



Quality Assurance and Learners' Learning Effectiveness: University of Ibadan Distance Learning Centre Experience

¹Ganiyu Oluwaseyi Quadri, ²Taofeek Gbolahan Muibi & ³Wilfred I. Ukpere

^{1&3}Department of Industrial Psychology and People Management, School of Management, College of Business Economics, University of Johannesburg.

²Department of Adult Education, University of Ibadan, Ibadan, Nigeria.

Email: ¹qudriseyi@gmail.com, ²taofeekgbolahan@gmail.com, & ³wiukpere@gmail.com

Abstract. Quality assurance and concern for distance learning programmes (DLPs) are necessary due to the significance of quality control for student satisfaction and enrolment. In light of this, this study investigated how learners' learning effectiveness (LE) within the institution was impacted by quality assurance mechanisms (QAM) such as course design (CD), effective teaching and learning (ETL), assessment and evaluation procedures (AEP), learner support services (LSS), and environmental infrastructure (EI). The study design that was used was a descriptive survey. 200 students were selected at random from the faculties of arts, education, and social sciences (FAESS), totalling up the population of 100–500 level students. Part of the research included a 30-item survey on the Perceived QAM Implementation on LE in Distance Education Scale ($r=.81$). The data were analysed with descriptive statistics and the Pearson Product-Moment Correlation (PPMC) at the 0.05 threshold of statistical significance. The findings demonstrated that CD ($r=0.76$), teaching and learning approaches (TLA) ($r=0.62$), AEP ($r=0.57$), LSS ($r=0.45$), and EI ($r=0.49$) had positive and significant correlations with students' LE. Also, CD, ETL, AEP, LSS, and EI contributed to students' LE in the institution. In light of the results, the research suggested that the leadership of the University of Ibadan's (UI) Distance Learning Centre (DLC) should set up efficient guidelines and a management framework to handle different facets of quality assurance (QA) and ensure the effective implementation of these policies to support and improve students' LE. This proactive approach would ensure compliance with the rigorous demands of 21st-century education. This unique research on QAM and students' LE was carried out at DLC, UI.

Keywords: Quality Assurance Mechanisms, Learning Effectiveness, Open-Distance Learning, Distance Learning Centre, Distance Learners.

JEL Codes: I21; I23

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1. Introduction

Preliminary investigation has shown that distance education (DE) is a learning mode without a classroom, in most cases, learning takes place online. This is a concern for scholars and education stakeholders about the quality of delivery of the programme. Based on this, the a need to investigate the quality assurance (QA) and students' learning effectiveness (LE) in the institution. To assess LE, well-designed and structured learning systems involving students, teachers, and educational institutions are necessary. The basis for evaluating LE is students' appraisals of significant accomplishments, which may be determined via self-evaluation, instructor-defined evaluations, or institution-defined assessments. In essence, it describes how well learning goals have been met or completed. Student achievement, engagement, observed satisfaction, attitudinal modifications, and other pertinent metrics may all be used to quantify the transformation in the instructional trajectory.

On the other hand, this alternative mode of learning has emerged as a prevalent instructional approach in the modern Era, involving a collaborative team of educators such as course content teachers, trainers, instructors, and multiple tutors. Either personally at a DE On-Site Centre or virtually via Virtual Learning Environments (VLE), these people work. Research suggests that the success of remote education heavily relies on establishing a dialogic relationship among students, tutors, and teachers, despite being geographically separated and working at different times. This interaction is facilitated by various technologies, supported by an educational system that can meet the requirements associated with this mode of learning (Mhlongo, Mbatha, Ramasetse & Dlamini, 2023; Mansour, 2024). Based on this, the a need for the provision of course materials/CD, ETL approaches, AEP, LSS, and EI. To ensure students LE in DE, LSS played a significant role as interventions and resources are essential for facilitating the growth of distance learners (DLrs) (Wani, Asgar & Srivastava, 2023). These services played a crucial role in helping students overcome potential barriers related to technology, social interaction, and communication. However, the limited interaction with professors, lecturers, and peers presents a challenge in identifying students who may feel isolated, posing difficulties for faculty and support staff (Tufue, 2024). Students' feelings of isolation increase their likelihood of dropping out. Making friends is crucial for distant learners who find it difficult to fit in at university (Mtshweni, 2024). In McGhie's (2017) study, successful students emphasised the importance of selecting supportive and encouraging peers who could provide academic assistance. Collaborating with such peers resulted in a less stressful and more enjoyable learning experience characterised by mutual support (p. 417).



