

# **In-house Leadership Development Programs for High-Potential and High-Performing Engineering Faculty**

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## **Abstract**

*Faculty development or professional development programs are systematically organized for engineering college faculty members by various national organizations. In many institutes, the performance of the students doesn't match the faculty input. Most of the institutes don't provide needed resources and financial support for in-house faculty development programs. A research study has been undertaken to identify factors that contribute to the success or failure of faculty development programs underwent by them. 385 middle-level faculty members participated in this research. 30 issues have been identified for getting their feedback and suggestions to improve the in-house faculty development programs. Most of the problems are due to limited resources, the absence of strategic planning, and limited counseling and mentoring of the faculty members. Suggestions are offered to plan and implement in-house faculty development programs based on the analyses of feedback. The success of creating human capital depends on the institutionalization of the best faculty development practices.*

**Keywords:** *Faculty development programs, Best impacts, Poor students' performance, Suggestions for planning and implementing in-house faculty programs*

## **1. Introduction**

Many national institutes, All India Council for Technical Education (AICTE), Indian Society for Technical Education (ISTE), State Technical Universities (STU), etc. conduct engineering faculty/professional development programs throughout the year on various topics like curriculum design, instructional planning, instructional aids preparation, interdisciplinary research, product development, leadership development, institutional development, higher education administration, planning and implementing the consultancy works, etc. But their impact on instructional design and delivery, facilitating the graduates to perform in real life, and undertaking consultancy works have been very little. In the knowledge-based economy, engineering institutes have to create human capital to meet the growth of the industry which is facing many competitions and disruptions, and ultimately, they have to assist in the faster growth of the national economy. From the close observation of the performance of the trained faculty members, it is observed that there is a big gap between the knowledge and skills gained by them and their delivery at the institutes. Unless, the causes are investigated, and remedial measures are undertaken, the problem will remain and the Return on Investment

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### **Article history:**

Received (July 27, 2022), Review Result (August 30, 2022), Accepted (October 1, 2022)

(ROI) will be very little. This research focuses on the problems faced by the trained faculty members, the resources available to them, and the development initiatives taken by the administration. The objectives of this research are to identify the obstructions that cause disruptions in the planning and delivery of instructions, the gaps in human capital development, the initiatives to be taken by the administration, and the culture of the organization through rigorous research and identification of remedial measures. The research methodology adopted is based on the open survey research involving 385 middle-level faculty members who have completed many faculty-development programs. They are from government engineering colleges, private engineering colleges, and autonomous colleges. Most of them offer postgraduate programs. The national institutes of national importance were excluded from this research.

### **1.2. Objectives and importance of the study**

Faculty development is an important intervention to develop the outcome of various programs, improve the services to the micro, small, and medium sectors of companies, bring a better return on the investments made on the resources, and faculty, and develop the reputation of the institutes. The following are the objectives of this research:

- To review the current practices in developing high-potential faculty members in various Engineering Institutes in India.
- Synthesize the feedback given by the middle-level faculty members on 30 issues that are centered around the in-house faculty development practices
- Highlight the best practices that can be diffused to other institutes
- Suggest improving the poorest practices of faculty development

### **1.3. An overview of this paper**

This paper includes a focused literature survey, an analysis of feedback from 385 middle-level engineering faculty members, a synthesis of feedback, remedial measures to improve the performance of the faculty members, limitations of the study, and suggestions for further research.

## **2. Literature Survey**

Bilal et al. (2019) [1] evaluated the impact and effectiveness of faculty development programs in fostering the faculty's knowledge, skills, and professional competence. In the case of healthcare institutions, the faculty members have improved their academic performance by incorporating the skills and competencies gained from faculty development programs. Russell Carpenter [2] observed that institution-wide faculty development focused not only on teaching and learning but also on areas of faculty support in promotion and tenure, student success, and retention. According to him, the role of the faculty developer is complex and the need for more collaboration between faculty and staff, and facilitating connections. Faculty developers are often called upon to bridge boundaries or offer campus perspectives, advice, and guidance beyond instructional context. Faculty developers collaborate across delineated institutional contexts, bringing parties together to consider approaches that are in the best interest of teaching, learning, instruction, instructional design, academic support resources, and complex integration of considerations and roles. Faculty developers have to explore areas of faculty productivity, faculty satisfaction and the factors

