



EXTENT OF USAGE OF INNOVATIVE TEACHING STRATEGIES BY FEDERAL POLYTECHNIC BALI LECTURERS

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Abstract

Innovative teaching strategy is an effective approach that enables students to be globally competitive. The strategy is used in teaching and learning to acquaint students with digital skills that are required in the modern business offices. Three research questions guided the study and three hypotheses were tested. Descriptive survey research design was adopted for the study. The studied innovative teaching strategies were classified into three, namely: blended learning, interactive learning and Artificial Intelligence in education. The population of the study comprised four hundred and nineteen (419) lecturers in Federal Polytechnic Bali, Taraba State. The simple random sampling technique was used to select 95 lecturers out of the population. The sample of the study was therefore, ninety five (95) lecturers. A 45-item self-structured questionnaire titled Extent of Usage of Innovative Teaching Strategies Questionnaire (EUITSQ) was the instrument for data collection. The questionnaire was validated by three experts. Cronbach Alpha reliability procedure was used to establish the internal consistency of the instrument and a reliability coefficient index of 0.82 was obtained. Mean and standard deviation were used to answer the research questions while t-test was used to test the hypotheses at 0.05 significant level. The study found among others that lecturers combine both traditional in-class training and high-tech online teaching, lecturers are physically present to control over time during blended learning, they are physically present to place, path and pace lessons, AI makes students responsible for learning, lecturers create an environment where students feel encouraged to speak up. The study recommended among others that lecturers should update their knowledge on the different innovative teaching strategies so that they can use it to make recipients relevant after graduation., lecturers should always make use of the interactive learning strategy because it gives students the access to full participation in the lessons.

Keywords: AI, innovative, strategies, teaching and usage

Introduction

Education is a very reliable instrument for innovation. Education is a process that follows the trend in the society in training learners to enhance their relevance in the society where they will exist after graduation. It is also said that education is the key to success. This can only be true if the teaching and learning are in line with what is obtainable in the society. The world has gone global through technology therefore, the training that is relevant in the present world is the type that gives learners access to the knowledge and skills of technology. The extent to which innovative teaching strategy is utilized in teaching is what equips the learner for global relevance. This is the reason why it is said that education is an instrument par excellence because through education learners are acquainted with the knowledge that is acceptable in the society. Education holds the key to human



progress. It plays an important role in bringing change. Education is one and only instrument that can be used to bring about change towards the social and economic betterment of a nation (Ibrahim, 2017). It is a very reliable instrument for innovation. In Nigeria, it is glaring that education was regarded as the single most important industry for the production of high-level manpower and the capstan of the entire society (Nwosu, Crossdale & Ofulue 2018). According to Esene (2013), the following are the philosophy of education in Nigeria:

1. Education as an instrument for national development: to this end, the formulation of ideas, their integration for national development and the interaction is obtained through education.
2. Education fosters the worth and development of the individual, for each individual's sake, and for general development of the society;
3. Every Nigerian child shall have a right to equal educational opportunities irrespective of any real or imagined disabilities each according to his or her ability.
4. There is need for functional education for the promotion of a progressive and united Nigeria; and to this end, school programmes need to be relevant, practical and comprehensive; while interest and ability should determine the individual's direction in education. If education must produce high level manpower it will be in line with regulated standards, for without standards many things will go wrong. This is so because according to Amesi (2018), education covers a wide spectrum of livelihood activities, it is the pedagogical and desirable business competencies necessary for self-employment or being employed with a view to making the recipient self-reliant with appropriate infrastructure and equipment for learning.

Innovative teaching is the process of proactively introducing new teaching strategies and methods into the classroom. The purpose of introducing new teaching strategies and methods is to improve academic outcomes and address real problems to promote equitable learning. It aims at involving learners in the learning process unlike the traditional teaching method in which the teacher alone teaches what he wants to teach and students are passive learners. The traditional methods allow students to stay in a boring class with the voice of the teacher echoing in the recipient's ears, the student tries to lift his eyelids to pay attention to what the teacher is saying. Simply put, innovative teaching strategies are different methods of technological teaching. Nowadays, many teachers are trying to keep their classes as far as possible from that passive learning and let their students get more involved in learning by finding different approaches to teaching them. Students-centred learning is encouraged because it allows learners to discover and participate in learning.