Successful students in McGhie's (2017) research also emphasised the value of seeking support from both peers and teachers. He highlighted the importance of asking questions without hesitation and seeking clarification whenever needed. Recognising that no one is expected to be an expert in everything, they viewed seeking help as a normal part of the learning process (p. 418). Additionally, the provision of course materials/CD cannot be overemphasised. Course material development is an essential component of DE delivery worldwide. It encompasses the provision of well-written course material, provision of learner-content interaction, learners-learner interaction and provision of well-illustrated and well-packaged course materials (Igoni & Oluwuo, 2023). According to Muibi (2019), an effective instructional design management system, at the macro level, in DE must include the design team, the faculty, department or unit team, and the senate or council. The CD process is typically divided into five stages: content design, content development, content implementation, course evaluation, and content modification (Smith, Onofre-Martínez, Contrino & Membrillo-Hernández, 2021; Chen, 2016). Many online students are non-traditional learners seeking continuing education for professional growth while juggling full-time jobs and family responsibilities. They prefer well-designed courses that maximise their chances of completion, including clear assignments and timely, consistent feedback. Increased interaction between instructors and students leads to higher levels of student engagement, which is crucial for successful online education (Quadri & Muibi, 2024). In addition, TLA in DE is seen as independent instruction and a kind of learning that arises from the modern disconnect between the instructor and students, which relieves the students of the need to go to a certain location at a specific time to meet a specific person for training (Muibi, 2020). Learning is essentially an individual endeavour that requires individuals to assimilate knowledge, attitudes, and skills to learn effectively. In distance learning (DL) scenarios, specifically designed self-instructional resources often replace lectures or traditional classroom instruction as the primary source of information (Mohd Basar, Mansor, Jamaludin, & Alias, 2021). Additionally, students receive guidance on effective study practices, time management strategies, and the development of skills necessary for learning through reading, group discussions, and practical activities.

Again, the need for provision of EI, which in most cases centred on the provision of ICT infrastructure in DE. According Muibi (2019), information and communication technology (ICT), has been recognised by scholars as a cardinal issue to be accorded attention in DE (Quadri, Quadri & Oluwasina, 2015). ICT stands for the media and channels that help students in DE overcome their mental and physical distance from their teachers, other students, and the institution. This is why it becomes highly important for a clear and well-specified policy to be designed and implemented on this (Muibi, 2021). The kind of ICT policy that is created and put into place will



undoubtedly affect students' academic accomplishment (AA) in a number of ways. The advantages include lowering the percentage of preschool withdrawals, encouraging children to study, reducing the physical distance between them and the DL institution, and making DL more appealing to prospective students (Muibi, 2022). Based on existing literature in the field of open and DE, the effectiveness of remote learning depends on the interactive communication between students, tutors, and teachers, even when they are geographically separated and in different time zones. Educational institutions need to be equipped to meet the demands of this form of education, supported by various technologies (Mhlongo, Mbatha, Ramatsetse & Dlamini, 2023; Mansour, 2024). In DE, a polyteaching team, as described by Gnonlonfoun (2021), plays a crucial role in providing didactic and pedagogical mediation. Specialist professors, also known as authors or content professors, are responsible for the course content, teaching methods, class formats, course materials, technological tools for engagement, and curriculum design.

It is also essential for AEP in DE. Assessment holds a critical role in DE programmes, as emphasised by DE scholars, as it drives students' performance and shapes the educational experience (Bozkurt, 2019). Evaluation is also another important concept, as it involves comparing and assigning value to two sets of data (Mansour, 2024). To determine effectiveness, both formative and summative assessments (SA) are to be employed; formative assessments are to be used in the DE programme to guide instructional decisions, and SA is utilised to evaluate overall programme performance (Carney *et al.*, 2022). Dailey (2020) asserts that in a closely supervised classroom, a single "high-stakes test" may suffice for measuring student success, but in DE, evaluation should be an ongoing process (formative). For example, teachers are advised to analyse each participant's daily contributions within the online learning community, such as online discussions, to identify individual achievements. Additionally, educators should strive to understand each student's unique approach or strategy for overcoming learning challenges by examining their expressed thoughts on discussion boards. Feedback plays a crucial role in the assessment process. If evaluation is to be a significant component of instruction, feedback must be an integral part of the assessment process (Yan & Carless, 2021).

