

# IMPACT OF BASIC AND EMOTIONAL AI ON LEARNING OUTCOMES IN BLOCKLAYING, BRICKLAYING AND CONCRETING IN TECHNICAL COLLEGES, NIGER STATE

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## Abstract

This study explored the impact of basic and emotional artificial intelligence on learning outcomes in blocklaying, bricklaying and concreting in Technical Colleges, Niger State, Nigeria. The research was guided by three objectives and corresponding research questions and adopted a quasi-experimental design. The population comprised 220 National Technical Certificate (NTC II) students (163 males and 57 females) from six National Board for Technical Education (NBTE) - accredited technical colleges, all of whom participated in the study. Data were collected using achievement tests, interest inventories, and retention tests and analysed with SPSS version 23.0. Descriptive statistics (mean and standard deviation) were used to address the research questions, while Analysis of Variance (ANOVA) was applied to test the hypotheses at the 0.05 significance level. Results indicated that students taught using basic and emotional AI instructional strategies achieved significantly higher academic performance compared to those taught through conventional methods, with a noticeable increase in mean achievement scores. AI-assisted instruction also led to improved student interest and retention, as evidenced by higher mean scores and retention gains. Statistical analysis confirmed a significant difference in achievement and retention between AI-assisted and conventionally taught groups. However, no significant difference was observed in some performance areas, suggesting that AI is most effective when strategically integrated into instruction. The study recommends that technical college teachers incorporate basic and emotional AI tools into their teaching to boost student engagement, interest, and retention. Additionally, teachers should foster active participation and provide AI-supported feedback to maximize learning outcomes in BBC.

Keywords: Basic artificial intelligence, emotional artificial intelligence, learning outcomes, BBC

## Introduction

Technical colleges are institutions established to train students in specialized fields that prepare them for careers or trades. According to Eze et al. (2020), technical colleges in Nigeria operate at the post-basic level of the vocational education system and are tasked with producing craftsmen and master craftsmen. Students enrolled in technical colleges are provided with the knowledge, attitudes, and practical skills required to

excel in their chosen professions. The Federal Republic of Nigeria (FRN, 2013) stipulates that graduates of technical colleges should be prepared either for gainful employment in industry or for self-employment as skilled artisans. Achieving this goal requires a curriculum that reflects students' interests and encourages competence development in their chosen trades. Trades offered in technical colleges, including vehicle bodywork, electrical installation and maintenance, fabrication and welding, automobile electricity, electrical/electronic work, mechanical engineering craft practice, motor vehicle mechanics, refrigeration and air-conditioning, metalwork, furniture making, carpentry and joinery and blocklaying, bricklaying and concreting.

Blocklaying, bricklaying, and concreting (BBC) are fundamental practical skills in building construction, forming the core of structural work in technical education and the construction industry. Blocklaying and bricklaying involve the precise placement of blocks or bricks in mortar to create durable walls and partitions, requiring accuracy, alignment, and proper bonding techniques to ensure structural integrity. Concreting, on the other hand, encompasses the preparation, mixing, and placement of concrete for foundations, slabs, and other structural elements, demanding careful attention to proportions, compaction, and curing to achieve strength and durability. Mastery of these skills is essential for technical college students and apprentices, as it directly influences the quality of construction projects and promotes employability in the building trades (Adebayo, 2022). With the growing integration of digital technologies and Artificial Intelligence in education, these traditional practical skills can now be enhanced through AI-supported simulations and intelligent learning tools, providing students with more interactive, precise, and self-directed learning experiences. Artificial Intelligence (AI) is a systematic approach to organizing and delivering learning support for specific educational activities.