The innovative trend in education is the use of technology in bringing learners to the level of global competitiveness. With technology learners are given requisite skills to survive unemployment and to work in any sort of technological office whether as self-employed or paid job. The extent to which lecturers use innovative teaching strategies in teaching is the solution to unemployment. Okoye (2017) states that innovation is a re-designed method of application of new ideas, knowledge and processes to the present in order to improve on the prevailing condition. The world has gone technological and digital the innovative strategies must include the digital and technological methods required in teaching and learning to enable students have competence that can induce hard work and productivity in the organizations where they will work after graduation. This is very essential because the modern business office do not tolerate graduates that are not fit to work with the technologies. Innovative teaching methods are not just about using the most cutting-edge technology in class or constantly catching up with the latest education trends, these are the teaching-learning methods. They are all about using new teaching strategies that focus more on students. These innovative ones encourage students to join proactively and interact with their classmates and the teacher during lessons. Students will have to work more, but in a way that meets their needs better and can help them grow faster (Naba, 2022). Unlike traditional teaching, which mainly focuses on how much knowledge the teacher can pass on to the students, innovative ways of teaching dig deep into what students truly take away from what the teacher is teaching during teaching and learning. Innovative learning strategies include blended learning, interactive learning, AI learning and so on.



The world has seen a shift from restricting learning to the four walls of a classroom to online ones and hybrid learning. However, students need to be guided during this hybrid learning if not the students will begin to partake in order activities not related to learning. It is always easy to blame students for not studying hard but it is also the teacher's responsibility not to give dull and dry lessons that make students fed up. Many schools, teachers and trainers have been trying innovative teaching strategies in the new normal to keep students interested and more engaged. Innovative teaching enables teachers to assist students in learning by reaching out to students minds and give students better access to classes. Tran (2023) states that innovative teaching benefits students in various ways such as;

1. **Encourage research:** Innovative approaches to learning encourage students to explore and discover new things and tools to broaden their minds.
2. **Improve problem-solving and critical thinking skills:** Creative teaching methods allow students to learn at their own pace and challenge them to brainstorm new ways to address a problem instead of finding answers already written in textbooks.
3. **Avoid receiving a lot of knowledge at once:** Teachers using new approaches still give students information, but they tend to split it into smaller parts. Digesting information can now be more accessible, and keeping things short helps students get the basics faster.
4. **Adopt more soft skills:** Students have to use more complex tools in class to finish their work, which helps them learn new things and spark their creativity. Also, when doing individual or group projects, students know how to manage their time, prioritise tasks, communicate, work with others better, and much more.
5. **Check students' understanding:** Grades and exams can say something, but not everything about a student's learning capacity and knowledge (especially if the student successfully cheated during tests or examination). Innovative teaching ideas let teachers monitor classes and better know what their students struggle with to find the most suitable solutions.
6. **Improve self-evaluation:** With great methods from teachers, students can understand what they have learnt and what they are missing. By discovering what they still need to know, they can understand how to learn particular things and become more eager to do it.
7. **Enliven classrooms:** Do not let your classrooms be full of your voice or awkward silence. Innovative teaching methods give students something different to get excited about, encouraging them to speak up and interact more. Types of innovative strategies;

Blended learning

Blended learning or hybrid learning, also known as technology-mediated instruction, web-enhanced instruction, or mixed-mode instruction, is an approach to education that combines online educational materials and opportunities for interaction online with physical place-based classroom methods. Blended learning is a method that combines both traditional in-class training and high-tech online teaching. It gives the teacher and the students more flexibility to create effective studying environments and customise learning experiences. In the technology-driven world of today it is hard to neglect powerful tools like the internet or e-learning software. Things like video meetings for teachers and students, learning management system (LMS) to manage courses, online sites to interact and play, and many apps serving studying purposes have taken the world. During the school time when school reopen students join the offline classes, it is still great to have some help from digital tools to make the lessons more engaging. The extent of usage of this interactive digital strategies by lecturers to enable learners achieve the purpose of education in this technological era is a concern to educators. AhaSlides is a great tool for blended learning that engages students in face-to-face and virtual classrooms. The students can join quizzes, games, brainstorming and many class activities on this platform (Kolinski, 2022).