The QA practice in DE, particularly, has been greatly influenced by well-documented theoretical frameworks (TF) postulated by DE scholars across the world. Such TFs have specifically focused on CD, ETL, AEP, LSS, and EI.

However, policy formulations in these areas have not received adequate attention from scholars and practitioners of DE as those of TFs. Even where such policy structures are specified, they are not primarily tailored towards learners' LE (LLE). They are often tailored towards the smooth administrative and management of DLP. There is, therefore, a need to find out how these policies affect LLE. Based on this, this study was carried out to fill the gap created by the dearth of studies



on QA and LLE at the DLC, UI. Specifically, the study focuses on the relationship between each of the five mechanisms (CD, ETL, AEP, LSS, and EI) and LLE. The following null hypotheses were evaluated in compliance with the objectives at a significance threshold of 0.05:

H0₁: There is no significant relationship (SR) between CD and LLE at DLC, UI.

H0₂: There is no SR between ETL and learners' LE in the institution.

H0₃: There is no SR between AEP and learners' LE in the institution.

H0₄: There is no SR between LSS and LLE in the institution.

H0₅: There is no SR between EI and learners' LE in the institution.

H0₆: There are no significant relative effects between each of the QAM (CD, ETL, AEP, LSS, and EI) and LLE in the institution.

Theoretical framework

Several investigations employed or altered TFs to enhance their DL study. This research chose the E-Learn Cube (E-LC) as the appropriate TF. Haw *et al.* (2015) enhanced the work of Sun *et al.* (2008) and used Khan's (2001) research to delineate the E-LC, including six essential factors for achievement. Each component contributes to profound academic achievement. Development, content, instructor, electronic assistance, and participation by learners are the six key success factors for DL. The research carried out by Haw *et al.* (2015) has a tight relationship with the 17 qualities that comprise the six factors. These features are appropriate for this research as they offer a comprehensive perspective on the creation and layout of DL resources for instruction and evaluation. The design component essentially pertains to the ease and benefits learners get from the arrangement, seamless accessibility, and accessibility of the instructional material (Davis, 1989). Another aspect of the instructional design is the ease with which the information may be assimilated or segmented (Manning *et al.*, 2021). A robust correlation exists between the instructional element and its structure. The educational component pertains to students' perceptions of the course parameters, flexibility, and utility, along with their comfort level with their task (Haw *et al.*, 2015). The instructor's engagement is an essential part of the E-LC. Freeman, Wright, and Lindqvist (2010) assert that a teacher's perspective, together with the manner in which they educate, assess, and provide feedback to their students, has an impact on the whole experience of the student. Feedback is often provided using rubrics. A checklist is designed for



scoring, but it can also be employed to improve CD by offering input (Ragupathi & Lee, 2020). On the other hand, technology facilitates engagement and the dissemination of material.

A student's comprehensive assessment of a course may be enhanced or skewed by their interaction with the technology (D'Angelo, 2018). Numerous individuals may encounter trauma during their initial encounters with studying and evaluation in a DL environment. Therefore, it is critical to get backing from all avenues, especially governmental, institutional, facilitative, and technical resources (Bates, 2014). The efficacy and achievements of DL are ultimately shaped by the students' commitment and dispositions. Peers may have either a positive or negative influence on experiences (Haw *et al.*, 2015). Using the revised TF of Haw *et al.* (2015) as a guide, the questionnaires were created with this context in mind. For example, "How do you assess the structure of the component?" "How did your interest and understanding of this course change depending on the standard of your online access?" What effects has your cohort had on your participation in events? Include further details in your response. What is the connection among the student, technology, and design components? Each component emphasises aspects of the constructionist approach to learning and evaluation, together with the student's viewpoint on ICT utilisation. Understanding that this theory has delineated the variables pertinent to the issue of inquiry, including CD, TLA, AEP, LSS, and EI, is essential.

