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**Quality Assurance of E-Learning in Distance Education: PLADEPPRO-An Evaluation Model and its Application in India**

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**Abstract**

*The importance of E-learning has been increasing specially in teaching and learning methods of various educational institutions and corporate training institutes. However it is very essential to evaluate of e-learning for the quality assurance of e-learning programmes. This paper formulates a four-stage evaluation model for e-learning courses, which includes planning, development, process, and product evaluation, called the PLADEPPRO evaluation model. Planning evaluation includes market demand, feasibility, target student group, course objectives, and finance. Development evaluation includes instructional design, course material design, course Web site design, flexibility, student-student interaction, teacher's support, technical support, and assessment. Process evaluation includes technical support, Web site utilization, learning interaction, learning evaluation, learning support, and flexibility. Product evaluation includes student satisfaction, teaching effectiveness, learning effectiveness, and sustainability. The PLADEPPRO model has been used as a research framework, a purely e-learning course on Research Methods in Distance Education. According to summative evaluation through a student e-learning experience survey, the majority of students were very satisfied on all e-learning dimensions of this course. The majority of students thought that the learning effectiveness of this course was equivalent, even better, than face-to-face learning because of cross-border collaborative learning, student-centered learning, sufficient learning support, and learning flexibility. This study shows that a high quality of teaching and learning might be assured by using the systematic PLADEPPRO evaluation procedure. It is hoped that the PLADEPPRO evaluation model and its application can provide a benchmark for establishing a wider e-learning quality assurance mechanism in educational institutions.*

**Keywords:** *Quality assurance, E-learning, Distance Education, Evaluation, PLADEPPRO model*

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#### Introduction

E-learning has been used in regular education programmes, continuing education, higher education, research, and corporate in world as it has flexibility, richness, resource-sharing and cost-effectiveness. Millions of people around the world are pursuing their education and training through online or Internet. Over 70% of universities in the USA and 60% in India are providing e-learning courses. The financial crisis in 2009 led to a significant increase in student enrollment in e-learning colleges in India, some of which even had increases of 20%. The continuing education departments in Indian universities are gradually merging with e-learning colleges and providing continuing education programmes to their adult students through e-learning.

With the rapid development of information and communication technology (ICT), student attitudes towards e-learning are becoming more positive. Many Indian students have shown positive attitudes to e-learning when they considered pursuing a continuing education programme, majority of them hoped to try the blended learning approach.

The economic benefits of e-learning are also becoming visible. Now with millions of students enrolled across the country every year, it generates huge revenue for the e-learning institutions. With the rapid development of e-learning, there is also an increasing interest in e-learning research. Among all the research topics, quality assurance of e-learning has attracted the greatest concern. Various national, regional, and international initiatives have been undertaken with regard to quality assurance in e-learning. Further, online learning have been developing and publishing ideas for over a decade about how to manage the quality of the learning experience of those trying to study through the Internet.

It found has been that most institutions apply the same quality criteria for e-learning as for the other modes of delivery. The new entrants to the e-learning field are unlikely to have existing internal procedures to cover quality assurance of this new mode of operation. The adoption of a set of quality standards that carry some wider recognition addresses the need for internal processes. Course quality is assured by a series of evaluations, and e-learning should be no exception. In this paper, it has been proposed for an e-learning course evaluation model for quality

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assurance and analyzes its concrete application using a cross-institutional purely e-learning course.

**Construction of an E-Learning Course Evaluation Model**

Context, Input, Process and Product (CIPP) is a frequently used evaluation model in the field of social sciences. Referring to the CIPP evaluation model and characteristics of e-learning courses, it has been proposed a system for evaluating e-learning courses that consists of four evaluation activities: Planning Evaluation, Development Evaluation, Process Evaluation, and Product Evaluation; in simple called as the PLADEPPRO model. Based upon the proposed PLADEPPRO model and in line with the components and e-learning characteristics, the e-learning evaluation model consists of 26 items as shown in Figure-1 below.