Blended learning requires the physical presence of both teacher and student, with some elements of student control over time, place, path, or pace. While students still attend classes in the four walls of the classroom with a teacher present, face-to-face classroom practices are combined with computer-mediated activities regarding content and delivery. It is also used in professional



development and training settings. Since blended learning is highly context-dependent, a universal conception of it is difficult. Some reports have claimed that a lack of consensus on a hard definition of blended learning has led to difficulties in research on its effectiveness. Naba (2022) broadly defined blended learning as a mixture of online and in-person delivery where the online portion effectively replaces some of the face-to-face contact time rather than supplementing it. Blended instruction is reportedly more effective than purely face-to-face or purely online classes. Blended learning methods can also result in high levels of student achievement more effective than face-to-face learning. By using a combination of digital instruction and one-on-one face time, students can work on their own with new concepts which frees teachers up to circulate and support individual students who may need individualized attention. "Rather than playing to the lowest common denominator as they would in a physical classroom. Teachers can now streamline their instruction to help all students reach their full potential. Proponents of blended learning argue that incorporating the "asynchronous Internet communication technology" into higher education courses serves to "facilitate a simultaneous independent and collaborative learning experience".

According to Tran (2023), blended learning can lower costs by putting classrooms in the online space and it essentially replaces pricey textbooks with electronic devices that students often bring to class. E-textbooks, which can be accessed digitally, may also help to reduce textbook budgets. Blended learning gives the opportunity for data collection and customization of instruction and assessment as two major benefits of this approach. Blended learning often includes software that automatically collects student data and measures academic progress, providing teachers, students and parents detailed students data. Often, tests are automatically scored, providing instantaneous feedback. Student logins and work times are also measured to ensure accountability. Schools with blended learning programs may also choose to reallocate resources to boost student achievement outcomes. Blended learning allows for personalized education, replacing the model where a teacher stands in front of the classroom and everyone is expected to stay at the same pace. Kolinski (2022) upheld that "blended learning allows students to work at their own pace, making sure they fully understand new concepts before moving on."

Interactive Lessons

Interactive teaching methods are teaching methodologies that focus on the maximum engagement of learners. In interactive teaching style, the teacher involve learners and ensure participation. Make the students responsible for learning. Students are the teacher's innovative learners therefore, the one-way lessons are very traditional and sometimes exhausting for both the teacher and the students. Naba (2022) states that teachers should create an environment where students feel encouraged to speak up and express their ideas. The author maintained that students can join in-class activities in many ways, not just by raising their hands or being called out to answer. These days, one can find online platforms that help make interactive classroom activities to save a lot of time and get all students to join instead of just two or three. Interactive teaching can be conducted by playing live quizzes and games with spinner wheels or even through word clouds, polls or brainstorming together. Online interactive games increase student participation, promote social and emotional learning, and develop competitive and team spirit. (Lieberman 2006; & Linderbauer 2020). Teachers can have all students participate in those exciting activities with the help of some online platforms. Not only that, but students can type or choose answers anonymously instead of raising their hands. This makes them more confident to get involved, express their opinions and no longer worry about being 'wrong' or judged. The traditional classrooms were teacher-centered. Teachers transmitted information and students received it. The method has been that students studied what the teacher taught, did homework, gave exams, and passed to the next class. Teachers should adopt a modern and interactive approach to teaching-learning.