Research Methodology

This study used a quantitative research design. The justification for using this strategy stemmed from the absence of variable manipulation by the researcher. The audience of choice included all DLrs from the FAEES, spanning levels 100 to 500. A sample size of 200 was selected using a basic random sampling method. The "Perceived QAM Implementation on LE in Distance Education Scale" (PQAMILEDES) is a questionnaire that the researchers created. It has five sub-scales: the CD Scale, TLA Scale, AEP Scale, LSS Scale, and EI Scale. There were two sections to the survey: During Session A, demographic information was collected, including age (15 years and older), sex, marriage status, faculty, and level of education. In order to answer the research questions and objectives, the second element was created. The replies were assessed on a four-point Likert scale, with Strongly Agree (SA) assigned a value of 4, Agree (A) a value of 3, Disagree (SD) a value of 2, and Strongly Disagree (D) a value of 1. Participants had to complete a consent form confirming their desire to participate in the survey before they could begin. The DLC UI provided access to DLrs from other departments and faculties via the common online forum, and the study



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was approved by the university. Participants were then given a guarantee that the information they provided would be kept strictly confidential and utilised only for research.

The legitimacy of the instruments employed in this research was assessed using content validity, which includes face validity. To improve responders' understanding, the tools' components were written in clear, concise language. They were rationally and meticulously organised to align with the goals and study questions. The researcher made sure that the instrument's contents matched the goals and research questions of the study in order to increase validity. Despite being excluded from the study's target demographic, fifty (50) students from the National Open University of Nigeria who were taking the DLP were used to test the instrument. To assess the instrument's reliability, the Cronbach's Alpha approach was used to calculate the internal consistency reliability coefficient. This approach was used since the survey enquiries required respondents to rate their level of approval or disapproval on an ascending scale rather than providing clear-cut answers for right or wrong. Coefficients of 0.79 for CD, 0.81 for teaching and learning (T&L), 0.76 for assessment and evaluation (A&E), 0.82 for LSS, and 0.81 for educational innovation and leadership (EI and LE) at 0.72 were obtained via the Cronbach Alpha reliability test. This suggests that the tool is suitable, relevant, and reliable for the study. PPMC and multiple regression were used for data analysis. In addition, descriptive statistics with a 0.05 level of confidence were used, such as frequency counts and straightforward percentages.

Findings of the study

The results of the study are delineated below, accompanied by the initial study's hypothesis in Table 1.

Testing of Hypotheses

Hypothesis 1-5: There is no SR between QAM (CD, ETL, AEP, LSS, and EI) and LLE at DLC, UI. In determining the relationship, a correlation matrix analysis was conducted, and the outcome is shown in Table 1.



Table 1: The Relationship QAM and LLE

Variables	CD&D	T&L	A&E	LSS	ED	LE
CD and Development Pearson Correlation (PC)	1	.615 **	.570 **	.451 **	.488 **	.758 **
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	N	203	203	202	203	202
T&L PC	.615 **	1	.745 **	.688 **	.654 **	.699 **
	S2-t	.000	.000	.000	.000	.000
	N	203	203	202	203	202
A&E PC	.570 **	.745 **	1	.737 **	.649 **	.635 **
	S2-t	.000	.000	.000	.000	.000
	N	202	202	202	202	202
LSS PC	.451 **	.688 **	.737 **	1	.788 **	.672 **
	S2-t	.000	.000	.000	.000	.000
	N	203	203	202	203	202
Environmental Domain: Infrastructure PC	.488 **	.654 **	.649 **	.788 **	1	.697 **
	S2-t	.000	.000	.000	.000	.000
	N	203	203	202	203	202
LE PC	.758 **	.699 **	.635 **	.672 **	.697 **	1
	S2-t	.000	.000	.000	.000	.000
	N	202	202	202	202	202

**. Significance level of the correlation is 0.01 (2-tailed).

Source: Field work 2025

With columns (1–5) representing QAM and column (6) representing LLE variables, Table 1 displays the PPMC computation results in a 2 x 2 matrix. Each column of this matrix displays the PC between the variables, the significance criteria for each correlation, and the number of people connected to each correlation. Degrees of freedom may be derived from this data (for Pearson's r , $df = n - 2$). Each variable exhibits correlation with the remaining ones, as seen by the horizontal cells of this array, namely rows 1 and 2. The alternative hypothesis, according to which QAM and LLE have a substantial connection, is supported by the correlation coefficients shown below: CD $r = 0.758$, T&L effectiveness $r = 0.699$, A&E $r = 0.635$, student support services $r = 0.672$, and EI $r = 0.697$. With a p -value of 0.01, below the significance threshold of 0.05, the null hypothesis—that



QAM and LLE have no relevant relationship—is rejected. All demonstrated significant associations with LE. These findings indicated that all the QA measures variables exhibited significant connections with the LE of learners at the DLC, UI.

