

## Enhancing the Quality of Distance Education Program: A Case Study of Program Investigation

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### Abstract

Information technology has helped people to come closer than ever, in terms of collaborative activities. This has increased the use of computers in all walks of life in society. Along with this the demand for trained persons in PC assembly, maintenance, up-gradation and networking is also increased. Considering this societal need, the School of Continuing Education of Yashwantrao Chavan Maharashtra Open University, Nashik (YCMOU) launched Diploma in Computer Hardware Maintenance and Network Technologies (DCHMNT) program in July 1999. As this is a pioneering program in this field and being a unique self-employment generating program of its kind, it needs to be studied in greater details to enhance the quality of content and implementation. In the present communication, we have discussed a study, which investigates this academic program in relation to the need-satisfaction, the quality and the relevance of the content of the program, course wise content appropriateness, and appropriateness of the study material in concern with self-study, the framework, the language and the difficulty level. The results of pilot study has emerged an immediate need of revision of few courses in the program and its relevant study material. Thus the investigation study has located the pinpoints for the quality improvement.

**Keywords:** Program Investigation, Quality, Case Study, Technical Education

### Introduction

In distance Education, program investigation encompasses the investigation of program objectives, course content, instructional design, support services, assessment practices, student achievements, and use/impact of technology. This helps to improve the quality of teaching learning, to enhance the relevance of the program, to assess how the program is perceived by its stakeholders and meets their expectations. This also helps to provide regular feedback on the factors that affect outcomes. In most forms of the higher education students typically evaluate a program experienced with respect to specific aspect of the

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program content, materials, and instructional methods. In distance education, the student program experience is additionally impacted by delivery methods, employed, as well as by the effectiveness of instructional strategies aim at creating social instructions in mediated contacts. Consequently, although a distance program is hopefully equivalent in term of performance, it is not experienced in the same way as a live instruction class. The quality emanates from the participation of all stakeholders in the program design, development and delivery. The course knowledge, teaching ability and the methodology of program deliverers are also important. At Yashwantrao Chavan Maharashtra Open University (YCMOU), the programs are designed keeping in mind the established quality assurance practices and principles (Koul, 1998, 2006). According to the literature, the quality assurance mechanism consists of planning, development, production, implementation and reviewing of the program. There are two forms of program investigation. Those are formative and summative investigation. Formative investigation is done while the development of the program and the summative investigation is carried out at the end of a program to measure the outcomes (Woolfolk, 1993). The data obtained from summative investigation is very useful for the revision and redesigning of the program. This type of investigation includes attitudes towards the program contents and student support system as well as the learning outcomes. Conventionally the educational institutions depend on summative investigation to assess whether or not the creative instructional design effort achieved the original product goals (Sims et al, 2002). In this paper, an attempt has been made to assess summative the overall quality and effectiveness of the different components of the content and the study material of DCHMNT program of YCMOU. The investigation is guided by the principles and practices of quality assurance and uses the feedback obtained from the coordinators, counselors and the students. The analysis of feedback results would be helpful in improving the overall quality of the content and the study material. This feedback data will be also used for the revision and redesigning of the program.