for departure, and faculty learning community curricula that promote access and inclusion and reduce instructional uncertainty. In the case of project-based faculty development programs, capacity development, quality improvement, and efficiency improvement are linked. The developed faculty would be having needed resources and an environment for implementation. Anupma et al. [3] have concluded that the course focuses on the process, experiential learning, and situating the course facilitator in the role of a functional mentor or coach to complete projects can be effective in facilitating change after faculty development programs. According to Catherine [4], many don't agree on what professional development is or how it should be offered. According to her, many professional development practices focus on delivering information rather than creating conditions for learning that professionals would find relevant or useful. In many externally funded projects, the institutions have to study the impact of the project on the return on investments, creating needed human capital and knowledge capital. Amena Shahid [5] developed the following checklist for effective faculty development programs: understand the roles and expectations of your faculty; develop respect and trust with your faculty as learners; review wide perspectives for consistent new abilities that address all the aspects that impact faculty success in each setting; connect the institutional/organizational culture with your faculty development culture; conduct a needs assessment to establish relevant program outcomes; solicit timely and effective feedback; design and implement a variety of programs to meet diverse needs; prepare staff developers; implement reward structures for participation in faculty development programs; build a culture for learning based on collaboration, teamwork, and shared vision. She indicated the following list of institutional commitments toward faculty development: get the support of senior administrators for faculty development programs; determine and provide the necessary human and financial resources for the program; and identify relevant leadership. All these are highly relevant for planning needed professional development programs. Mildred and Krishna [6] have suggested creating quality faculty development programs to impact teaching and learning. Aliaa Amr Alamoudi et al. [7] have evaluated the long-term impact of faculty development programs in medical education. Shuh Shing Lee, et al. [8] concluded that faculty development programs have positively impacted the behavioral changes of teachers. Rowbothan [9] stated that while faculty members at the university level are considered experts in their field of study but many may not have been trained in practices of effective teaching, how to share their expertise, or how to improve their teaching. Hence, don't overlook the induction and mentoring of faculty members. His suggestions are creating and evaluating faculty development programs that can aid in the formation of best instructional practices and increase the competency of faculty; blending online and face-to-face meetings and addressing the influence of self-efficacy on teaching effectiveness.

Annmarie and Keith [10] have explored the importance of cultivating leadership skills among faculty members. Avolio (2006) analyzed leadership development. Bonasso [11] concluded that twenty-first engineering projects are more than bricks, mortar, and money. He emphasized the need for leadership development of engineers. Bowles et al. [12] emphasized the need for coaching leaders in middle and executive management. Brian Eastwood [13] identified the following eight essential traits for effective leadership in higher education: 1. Financial acumen, 2. Collaboration, 3. Building new leaders, 4. Communication, 5. Strategic planning, 6. Change management, 7. Commitment to delivery, and 8. Intellectual curiosity. Educational leaders have to build young leaders in every branch which will ensure the growth of the abilities of the graduates. Cerni et al. [14] concluded that executive coaching can enhance transformational leadership. Perkins [15] concluded that executive coaching can change leader behavior. Foust et al. [16] suggested maximizing the talents and minimizing the