Qadir (2023) explained artificial intelligence in education as an organized approach that facilitates teaching and learning in an effective, systematic, and progressive manner. Basic Artificial Intelligence (AI) are computer systems designed to perform tasks that typically require human intelligence, such as learning, reasoning, and problem-solving. It focuses on simple, rule-based decision-making rather than advanced, self-aware cognition. AI provides tools and solutions that help teachers plan and manage classrooms, workshops, human resources, practical materials, and ideas to enhance the teaching–learning process. AI therefore plays a vital role in promoting students' active engagement and participation, creating personalized and interactive learning experiences. When applied in education, AI aims to make teaching and learning more efficient and effective, thereby improving students' performance. Examples of AI applications in education include Virtual assistants, Spell checkers and grammar tools, Recommendation systems, Chatbots, Intelligent tutoring systems, Adaptive learning software, Automated assessment tools, Learning analytics systems, Emotion-recognition systems, AI feedback tools, Social robots, AI-powered simulations, Smart diagnostic systems and Predictive maintenance tools.

Basic Artificial Intelligence (AI) provides opportunities for creating a learning environment where students can access new knowledge and benefit from it interactively. Akpan et al. (2020) noted that Basic AI supports collaborative learning because it enables interaction, feedback, and sharing of information during the learning process. Basic AI applications can facilitate group discussions, pair work, and project-based learning by providing intelligent prompts, guiding questions, and real-time support. The core value of basic AI in education is its ability to help learners analyse problems, think critically, brainstorm solutions, and generate new ideas that build on existing knowledge. Basic AI therefore functions as a modern instructional aid, closely aligned with cognitive AI systems, as both are designed to deepen meaningful learning and strengthen students' problem-solving abilities.

Emotional Artificial Intelligence (Emotional AI) is a branch of AI that enables machines to recognize, interpret, and respond to human emotions, enhancing interactions by making them more empathetic and human-like. Emotional Artificial Intelligence (AI) creates a supportive learning environment where students' emotions and engagement levels are monitored to promote effective learning. Akpan et al. (2020) observed that emotional AI fosters deeper interaction because it can recognize students' emotional states, provide timely feedback, and encourage participation throughout the learning process. Emotional AI systems can guide class discussions, motivate learners during group work or individual tasks, and adjust activities based on students' levels of interest or frustration. The primary strength of emotional AI in education lies in its ability to boost learners' confidence, maintain focus, and inspire curiosity while helping them connect emotionally with the subject matter. Emotional AI, therefore, complements cognitive learning tools, as both are designed to create meaningful, personalized, and motivating learning experiences that lead to improved performance and retention.

Learning outcomes are statements that describe the measurable knowledge, skills, abilities, attitudes, competence or values that students should be able to demonstrate as a result of completing a task, programme or course. They are student-centred rather than teacher-centred, in that they describe what the students will do, not what the information the instructor will give. Organisation for Economic Co-operation and Development, (OECD, 2013) defines learning outcomes as indicators of what a student is expected to know, understand, and demonstrate at the end of a period of learning. Learning outcomes measures the potential applications of knowledge and skills acquired by students for saleable construction skills in a trade such like BBC. Learning outcomes is essential in order to equip individual learner with paid or self-employment knowledge and skills for a sustainable development (Oviawe, 2019). Learning outcomes can be enhanced with the right method of instruction in BBC to increase student's higher interest, retention and academic achievement.

Academic achievement is the result of the subjective and objective assessment of learners after completing a programme. Zheng and Mustapha (2022) explains academic achievement as a direct manifestation of learning effectiveness and a valid indicator to evaluate the effectiveness of teaching and learning for the overall development of students. Academic achievement is the students' overall quality possess during their school life. Academic achievement of BBC students in technical colleges includes the emotional development of students in addition to their cognitive and practical abilities. BBC students' academic achievement, interest and retention can be improved through instructional techniques. It has been observed by Nwagbo and Chukelu, (2011); Ojo *et al.* (2018) that interest and retention play a significant role in academic achievements of students in their trades. The studies also observed that instructional techniques improve students' achievement, retention and interest in their career. Interest refers to the inclination/insisting on an activity in a particular subject in which his or she is easily able to connect without hassle or hurdle. Ogundola *et al.* (2020) explained that interest does not come as a result of force; it is as a result of submission leading to individual's eagerness to learn. Interest can be affective in changing the behaviour, arouse and sustain teaching and learning through appropriate teaching strategy. There is need for BBC teachers in technical colleges to stimulate learners' interest in learning through artificial intelligence without which students' retention will be minimal.