### **Literature Survey**

Distance education is a powerful way to meet the challenges of access, quality, cost and availability of education to the masses. It fulfils the educational needs of the society. However, it is needed to evaluate continuously the distance education programs. Rather, we can say that program investigation is vital tool used by the ODL system to assess and improve the quality and effectiveness of the knowledge dissemination. Passornsiri (1990). The study found that when student's expectations were compared with actual benefits they received from studying at STOU, younger students perceived that benefits gained were less than expected, while older students perceived that their benefits were greater. Gomathi Mani (1990) According to her postal delays, less contact seminars, lack of study centres and cost factor were the major problems. The counselling sessions helps students to avoid feeling of isolation and extend human support to students. Maria Ana T. Quimbo (1998) Investigation of distance education programs finds fundamental similarity with conventional education. These are aspects of the quality of learning, the effectiveness of materials and services provided, the suitability of courses for the needs of the area or the population served (Thorpe, 1998). Some aspects of learning may be inaccessible for the evaluator, whereas some aspects of provision are more open to inspection than is the case in conventional teaching. Maria Ana T. Quimbo (1998) Suchman (1967) proposed five categories of criteria- effort, performance, adequacy, efficiency and process to determine the success or failure of a program. Single investigation is expected to meet all these standards. Concerns of the study of Mangiduyos (1998) are the qualities of adequacy, necessity, usefulness, and sufficiency of the components of the program. Cited that a search for more indicators of school quality training yielded the standards to evaluate: Or being essential to the achievement of something, a state of need; or being advantageous, practical or of beneficial review measuring the results would and performed efforts; and performed efforts; and , or having enough resources to meet the needs and what is expected. Ashok K. Gaba and Nirod K. Dash (2004) In spite of the attempts made by ODL institutions to provide students with multiple media, the majority of the students depend primarily upon the self-instructional printed materials as the major instructional input. However, attention should be paid to: The self-instructional printed material should be

updated with the latest information, sound instructional technology, and inbuilt variations in the content treatment to meet the learning requirements of students, self-instructional material should be provided at the time of registration. Judith Calder and Ila Patel (2002). It was essential in a pilot project such as the COLLIT project that the investigation framework is sufficiently flexible to reflect and encompass the different developmental processes and the different structures that emerged. Judith Calder and Ila Patel (2002) The next step was to develop an investigation framework for the project in India that took account of both the overall investigation framework of the international project and reflected specific national concerns. The national evaluator prepared a draft of the investigation framework for COL Literacy project in India, which specified investigation objectives and articulating the key indicators for understanding the context, inputs, process and outcomes of the project. Within the CIPP investigation framework, the international investigation consultant have identified five areas for monitoring and investigation namely staff training, material and course development, local centre infrastructure, local centre staff and learners which were detailed in a data matrix. Rodney Skager and R. H. Dave (1970) none of the specifications of criteria actually defines a curriculum element or indicates the nature of associated investigation instrument or procedures. The criteria and specifications are suggestive, however, of starting points and areas of emphasis. T. Grady Roberts (2005) theoretically and conceptually, educational investigation can be undertaken at four levels (Kirkpatrick 1998). Investigation at the first level attempts to determine student reactions. Second-level investigation seeks to determine the amount of learning that has occurred. Investigation at the third level focuses on a change in student behaviour. Fourth-level investigation examines holistic results. Ehrman and Zuniga (1997) , In most higher education institutions, courses are often evaluated at the first level by assessing student's reactions or attitudes towards a course they are taking. This is often achieved by using a standardized investigation instrument administered at the conclusion of course for summative investigation purposes. Such an instrument often is characterized by a series of Likert- type questions and may include a few open –ended questions (Howland and Moore 2002).

## **Present Study: A Pilot study of Investigation of Diploma in Computer Hardware Maintenance and Network Technology (DCHMNT) Program**

The DCHMNT program is of 18 months duration. It consists of three semesters each of six months duration. The industrial training of three months training is a compulsory part of the program. The first semester consists of two theory courses based on digital electronics and microprocessor and one practical course. The codes of the courses are DCE101 (theory), DCE102 (theory) and DCE103 (practical). The second semester consists of one theory and two practical courses based on PC troubleshooting and maintenance. The codes of the courses are PUM102 (theory), PUM103 (practical) and PUM104 (practical). The third semester consists of one practical and one theory course based on networking technology. Two different options are provided to the students at the third semester as Windows 2000 Server [NET 101(theory) and NET102 (practical)] and Linux [NET105 (theory) and NET106 (practical)]. Each theory and practical course is evaluated separately for 150 marks. The question paper of each theory course consists of section 1 with 90 marks and section 2 with 60 marks. Section 1 consist 6 long answer questions (answer in 10-12 lines) and 6 short answer questions (answer in 5-6 lines). Each long answer question is evaluated for 10 marks and each short answer question is evaluated for 5 marks. Section 2 consists of 30 multiple-choice questions each carrying 2 marks. Each practical course is evaluated in three components (100 marks for practical demonstration, 30 marks for the workbook writing and 20 marks for the viva). The one textbook and three workbooks are used as study material for the first semester. One textbook and one workbook are used for the second semester as a study material. And one book is used as study material for the third semester. The students with 10<sup>th</sup> standard pass qualifications or the preparatory examination for the graduation passed is eligible for the admission to this program. The main objectives of the DCHMNT program are:

- To acquaint the learners with basic digital electronics, microprocessors, PC assembling and maintenance, networking technologies.
- To make the learner ready for creating the self-employment in PC maintenance and networking.