barriers to the growth of women faculty members. Herold and Fields [17] suggested getting subordinate feedback for developing leadership and providing organizational rewards. Hughes et al. [18] leadership can be enhanced based on experience. Joo et al. [19] explored the coaching and mentoring by managers. Kassolakis [20] suggested leadership development programs for women faculty members. Kets and Konotov [21] desired to implement transformational executive education programs. Khattak et al. [22] have suggested offering courses in leadership capacity development in engineering institutes. Michael Baidani [23] suggested the following steps create high-performing engineering teams: mutual respect among leaders and team members, sharing vision, and open and clear communication. Further, he advised the administrators to build-cohesive and value-aligned team dynamics, create an environment of open communication, stresses the importance of learning, and set measurable goals. All these steps are essential for creating high-performing faculty teams in engineering institutions. MIT is offering courses on leadership skills for engineering and science faculty members. Perkins [15] concluded that executive coaching can change leader behavior meeting effectiveness. Phyllis [24] stated that advancing leaders in engineering is due to ways of learning leadership. Simon (2013) [25] stated that leadership labs can be used to develop leadership capabilities. Stephen Covey [26] listed the following seven habits of highly effective people: be proactive, begin with the end in mind, but first thing first, think win-win, seek first to understand then to be understood, synergize, and sharpen the saw. All these are essential for educational leaders. Many universities recognize their outstanding researchers by providing advancement rewards. It is stated that the performance of the faculty can be improved through leadership development, coaching, mentoring, and rewarding the best performers. In addition, the administrators have to remove the barriers. If these activities are not followed systematically, then there is an urgent need for research.

### **3. Research Questions**

30 Research questions were developed to evaluate the current practices in the in-house development of high-potential faculty leadership. For each feedback, weighted averages have been calculated. All the outcomes have been reviewed and the suggestions have been presented.

#### **3.1. Research methodology**

A direct discussion was held with 385 middle-level faculty members (Senior Assistant Professors & Associate Professors) of engineering colleges (Self-financing, Affiliated, and Autonomous Engineering Colleges) in the southern region over six years. The faculty members from the deemed universities and state technical universities were not contacted. 96 women faculty members also participated in this research. 68.05% of them completed master's degree programs in engineering before entering college and occupying the post of Associate Lecturer. 23.90% of them completed doctoral degrees. The balance is 7.79% of them are pursuing Ph.D. as part-time candidates. Discussions were held during the faculty development programs held at the extension centers, in-house programs, and at the main campus of the National Institute of Technical Teachers Training and Research, Chennai. An open-ended question has also been circulated to get their opinions and suggestions for improvement of the academic, administrative and financial management.

Table 1. The feedback has been recorded and analyzed and presented

No.	Question	A (4)	F (3)	S (2)	R (1)	W A (Max-4)	W%
3.1	Whether the Institute Organized Leadership Development Programs as a part of the Institutional Development Process?	15	41	121	181	1.626	40.65
3.2	Whether the Institute Developed Strategic Planning and Institutional Development Programs?	25	48	91	221	1.681	42.01
3.3	Have They Identified the Potential Leaders in Various Branches?	11	39	104	231	1.558	38.96
3.4	Whether the Faculty Selection process was based on Excellent Accomplishments, Achievement Motivation, and Readiness to Undertake cutting Edge Academic Programs?	43	56	108	178	1.932	48.31
3.5	Whether the Administrators assisted in Achieve Various Activities like Research, Publications, Consultancy Projects, and Service to the Industry and Community?	12	43	164	166	1.743	43.57
3.6	Whether the Administrators Created Resources for Undertaking the Programs as stated in Qn.5?	15	39	153	178	1.717	42.92
3.7	Whether the Chairpersons offered Counseling?	14	46	58	267	1.499	37.47
3.8	Whether the Administrators Eliminated the Barriers that Obstructed the Implementation?	24	32	62	267	1.540	38.51
3.9	Whether the Administrators offered any Project-Specific Training Programs?	43	66	78	198	2.031	50.78
3.10	Whether the Faculty Members have been provided with Coaches for a given Innovative Program?	56	78	125	126	2.166	54.16
3.11	Whether the Administrator takes Steps to Resolve the Conflicts?	77	96	164	48	2.574	64.35
3.12	Whether needed Development of Industry-specific and Interdisciplinary Programs is Continuously Planned?	29	48	87	221	1.836	45.90
3.13	Whether the Appropriate Mentors are Appointed for the Junior and Middle-Level Faculty Members?	34	52	78	221	1.738	43.44
3.14	Whether Project-Specific Workshops are Planned and Offered to the Project Teams?	27	51	94	213	1.719	42.99
3.15	Whether In-house Seminars are Planned and Conducted to Improve the Attitudes, Skills, and Competencies of the Faculty Members?	38	67	89	191	1.875	46.88
3.16	Whether the Institute Approves and Reimburses the Cost to the Faculty Members to Undergo Appropriate MOOCs?	27	54	69	235	1.670	41.75
3.17	Whether Institute Permits the Faculty to Apply for the Faculty Development Programs Offered by various International Research Universities?	21	43	75	246	1.582	39.55