Artificial Intelligence Learning

AI assists teachers in doing so much work. The AI method is surprisingly widespread these days. Using AI does not mean that it does everything and replaces the teacher. It is not like in the science-fiction movies where computers and robots move around and teach students (or brainwash



them). It helps the teacher reduce their workload, personalise courses and instruct students more efficiently. The teacher can probably use many familiar things, such as Learning Management System, plagiarism detection, automatic scoring and assessment and all AI products. So far, AI has proved that there are many benefits for teachers, and the scenarios of it invading the educational field or the world are the stuff of movies only. The teacher can use AI in innovative teaching methods for the following purposes; course management, assessment, adaptive learning, parent-teacher communication and audio/visual aids. Artificial intelligence enhances learning, assist teachers and induces effective individualized learning excitement, but it is also a bit discouraging especially through fear. To even have an intelligent conversation about AI in education, one must first push past imaginary, science-fiction scenarios of computers and robots teaching the students, replacing teachers and reducing the human element from what is a fundamentally human activity. Tran (2023) listed the following Potential Benefits of AI in Education:

1. **Personalization:** "It can be overwhelmingly difficult for one teacher to figure out how to meet the needs of every student in his/her classroom. AI systems easily adapt to each student's individual learning needs and can target instruction based on their strengths and weaknesses."
2. **Tutoring:** AI systems can "gauge a student's learning style and pre-existing knowledge to deliver customized support and instruction."
3. **Grading:** AI can help grade exams using an answer key; but it can also "compile data about how students performed and even grade more abstract assessments such as essays."
4. **Feedback on Course Quality:** For example, if many students are answering a question incorrectly, "AI can zero in on the specific information or concepts that students are missing, so that educators can deliver targeted improvements in materials and methods."
5. **Meaningful and Immediate Feedback to Students:** Some students may be shy about taking risks or receiving critical feedback in the classroom, but "with AI, students can feel comfortable to make the mistakes necessary for learning and receive the feedback they need for improvement." Much of the potential envisioned for AI in education centers is on reducing time spent by teachers on tedious tasks to free up time for more meaningful ones. "AI is not a threat to teachers; it is not there to replace teachers," but rather to deliver a better education to students."

According to Tran (2023), AI in education has lesson inclusion and universal access to education by helping to make global classrooms available to all, including those who speak different languages or who might have visual or hearing impairments; creating access for students who might not be able to attend school due to illness and better serving "students who require learning at a different level or on a particular subject that is not available in their own schools. It is hoped that AI will ultimately help educators make continued progress in addressing the broad range of physical, cognitive, academic, social and emotional factors that can affect student learning and ensure that all students have equal opportunity in education, regardless of their social class, race, gender, sexuality, ethnic background or physical and mental disabilities.

Statement of the Problem

The world has undergone a rapid change due to the presence of technology. The extent to which lecturers utilise innovative technology has great impact in the life of the learner. If the innovative teaching strategies are used in the teaching and learning process learners who will become graduates and workers will also be innovative. It is observed that most of the innovative teaching strategies are not utilised by lecturers in the Federal Polytechnic Bali and as result of this most graduates complete the courses without adequate skills. Abdul, Abdukadir and Abdul (2013) confirmed this in a recent study where over 40 million graduates are unemployable into organization because of lack of technical and vocational skills for the available jobs. If this is the case it then means that recipients are not receiving the kind of education that will benefit them after graduation. The graduates cannot properly fit into the technological world and office where everything is done in a technological manner. It is against this backdrop that the researcher investigated the extent of usage of innovative teaching strategies by Federal Polytechnic Bali lecturers.



Research Questions

1. To what extent is the blended learning strategy utilised by Federal Polytechnic Bali lecturers?
2. To what extent is the interactive learning strategy utilised by Federal Polytechnic Bali lecturers?
3. To what extent is the AI learning strategy utilised by Federal Polytechnic Bali lecturers?

Research Hypotheses

Ho1: There is no significant difference in the mean opinions of male and female lecturers on the extent to which blended learning strategy is utilised by Federal Polytechnic Bali lecturers.

Ho2: There is no significant difference in the mean opinions of lecturers in the school of business and lecturers in the school of science on the extent to which interactive learning strategy is utilised by Federal Polytechnic Bali lecturers.