## **Research Objectives**

The present study is limited to:

- 1) Investigate the instructional effectiveness, presentation and usefulness of the study material.
- 2) Investigate the usefulness of the self test questions
- 3) Investigate the relevance and the appropriateness of the content of the program with the present needs.

## **Methodology**

The pilot investigation study is carried out by feedback survey method. The items in the scale are of mixed types. An approach is followed in the feedback study, which considers the involvement of learners as well as the counselors, and the coordinators involved in the transaction of distance learning materials or counseling in the classrooms. Three types of questionnaires were designed; one for the learners, one for the counselors and one for the coordinators. The questionnaire for the learners consisted of 7 questions about the personal information, 14 questions related to study material and its relevance. Counselor questionnaire consists of 12 questions about the study material and its relevance. And the coordinator questionnaire consists of 4 questions about the study material. The number of students enrolled on an average per year for the program is 1000. The study centers of DCHMNT program are spread all over the State of Maharashtra in India. The questionnaire is sent to 10 functional study centers for the learners, the counselors and the coordinators. Out of the whole feedbacks only 103 learners' feedback, 13 counselor's feedbacks and 4 coordinators feedbacks are randomly selected. (At many of the study centers both roles of the counselor and the coordinator are performed by the same person hence only 4 coordinator feedbacks are considered who are the different persons than the counselors at that study centers). From the total learner respondents 19 are of first semester, 56 are of second semester and 28 are of third semester. All the third semester learners in this sample are enrolled to windows 2000 server option. As the Linux

networking Technology option is just launched at the time of study no learner is enrolled to this option. The feedback request forms are sent to the respondents (learner's means students, counselors and coordinators) by postal means. The feedback data was analyzed mainly by calculating the percentages.

### **Findings and Discussions**

Keeping in view the aims of this study, the aspects explored specific to the program under investigation are related to the study material (with regard to course content appropriateness, presentation style, language, content coverage, content sufficiency, adequacy of illustrations, difficulty level, usefulness of the self test questions, relevance of the content with the present needs etc.) Some items related to the general background and the personal details of the respondents have been included for corroborating the analysis of the finding, which is placed below.

#### **Sample Characteristics**

Out of the total 103 learner respondents (Male 93%, Female 7%), (Married 4%, Unmarried 96%), Age Group (16 to 25 yrs 96%, 26 to 35 yrs 3%, 36 to 45 yrs 1%), residential area (Rural 14%, Urban 86%), Profession (Service 26%, Housework 14%, Farming 4%, Business 5%, learning 51%), Out of the total counselor respondents: Qualifications (Government Technical Board diploma in engineering and other qualification in Computer hardware 23%, Bachelor of Engineering or Master of Science in Computers 77%), Experience (1 to 5 years 77%, 6 to 10 years 23%), Publications as articles / research papers/ books (Yes 23%, No 77%) Out of 4 coordinator respondents: Educational Qualifications (Post graduated 25%, Graduated 75%), Experience ( 1 to 5 years 25%, more than 5 years 75%), Working as counselor and coordinator both ( Yes 25%, No 75%)

#### **Self Study Material (Learner's Views)**

The opinions of the learners about all aspects of the first semester study material are collected from all first, second and third semester learners. For the second semester study

material opinions are collected from second and third semester learners. And about third semester study material the opinions are collected from third semester learners only.