The analysis above signifies that QAM is pivotal in enhancing LLE, performance and learners' retention in the programme. It also implies that improvement in the QAM on (CD, ETL, AEP, LSS, and EI) would bring about better LLE in the DL institutions.

Hypothesis 6: There are no significant relative effects between each of the QA mechanisms (CD, ETL, AEP, LSS, and EI) and LLE in the institution.

Table 2. Multiple regression analysis showing the relative effect of each of the QAM (CD, ETL, AEP, LSS, and EI) and LLE in the institution.

Model		Unstandardised Coefficients		Standardised Coefficients	T	Sig.	Remark
		B	Std. Error	Beta			
1	(Constant)	-1.546	.910		-1.699	.091	
	<i>CD and Development</i>	.446	.043	.494	10.309	.000	Significant
	<i>T&L</i>	.132	.059	.139	2.243	.026	Significant
	<i>AE</i>	-.054	.057	-.059	-.944	.346	Not Significant
	<i>LSS</i>	.180	.059	.211	3.074	.002	Significant
	<i>Environmental Domain: Infrastructure</i>	.196	.051	.237	3.835	.000	Significant

Source: Field work 2025



Table 2 showed that each of the independent variables (CD, ETL, AEP, LSS, and EI) made a significant contribution to the LE of learners in DLC, UI. In term of magnitude of contribution, CD and development made the most significant contribution (Beta= .494; t= 10.309; p<0.05) to the influence followed by EI (Beta= .237; t= 3.835; p>0.05) then followed by students' support services (Beta= .211; t= 3.074; p>0.05) and also followed by teaching and LE (Beta= .139; t= 2.243; p>0.05) and finally by A&E (Beta= -.059; t= -.944; p>0.05). This shows that among the QAM (CD, ETL, AEP, LSS, and EI), CD and development played a vital role and a major QA mechanism that significantly influences LLE at the DLC, UI. Other QAM also contributed significantly to the LLE in the institution, except the A&E mechanism, which generated a negative result with low influence. This implies that attention must be paid to the A&E mechanism strategies adopted in the institution.

Discussion of findings

The results of study hypothesis 1, which posits that there is no substantial relationship between CD and LLE, were rejected and deemed very significant. The results of this study align with Muibi (2023), asserting that the supply of well-crafted, comprehensive, and attractive educational content is crucial for quality DL delivery and is a significant factor influencing students' learning engagement and academic achievement in distance learning programmes. Similarly, this is why scholars in DE have strongly emphasised the importance of course materials that are well-written, well-illustrated, and well-packaged. This was stated by Ojokheta (2000); Muibi (2020) stressed the importance of providing two-way communication when writing the course materials.

It was not surprising that the results of hypothesis 2, which claim that there is no SR between ETL and LLE in the institution, were dismissed and shown to be extremely significant. This result supports the findings of Muibi (2020), who found that ETL in DE involves frequent consultations, tutors who constantly get ready for class, tailoring their lessons to each student's needs, prompting students to ask questions during interactions, giving study advice, inspiring students to learn, and considering each student's unique characteristics. The usage of Moodle, Blackboard, online libraries, online course modules and study guides, online learning for tutor-student and learner-learner dialogue, and access periods for virtual learning encouraged and facilitated ETL in DE programmes, according to Muibi (2024). This finding also corroborated that of Mohd Basar, Mansor, Jamaludin, & Alias (2021), who indicated that ETL in DE deals specifically with the design of self-instructional resources that often replace lectures or traditional classroom instruction as the primary source of information to the learners. That is, students receive guidance on effective



study practices, time management strategies, and the development of skills necessary for learning through reading, group discussions, and practical activities.

Hypothesis 3's results, which claim that there is no SR between AEP and LLE at the institution, were disproved. This supports Ojokheta's (2000) assertion that a significant factor influencing students' success in any DLP is the evaluation they get on their assignments. When the DLrs are unable to have easy access to the results of examination, they tend to be demoralised and frustrated, and the resultant effect of this is that they withdraw from the programme or perform poorly in subsequent examinations. Quadri and Muibi (2025) emphasised that understanding students' learning experiences throughout the course enables educators to align course objectives with learner interests and demands. With all these submissions, one could therefore submit that the feedback method is very germane to success in DLPs. This finding also validated that of Muibi (2020), that for online quizzes and easy access to the examination results by DLrs, the use of online learning tools such as WhatsApp (WA), Email, Edmodo, Google Forms and Moodle was very useful.

