

**TECHNICAL EDUCATION QUALITY IMPROVEMENT
PROGRAMME
(TEQIP)**

**Report on
Utilization of Institutional Resources created under
TEQIP in Andhra Pradesh**

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1. INTRODUCTION

The Technical Education Quality Improvement Programme (TEQIP) supported by the World Bank funding for improvement of quality in Technical Institutions in Andhra Pradesh aims at

- (a) Promotion of Academic Excellence through Academic reforms including faculty development;
- (b) Networking of Institutions for quality enhancement and resource sharing;
- (c) Promotion of R&D activity and Industry Interaction
- (d) Enhancing quality and reach of services to Community and Economy;
- (e) Directing the effort to improve the weaker sections under Tribal Development activity
- (f) Management Capacity Development.

The Programme was initiated during 2004-05 in Andhra Pradesh. Twelve institutions were selected in the State of Andhra Pradesh for extending the TEQIP support. The selection has been as per the norms indicated by NPIU , Government of India and the World Bank . Out of this the following four Institutions have been identified as the lead Institutions in Andhra Pradesh:

1. Andhra University College of Engineering, Visakhapatnam
2. JNTU College of Engineering, Hyderabad
3. University College of Engineering, Osmania University, Hyderabad, and
4. Sri Venkateswara University College of Engineering, Tirupati

and the below given eight institutions as the Network Institutions:

1. Institute of Science & Technology (Formerly Institute for Post Graduate studies & Research),
2. JNTU College of Engineering, Anantapur
3. JNTU College of Engineering, Kakinada,
4. University College of Technology, Osmania University, Hyderabad,
5. Rajiv Gandhi Memorial College of Engineering & Technology, Nandyal,
6. Sreenidhi Institute of Science & Technology, Ghatkesar
7. Bapatla Engineering College , Bapatla. and
8. Government Institute of Electronics, Secunderabad

Amongst the eight Networking Institutions listed above SI.No.1 is an institution offering only post graduate and research programmes. SI.Nos. 2 to 7 have undergraduate programmes in Engineering besides PG and research activities. SI.No.8 is a Polytechnic offering only diploma level programmes.

In the pre-TEQIP period, the purchase procedures followed at all these institutions were lengthy & time taking. Besides, the funds available for acquiring/creating the facilities were too meager. Most Equipment and Computers were outdated and there was no state-of-the-art software to support the instruction and research needs of the students and faculty.

The main objective of TEQIP has been to promote academic excellence at these Institutions. The rules and procedures for acquisition of resources as well for various other heads of expenditure have been so framed that all obstacles in the pursuit of attaining academic excellence are removed. Institutes have been given all the freedom to successfully implement the action plan stated in the CIP (which is approved by the NPIU) within the time frame and budget allocation.

The academic auditing and mentoring efforts have been emphasizing and ensuring that the Institutions meet the expectations of TEQIP by periodically interacting with Institutions and helping them to understand clearly their obligations for receiving the financial support under TEQIP. Auditing and Mentoring stress has been on:

1. Commissioning of the equipment soon after it is received
2. Training the Faculty and staff on the proper use of equipment and software
3. Making the entire Institute know about the capabilities of the equipment and the persons to be contacted if anyone wants to use the equipment for teaching or research
4. Proper maintenance of log books that detail the use of the equipment as well the maintenance carried out
5. Ensuring that there is a comprehensive maintenance policy that ensures that the equipment maintenance will be carried out even after the funding under TEQIP stops.
6. In case of expensive and mainly-for-research type of equipment emphasis has been to improve their utilization under networking objectives of sharing the resources for joint teaching, research, publication and consultancy and even joint academic programmes to be offered by the Institutions under formal or non-formal networking.

The efforts have been largely successful as per the reports submitted by the Individual institutions. The issues linked to procurement, installation, commissioning, optimum utilization, methods to increase ways of utilization and maintenance forms the basis of this report on “Utilization of TEQIP resources” to analyze phase –I implementation and in formulating phase-II.

2. Overall assessment of Commissioning & Utilization

The institutions have taken utmost care in timely procurement and commissioning of all the equipment from manufacturers and suppliers. The final payments were not released unless the supplier has supplied in time, erected, commissioned and trained the concerned faculty. This has been verified through stock register entries, training reports, payments made to the suppliers. The Academic Auditors' reports after the Performance Audit conducted every six months show remarkable progress in the extent of utilization of TEQIP resources. The increase in utilization is due to trained faculty and improved laboratory instructions including those of usage of manuals.