Ho3: There is no significant difference in the mean opinions of male and female lecturers on the extent to which AI learning strategy is utilised by Federal Polytechnic Bali lecturers.

Methods

The study adopted the descriptive survey research design. This is because the study through questionnaire sought individuals opinion on the topic understudy. Idowu (2021) averred that descriptive survey research design is a research design in which the entire population or representative sample is studied by collecting and analysing data from a group of respondents through the use of questionnaire. The population of the study was 419 lecturers in Federal Polytechnic Bali. The simple random sampling technique was used to select 95 lecturers out of the population. The sample of the study was therefore, 95 lecturers. A 45-item self-structured questionnaire titled Extent of Usage of Innovative Teaching Strategies Questionnaire (EUITSQ) was the instrument used for data collection. It was structured on a modified 4-point Likert rating scale of Very High Extent, High Extent, Low Extent and Very Low Extent with corresponding values of 4, 3, 2 and 1 respectively. In order to ensure that the instrument measured what it was expected to measure three experts validated the instrument 2 from the department of Office Technology and Management and 1 from department of Statistics Federal Polytechnic Bali. The internal consistency of the instrument was determined using Cronbach-Alpha procedure and it yielded a coefficient index of 0.82 which signified that the instrument was reliable for the study. The researcher and two research assistants collected the data. The 95 copies of the questionnaire was administered to 95 lecturers in the institution and 92 copies were collected which represents (97.15) return rate. Mean and standard deviation were used to answer the research questions while independent t-test was used to test the hypotheses at 0.05 level of significant. The decision rule for the research questions were based on the upper and lower limits of the means scores thus: Very High Extent (VHE) = 3.50-4.00, High Extent (HE) = 2.50-3.49, Low Extent (LE) = 1.50-2.49 and Very Low Extent (VLE) = 1.00-1.49. For the hypotheses if the p-value is less or equal to the significant level the hypothesis was not rejected but if not it was rejected.

Results

Research Question 1: To what extent is blended learning strategy utilised by Federal Polytechnic Bali lecturers?

Table 1: Mean and standard deviation on the extent to which blended learning strategy is utilised by Federal Polytechnic Bali Lectures.

S/N	Items	Mean	SD	Remarks
1.	Lecturers combine both traditional in-class training and high-tech online teaching	3.11	0.52	Agree
2.	Lecturers employ tools such as internet and e-learning software	2.85	1.00	Agree
3.	Lecturers employ video meetings for teachers and students	2.55	1.03	Agree
4.	Lecturers employ LMS to manage courses	2.32	1.08	Disagree



5. They employ online sites to interact and play	2.74	1.02		Agree
6. Lecturers employ Aha Slides to engage student in face-to-face and virtual classrooms		2.23	1.09	Disagree
7. By doing so students join quizzes, games, brainstorming and many class activities on the platform	2.33	1.08		Disagree
8. Lecturers are physically present to control over time during blended learning	3.33	0.92		Agree
9. They are physically present to place, path and pace lessons	3.09	0.93		Agree
10. Lecturers use blended learning during conferences and seminars	3.52	0.99		Agree
11. Lecturers allow online delivery to replace some of the face-to-face contact	2.73	0.83		Agree
12. Students can work on their own with new concepts	3.28	0.99		Agree
13. Lecturers streamline their instruction to help all students reach their potential		3.04	1.04	Agree
14. It facilitates a simultaneous independent and Collaborative learning experience		3.25	0.75	Agree
15. Tests are automatically scored, and instant feedback is provided	2.50	0.94		Agree
Cluster Mean		2.85	0.88	Agree

Source: Field Survey 2023

The analysis of the data presented in Table 1 shows mean scores of respondents on the extent to which blended learning strategy is utilised by Federal Polytechnic Bali lecturers with the mean ratings ranging from 2.23 to 3.52 indicating agree. This means that the items showed that the blended innovative learning strategy is utilised by lecturers in Federal Polytechnic Bali. The respondents disagreed with items 4, 6 and 7 with mean scores of 2.32, 2.23 and 2.33. 12 items have mean scores that are above the cut-off mark of 2.50 that is regarded as the acceptable limit as indicated in the decision rule. The total cluster mean of 2.85 further indicates that lecturers in Federal Polytechnic Bali agreed to the items. The standard deviation of 0.88 indicates that the respondents have similar opinion to the items on the extent of usage of blended innovative learning strategy.