3.18	Whether the Faculty Members are Involved in the Interdisciplinary Research and Development Programs?	22	56	98	209	1.716	42.92
3.19	Whether the Institute Performs Academic Auditing?	56	78	93	158	2.083	52.08
3.20	Whether the Institute is Conducting Periodical Tracer Studies?	19	43	58	265	1.522	38.05
3.21	Whether the Institute introduced Program Planning and Budgeting System (PPBS)?	12	45	71	257	1.512	37.80
3.22	Whether the Institute has Adopted “Analysis-Design-Product Development- Testing- Improving-Mass Production-Marketing- Maintenance- Scrapping- and Developing Innovative Products”	45	67	97	176	1.951	48.77
3.23	Developing Institute-Institute- Industry-National Research Labs–Community- Partnership Units	56	65	97	167	2.057	51.43
3.24	Guidance in Planning Interdisciplinary Research Projects, Intellectual Properties, and Research Papers.	31	44	63	247	1.634	40.84
3.25	Establishing Consultancy Development Center and Bidding for Complex Projects under MNCs and IDAs.	23	45	76	241	1.610	40.26
3.26	Rewards for Excellence	43	64	78	200	1.870	46.75
3.27	Succession Planning in the Institutions.	56	67	89	173	2.016	50.39
3.28	Discrimination-based on the Imbalanced Issues	65	77	98	145	2.161	54.03
3.29	Ethics	41	65	98	182	1.914	47.86
3.30	Recognition for Innovative Performance and Services	76	84	98	127	2.283	57.08

A: Always, F: Frequently, S: Sometimes, R: Rarely, WA: Weighted Average, W%: Weighted %

### 3.1.1. Synthesis of the feedback

Based on the feedback from 385 faculty members, the best and the poorest practices are identified as follows:

### 3.1.2. The best practices are

Steps Taken for Resolving Conflicts: 64.35%

Recognition of Excellent Performance and Service Rendered by the faculty members: 57.08%

Coaching the Faculty Members for Innovative Programs: 54.16%

Academic Auditing: 52.08%

Developing Institute-Institute-Industry-National Labs-Community Partnerships: 51.43%

Project-Specific Training: 50.78%

Succession Planning: 50.39%

### **3.1.3. The poorest practices are**

- Granting Permission for Applying International Programs: 39.55%
- Identification of Potential Leaders: 38.96%
- Elimination of Barriers and Obstructions for performance: 38.05%
- Conduct of Periodical Tracer Studies of Alumni: 38.05%
- Planning Programming Budgeting System (PPBS): 37.08%
- Counseling by the Chair Persons: 37.47%

## **3.2. Results and discussions**

All 30 questions have been analyzed. Whenever poor practices are identified, suitable interventions based on the desirable improvements are presented in the flowing section. This will improve the in-house faculty development and result in high-performing faculty teams.

### **3.2.1. Need for leadership development in engineering institutions as a part of the institutional development process**

This is an essential step and without this, there can't be any significant growth and development. The growth of the programs and attributes of the graduates are linked to leadership at all levels. The feedback shows that the score is only 40.65%. The administrators should cultivate leadership development practices by recognizing the contributions of the high-performing faculty team. They have to bring autonomy in program planning, undertaking interdisciplinary research, and creating academic innovations. Delegation of needed project-specific authority has to be granted. This also includes accountability. The New Education Policy states that creating a culture of excellence through institutional leadership. According to NEP 2020, the presence of outstanding and enthusiastic institutional leadership that cultivates excellence and innovation through creating merit and performance-based culture is the need of the hour.