**Table 1:** Appropriateness of the study material for self –study

First semester self study material (Opinion from all three semester learners)	
Appropriate:	95 opinions: 93%
Appropriate to some extent:	05 opinions: 5%
Not appropriate:	03 opinions: 2%
Second semester self- study material (Opinion from second and third semester learners only)	
Appropriate:	09 opinions: 10%
Appropriate to some extent:	20 opinions: 24%
Not appropriate:	55 opinions: 76%
Third semester self-study material (Opinion from only third semester learners)	
Appropriate:	15 opinions: 54%
Appropriate to some extent:	10 opinions: 36%
Not appropriate:	03 opinions: 10%

The data from the table 1 clearly indicates that the majority of the learners found the first semester study material as appropriate for the self-study. Regarding the second semester study material very few learners found the study material as appropriate to some extent for the self-study but the majority of the learners found the material not appropriate for the self-study. It clearly indicates that the second semester study material shall be revised in accordance with the style required for self-learning. Regarding the third semester study material majority of the learners found it appropriate for self-learning.

The data from table 2 clearly indicates that the majority of the learners found the contents of the first and third semester courses appropriate. But the majority found the contents in the second semester courses less appropriate because the book was consisting the exhaustive content which were not required according to the course content of the second semester curriculum.



The data from table 3.A clearly indicates that the majority of the learners found the first semester study material excellent in framework, language of the textbooks, examples and explanations in the textbooks. Even the learners found the overall quality of the first semester books excellent which makes the learning process interesting for the learners.

**Table 2:** Course wise content appropriateness

First semester courses:

DCE 101: Digital Computer Electronics, Theory Course (From all three semester learners)	
Appropriate:	77 Opinions: 75%
Appropriate to some extent:	21 opinions: 20%
Not appropriate:	05 opinions: 5%
DCE 102: Microprocessors, Theory Course (From all three semester learners)	
Appropriate:	77 Opinions: 75%
Appropriate to some extent:	22 opinions: 21%
Not appropriate:	04 opinions: 4%
DCE 103: Practical based on Digital Electronics and Microprocessors, Practical Course (From all three semester learners)	
Appropriate:	73 Opinions: 71%
Appropriate to some extent:	21 opinions: 20%
Not appropriate:	09 opinions: 9%
Second semester courses:	
PUM 102: PC Maintenance, Theory Course (From second and third semester learners)	
Appropriate:	14 Opinions: 17%
Appropriate to some extent:	37 opinions: 44%
Not appropriate:	33 opinions: 39%
PUM 103: PC Maintenance, Practical Course 1 (From second and third semester learners)	
Appropriate:	12 Opinions: 14%
Appropriate to some extent:	33 opinions: 39%
Not appropriate:	39 opinions: 47%
PUM 104: PC Maintenance, Practical Course 2 (From second and third semester learners)	
Appropriate:	13 Opinions: 15%
Appropriate to some extent:	35 opinions: 42%
Not appropriate:	36 opinions: 43%
Third semester courses:	
NET 101: Network Technology (Windows 2000 Server), Theory Course (Only third semester learners)	
Appropriate:	23 Opinions: 82%
Appropriate to some extent:	03 opinions: 11%
Not appropriate:	02 opinions: 07%
NET 102: Network Technology (Windows 2000 Server), Practical Course (Only third semester learners)	
Appropriate:	23 opinions: 82%
Appropriate to some extent:	03 opinions: 11%
Not appropriate:	02 opinions: 07%

**Table 3.A:** Framework, language, explanations, examples and overall opinion about the first semester study material (from all three semester learners)

Point regarding the study material	Excellent	Very Good	O.K.	Not satisfactory	Bad
Frame work of the text-books	83	11	09	00	00
Language in the text books	83	11	09	00	00
Examples and explanations in the books	83	11	09	00	00
Overall opinion about the book	83	11	09	00	00

**Table 3.B:** Framework, language, explanations, examples and overall opinion about the second semester study material (from all second and third semester learners)

Point regarding the study material	Excellent	Very Good	O.K.	Not Satisfactory	Bad
Frame work of the text-books	00	02	23	56	03
Language in the books	00	02	23	56	03
Examples and explanations in the books	00	01	24	56	03
Overall opinion about the book	00	02	23	55	04

The data from the table 3.B it clearly indicates that the majority of the learners found the second semester study material i.e. textbooks average in the framework, language, examples and explanations in the textbooks. The overall quality of the study material is reported as average. The learners found the second semester study material ungainly for the study, which turns the student’s interest de-motivating.