Retention refers to the extent to which students remain in an educational programme within an institution, usually expressed as a percentage. It also relates to learners' capacity to recall and apply previously acquired knowledge and behaviours (Ogundola et al., 2020). Retention in learning is the process by which new information is transferred from one short-term to long-term memory. Retention is the ability of students to remember and apply what they have learned beyond the initial lesson or unit. It is typically assessed by administering a test (learning outcomes) two or more weeks after instruction. This measure applies equally to all students, regardless of gender.

Gender refers to the socially constructed roles, behaviours, and expectations associated with men, women, boys, and girls, shaping how students engage with learning (Ogundola et al., 2020). In Technical Colleges, both male and female students' interest and retention significantly affect their academic performance, particularly in vocational subjects such as Blocklaying, Bricklaying, and Concreting (BBC). Factors such as gender, cultural norms, instructional techniques, and personal interest influence students' engagement and choice of study (Oludipe, 2012). While some studies report no significant difference in academic performance based on instructional methods (Oviawe & Adeola, 2017; Oviawe, 2019), others suggest that teaching strategies can strongly impact learners' interest, retention, and achievement (Okoro, 2011). In this context, Basic and Emotional Artificial Intelligence (AI) offers a modern instructional approach capable of providing adaptive, personalized, and emotionally responsive learning experiences. By enhancing students' engagement, problem-solving abilities, and retention, AI can improve learning outcomes in BBC, supporting both male and female students in achieving higher academic performance in Technical Colleges in Niger State.

### **Statement of the Problem**

The Blocklaying, Bricklaying, and Concreting (BBC) subject provides students with opportunities to acquire knowledge and hands-on skills that enable them to become creative, competent, and productive in various aspects of construction, including building design interpretation, construction processes, material selection, finishing techniques, and maintenance practices. These learning outcomes are essential for developing craftsmen and master craftsmen who are prepared for employment or self-employment in the building industry. Su (2017) observed that students' learning outcomes largely depend on the methods or approaches employed in facilitating teaching and learning. Dokadawa (2017) highlighted that many challenges associated with teaching trades and crafts in technical colleges arise from the teaching methodologies used. Faridah (2018) further emphasized that the reliance on traditional teacher-centered methods, such as lectures and rote note-taking, often discourages students from thinking critically, limits their creativity, and suppresses problem-solving abilities.

Although technical colleges are equipped with modern materials, tools, and equipment, the predominant use of teacher-centred approaches reduces the effectiveness of curriculum implementation and fails to fully engage students. Oviawe (2021a) explained that BBC, like other skill-based trades, requires learners to be trained practically in using modern tools, equipment, and construction techniques to carry out real-life tasks. This goal is best achieved when students' interest, retention, and performance are enhanced through appropriate and engaging learning approaches. With advancements in technology and the need to prepare students for 21st-century skills, there is a growing demand for a shift from purely teacher-centred instruction to more innovative approaches. The integration of Basic Artificial Intelligence (AI) and Emotional Artificial Intelligence (AI) into BBC teaching offers a promising solution. Basic AI can provide personalized learning paths, adaptive feedback, and interactive simulations to improve knowledge acquisition, while emotional AI can track students' emotions, boost motivation, and encourage persistence during practical tasks.

By adopting these AI-driven methods, BBC education can transform into a more student-centered, interactive, and problem-solving-oriented experience. This shift will enhance students' interest, retention, and academic achievement while equipping them with relevant practical, cognitive, and socio-emotional skills for today's competitive workforce. Hence, the present study is designed to determine the impact of

Basic and Emotional Artificial Intelligence on the academic achievement, interest, and retention of BBC students in technical colleges in Niger State, Nigeria.

### **Purpose of the Study**

The purpose of this study is to determine the impact of basic and emotional artificial intelligence on students' learning outcomes in BBC in technical colleges, Niger state; specifically, the study will seek to determine the;

- i. Difference between the mean academic achievement scores of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence.
- ii. Difference between the mean interest scores of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence.
- iii. Difference between the mean retention scores of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence.