### **3.2.2. Strategic planning and institutional development**

The score is 42.01%. The institutes have to develop appropriate vision and mission statements and develop the institute to achieve continuously. All faculties should be involved in this development process. Most of the affiliated colleges need to grow at a fast rate. Strategic planning would give direction to the departments and faculty to plan new programs and courses. Institutional development centers on this step. To overcome all disruptions, strategic planning will provide a path to accelerate the creation of human capital.

### **3.2.3. Identification of potential faculty leaders**

The score is just 38.96%. The potential leaders can be identified by their publications, services, new courses that they develop, and their attempts to bid for complex projects under various multinational agencies and International Development Agencies (IDAs). The New Education Policy 2020 states that higher education faculty members must be valued and supported with excellent preparation and conducive working environments.

### **3.2.4. Selection Process has to be focused on excellence**

The score is 48.31%. The NEP 2020 states that "A further challenge with faculty motivation is that career management is too often NOT based on merit." The faculty should NOT be based on corrupt practices or another arbitrary process. Hiring, retention, salary increase, promotion, and vertical mobility are to be based on merit and quality of performance in teaching, research, and service. Incentives for conducting outstanding work are to be an inherent part of the system. They should increase faculty motivation and commitment to excellence.

### **3.2.5. Achievement motivation**

The score is 43.57%. The faculty join with achievement motivation but most institutes don't follow the standards, approved norms, rules, and procedures. These unethical practices kill the achievement motivation of the faculty members. It is learned that many high-performers resign and leave for overseas universities. There they get all academic support and they grow as world-class leaders in their branches of specialization. NEP 2020 suggests improving service conditions, faculty empowerment, performance management or career progression, and institutional leadership to achieve high quality in higher education.

### **3.2.6. Development of goals for planning and implementing industry-specific and interdisciplinary engineering programs and program development committees**

The score is 42.92%. The high education institutes have to ensure the modernization of labs, workshops, libraries, and WI-PI connections, creating linkages with the industry, creating an ecosystem for excellence, and empowering the high-performing faculty teams. There is a need for a Chief Academic Officer and a Chief Learning Officer who can scan the developments in various world-class universities and develop such new programs in cutting-edge technologies. The institutes should create interdisciplinary postgraduate programs based on the disruptions. Such measures are essential.

### **3.2.7. Counseling**

The score is just 37.47%. Counseling is an accepted method to guide the faculty toward excellent pathways. Senior members can offer to counsel based on the projects, programs, and consultancy projects. If there is a need for professional counselors from the industry, they can be taken as adjunct faculty members to offer project-specific counseling.

### **3.2.8. Resolving barriers**

The score is 38.51%. Most of the dedicated team members face many barriers, obstructions, and bottlenecks but many of them are due to the administrators. All these are to be changed to facilitate easy and quick implementation of the innovative programs.

### **3.2.9. Pretraining**

The score is 50.78%. As one develops needed pretraining in the case of externally funded projects, all such project-specific development processes are to be extended.



### **3.2.10. Coaching**

The score is 54.16%. Coaching is an essential in-house faculty development process. Only in sports activities, the performance of the sports team is contributed by the coaches. In Ph.D. programs the guides are supervisors are recognized. For every faculty member, there is a need for a dedicated coach. Many complex development projects are completed by high-performing teams which are supported by knowledgeable coaches.

### **3.2.11. Conflict resolution**

The score is 64.35%. In many development projects, most of the conflicts are due to project planning, interpersonal relationships, availability of resources, work allocation, completing the project as per the terms and conditions, and sharing the project gains. Conflicts are to be resolved in the beginning. There is cooperation and collaboration among the project members.

### **3.2.12. Program development process to minimize the gaps between industry and institution, planning new programs**

The score is 45.90%. Most of the affiliated institutions are not having academic autonomy to modify, improve and add electives to the curriculum. There could be flexibility in planning industry electives, on-the-job training, and dissertations.

### **3.2.13. Mentoring**

The score is 43.44%. The faculty members need mentors who can advise at various stages of project planning and implementation. The research scholars have the benefit of doctoral committee members and dedicated guides. Similarly, the students need mentors in planning electives, project works, and choosing postgraduate programs. Many students could not complete cutting-edge projects for want of mentors.