The data from the table 3.C clearly indicates that the majority of the learners found the third semester study material very good in framework, language, examples and explanations in the textbooks. The learners found the overall quality of the third semester

study material very good. It improves the interest in the learning. The learners found the networking technology books very interesting for the knowledge gain.

**Table 3.C:** Framework, language, explanations, examples and overall opinion about the third semester study material (from third semester learners)

Point regarding the study material	Excellent	Very Good	O.K.	Not Satisfactory	Bad
Frame work of the text-books	11	16	01	00	00
Language in the books	10	17	01	00	00
Examples and explanations in the books	11	16	01	00	00
Overall opinion about the book	11	16	01	00	00

**Table 4:** Usefulness of the summary at the end of each chapter (Responded at multiple options, all three semester learners)

Points	No of respondents agreed the point
To understand the subject more effectively	35
Main concepts are cleared	32
Thorough revision of the chapter	32
Learning appropriate to the objective can be tested	12

The data from the table 4 clearly indicates that the 35 learners felt, that the summary at the end of each chapter helped them to understand the subject more effectively, 32 learners felt that summary helped to clear the main concepts in the chapter, 32 learners felt that summary helped to provide the thorough revision of the chapter and 12 learners felt that the summary helped them to learn appropriately according to the objectives of the topic. From the variety of the opinions it is clear that everybody has different opinion regarding

the usefulness of the summary according to his/her perceptions. It means that the summary at the end of the books helps in many ways.

**Table 5:** Appropriateness of the number of books at each semester

Semesters	Appropriate	Percentage	Not Appropriate	Percentage
First semester (response from all three semester learners)	75	73%	28	27%
Second semester (response from second and third semester learners)	18	21%	66	79%
Third semester Windows 2000 server (Response from third semester learners)	23	82%	05	18%

The data from table 5 clearly indicates that the 73% of the total learners felt that the number of books for the first semester is appropriate. Most of the learners from the sample reported that the number of books for the second semester is not appropriate. 82% of the learners reported that the number of books of the third semester is appropriate. The second semester has only one book as a textbook but it's too heavy to carry and use. Hence the responses have indicated that the contents of the second semester shall be appropriately divided in the appropriate number of the textbooks for the convenience of the learners.

**Table 6:** Difficulty level of the course for self-study

6. A) about first semester courses (From all three semester learners)

Sr No	Course	Easy	Percentage	Difficult	Percentage
1	DCE 101	75	73%	28	27%
2	DCE 102	41	40%	62	60%
3	DCE 103	77	75%	26	25%

The data from the table 6.A it clearly indicates that most of the learners found the DCE 101 (Digital Computer Electronics, Theory) and the DCE 103 (Practical based on DCE 101 and DCE 102) easy to learn and the self study. But the theory course DCE 102 (Microprocessor) was found difficult, to understand and learn by self-study, by the respondent learners. The responses indicate that the course DCE 102 curriculum shall be revised.

6. B) about second semester courses (From second and third semester learners only)

Sr No	Course	Easy	Percentage	Difficult	Percentage
1	PUM 102	49	48%	54	52%
2	PUM 103	49	48%	54	52%
3	PUM 104	49	48%	54	52%

The data from the table 6.B it is clear that majority of the learners found the courses at second semester difficult to learn by self-study and they require more supports. The curriculum shall be revised at an earliest.

6. C) about third semester courses (From third semester learners only)

Sr No	Course	Easy	Percentage	Difficult	Percentage
1	NET 101	23	82%	05	18%
2	NET 102	23	82%	05	18%

From the table it is clear that most of the learners found the courses at third semester easy to understand by the self-study. Hence the learners like to study the content with more interest. They gain the complete knowledge and can apply in the practical present life.

In the DCHMNT program total three workbooks are provided as the study material. The workbooks are available only for the first semester practical course. For this item all three-semester respondents have responded. From the table 7 it clearly indicates that most of the learners found the workbooks useful for the study and good in quality.