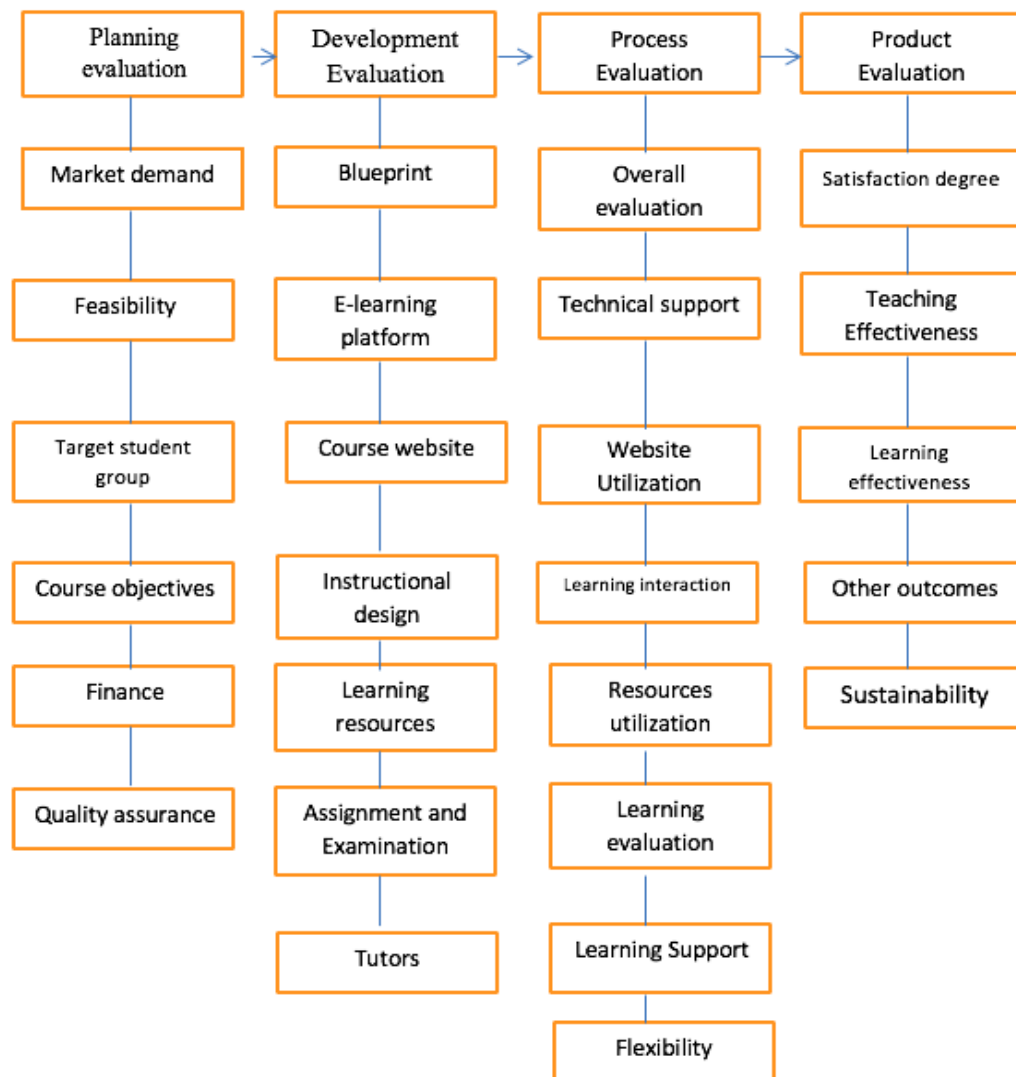


Figure-1: The PLADEPPRO Evaluation model for e-learning courses

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Figure-1 shows that the Planning Evaluation of e-learning courses begins with market demand analysis and feasibility analysis. Market demands refer to needs of target student groups or knowledge and skills in their careers. If courses are job-related, employer perspectives on the essential needs of their employees also need to be considered. If a course is to be exported to other countries, it is necessary to analyze their local educational import policies, regulations, and levels of technical support. Then one needs to analyze the target student group, course objectives, financial issues, and quality assurance mechanism. Analysis of target student groups includes age range, educational background, work experiences, working hours, study time availability, learning motivations, and job requirements. If the exported course is to be jointly launched with local educational institutions, the quality assurance system of the partner institution needs to be analyzed as well. Development evaluation of e-learning courses involves analyzing every component of course development, including the course blueprint, e-learning platform, course Web site, instructional design, learning resources, assignments and examinations, and teachers. Development evaluation is a process corresponding to eight activities of e-learning. Evaluating the e-learning teaching process should include the following eight dimensions: overall evaluation, technical support, Web site utilization, student-student interaction, resources utilization, learning evaluation, learning support, and flexibility. Product evaluation measures the learners' degree of satisfaction, teaching effectiveness, learning effectiveness, and any other possible additional outcomes. In the end, the sustainability of courses will depend on the results of the above mentioned analyses.

#### **Application of PLADEPPRO Evaluation Model**

This section describes the application of the PLADEPPRO evaluation model through a case study of an e-learning course on Research Methods in Distance Education.

#### **E-Learning Course on Research Methods in Distance Education**

The e-learning course on Research Methods in Distance Education was developed by the faculty of Hasanath College, Bangalore, India for providing the learning materials including the textbook, e-learning study guide, study units, e-learning courseware, study timeline, selection and training of tutors, quality assurance and copyright protection, and the award of attendance certificate, e-learning platform design,

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development and management, student recruitment and management, tutor management, technical support, and learner support services.