Research Question 2: To what extent is the interactive learning strategy utilised by Federal Polytechnic Bali lecturers?

Table 2: Mean and standard deviation on the extent to which interactive learning strategy is utilised by Federal Polytechnic Bali Lectures.

S/N	Items	Mean	SD	Remark
1.	Lecturers involve learners and ensure engagement of learners	3.60	1.45	Agree
2.	Lecturers allow students full participation	3.04	1.04	Agree
3.	Lecturers make students responsible for learning	3.25	0.75	Agree
4.	Students are the teacher's innovative learners	3.51	0.79	Agree
5.	The one-way lessons are very traditional and sometime exhausting for both teachers and students	3.81	0.66	Agree
6.	Lecturers create an environment where students feel encouraged to speak up	3.77	0.74	Agree
7.	Students can join in-class activities in many ways not just by raising their hands or being called out to answer	3.46	0.87	Agree



8. Lecturers find online platforms that help make interactive classroom activities	2.58	0.53	Agree
9. Lecturers use playing live quizzes for interactive lessons	2.46	0.96	Disagree
10. Lecturers use games, word clouds to brainstorm with students	2.06	0.53	Disagree
11. Lecturers can help all students participate with the help of some online platforms	3.55	0.71	Agree
12. Lecturers put forward questions and pair students to solve it.	3.38	0.78	Agree
Cluster Mean	3.20	0.81	Agree

Source: Field Survey 2023

The analysis of data in Table 2 shows mean scores of respondents on the extent to which interactive learning strategy is utilised by Federal Polytechnic Bali lecturers with the mean scores ranging from 2.06 to 3.77 indicating agree. This means that the items showed that the interactive innovative learning strategy is utilised by lecturers in Federal Polytechnic Bali. The respondents disagreed with items 9 and 10 with mean scores of 2.46 and 2.06 respectively. 10 items have mean scores that are above the cut-off mark of 2.50 that is regarded as the acceptable limit as indicated in the decision rule. The total cluster mean of 3.20 further indicates that lecturers in Federal Polytechnic Bali agreed to the items. The standard deviation of 0.81 indicates that the respondents have similar opinion to the items on the extent of usage of interactive learning strategy.

Research Question 3: To what extent is the blended learning strategy utilised by Federal Polytechnic Bali lecturers?

Table 1: Mean and standard deviation on the extent to which AI learning strategy is utilised by Federal Polytechnic Bali Lectures.

S/N	Items	Mean	SD	Remarks
1.	Lecturers use AI to adapt to individual students learning needs	2.05	0.54	Disagree
2.	They use it to induce effective individualized learning excitement	2.46	0.96	Disagree
3.	Lecturers use AI to deliver customized support and instruction to students	2.33	0.99	Disagree
4.	It helps lecturers reduce their workload	3.32	0.76	Agree
5.	It helps lecturers in course management	3.46	0.70	Agree
6.	It aids lecturers in students assessment	3.15	0.72	Agree
7.	It aids in adaptive learning	2.90	0.82	Agree
8.	It assists lecturers in parent-teacher communication	3.33	0.78	Agree
9.	It also helps lecturers in audio/visual aids	3.31	0.75	Agree
10.	Lecturers use it to target instruction based on students strengths and weaknesses	3.44	0.81	Agree
11.	It helps grade exams using an answer key	2.98	0.73	Agree
12.	It can grade abstract assessment like essay	2.75	0.75	Agree
13.	AI can zero on the specific information the students are missing	3.02	0.74	Agree
14.	Lecturers deliver targeted improvements in material and methods using AI	3.18	0.75	Agree
15.	It helps lecturers free up time for meaningful ones	3.06	0.77	Agree
16.	AI enables lecturers teach basic and advanced skills	3.08	0.71	Agree



by assessing their present skill level

17. Lecturers use AI to analyse and interpret data		2.04	0.55	Disagree
18. AI makes global classroom available to all	3.22	0.73		Agree
Cluster Mean		2.76	0.71	Agree

