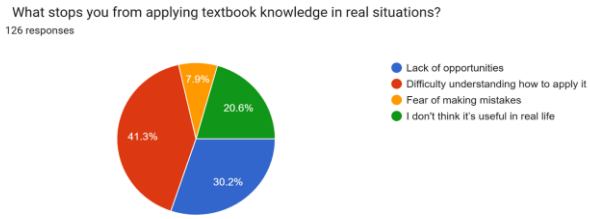
4. *Books to real-life*

Question: In your academic journey so far, how much of what you have learned from books has helped solve real problems?
Results: According to 41.3% of respondents some of what they learned from books helped them to solve problems whereas 38.9 % of them stated that very little lessons of books helped them. Around 14.3% of respondents stated that things learned from books helped them in solving them real life problems while 5.6% of students stated that the learned lessons from books not at all helped them.
Conclusion: The findings reveal that some students find book learning somewhat helpful in solving real life problem whereas a large portion feels that it has limited impact. Only small portion of students feels that it is highly helpful.



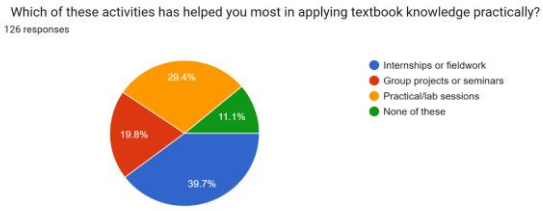
5. *Barrier in applying textbook knowledge in real world*

Question: What stops you from applying textbook knowledge in real situation?
Results: 41.3% of students find difficulty in applying the textbook knowledge while 30.2% feel lack of opportunity. According to 20.6% of students textbook knowledge is not useful in real situations whereas 7.9% afraid of making mistakes that stops them applying their textbook knowledge in real world.
Conclusion: The results indicate that the main barriers in applying textbook knowledge in real world are difficulty in applying theory to practice and lack of opportunities. Additionally some students find textbook knowledge irrelevant to real world while some hesitate due to fear of making mistakes.



6. *Activities encouraging practical knowledge*

Question: Which of these activities has helped you most in applying textbook knowledge practically?
Results: Internships and fieldworks helped 39.7% students in applying textbook knowledge practically whereas for 29.4% students, practical/labs session helped most. According to 19.8% of students group projects or discussions helped them most in applying textbook knowledge practically while for 11.1% none of the activities helped them.
Conclusion: The results indicate that students find internships and fieldworks more effective than any other method to apply their textbook knowledge practically, followed by group projects or discussions. However, small portion of students find none of the activities helpful, highlighting the need of making practical learning more impactful.



7. *Gap between theory and practical*

Question: How do you feel about the gap between what you learn in theory and what you practice?

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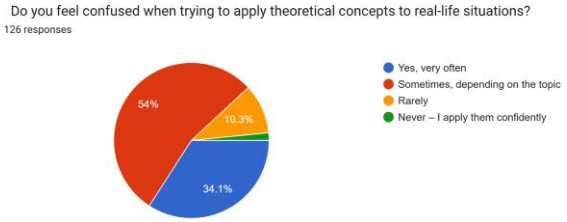
Results: According to 54.8% of students the gap between what they learn in theory and what they practice is large and concerning whereas for 31.7% students the gap is small and manageable. Around 9.5% of students feel that there is no gap and both are aligned while 4% of students feel no gap at all.
Conclusion: A significant number of students, around half of the students find the gap large and concerning while some finds it manageable or non-existent. But the majority views it as major issue which emphasize on better alignment of academics and practical.

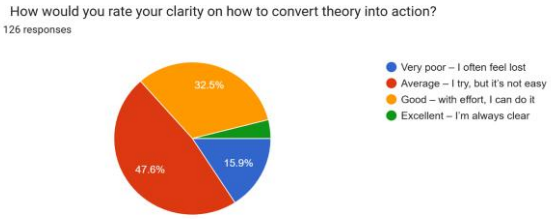
8. Feeling of confusion in applying theoretical knowledge in real world

Question: Do you feel confused when trying to apply theoretical knowledge in real situation?
Results: 54% of students feel confused sometimes, depending on the topic whereas 34.1% of students feel confused very often while applying theoretical knowledge in real situations. Around 10.3% of students rarely feel confused while 1.6% of students never feel confused in fact they are confident.
Conclusion: The results indicate that the majority of students feel confused when applying theoretical knowledge, either occasionally or frequently. Only a small percentage of students feel confident.



