

Promoting Research Culture in Technical Institutions in India

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Abstract—This paper represents the possible characteristics that should be followed by the technical institutions of India in order to promote the research culture. We analyze various factors to implement productive research in the technical institutions. However, this culture needs a change of institutional as well as individual characteristics cooperatively. We find these changes and their possible outcomes. We also focus on some challenges in implementing these changes. The main objective of this paper is to briefly point out the necessary steps that are to be taken by the technical institutions to promote research culture keeping in mind the possible challenges associated with these.

Keywords— *Research Culture, Productive research, Technical education in India*

I. INTRODUCTION

The culture of research does not imply to understand the importance of research by a group of scholars. It tends to be a supportive environment and framework in which research is evaluated. In India the faculties at various technical institutions are supposed to be involved in research oriented activities like publishing research papers, scholarly articles etc. the faculties at these technical institutions have come under pressure to research and publish [4]. Institutions nowadays emphasize on developing a research culture among the teachers in order to enhance quality of the students [5]. However, promoting and establishing research culture technical education is a two-fold process. It requires both institutional and group efforts to fix up research goals and communicate them effectively. In this study we put forward the important aspects of research in technical institutions in India.

II. LITERATURE REVIEW

In the literature of exploring research environment in India's Technical Institutions various aspects of research cultures have been discussed. In [1] the authors stated that culture of research requires a well-defined plan of successful research and supplementary changes in accordance. Institutions must allocate significant resources for faculty training and support to make them skillful. The role of a teacher should include both research and teaching expertise. Institutions may develop continuing education courses or support services in research practices, grant writing, and grant management. These programs could be housed in either a centralized or

discipline-specific research center. Another important aspect of research culture as stated in [2] is open and collaborative relationships among faculty members. Friendly relationships among faculty members can lead to a successful research mentoring initiative which is important to establish a research culture in an institution. Cooperation among faculties is also helpful to foster collective research efforts.

In order to move from the traditional culture to research culture [3] the technical institutes should identify motivation and ability of the faculty members. People with high motivation and low ability would need training and support resources of the organization. However, those with low motivation would benefit from developing personal relationships and expanding their networking.

According to [4] youngsters who are involved in rigorous research practices early in their education are the pioneers in developing research culture. Institutions should inspire these students by providing research assistance and involving experienced faculty members to guide them according to their expertise.

Considering all these initiatives to bring a research culture may take years to develop. But there should be policies and planning to maintain the sustainability of this culture. New policies like research funding, expanding research opportunities with outside institutions should be adopted by the technical institutions. In the next section we discuss the characteristics of the institutions and the individual that can promote research culture in technical education.

III. PROMOTING RESEARCH CULTURE IN TECHNICAL INSTITUTES

The essential characteristics of institutions to build high levels of research productivity and culture of research incorporate multiple levels such as Institutional Reputation, Faculty Advancement, leadership etc. In this section we concentrate on those characteristics at different levels. A rigorous literature review shows that a productive research is one in which faculty involves in research activities such as publications of quality papers, attending conference, writing a book or a chapter, guiding postgraduate students M.Tech thesis and projects, obtaining patents and grants and many more [6]. Research productivity is also important for the promotion of individual faculty members. We categorize three

levels for promoting productive research in technical education. These are:

A. Institutional Characteristics that Promotes productive Research

- To recruit and hire members who are having specific and transparent goals, innovation, dedication and leadership quality.
- Research has greater or equal priority than other goals.
- Members should get a suitable environment for implementing ideas.
- Recognition of research work by giving promotion, reward, and responsibilities.
- Opportunities for professional development should be ensured.

B. Individual Characteristics that Promotes productive Research

- Motivation towards exploring ideas and innovation.
- Contribution to the society.
- Having clear knowledge in one's research area.-
- Should have basic research skills like statistics, design, data collection methods other area specific methods.
- Must have the capabilities to carry multiple projects simultaneously to avoid hindrance if one project fails.
- Committed to research oriented activities as conducting seminars, FDPs, short term courses, curriculum design etc.
- Has academic freedom, manages time and goals, committed to the organization.
- Should have a work habit of productive research.

C. Leadership Characteristics that Promotes productive Research

- Manager of people and resources like Fund-raiser, Group leader and so on.
- Participative in nature
- Contribute to decision making
- Vests ownership of projects with members and values their ideas
- Makes high-quality information readily available to the group.

IV. IMPLEMENTATIONS

Implementing research culture with all the discussed initiatives is the crucial part in an organization. In order to promote the culture of research in the technical institutions of India the technical institutes should adopt some policies that are dedicated and transparent. In this section some of the proposed policies by the researchers are being highlighted which are standard but are to be molded according to the institution's culture.

A. Mentorship of the experts

The institutions should encourage experienced faculty members with research skills to share their expertise with those who need assistance in developing their competence for research.²⁷ Mentorship in research skills is important in professional fields where younger faculty may have had less training in research and its importance.

B. Adequate resources for training and support programs

Providing funds for training courses by the experienced faculty researchers in order to train less experienced faculty members will encourage the faculties of both sides. Subscription and access to high-class research libraries, computers, updated laboratories etc. are essential for smooth conduction of training and research oriented activities.

C. Establishing Research Centers

Establishing research centers inside the institutions can effectively inspire the faculty members to involve in research oriented activities. Once a research center is established people can collectively conduct training and support programs, publishing a journal to highlight the successes of faculty researchers, circulating regular newsletters, memos, or emails with faculty publishing successes; and creating faculty awards in recognition of achievements in research. These activities will grow in time with a successive involvement of the young faculties having skillful and innovative minds

D. Networks and collaboration

Networking with industries and global research organizations is a must for the technical Institutes for the knowledge of recent trends of technologies and emerging fields of research Promoting faculty members for participation in conferences, hosting conferences and symposia. Establishing institutional relationships with other universities, professional associations, and government bodies are all necessary activities for productive research.

E. Customizing workload of Faculty

Institutions should ensure a balanced work load distributed between teaching and research for the faculty members so that they can involve in productive research. In [7] authors stated that faculties who spend more hours for student-activities reduce publication rates, and vice versa.” Institutions should fix up a weightage for increasing pay, promotions and other rewards that establish this balance.⁵⁰ an institution may also consider incentivizing pay for research production. In [8] a study finds that payment increment in accordance with research production yield increased scholarly output.

V. CHALLENGES

Developing research culture in an organization may face various challenges which develop with time.

Although faculty members of a technical institution are supposed to be a motivated researcher current scenario does not conform to it. Most of the new generation faculty members are not motivated to research because of lack of skill or innovations.

Another difficulty in evaluating the research potential inside an organization is the factors to evaluate research

productivity. There are different factors by different institutions at different levels for measuring research productivities. However, lightening the workload of an individual faculty in turn increases the additional responsibilities to other faculties. Hence considering research potential should be done at unit level rather than individual ones.

Finally increasing the research culture in a technical institute actually creates deviation from the primary goal of technical education which is teaching. The decrease in teaching load of the faculty will intern forces the institute to hire more faculties which may not be the intention of that institute.

CONCLUSION

This study focuses on the research culture of the technical institutions of India. The analysis of research culture and the initiatives for promoting productive research in technical institutions have been discussed in the paper. We have discussed implementations of these initiatives in the technical education of India. It is found that establishing research trends in technical institutes requires huge changes from the traditional thought and that too by facing some challenges. We have analyzed these challenges in productive research. Although our study is primarily concerned about indian technical education this is not limited to only India. This study in future will certainly expand in other developing countries with a broader aspect.

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