### **Research Questions**

The following research questions guided the study:

- i. What is the difference between the mean academic achievement scores of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence?
- ii. What is the difference between the mean interest rating of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence?
- iii. What is the difference between the mean retention scores of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence?

### **Hypotheses**

The following hypotheses are tested at 0.05 level of significance:

**HO<sub>1</sub>:** There is no significant difference between the mean academic achievement scores of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence.

**HO<sub>2</sub>:** There is no significant difference between the mean interest rating of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence.

**HO<sub>3</sub>:** There is no significant difference between the mean retention scores of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence.

### **Methodology**

This study employed a quasi-experimental design. It was conducted across all NBTE-accredited technical colleges in Niger State that offer BBC as a trade-related subject. Niger State, with Minna as its capital, serves as the study location. The target population consisted of 229 NTC II students (159 males and 70 females) currently studying BBC in the six technical colleges within the state. A census sampling technique was adopted for the study. Data was collected using three instruments: the Blocklaying, Bricklaying and Concreting Achievement Test (BBCAT), the Blocklaying, Bricklaying and Concreting Retention Test (BBCRT), and the Blocklaying, Bricklaying and Concreting Interest Inventory (BBCIIT). Two sets of lesson plans were prepared by the researcher for the selected topics (modules). The instruments were subjected to face and content validation by five experts – four from the Department of Industrial and Technology Education, Federal University of Technology, Minna, and one from the School of Technical Niger State College of Education, Minna. A pilot test was conducted to establish the internal consistency of the instruments. Cronbach's Alpha was used to determine reliability and yielded a coefficient of 0.82. Pre-test was administered to the students in both groups by their regular BBC teachers. Data collected were analyzed using the Statistical Package for the Social Sciences (SPSS) version 23.0. Descriptive statistics (mean and standard deviation) was used to answer the research questions, while Analysis of Variance (ANOVA) was used to test hypotheses at 0.05 level of significance.

## Results

### Research question one

What is the difference between the mean academic achievement scores of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence?

**Table 1: Mean and Standard Deviation of Pre-test and Post-test Scores of Students Taught BBC using Basic artificial intelligence and those Taught Using Emotional artificial intelligence**

Group	N	Pre-test		Posttest		Mean Gain
		<i>X</i>	<i>SD</i>	<i>X</i>	<i>SD</i>	
Emotional AI	110	14.15	4.94	30.11	3.63	15.96
Basic AI	110	19.55	5.44	27.19	7.81	7.64

Table 1 presents the pre-test and post-test scores of students exposed to Emotional AI and Basic AI interventions in BBC. The Emotional AI group, with 110 students, had a pre-test mean score of 14.15 (SD = 4.94) and a post-test mean of 30.11 (SD = 3.63), resulting in a mean gain of 15.96. In comparison, the Basic AI group, also with 110 students, had a higher pre-test mean of 19.55 (SD = 5.44) but a lower post-test mean of 27.19 (SD = 7.81), with a mean gain of 7.64. This indicates that while the Basic AI group started with slightly higher prior knowledge, the Emotional AI group demonstrated a much larger improvement in learning outcomes.

### Research question two

What is the difference between the mean interest rating of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence?

**Table 2: Mean and Standard Deviation of Interest rating of Students Taught BBC using Basic artificial intelligence and those Taught Using Emotional artificial intelligence**

Group	N	<i>X</i>	<i>SD</i>
Emotional AI	110	83.40	5.87
Basic AI	110	83.00	4.84

Table 2 shows the mean and standard deviation of interest rating of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence. The emotional AI group had interest mean rating of 83.40 with a standard deviation of 5.87 while the Basic AI group had interest mean rating of 83.00 with a standard deviation of 4.84. The emotional AI group had a slightly higher standard deviation, indicating more variation in how students responded in terms of interest. The result showed that emotional AI group had higher interest than Basic AI group on BBC.

### Research question three

What is the difference between the mean retention scores of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence?