9. Clarity of converting theory into action

Question: How would you rate your clarity on how to convert theory into action?
Results: 47.6% of students rate themselves as average in converting theory into action, according to them it's not easy while 32.5% of students rate themselves good, according to them with efforts, they can manage it. 15.9% of students rate themselves as very poor in this aspect, according to them they often felt lost, whereas 4% of students are excellent in converting theory into action, according to them they are always clear.
Conclusion: The results suggest that most of the students face challenges in converting theory into action, with nearly half of the respondents rating themselves as average. While some confident, a significant number of students struggle or feel lost.



B. Detailed analysis of the results and their discussion

1. Lack of application of theoretical knowledge
   According to the results of the survey, the Indian education system mainly focuses on theoretical or bookish knowledge due to which students are often unable to apply their theoretical knowledge in real world. More than 50% of the students convert theory into practical depending on the topic whereas many students feel lost, hesitate or have fear making mistakes in application of theoretical knowledge. This is a major concern in our Indian education system, as it prevents students from becoming confident and capable of dealing with real world problems.
2. Gap between theory and practical application
   According to the survey there is a large and concerning gap between theory and practical. Students are not able to deal with this gap due to greater focus on theoretical knowledge while practical knowledge is often neglected in Indian higher education. Although there are labs, hands on experience learning, internships and fieldwork opportunities but they are still limited and lack significant opportunities and exposure.
3. Barrier in application of theory into practical
   The survey results indicate that the majority of students (around 50%) face difficulty in converting theory into practical, which acts as the barrier in their learning and growth. Lack of opportunities is another significant concern which highlights the need for more practical and real-life exposure. A significant number of students feel that bookish knowledge is not at all useful in real world which call an immediate shift in the Indian education system from theory based approach to a more practical one.
4. Handling real life situation
   The majority of respondents in survey stated that with their academic curriculum, they struggle to handle real life situations only a small percentage of students feel confident which highlights the need of a significant change in our academic curriculum or practice of teaching. According to the survey the textbook knowledge does not help much or are limited in solving the real-life situations.
5. Activities encouraging practical learning
   According to the survey conducted, students find internships and field work more effective in converting theory into practical as it provides hands-on-learning experiences which help in gaining clear and deeper understanding of concepts. Group projects and

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discussion is another activity which give the clear and deeper understanding about the theoretical knowledge.

VI. RECOMMENDATIONS

The Survey results directly highlight the need of a revolutionary change in Indian higher education system. Our Indian education system primarily focuses on rote learning or theoretical knowledge, often neglecting practical knowledge due to which students fail to apply their textbook knowledge in practical, ultimately defeating the main purpose of education.

The main purpose of education is to empower students with knowledge, skills, values and critical thinking so that they can contribute in the development of society. It also focuses on understanding the concepts in deep and apply in real-life situations.

To fulfill the purpose of education as well as to improve our Indian education system and bring a revolutionary shift from theoretical knowledge to real-world application, there are some recommendations:

A. AIBL (Artificial intelligence based learning)

1. *Introduction to AIBL*
   AIBL (Artificial Intelligence Based learning) is the response to the call to bring revolutionary change in Indian Education system and move towards practicality. AIBL is the integration of AI in today's Indian education system. This integration of AI tools and systems will significantly make the Indian education system more personalized, effective and adaptive to the needs of individuals. AIBL utilizes intelligent algorithm to analyze student performance, learning pattern and preferences and accordingly provides customized learning experience. As Indian education system need to shift towards practical and skill based education, AIBL is the crucial step towards making education more inclusive, student – centric and aligned with real world demands.
2. Revolutionizing Indian education using AIBL
   Introducing AIBL in Indian education system will bring a revolutionary change in education system.
   AIBL provides a personalized learning platform where students can learn at their own pace, style and gaps. This will help students (slow or fast learner) to get guidance as they need. AIBL supports practical learning over rote learning which replaces superficial cramming over deep understanding of concepts. It also reduces workload on teachers which help them to give individualized instructions for students all round development. AIBL also supports learning without internet and multilingual approach of learning which help rural area students to interact with this new platform. AIBL is not limited to theoretical knowledge but also provide learning out of the classroom. It tracks student growth which help teachers to analyze students deeply.
3. *Use of AIBL model in classroom*
   For implementing AIBL in Indian education system:
   a. *Use the concept of blended learning*
   The concept of blended learning help student to gain a deeper understanding about the concepts. This approach of learning also reduces the workload on teachers and allow them to pay personalized attention to each students. Integrating AIBL with the concept of blended learning provides students self -paced learning platforms.
   b. *Use of simulations*
   Simulations help in creating engaging, dynamic and intellectually challenging learning environment that activates students' curiosity. They also foster critical thinking, improves retention, prepare students for complex problems, motivates self - directed learning and ultimately bridge the gap between theory and practice.
   c. *AI-Driven real world problems*
   Using AIBL teachers can provide AI-driven real - world problems that help students in apply their theoretical knowledge in real world. This will connects students from real world context which will ultimately foster the curiosity and a deeper interest in learning.
4. Step-by-step implementation of AIBL in Indian education system at ground level
   a. *Infrastructure development and digital access*
   Development of infrastructure is the first and foremost step to be taken for implementing AIBL in Indian education system at ground level. Smart classroom should be equipped with basic computers/tablets, projectors and internet access. In rural areas, AI - powered learning without internet connectivity should be promoted. Using low-cost, solar powered learning devices will help in reducing expenses and make education more affordable for every student in rural areas. Collaboration with government initiative like Digital India PM eVIDYA etc, will help in getting the easy access to digital tools.
   b. *Multilingual AIBL platforms*
   India is a diverse country with a rich culture of multiple languages. Therefore, AIBL supports multilingual approach of learning which help connect students from every corner of the country. This approach allows students to learn and understand the concepts in their own mother tongue due to which students connect to the concepts and grasp it easily. To implement AIBL collaboration with startups and research groups building vernacular adaptive learning content (e.g. Diksha platforms)
   c. *Train teacher as AIBL facilitator*
   Teachers are key to the adoption: they must be comfortable with AIBL model of learning. Teachers should be trained to use AI-driven tools to make their teaching more interactive. Without proper training of teachers the benefit of AIBL can't be fully realized. So for successful implementation of AIBL model of learning, teacher training is crucial part of it. For

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teachers' training conduct state-sponsored digital pedagogy training programs.

d. *Start pilot programs in different schools and colleges*
This small pilot program is a test implementation of AIBL model of learning. In this pilot program few colleges (urban and rural) should be selected and integrate AIBL model of learning into their education system. AIBL should be applied in key subjects (Mathematics, Science and Language) in which gap between theory and practical is large and will help in tracking improvements in students. Evaluate the improvement in engagement, performance and confidence.

e. *Develop India-specific AIBL content aligned with NCERT*
AIBL content must be aligned with NCERT to ensure relevance and curriculum specificity. Collaborate with NCERT, NIOS and SCERTs to digitize textbook content with an adaptive layer. Use AI generated simulations, practice test, case studies and real world tasks related to concepts of NCERT.

f. *Use government or CSR support for funding*
For large scale development of this model sustainable financial support is needed for which CSR support from tech companies can be invited to fund AI tools. Encouraging public-private partnership for scaling content, devices and training can also contribute to successful development of this project.

5. Role of teacher in AIBL model of Learning
The role of teacher in AIBL model of learning is not diminished – it evolved. While AI automate and personalized some aspects of education but teachers remain the central to guiding.

a. *Teacher as the facilitator*
Teachers act as learning facilitator who help students to navigate AI tools, interpret data and understand the concepts. They guide students in setting goals and developing effective learning strategies.

b. *Emotional and social mentor*
AI can personalize the content according to the needs of students but cannot understand their feelings or emotions the way a teacher can understand. In this AIBL model of learning one of the most important roles of teacher is to provide the emotional support to students. Recognizing stress, learning blocks or emotional struggle in students is the important role of teacher. Teachers also offer empathy, encouragement and motivation.

c. *Curriculum designer*
Selecting the right AI tools and resources and customizing the content to align with curriculum goals is the fundamental role of a teacher in an education system. It is important to ensure that AI not only delivers the content but also relates it to practical world, while keeping in mind the NCERT curriculum.

d. *Critical thinking and ethical guide*
AI can suggest content, but teachers help students learn how to question, evaluate and critically analyze the content. Teacher also educates students about digital ethics, data privacy and responsible use of AI, things that AI itself cannot do.

e. *Bridge between technology and learner*
Not every student is tech-savvy especially those who are from of rural areas or unprivileged urban areas. Now here comes the role of teacher to teach students about the use of AI and supporting students in tech related challenges.

VII. Conclusion

AIBL has the power to bring revolutionary change in our Indian education system by reducing the gap of theoretical knowledge and practical application. It ensures personalized, inclusive and real-world learning, reducing the burden on teachers. However, its success depends on proper infrastructure, teacher training, alignment with curriculum and emotional and motivational support from educator. With collaborative and well-planned approach, AIBL can transform education into more student centric skill based and future ready system.

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