**The Research Methods in Distance Education course consists of five units with ten chapters as shown in Table-1 below.**

<b>Unit</b>	<b>Chapter</b>
Unit 1: Introduction to research methods in distance education	Chapter 1: Distance education research methodology
	Chapter 2: Rationale of the distance education research
Unit 2: Literature review and research design	Chapter 3: Literature collection and analysis
	Chapter 4: Research design in distance education
Unit 3: Research methods in distance education (1)	Chapter 5: Questionnaire and interview
	Chapter 6: Delphi and cost analysis
Unit 4: Research methods in distance education (2)	Chapter 7: Ethnography and policy analysis
	Chapter 8: Action research, design research, comparative research, evaluation research
Unit 5: Writing a research proposal and research paper	Chapter 9: Writing a distance education research proposal
	Chapter 10: Writing a distance education research paper

**Table-1: Course Structure of Research Methods in Distance Education**

The course lasts 10 weeks and the average study hours are about eight per week, 80 hours altogether. All the teaching, learning, activities, quizzes, assignment, and discussion sessions take place in e-learning mode. One tutor is allocated to every 20 students. The students' learning procedure is as follows: read the study guide; understand the learning objectives; watch the video lectures (streaming media courseware); read the study unit; read related chapters in the textbook; participate in the e-learning discussion; read the summary of e-learning discussion prepared by the tutor, and write assignments.

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**Planning Evaluation**

It is necessary to analyze the market demand, feasibility, course objectives, target student groups, finance, and quality assurance when preparing an e-learning course plan. This is a standardized process which involves writing a course development proposal and filling in various forms that will be discussed and decided upon by different academic boards, the registrar's office, and the finance department.

**Market demand analysis**

This e-learning course has a huge potential market demand in English language speaking cities in India. With the rapid development of distance education and e-learning teaching mode, more and more distance education managers and practitioners are beginning to recognize the importance of research activities in enhancing teaching effectiveness and raising their university's reputation. Academic research has also become an important index in the evaluation of distance education institutions, but high-quality academic research remains the weakest link in most such institutions. This is mainly because most distance education practitioners lack the necessary knowledge, skills, and experience of educational research. Therefore, they urgently need to acquire that knowledge and study the skills of distance education research in a systematic way.

**Feasibility analysis**

Since the major market for this course is Bangalore, the college has chosen to collaborate with the Indira Gandhi National Open University (IGNOU), New Delhi in order to achieve good cost-effectiveness. This IGNOU is one of the top e-learning education institutions in India. Moreover, it has also had successful experience of cooperating in e-learning courses with the Open Universities in India.

**Target student group**

Students across India States and NRI (Non-Resident Indian) students come from SAARC (South Asian Association and Regional Cooperation) countries are targeted student group. Researchers, managers, and teachers from various universities, e-learning colleges, open universities, and continuing education colleges who satisfy the following two requirements are qualified to study this course: having a college

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diploma and having two years working experience in the field of distance education.

In most open education institutions in India, the academic staff members are encouraged to take on-the-job training in their professional areas. They could apply for sponsorship as well as leave from their own universities. The University could also assign some staff to take relevant courses as a part of staff training and development. It is expected the tuition fee of students would be paid by their institutions.

**Course objectives**

The objectives of this course are set based upon the analysis of the course content structure, market demand, and target student group. Generally speaking, by the end of the course, the learners will be able to understand the methodology of distance education research; understand the rationale of distance education research; understand the process of distance education research; collect and analyze literature in the field of distance education; conduct research design for distance education research; apply distance education research methods; write a distance education research proposal; and write distance education research papers.

**Financial analysis**

This involves budgeting various expenditures and income. The expenditures consist office categories, which are course materials development (course content writing, editing, use of copyright materials, translation); e-learning instructional design (working hours of instructional and graphic designers); multimedia design and production (expert teaching, video programme shooting, offline editing, dubbing); interactive courseware development; technical development (setting up the e-course platform, designing the course Web site, upload learning resources); and textbook and tutor fees. The income is tuition fees from students. It was estimated that the tuition fee from 60 students of the 1<sup>st</sup> intake could cover all course design and development expenditures.

**Internal quality assurance analysis**

This follows the quality assurance systems of NAAC (National Assessment and Accreditation Council). For any course, the internal quality assurance includes



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seven parameters as prescribed by NAAC. They are Curricular Aspects, Teaching-Learning and Evaluation, Research, Consultancy & Extensions, Infrastructure and Learning Resources, Students Support and Progression, Governance, Leadership and Management and Innovations and Best Practices.