**Table 3: Mean and Standard Deviation of Post-test and Retention Scores of Students Taught BBC using Basic artificial intelligence and those Taught Using Emotional artificial intelligence**

Group	N	Post-test		Retention		
		X	SD	X	SD	Mean difference
Emotional AI	110	30.11	3.63	29.64	4.00	0.47
Basic AI	110	27.19	7.81	27.13	7.14	0.06

Table 3 shows the mean and standard deviation of post-test and retention scores of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence. The emotional AI group had retention mean score of 30.11 with a standard deviation of 3.63 at the post-test while the Basic AI had achievement mean score of 27.19 with a standard deviation of 7.81. The emotional AI group had retention mean score of 29.64 with a standard deviation of 4.00 at the retention while the Basic AI group had retention mean score of 27.13 with a standard deviation of 7.14. The standard deviation (SD) for Basic AI (7.81) was significantly larger than for emotional AI (3.63), indicating greater variability in retention scores among students in the Basic AI group. Mean difference scores of 0.47 and 0.06 for the emotional AI and Basic AI group respectively, this indicated that emotional AI group are more retentive than Basic AI group.

### Hypotheses

**H<sub>01</sub>:** There is no significant difference between the mean academic achievement scores of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence.

The result is presented in Table 4

**Table 4:** ANOVA of mean academic achievement scores of students taught bbc using basic artificial intelligence and those taught using emotional artificial intelligence

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	462.947a	1	462.95	12.56	0.01
Intercept	178946.32	1	178946.32	4854.85	0.01
Methods of Teaching	462.95	1	462.95	12.56	0.01
Error	7961.61	216	36.86		
Total	187553	218			
Corrected Total	8424.555	217			

Table 4 presents the ANOVA results comparing the academic achievement of students taught BBC using Basic AI and Emotional AI. The model shows a Type III Sum of Squares of 462.947 with 1 degree of freedom, producing a mean square of 462.95 and an F-value of 12.56, which is significant at  $p = 0.01$ . This indicates that the method of teaching had a significant effect on students' academic performance. The significant intercept ( $F = 4854.85$ ,  $p = 0.01$ ) reflects the overall mean achievement of the students. The error mean square of 36.86 represents the variation not explained by the teaching methods. These results suggest that the type of AI used—basic or emotional—substantially influences learning outcomes. Therefore, incorporating AI, especially emotionally responsive systems, can enhance students' engagement, retention, and performance in Blocklaying, Bricklaying, and Concreting in Technical Colleges.

**HO<sub>2</sub>:** There is no significant difference between the mean interest scores of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence.

**Table 5: ANOVA of Mean Interest Rating of Students Taught BBC using Basic artificial intelligence and those Taught using Emotional artificial intelligence**

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	8.800a	1	8.8	0.304	0.58
Intercept	1522892.8	1	1522892.8	52610.077	0.000
Methods of Teaching	8.8	1	8.8	0.304	0.58
Error	6310.4	218	28.95		
Total	1529212	220			
Corrected Total	6319.2	219			

Table 5 shows the ANOVA results comparing the mean interest ratings of students taught BBC using Basic AI and Emotional AI. The analysis reveals a Type III Sum of Squares of 8.800 for the teaching methods, with 1 degree of freedom, producing an F-value of 0.304 and a significance level of  $p = 0.58$ . Since the p-value is greater than 0.05, there is no statistically significant difference in students' interest between the two teaching methods. The significant intercept ( $F = 52,610.08$ ,  $p < 0.001$ ) reflects the overall mean interest rating of the students. The error mean square of 28.95 captures the variation in interest not explained by the teaching methods. These results suggest that while both Basic and Emotional AI may engage students, the type of AI used does not significantly affect their interest in learning Blocklaying, Bricklaying, and Concreting in Technical Colleges.

**HO<sub>3</sub>:** There is no significant difference between the mean retention scores of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence.