**Table 7:** Quality of the workbook (From all three semester learners)

Sr No	Name of the workbook	Excellent		Good		OK		Bad	
1	DCE 103: Digital Electronics Home workbook	22	21%	66	64%	15	15%	00	0%
2	DCE 103: Digital Electronics Lab Workbook	22	21%	66	64%	15	15%	00	0%
3	DCE 103: Microprocessor Workbook	22	21%	66	64%	15	15%	00	0%

**Table 8:** Identification of the semester wise workbooks need

Sr No	Course name	Yes	Percentage	No	Percentage
1	DCE 103 (From all three semester learners)	89	86%	14	14%
2	PUM103 (From second and third semester learners)	77	92%	07	8%
3	PUM104 (From second and third semester learners)	77	92%	07	8%
4	NET102 (From third semester learners)	03	11%	25	89%

The data from the table 8 indicates that learners require the workbooks at all semesters. Hence the workbooks at first semester shall be retained as it is in the use and new workbooks shall be developed for the second and third semester contents.

### **Self Test Questions usefulness (Learner's Views)**

The learner's questionnaire consist the questions based on the appropriateness of the self-test questions to the objectives of the topics, efforts of the learners to solve the questions, the way of solving the questions, the relevance and usefulness of the questions for better understanding of the course content. Here the opinions of all three semesters' learners are considered. Most of the learners i.e. 83% reported that the questions are appropriate to the objectives of the topics. 75% of the learners were trying to solve the questions in the textbooks. Most of the learners were solving the self-test question by reading the units. Some of the learners use to copy the model answers and some were solving by reading the reference books. Most of the learners i.e. 87% have reported that the self-study questions have helped them to understand the course content effectively to moderate extent.

### **Content Related Counselor's Views**

Counselors are the key persons as stakeholders because they directly interact with the course contents. They are directly interacting with the learners also and have first hand experience about the implementation of the course contents. The questionnaires for the counselors consists the items based on the difficulty levels of the courses, percentages of the difficult topics faced by the learners; the need investigation of the CD based material for the learners, proper courses inclusion in the program according to the objectives of the program, the opinions about the study materials etc. Majority of the counselors read the objectives of the courses before counseling hence they are very much aware about the course contents, the program objectives and the course objectives. The counselors reported that the courses included in the program are according to the objectives framed for the program. Most of the counselors reported that the contents in the individual courses are also according to the each course objective. The beginnings of the chapters i.e. topics are also OK for the further study. There are no gaps in the contents. The counselors reported the study material OK as a whole for the self-study.

**Table 9:** Course wise identification of the difficult topics in the program (Counselor respondents)

Sr No	Course	100% topics	75% topics	50% topics	25% topics				
1	DCE 101	00	0%	00	0%	03	23%	10	77%
2	DCE 102	00	0%	00	0%	04	31%	09	69%
3	DCE 103	00	0%	00	0%	03	23%	10	77%
4	PUM 102	10	77%	02	15%	01	8%	00	0%
5	PUM 103	10	77%	02	15%	01	8%	00	0%
6	PUM 104	10	77%	02	15%	01	8%	00	0%
7	NET 101	00	0%	01	8%	02	15%	10	77%
8	NET 102	00	0%	01	8%	02	15%	10	77%

From the table 9 it is indicated that, 77% of the counselors found the DCE 101 has 25% difficult topics, 69% of the counselors found DCE 102 course has 25% difficult topics, 77% of the counselors found DCE 103 has 25% difficult topics. Regarding the second semester courses, 77% of the counselors reported that the three courses (PUM 102, PUM 103, and PUM 104) have 100% difficult topics. About the third semester courses 77% of the counselors reported that NET 101 and NET 102 each course consist 25% difficult topics. The data from the counselor respondents has generated the urgent need of revision of the books of DCE 102 and the three courses in the second semester.

Majority of the counselors reported that if the difficult topics are supported with the additional CD based material the learners can use those and the difficulties can be solved.