It is pertinent to mention here that one of the networking institution i.e., Government Institute of Electronics, Secunderabad has prepared laboratory manuals for networking institutions & all other Polytechnics under non-formal networking.

Since the warranty of all the procurements under TEQIP is for 3 years the maintenance issues of all the equipment was not a major concern. However certain equipments after the warranty are kept under Annual Maintenance Contract with the expenditure met either from TEQIP or the institutional funds. The major issue could be the AMC after the project period. The Institutions are confident in taking care of this. Some Institutions have created reasonable amount of maintenance funds. Some others are training up their own maintenance personnel. A few institutions will be in a position to use their allotted funds to keep the equipment function. There are at least four institutions that have enough IRG to sustain the functioning of the equipment .

The utilization of computers, books and learning resources has increased to a maximum extent in all the project institutions uniformly. It is observed that the libraries have started functioning for extra hours, issuing more number of books (about 4 on average) to each student and more number of students have also started spending more time in libraries (kept open for 10-12 hours on average). The two institutions viz., JNTU College of Engineering Hyderabad, JNTU College of Engineering, Ananthapur have commissioned 24/7 Computer laboratory for their students with biometric access. The campus wide networking functioning in all the institutions is enabling the students and faculty to make use of the learning resources procured as well as software procured in all the Departments.

Though the faculties have been trained for running the equipment, they are not geared up to take maintenance part of upkeep of the equipment. This is because of the specific nature of the electronic circuits and parts used in the equipment as well as the typical test equipment necessary to carry out the repairs. All this is forcing institutes to go for annual maintenance contracts that are sufficiently high. This issue has to be addressed in the Phase – II. A comprehensive purchase-commission-operate-maintain policy needs to be worked out while purchasing expensive equipment. Some mandatory maintenance training for faculty and staff should also become part of the contract in the purchase of equipment.

There is a large scope for reducing the wastage in terms of procuring the same equipment in a cluster of institutions. This aspect was not given a serious consideration during Audits. This is a matter of serious concern and may have to be addressed in phase –II. Information regarding the purchase of expensive equipment should be on the Net and policy decisions regarding avoiding duplication of expensive equipment at different institutions should be made. Improved utilization of expensive equipment should result from Networking.

UTILIZATION DETAILS OF ALL 4 CATEGORIES OF EQUIPMENTS & CENTRAL FACILITIES CREATED IN 12 PROJECT INSTITUTIONS TILL JANUARY 2009

520 equipments costing about Rs. 1 to 5 lakhs each procured by all the 12 institutions have been utilized for various activities by 2,17,000 individuals and 2040 faculty/staff were trained to operate.

172 equipments costing about Rs. 5 to 10 lakhs each procured by these institutions have been utilized for various activities by 71,000 individuals 503 faculty/staff were trained in usage of them.

102 equipments costing between Rs. 10 to 20 lakhs each procured by the institutions have been utilized for various activities by 60,000 individuals for 7,810 hours.

35 equipments costing above Rs. 20 lakhs each procured by all the 12 institutions have been utilized for various activities by 18,000 individuals for 2,290 hours

80 Central facilities like library, computer center, campus wide networking, language laboratory etc., created by all the 12 institutions have been utilized for academic excellence by all departments .

3. Discrepancies

The performance audit reports of the initial rounds of audit predominantly reported that the institutions have to substantially increase the utilization of resources procured under TEQIP. Later in the subsequent rounds of performance audit it was reported that the institutions have increased the utilization of TEQIP resources in view of the increased number of research outputs and also consultancy works besides classwork.

It is observed that there are no perceivable discrepancies between the auditors reporting and the institutional reports. However, the institutions like SVU College of Engineering, Tirupati and JNTU College of Engineering, Kakinada have not increased the access to library, computer centre and other central facilities in spite of the repeated suggestions given by the visiting mentors.

The only discrepancies observed are to a major extent visible in institutional reporting in the format prescribed by NPIU. In spite of repeated instructions the institutions were unable to give proper information for several reasons including that of non-availability of information in initial stages of the project.