The results of hypothesis 4, indicating the absence of a significant relationship between LSS and LLE within the institution, were rejected, aligning with Ojokheta (2000), who posits that the offering of LSS in DL institutions facilitates closer connections between learners and the institution, thereby mitigating the physical distance. According to Ojokheta (2000), data, guidance, advice, responsibility, evaluation, representation, and system input are all components of LSS in DE. This corroborated the findings of McGhie (2017), who emphasised the value of seeking support by distance learner from both peers and teachers as a successful DLrs. He highlighted the importance of asking questions without hesitation and seeking clarification whenever needed. Recognising that no one is expected to be an expert in everything, learners viewed seeking help as a normal part of the learning process in DLP. The aforementioned assertion supported research by Muibi (2021) and Ogendengbe & Quadri (2020), who found that students with smartphones as additional LSS had easy access to online study materials and course modules, online tutor-student communication, and learner-student interaction for effective educational advancements through Zoom (Zm) and WA.

The results of hypothesis 5, according to which there is no SR between EI and LLE inside the organisation, were disproved. This result agrees with the submission of DE scholars who stated that distance educational institutions need to be equipped to meet the demands of this form of



education, supported by various technologies (Mansour, 2024). This result supported Mohd Basar, Mansor, Jamaludin, and Alias's (2021) conclusion that EI provision is crucial for LLE in DL institutions. In addition, it was said that DL is intended to promote student connection and learning certification by using a variety of technologies to reach learners remotely. Social networking platforms like WA and Telegram, learning programmes like Moodle, Zm, and LMS, and Google Classroom and Meet allow students to access content at any time, according to research by Ogedengbe and Quadri (2020) and Muibi (2022). These results validated the use of a variety of technologies to connect with distant learners.

The results of hypothesis 6 indicate that the institution's LLE and each of the QAM (CD, ETL, AEP, LSS, and EI) do not significantly affect one another. In term of magnitude of contribution, CD and development made the most significant contribution (Beta= .494; t= 10.309; p<0.05) to the influence followed by EI (Beta= .237; t= 3.835; p>0.05) then followed by students' support services (Beta= .211; t= 3.074; p>0.05) and also followed by teaching and LE (Beta= .139; t= 2.243; p>0.05) and finally by A&E (Beta= -.059; t= -.944; p>0.05). This shows that among the QAM (CD, ETL, AEP, LSS, and EI), CD and development played a vital role and a major QA mechanism that significantly influences LLE, the DLC, UI. Other QAM also contributed significantly to the LLE in the institution, except the A&E mechanism, which generated a negative result with low influence. This implies that attention must be paid to the A&E mechanism strategies adopted in the institution.

Conclusion

The research examined how much the QAM (CD, ETL, AEP, LSS, and EI) affected LLE at DLC, UI. The conclusion drawn from the aforementioned data is that the QAM (CD, ETL, AEP, LSS, and EI) that are used in the institution have a substantial impact on LLE. The significance of quality control for student satisfaction and recruitment must be taken into account in every DL institution to suit the demands of students. This would assist in planning, organising and administering today's technological enhanced DLP. This, in turn, would enable the DLC, UI., to compete globally with other DL institutions around the globe.

Recommendations

These recommendations were made in light of the study's findings:

1. New kinds of ICTs for capacity development should be included in the T&L process within the institution. ICT, including virtual worlds, must be precise, rational, and systematically created and assessed to improve the LE of students in DE.



2. Reflective teaching and LE should be used in open and DL to enhance the favourable perception of the DLC, UI. This will enhance the educational process of learners.
3. An enhancement in the utilisation of diverse A&E methodologies, especially online instructional and grading tools, is necessary to enhance the virtual educational experience of remote students and enhance the use of ICTs by optimising them to support the effective production of LLE inside the institution.
4. ODL colleges must establish an LSS that addresses the diverse demands of learners, including intellectual, emotional, managerial, and technical demands.
5. Provisions must be established for ICT infrastructure, including training, finance, sufficient internet access, and alternate energy sources. Effective implementation of the aforementioned guidelines will subsequently improve the comprehension of QA standards among both tutors and learners, bolster instructors' enthusiasm, and contribute to the effectiveness of DL facilities.
6. The university should invest on technological infrastructures to enhance students accessibility to 21st century learning tools/apps that could improve, learning effectiveness, knowlesge retention and practicability.

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