Very few counselors have raised the issues that the CD based support material will not be of the use for the reasons: every student has no access to computers, most of the students of YCMOU belongs to less income class hence can not afford to have computers, no



human touch will remain in the teaching process and some practical can not understood on their own just by watching the CD.

**Table 10:** Opinions about framework, language, illustrations and examples regarding the study material (Counselor respondents)

Point related to the text-book	Very good		Good		O.K.		Not satisfactory		Bad	
Frame work of the text-books	01	8%	05	38%	07	54%	00	0%	00	0%
Understanding of the language	02	15%	01	8%	10	77%	00	0%	00	0%
Illustrations and examples in the text-book	01	8%	09	69%	03	23%	00	0%	00	0%
Over all opinion about the text-book	03	23%	09	69%	01	8%	00	0%	00	0%

From the data in the table 10 it is clear that most of the counselors found the frame work of the book, the language for understanding of the course, the illustrations and examples in the text-book are good. The 69% counselors reported that the textbooks are good in as overall.

### **Relevance of the Curriculum to the Present Needs**

Counselor's Views: 100% of the counselor respondents have reported the curriculum of the program is most relevant to the present needs. Rather all the contents in the program are most relevant to the present job needs and the learners can perform very well at the jobs or while doing the self-employment. Only the counselors have reported that the study material for the course DCE 102 and the three courses in the second semester shall be elaborated in a simple manner and the books shall be revised.

## **Coordinators Views**

At all study centers though the coordinators are not directly involved in the content delivery but day-to-day they have to receive the various feedbacks and the difficulties from the learners and the counselors. Hence they can also contribute as a stakeholder hence the feedbacks are obtained from them also. The 100% coordinators have reported that the learners never complain about the relevance of the contents with their job expectations. The learners are happy with the curriculum but they require the appropriate study material for DCE 102 and the second semester courses. The coordinators also have reported that the counselors are also happy and satisfied with the program curriculum. The counselors reported to the coordinators that the curriculum is useful to prepare the learners for doing the jobs in the computer hardware and networking technologies field in the present era. Again importantly the counselors have reported to the coordinators that the DCE102 and the second semester study material shall be revised and made appropriate. In DCE 102 (Microprocessor) course the learning of 8086 microprocessor kit shall be importantly done and all others can be deleted from the course.

## **Conclusions and Recommendations**

In the present communication, the need and importance of Distance Education as a vehicle for development and change has been discussed. The DCHMNT program as a representative of such societal change has been established. A pilot case study of the program investigation for DCHMNT program in respect of instructional effectiveness and quality of study material, and relevance of the content with the present needs has been discussed in details. The learners in the sampled population were predominantly urban and of the age group between 16 to 25 years. Their seriousness about studying the courses is beyond doubt, though they need to be guided clearly about how best to study the courses. Since enrolment in the program grew with time, one can say that the university has succeeded in providing access to technical education to a diverse learner population across the State of Maharashtra in India. Though study materials have been rated of good quality, relevant to the present needs and useful, the need to improve and revise the

presentation of the courses and to simplify the difficult topics is also emphasized by all stakeholders. The knowledge in computer hardware and networking technologies field is continuously updating hence the need of updating of the program is noted. This revisions and changes shall be made as fast as the needs change, outside in the job market.

The counselors have marked the DCHMNT program as a landmark program in the sense that in India, no other program has been launched which is so much self-employment creating in nature; caters to the need of middle class learners and is offered through the Distance mode. They have recommended that the course developers should include more and varied self-test questions. The questions should be sequenced in order of difficulty and of learning objectives. The level of available textbooks must be moderated. The theory course at first semester DCE 102 is consisting of many microprocessor kits at a time, some of which are not useful for the further study of the program, those shall be deleted. This will further reduce the unnecessary burden of study on the learners. Only 8086-microprocessor kit shall be kept for the study. The second semester content has scope for improvement and shall be revised every year according to the present time needs. The program develops the human resource in the PC maintenance and networking in ICT field. AS the developments in the IT field are changing very fast the program has generated the need to launch the programs in variety of networking technologies options in the field as fast as possible.

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