4. Overall review on commissioning and utilization

Consolidated report of all the types of equipments purchased and utilized under TEQIP.

Sl. No	Category of equipment	Nos.	No. trained	No. of persons used (in thousands)	No. of hours used per month	AMC	In house maintenance	Usage of Manuals, consumables etc.	
1.	A(Rs.1-5 Lakhs)	520	2040	217	-	48	394*	yes	
2.	B (Rs.5-10 Lakhs)	172	503	71	-	03	142*	Yes	
3.	C(Rs.10-20 Lakhs)	102	193	60	7810	01	101**	yes	
4.	D(above Rs.20 Lakhs)	35	92	18	2290	01	31**	yes	
5.	Central facilities	A	47	122	All Depts	-	14	19*	yes
		B	20	52		-	05	15	yes
		C	09	26		572	0	09**	yes
		D	04	16		892	0	04**	yes

- not asked for in format

* rest on call basis

** includes under warranty & later in-house maintenance or AMC

Consequent upon commissioning these equipments and on optimum utilization, the IMPACT observed is:

In laboratories, where 4-5 students were working on each equipment prior to TEQIP only 2 students per experiment are working on average presently.

Prior to TEQIP 2-3 students were using each computer terminal where as presently there is an exclusive terminal for each student

The common reasons stated by the institutions in delayed receipt, installation & commissioning of some of the equipments are:

- i) Since large no. of TEQIP institutions across the country are placing supply orders simultaneously, the firms are unable to meet the demand for supplying, installing & commissioning in time.
- ii) The firms are quoting a long delivery period
- iii) The firms are training the faculty & staff at their convenience in spite of stopping the payment of bills.

The following are some of the issues that have not been taken care in the UTR Reporting formats:

- i) A large number of users on computers
- ii) To arrive at the no. of hours of utilization per month in table 6.1B of the format the denominator i.e., the number of months after commissioning must be taken as 6 months for every 1 academic year as no. of working days is only 180 days.
- iii) There should have been a column for the revenue generation from utilization
- iv) Utilisation of certain equipment like servers, UPS, software used in administration, campus wide networking etc., cannot be quantified but the activities only can be listed

5. Suggestions for enhanced utilization and increased sustainability:

The institutions must aim for enhanced utilization of the resources generated under TEQIP such that they can increase their revenues and attain sustainability.

The TEQIP resources and the expertise gained by the faculty through several faculty development programmes are the only means to generate revenue for the institutions and sustain their activities. Some of the suggestions given by the institution are listed for attaining enhanced utilization and increased sustainability:

1. Introduce value added courses for enhanced utilization of infrastructure and faculty
2. Continuing education programmes for industry
3. Increased utilization through networking among institutions.
4. Sharing R&D facilities with other institutions and industry.
5. Sponsored research and consultancy
6. Improved teaching learning processes and promote self learning among students
7. Provide projects for P.G and Ph.D students
8. Encourage inter disciplinary P.G and Ph.D programmes.
9. Increasing number of experiments in each subject for knowledge enhancement and skill development.

6. Suggestions for future studies/methodologies to ensure a high utilization of financed equipment.

The institutions have to necessarily document the utilization of all the equipment available in a standardized format for assessing their utilization. Hence it is obligatory to design the format for log-book that can provide information on the extent of utilization, purpose of utilization, by whom and also revenue generated by each of the equipment. A suggestive model format-I, II & III for the log-books are enclosed for phase-II .

Mere design of the log-book format would not serve the purpose unless the institution makes it mandatory for everyone to necessarily document all the activities.

Regular periodic checks on maintenance of log-books, consolidate the utilization at regular intervals for assessment and review, suggest methods to improve utilization, monitor the improved methods of enhanced utilization and finally evaluate the methodologies for effectiveness and measure the impact.

Format – I (Computational Faculty-Log Book)

College:				Department:					
				Instrument:					
S.No.	Date	Name of the user	Allotted schedule		Purpose	Time		Revenue generated, if any	Remarks
			Class	Orgn.		IN	OUT		

Format – II (Major equipment Log Book)

College:										
Instrument:						Utilization for the month of :				
Department:										
Sl. No.	Dt	Name of the user	Class/Organ ization	Purpose	Time		No. of samples / consum ables incl. glasswa -re	Revenue generated	User sign	i/c sign
					In	OUT				

Format-III (Log-book for maintenance)

College:						
Instrument:						
Department:						
Sl.No. Dt	Maintenance by (In- house/AMC/ Call basis) with name &n address	Repair/ service	Parts replaced	charges	i/c sign	Head sign

7. Un-commissioned or substantially under-used equipment and LR

Some sophisticated equipment procured mainly for research and consultancy promotion remains at present underutilized. A substantially least number of equipments are to be categorized as under used for the reason that there are only limited number of industries linked to these institutions. This situation will change as the institutions are stepping up industry interaction.