### **3.2.14. Workshops**

The score is 42.99%. Faculty development workshops are essential in preparing self-assessment reports for accreditation, and in preparing capacity development. Workshops provide hands-on training to develop a report based on the accomplishments and innovations. They are based on the projects that are to be completed and save time. They assist the project teams to fix a flawless procedure.

### **3.2.15. Inhouse seminars**

The score is 46.88%. In-house seminars will be highly useful for exchanging viewpoints, the strength of various faculty members, resources available in various departments, and previous successful projects completed. The project team can include appropriate faculty also. In-house seminars are essential for the validation of self-assessment reports, project proposals, technical proposals, and financial proposals.

### **3.2.16. massive open online courses (MOOCs)**

The score is 41.75%. In the last two years, due to pandemics, most institutions have switched over to MOOCs. Many international universities offer MOOCs in many upcoming areas for the benefit of global faculty members. The Ministry of Education has funded many

National Institutes of Technical Teacher Training and Research and empowered them to offer faculty development programs. Hence, colleges should facilitate their faculty and students to undergo MOOCs.

### **3.2.17. Exposure to global research institutions**

The score is 39.55%. Only a few institutions that offer postgraduate and doctoral programs have established reasonable linkages with global research universities. The evaluation of Ph.D. theses is to be done by global research professors. A few institutions have collaborated on research projects. The administrators have to follow the vision and encourage the departments to establish long-term co-operations with appropriate universities.

### **3.2.18. Exposure to interdisciplinary dissertation guidance and inclusion in the doctoral committees**

The score is 42.92%. Interdisciplinary dissertations and research work have been well established to meet the human capital demands of the industries. In this 21st century, the institutes have to train all the faculty members to undertake interdisciplinary research work.

### **3.2.19. Academic auditing**

The score is 52.08%. Academic auditing has to be conducted every semester so that all the problems can be identified. Many affiliated institutes would not have established Academic Councils. The performance of the students has to be reviewed and the shortfalls have to be checked and remedial measures are to be implemented. This will improve the quality of the graduates.

### **3.2.20. Tracer studies of alumni**

The score is 38.05%. Tracer studies will be useful for improving the curriculum, upgrading the instructional methods, availing the industrial training, and offering the project/dissertation works. The institutes can introduce tracer studies every year and also establish an alumni unit.

### **3.2.21. Exposure to program planning budgeting system (PPBS)**

The score is 37.80%. PPBS will be highly useful for planning consultancy projects. It will assist in generating internal revenue through testing, and training the employees and executives.

### **3.2.22. Exposure to “Analysis, design, prototype development, testing, improving, manufacturing, marketing, maintenance - scrapping- and developing innovative products”**

The score is 48.77%. This instructional design will improve the attributes of the graduates and bring desired professional abilities. Further, the candidates can focus on product design and fabrication. They can perform very well in selection.

### **3.2.23. Planning short-term and medium-term courses in emerging technologies in collaboration with other leaders**

The score is 51.43%. Emerging technology courses are very much required to meet the disruptions due to Industry-4.0. Many curricula have to be upgraded in Artificial Intelligence,

robotics, machine learning, data science, the Internet of Things, and cyber security. Hence, the institutes have to develop the faculty members and introduce new courses where ever needed.

#### **3.2.24. Guidance in developing interdisciplinary research projects, intellectual properties, and research papers**

The score is 40.84%. The institutions have to focus on interdisciplinary graduate and postgraduate programs. The interdisciplinary research projects are to be introduced where ever needed in collaboration with the R&D departments of the industries.

#### **3.2.25. Establishing a consultancy development center and bidding for complex projects under MNCs and IDAs**

The score is 40.26%. Every engineering institute has to establish a consultancy center by utilizing high-performing faculty members, modern laboratory facilities, and new software. The institutes have to create linkages with the companies in the region. This approach will bring more cooperation and collaboration in exchanging the faculty and industry executives.

#### **3.2.26. Rewards for excellence**

The score is 46.75%. Only a few institutes have implemented the culture of recognizing excellence in research, publication, intellectual product development, internal revenue generation, and developing new courses in emerging technologies. In this 21st century, institutes have to focus on excellence and innovation. Rewards are the best to motivate faculty members.