**Development Evaluation**

The first step in e-learning development evaluation is to analyze the course blueprint, which is compiled and prepared by the programme director. The blueprint deals with the formation of the course team and its members' roles, course background, course introduction, course objectives, learner analysis, requirements for learning facilities and skills, course modules/units, learning materials, assessment and examination, communication and collaboration in learning, learner support services, teaching model(s), course materials writing schedule, quality assurance, and copyright issues.

When the course blueprint evaluation has been completed, it is followed by analyzing the construction of the e-learning platform and course Web site, instructional design, learning resources, assignment and examination arrangements, and the recruitment and training of tutorial staff. Table 2 indicates the e-learning course development and evaluation steps.

**Table 2****E-Learning Course Development and Evaluation**

Course content	Responsible organization	Evaluation
Course blueprint	Indira Gandhi National Open University, New Delhi	Evaluation process:  Course development team – Education-subject unit- Academic Board of the College of Humanities and Law -Quality Assurance team - Registrar's office - External assessors.
Instructional design		
Learning resources		
Assignment and examination		



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E-learning platform		Programme director; Instructional designer; Multimedia designer; Multimedia producer; tutors; course external assessor
Course Web site		Registrar's office; Financial Unit
Financial analysis		Programme director;
Tutors		external assessors

Since this course was developed by college faculty, the evaluation of the course blueprint, instructional design, learning resources, assignment and examination procedures followed the course development procedures of IGNOU. Outside experts were invited to do an external evaluation. The requirements for external experts were professors in education with at least 10 years' experience in distance education research and teaching.

In terms of instructional design, the ADDIE (analysis, design, development, implementation, and evaluation) model was adapted with five phases: The principle of seven types of interactions was also emphasized, including the interactions between students and interface, between students and teachers, among students, between students and learning content, between students and learning objectives, between students and multimedia learning resources, and between students and time management.

**Process Evaluation**

Process evaluation refers to evaluating the process of course delivery, including the overall evaluation, technical support, Web site utilization, learning interaction, resource utilization, learner support, assessment, and flexibility. Process evaluation mainly uses three approaches: survey of students' learning experience and feedback; survey of tutors' opinions; and programme director's monitoring of the e-learning tutorials.

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The approach to understanding students' learning experience and feedback is as follows:

Establishing a special feedback area on the course Web site, establishing email communication between tutors and students, and internal reviewer or programme director's interviews with tutors and students. For example, the students were asked to familiarize themselves with various functions of the e-learning platform in the first week, referring to the course Web site guidance. The students needed to report to their tutor their degree of familiarity and time spent for this purpose. It was found that all the students learnt to use this course platform in two to four hours.

Considering that this was a short on-the-job training course without study credits, the change was made by the course team. Instead of applying each research method in general, the students were asked to choose two research methods in writing a research proposal as a group project. The assignments were revised accordingly for the 2nd intake of students. However, for credit courses, changes must be approved by the quality assurance committees of institution.

Monitoring e-learning tutorials is one of the most important tasks for the programme director, who needs to log into the course Web site at least once every two days to observe students' learning progress and difficulties. If students' questions are not answered promptly or only ambiguous answers are provided, or if there are not many posts in the discussion forum area, the programme director would take immediate action to contact the tutors and solve the problem and inspire student's learning enthusiasm.

Process evaluation is a meticulous process which involves continuous evaluation throughout the course. The programme director and tutors need to plan carefully to maintain students' learning enthusiasm and help them achieve the final learning objectives.

**Product Evaluation**

Product evaluation of an e-learning course is mainly conducted through quantitative research, supplemented with students' feedback and suggestions. For this purpose first intake of this e-learning course, the online questionnaire method to be used and surveyed to collect data on the students' evaluation of course

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effectiveness, teaching effectiveness, and learning effectiveness, feedback on course effectiveness and students' evaluation of various e-learning components of the course.

#### Sustainability

The success of this e-learning course has built up a good reputation. Many institutions have reserved places for their staff, and the long waiting list of potential students shows the course's success, which ensures its sustainability.

#### Conclusion

The PLADEPPRO model for evaluating e-learning courses has been designed and proposed based upon the CIPP evaluation model. In line with the characteristics and process of e-learning teaching and learning, 26 evaluation items are identified within the PLADEPPRO model. Using the PLADEPPRO model, the e-learning course on Research Methods in Distance Education to describe and analyze the series of evaluation activities. The PLADEPPRO evaluation model could effectively ensure the quality of the e-learning course in terms of both teaching and learning effectiveness. However, the use of the PLADEPPRO model measures only one purely e-learning course and further studies are needed. This model could contribute to the e-learning quality assurance literature in the Indian context and could be one reference in establishing e-learning quality assurance models for other educational institutions.

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