Source: Field Survey 2023

The analysis of data in Table 3 shows mean scores of respondents on the extent to which AI learning strategy is utilised by Federal Polytechnic Bali lecturers with the mean ratings ranging from 2.04 to 3.46 indicating agree. This means that the items showed that AI innovative learning strategy is utilised by lecturers in Federal Polytechnic Bali. The respondents disagreed with items 1, 2, 3 and 17 with mean scores of 2.05, 2.46, 2.33 and 2.04 respectively. 14 items have mean scores that are above the cut-off mark of 2.50 that was regarded as the acceptable limit as indicated in the decision rule. The total cluster mean of 2.76 further indicates that lecturers in Federal Polytechnic Bali agreed to the items. The standard deviation of 0.71 indicates that the respondents have similar opinion to the items on the extent of usage of AI learning strategy

Hypotheses Testing

Ho1: There is no significant difference in the mean opinions of male and female lecturers on the extent to which blended learning strategy is utilised by Federal Polytechnic Bali lecturers.

Table 4: t-test Analysis of Respondents Mean Ratings on the extent to which blended learning strategy is utilised by Federal Polytechnic Bali lecturers

Variable	N	X	SD	Df	t-cal	t-crit.	Decision
Male	57	3.08	0.71	90	0.42	1.96	NS
Female	35	2.37	0.45				

Source: Field Survey, 2023

Data presented in Table 4 revealed that the calculated t-value of 0.42 at 90 degrees of freedom and at 0.05 level of significance is less than the p-value of 1.96. This indicates that there is no significance difference in the mean opinions of male and female lecturers on the extent to which blended learning strategy is utilised by Federal Polytechnic Bali lecturers. The null hypothesis was therefore, accepted. This implies that blended learning strategy is used by Federal Polytechnic Bali lecturers.

Ho2: There is no significant difference on the mean opinions of lecturers in the school of business and lecturers in the school of science on the extent to which interactive learning strategy is utilised by Federal Polytechnic Bali lecturers.

Table 5: t-test Analysis of Respondents Mean Ratings on the extent to which interactive learning strategy is utilised by Federal Polytechnic Bali lecturers

Group	N	Mean	SD	t-cal	Df	t-crit.	Decision
School of Business	50	3.52	0.41				
School of Science	42	2.33	0.53	13.09	90	1.96	S

Source: Field Survey, 2023



Data presented in Table 5 shows that there are 50 lecturers in the school of business and 42 lecturers in the school of science. The calculated t-value of 13.09 at 90 degrees of freedom and at 0.05 level of significance is greater than the p-value of 1.96. This indicates that there is significance difference in the mean opinions of male and female lecturers on the extent to which interactive learning strategy is utilised by Federal Polytechnic Bali lecturers. The null hypothesis was therefore, rejected. This implies that lecturers in the school of business and school of science differ in their opinions on the extent to which interactive strategy is utilised by lecturers in Federal Polytechnic Bali. Ho3: There is no significant difference in the mean opinions of male and female lecturers on the extent to which AI learning strategy is utilised by Federal Polytechnic Bali lecturers.

Table 6: t-test Analysis of Respondents Mean Ratings on the extent to which AI learning strategy is utilised by Federal Polytechnic Bali lecturers

Group	N	Mean	SD	t-cal	Df	p-value	Decision
Federal	57	3.60	0.41	0.095	90	1.96	NS
State	35	3.58	0.53				

Source: Field Survey, 2023

Data presented in Table 6 shows that there are 57 male lecturers and 35 female lecturers in Federal Polytechnic Bali. The calculated t-value of 0.095 at 90 degrees of freedom and at 0.05 level of significance is less than the p-value of 1.96. This indicates that there is no significance difference in the mean opinions of male and female lecturers on the extent to which AI learning strategy is utilised by Federal Polytechnic Bali lecturers. The null hypothesis was therefore, accepted. This implies that male and female lecturers did not differ in their opinions on the extent AI learning strategy is utilised by lecturers in Federal Polytechnic Bali.