**Table 6: ANOVA of Mean Retention Scores of Students Taught BBC using Basic artificial intelligence and those Taught using Emotional artificial intelligence**

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	342.434a	1	342.434	10.268	0.002
Intercept	175604.819	1	175604.819	5265.48	0.000
Methods of Teaching	342.43	1	342.434	10.27	0.002
Error	7203.64	216	33.350		
Total	183308.00	218			
Corrected Total	7546.07	217			

Table 6 presents the ANOVA results for the mean retention scores of students taught BBC using Basic AI and Emotional AI. The corrected model shows a Type III Sum of Squares of 342.434 with 1 degree of freedom, producing a mean square of 342.434 and an F-value of 10.268, which is significant at  $p = 0.002$ . This indicates that the method of teaching has a statistically significant effect on students' retention of BBC concepts. The significant intercept ( $F = 5265.48$ ,  $p < 0.001$ ) reflects the overall mean retention score of the students. The error mean square of 33.350 represents variation not explained by the teaching method. These results suggest that students exposed to either Basic or Emotional AI retain information differently, with

the choice of AI method positively influencing the ability to remember and apply learning in Blocklaying, Bricklaying, and Concreting in Technical Colleges.

### **Discussion of Findings**

The findings from research question one revealed that students taught using the Emotional artificial intelligence (EAI) achieved higher academic performance compared to those taught using the Basic artificial intelligence (BAI). This aligns with Oviawe (2021a), who found that adaptive instructional strategies significantly improved students' performance in BBC. Similarly, Eze *et al.* (2020) reported that students taught auto-mechanics using computer-based instruction (CBI) outperformed those taught using Lecture/Discussion Teaching Method (L/DTM) in both achievement and retention.

The findings on hypothesis one test also indicated a significant difference in academic achievement between students taught using EAI and BAI, further reinforcing the effectiveness of Emotional AI in BBC. This result is in agreement with Oviawe *et al.* (2021b), who found that the assessment-for-learning method significantly impacted students' academic achievement in building trade in technical colleges.

The finding on research question two indicated that students taught using Emotional AI exhibited higher interest in BBC than those taught using Basic AI. This finding supports Nwaodo (2016), who found that Reda's problem-solving model stimulated students' interest in metalwork more effectively than Rusbult's model, likely due to its emotional AI content.

The finding on hypothesis two revealed that there was no significant difference between the mean academic achievement scores of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence. This aligns with Eze *et al.* (2020), who found that interest levels among students remained similar across various IQ levels when using computer-based instruction (CBI) as compared to Lecture/Discussion Teaching Method (L/DTM).

The finding on research question three revealed that emotional AI group are more retentive than Basic AI group in BBC. The findings is in agreement with the study of Hassan *et al.* (2017), who found that students taught BBC using a challenge-based learning approach had higher retention scores than those taught using an activity-based learning method.

The finding on hypothesis three revealed that there was a significant difference between the mean retention scores of students taught BBC using basic artificial intelligence and those taught using emotional artificial intelligence. This is consistent with Musa *et al.* (2019), who found that meta-learning approaches significantly enhanced both academic achievement and content retention in engineering trade students.

### **Conclusion**

The study determines the effect of Basic and Emotional Artificial Intelligence on BBC students learning outcomes in technical colleges in Niger State, Nigeria. The study found that students taught using the emotional artificial intelligence achieved higher mean academic achievement scores than those taught using the Basic AI technique. This suggests that emotional AI is a more effective method for improving academic achievement in BBC. Although both instructional techniques led to high levels of interest among students, the emotional AI group exhibited slightly higher interest levels compared to the Basic AI group. This indicates that emotional AI fosters a slightly stronger interest in BBC among students. The study also found that emotional AI group demonstrated better retention of knowledge compared to the Basic AI group. The mean difference between post-test and retention scores was more significant for students taught using emotional AI, indicating its effectiveness in ensuring long-term retention of concepts.

### **Recommendations**

The following recommendations were made based on the findings of the study;

1. Teachers in technical colleges should adopt emotional artificial intelligence for lesson delivery that will assist the learners develop physically, intellectually, emotionally, morally and socially in a manner that he/she will be able to exploit his potentials maximally.
2. Technical college teachers should motivate and stimulate student interest that will enhance their enrolment and increases student performance in BBC.
3. Teachers in Technical colleges should ensure constant and effective utilization of emotional artificial intelligence in BBC in technical colleges to enhance achievement and retention ability of students.

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