Another major concern is the non-availability of costly consumables like glassware & chemicals which hampers the extent of utilization of equipment in some laboratories. The institutions must explore the ways & means to meet the requirement by adopting methods of cost recovery including from the students till a long term alternative is implemented.

A **common website** for all these institutions will generate awareness of the resources created at various institutions and it is expected that under networking their usage will improve. Once the non-formal networking activities start up with the large number of institutions in the State there is a tremendous potential for increased utilization. However, the institutions need to extensively work in this direction for overall equipments' optimum utilization.

Most institutes have also increased the number of Research Scholars being recruited and this will also lead to the increase in the utilization of these special facilities created. Keeping this in view more faculty members are being trained in the use of this equipment.

8. EXECUTIVE SUMMARY

Procurement is vital for development and without procurement there is no development. The procurement process involves several competencies for procuring quality & competitively priced proper equipment, timely and orderly commissionable equipment. Hence all these issues have to be assessed before we study the utilization of resources.

The institutions' efforts in planning to procure an asset must encompass all their activities in the areas of regular academic instructions, students' & other project works, research, consultancy and also networking for resource sharing. Besides these purposes it is also observed that the institutions have procured equipment to modernize their laboratories and also for creating State of the art facilities.

The 12 institutions have acquired assets as planned in their Concise Institutional Proposals (CIPs). The assets created are:

Civil works (8 institutions) at a cost of	Rs 098.624 millions,
Equipments valued at	Rs 951.113 millions
Books & LRs valued at	Rs 094.106 millions and
Furniture valued at	Rs 061.197 millions.

Innovative methods of utilizing, recording and measuring the duration of utilization of the resources created under TEQIP are highly appreciated. Though the practice of maintaining log books to document the utilization of equipment is worth mentioning and made mandatory there were instances of not taking it so seriously by some of the institutions. However it is observed from the reports submitted by the institutions that majority of the equipment have been utilized for classroom instructions consultancy & projects and lesser utilization for Networking activities, Research & Development, etc.

Barring few instances like procurement of Server Farm in OUCE, Hyderabad, completion of Civil works in AUCE, Visakhapatnam and some other minor instances of delayed completion and commissioning there were no major issues. The main problems behind these issues were due to the augmentation of TEQIP resources with those made available by Government/University etc. This was necessary to enlarge the scope of work to derive monetary benefits resulting from bulk procurements as well as to utilize the Government provided funds along with TEQIP funds for the cause of promoting academic excellence and all other components of TEQIP.

The learning resources and the video conferencing equipment procured by the institutions towards the end of Phase I is expected to be fully utilized in the time to come in a more effective manner even a prior to phase-II.

It has been emphasized that mere procurement of equipment and completing the civil works does not serve the intended purpose. TEQIP desires that the institutions develop the ability for their proper maintenance beyond the project period. Finally, it is also mandatory to sustain the resources by properly maintaining them in a good condition and if necessary they may have to be upgraded or totally replaced in the process of modernization and continue to utilize optimally for an ideal situation. In this endeavor, the institutions should also procure equipment that can generate considerable amount of revenue regularly to take care of the repair and replacement needs. The efforts of JNTU College of Engineering, Hyderabad for recovering the cost of one of their equipments i.e., Universal Testing Machine through consultancy much before the closure of the project period are laudable.

TEQIP funded institutions have improved their academic excellence in comparison to many of the Engineering colleges that are starved of the development funds in Andhra Pradesh. It is expected that this benefit is shared with the less fortunate institutions through Networking activities such

as sharing of infrastructure, equipment, Computing server times, software etc.,
The ultimate desire is to see better student projects, better research and
publications, consultancy services etc resulting from joint participation under
Networking.

9. Institutional information

(ALL THE 12 INSTS. REPORTS ENCLOSED)