Discussion of Findings

The study was on the extent to which innovative teaching strategy is used by lecturers in Federal Polytechnic Bali. The Research Question 1 which is to what extent is blended learning strategy utilised by Federal Polytechnic Bali lecturers found that respondents agreed that lecturers combine both traditional in-class training and high-tech online teaching. The study shows that lecturers employ tools such as internet and e-learning software, lecturers employ video meetings for teachers and students, they employ online sites to interact and play, lecturers are physically present to control over time during blended learning, they are physically present to place, path and pace lessons, lecturers use blended learning during conferences and seminars, lecturers allow online delivery to replace some of the face-to-face contact, students can work on their own with new concepts and lecturers streamline their instructions to help all students reach their potential. “Blended learning strategy facilitates a simultaneous independent and collaborative learning experience and tests are automatically scored, and instant feedback is provided. This finding is line with the study of Kolinski (2022) who states that things like video meetings for teachers and students, learning management system (LMS) to manage courses, online sites to interact and play, and many apps serving studying purposes have taken the world.

The findings of research question 2 on the extent to which interactive learning strategy is utilised by Federal Polytechnic Bali lecturers found that lecturers involve learners and ensure engagement of learners, lecturers allow students full participation, AI makes students responsible for learning, students are the teacher’s innovative learners, the one-way lessons are very traditional and sometime exhausting for both teachers and students, lecturers create an environment where students feel encouraged to speak up, students can join in-class activities in many ways not just by raising their hands or being called out to answer, lecturers find online platforms that help make interactive classroom activities, lecturers use playing live quizzes for interactive lessons, lecturers use games, word clouds to brainstorm with students, lecturers can help all students participate with the help of some online platforms and lecturers put forward questions and pair students to solve it. This finding corroborates with that of Lieberman (2006) and Linderbauer (2020) who states that online



interactive games increase student participation, promote social and emotional learning, and develop competitive and team spirit.

Finding in Research question three on the extent to which AI learning strategy is utilised by Federal Polytechnic Bali lecturers found that it helps lecturers reduce their workload, it helps lecturers in course management, it aids lecturers in students assessment, it aids in adaptive learning, it assists in parent-teacher communication, it also helps in audio/visual aids, it helps to target instruction based on students strengths and weaknesses, it helps grade exams using an answer key, it can grade abstract assessment like essay, AI can zero on the specific information the students are missing, it helps to deliver targeted improvements in material and methods, it helps lecturers free up time for meaningful ones, AI enables lecturers teach basic and advanced skills by assessing their present skill level. The findings affirm the findings of Tran (2023) who found that AI in education has lesson inclusion and universal access to education by helping to make global classrooms available to all, including those who speak different languages or who might have visual or hearing impairments. Hypotheses 1 and 3 were accepted while hypotheses 2 was rejected.

Conclusion

The study concluded that innovative teaching strategies are the technological methods of making students relevant. Technology has come to stay there is no going back therefore, innovative teaching strategies are the only ways of making the learner who will become a graduate relevant to himself and the society. The traditional methods of teaching if not totally done away with should be combined with innovative teaching strategies to enable the graduate fit into the current society.

Recommendations

Based on the findings and conclusion of the study the following recommendations were proffered:

1. Lecturers should update their knowledge on the various innovative teaching strategies so that they can use it to make recipients relevant after graduation.
2. Lecturers should always make use of the interactive learning strategy because it gives students the access to full participation in lessons.
3. AI should always be used by lecturers to make students feel comfortable to make the mistakes that are necessary for learning as they will receive the feedback they need for improvement.
4. AI should be used by lecturers to improve both their own writing skills and that of students and also for plagiarism detection.

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