#### **3.2.27. Succession planning in the institutions**

The score is 50.39%. Many institutes don't plan succession planning. The growth is disrupted when a leading faculty retires. The chain of growth is broken. The institutes have to create a core group in every branch and the research programs are to be continued to create innovations. Success planning is very essential.

#### **3.2.28. Discrimination of the high-performers**

The score is 47.86%. This proves that discrimination has been institutionalized. This will demotivate the high-performing faculty members. The focus on growth has to be supported without any willful discrimination. In many institutes, discrimination gave rise to court cases but the institute lost its reputation. The discriminated faculty have won the cases and joined the institute. The institute has to bear the cost of loss due to the unproductive departments.

#### **3.2.29. Ethical practices**

The score is 47.86%. Ethical practices alone will ensure the uniform treatment of faculty recruitment. Ethics are guided by the constitution. It should reflect in faculty selection, promotion, and grating leave for higher studies. Many CEOs use discretion to bye-pass discrete processes.

### **3.2.30. Recognition for innovative performance**

The score is 57.08%. Most research universities focus on innovation. The faculty members are to be encouraged to undertake innovative programs, and projects without any obstacles. The innovative products developed by the faculty and students will have to be appreciated. Faculty should be given autonomy in academic research and bidding for global projects.

## **4. Synthesis of Open Feedback**

The participants identified issues that are based on decision-making in planning in-house faculty development programs, seminars, interdisciplinary research projects, bidding for global faculty development programs, undertaking industry-specific problems for dissertations, and an ineffective reward system for excellence. All these issues are reviewed and suggestions are given for resolving them.

### **4.1. Limitation of the study**

The research has been based on feedback from 385 middle-level faculty members who are considered representatives of the entire population. The state technical institutes, self-financing institutes, and autonomous institutes have their own culture and limited administrative and financial autonomy. Autonomous institutes have academic autonomy but their programs are to be approved by the All-India Council for Technical Education. All these have a profound impact on the feedback provided by the faculty members who participated in this research.

### **4.2. Suggestion for further study**

A further research study can be undertaken on the use of MOOCs and the Self-directed study method in faculty development. This could be validated based on the program-specific attributes of the faculty members, their publications, and project completion.

## **5. Conclusions**

Many national councils, commissions, and faculty development institutes are conducting needed training and development programs based on the analyses of the expressed needs of 2000- 3500 institutions in India but the needed programs of many institutes are missed. The institute-specific programs can be planned and offered to meet the gaps. The faculty development programs are to be planned based on their needs assessment to foster the faculty's knowledge, skills, and professional, and transformation competencies. The programs should facilitate collaboration between faculty and staff. Further, faculty developers should focus on teaching, learning, instructional design, and academic support of resources. It is essential to prepare a checklist of the transformational areas needed. The leaders have to commission faculty developers from the companies and research universities, implement reward structures and build a culture for learning based on collaboration, teamwork, and shared vision. Get support from senior administrators and the board of governors. This research work centered on 30 issues and 385 middle-level faculties participated. From this research study, it is found that institute-based faculty development programs, the best practices are steps taken for resolving conflicts; recognition of excellent performance and service rendered; coaching for innovative programs; academic auditing; developing institute-

institute-national labs-community partnerships; project-specific training; and succession planning.

Further, the following poorest practices were identified: Denying Permission to the faculty members for applying for international programs; Nonidentification of potential leaders in fast-growing areas; Not eliminating barriers and obstructions to plan and not organizing in-house faculty development programs; failing to conduct periodical tracer studies on the performance of alumni; Not implementing Planning, Programming, Budgeting System (PPBS); and Not conducting counseling by the chairpersons. After in-depth analysis, needed interventions are given to overcome the poorest practices. It is suggested that there is a greater role for the senior administrators in developing the faculty members to plan industry-specific programs, introduce innovations, undertake interdisciplinary research projects, and develop the attributes of the graduates continuously. All of these could be implemented through the mission of the institute.

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