

WIP:Navigating Institutional Change: The Impact of Faculty Mobility in Engineering Colleges in a Kerala Scenario

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Abstract—This research WIP paper describes the impact of faculty mobility in engineering colleges, resulting from mandatory rules in a State Government set up, particularly in Kerala State in India. It affects not only the faculty members themselves but also students, academic programs, and institutional culture. However, there are also potential benefits associated with this practice, viz; knowledge exchange, professional and individual growth, enhanced networking opportunities, institutional development and diversity and inclusion. Faculty members bring with them diverse perspectives, teaching methodologies, and research insights, enriching the academic environment and contributing to professional development among peers. The paper highlights this distinctive challenge faced within the engineering education sector in Kerala State, which is not commonly observed in other regions of India or globally. In contrast to elsewhere, where faculty members usually enjoy the autonomy to select their preferred workplace, such as colleges or universities, this situation presents a different dynamic. The paper also mentions the methodology to be adopted for a comprehensive investigation in this direction, to understand the pros and cons of the unique aspect. A basic initial step in this research is carried out and the preliminary results and discussion are included in the paper.

Keywords—Engineering Education, Faculty, Research

I. INTRODUCTION

Kerala is a state in India, nestled on the southwestern coast of the country and is bordered by the Arabian Sea to the west and south. Its strategic location, sandwiched between Karnataka State to the north and northeast, and Tamil Nadu State to the east and south, has historically facilitated cultural exchange and trade, enriching its vibrant tapestry of traditions. Despite its modest size, Kerala stands out for its exceptional achievements in education, healthcare, and social welfare. This commitment to education has earned Kerala recognition as a beacon of enlightenment and progress. In fact, the educational achievements observed in Kerala have few comparisons among states in India and worldwide[1].

It's evident that engineers now require a more extensive interdisciplinary education to effectively adjust to technological advancements and thrive in a highly competitive global business environment, necessitating a restructured engineering education system.[2]. Over the past decade, engineering education in Kerala has experienced notable expansion, resulting in a significant rise in the number of engineering graduates [3]. In Kerala, an engineering college in the capital city of Thiruvananthapuram often has more established infrastructure in contrast with colleges in the hilly regions with limited facilities and resources, especially physical infrastructure. Being a major educational hub,

Thiruvananthapuram offers more diverse range of academic, research and extracurricular activities as compared to the remote districts of Kerala. This is applicable to the academic atmosphere and student demographics. In this regard, faculty mobility can offer several advantages. Transferred faculty members can facilitate collaborations between institutions, foster joint research projects, exchange programs and knowledge sharing initiatives, thus helping the student community as a whole. Exposure to different teaching contexts and student populations can help the faculty to develop adaptive teaching strategies and refine their communication skills. The experience and diverse knowledge of faculty will help in developing projects based on the needs of the specific society, say, be it the urban one of Thiruvananthapuram or the rural and tribal societies in the forest district of Wayanad.

However, the geographical and cultural diversity of the State can also pose additional challenges for faculty members who are compulsorily transferred from one region to another, such as from a city like Thiruvananthapuram with moderate climate to a hill station like Idukki or Wayanad, with extreme climates and difficult terrain. Adjusting to new environments, weather and work cultures can be stressful and may impact job satisfaction and productivity. Investigating the effects of faculty transfers within engineering colleges, particularly those controlled by the State government, could yield valuable insights.

Literature review reveal that previous studies have not explored this particular area. Hence this paper sheds light on Kerala's specific circumstances and through a balanced examination of the positive and negative effects, offers a nuanced understanding of this often-overlooked aspect, which demands detailed research. The methodology to be adopted for this is also discussed.

II. ENGINEERING EDUCATION: A KERALA SCENARIO

In 1806, the East India Company established Haileybury College in England to train administrators for its operations. Meanwhile, in India, the demand for technical education led to the establishment of institutions like Thomason College (now IIT Roorkee) in 1847, marking the beginning of formal civil engineering education. Subsequently, the growing recognition of the importance of technical expertise spurred the creation of institutions such as the Indian Institute of Science, Indian Institutes of Technology (IITs), National Institutes of Technology (NITs) and numerous other engineering colleges across the country[4]. To facilitate development and assure quality in technical and engineering education and to regulate it,

Government of India constituted an advisory body named All India Council for Technical Education (AICTE) in 1945, as an apex body, which was given statutory status in 1987. AICTE is responsible for the approval of all engineering institutions and has laid down certain guidelines, norms and standards that all these institutions should adhere to. A National Board of Accreditation (NBA) was constituted by AICTE in order to evaluate institutions on the basis of the guidelines issued by the body from time to time [5].

The profound commitment to education in Kerala, evident in its status as one of the most literate states in India, highlights the longstanding importance of learning within its culture[6,7]. This dedication extends to engineering education, with Kerala placing significant emphasis on nurturing technical expertise and innovation. The College of Engineering Trivandrum established in 1939, stands as Kerala's first engineering college. Post-independence, Kerala saw the establishment of many additional engineering institutes. The present engineering colleges in Kerala State can be categorized into five distinct groups based on their administrative structure and funding sources, which is provided in TABLE I[8,9].

APJ Abdul Kalam Technological University was founded in 2014. The engineering institutions in the state (Category 2-5 in TABLE I), once affiliated with other universities, were unified under the affiliation of this university. There are a few Deemed universities also in the State with their schools of engineering.

A. Government Engineering Colleges in Kerala

At one time, Kerala exclusively had government-controlled engineering colleges. In the recent past, the higher education sector transitioned to include self-financing models, broadening opportunities for private institutions to contribute to engineering education. However, the most sought-after category which the best students in the state prefer is still the colleges that are State Government controlled (Category No: 2), though the government aided colleges (Category No:3) are also strong contenders. Affordability with lower fees, better accessibility to students, quality education with experienced faculty and state-of-the-art infrastructure, accredited degrees, good job placement opportunities, high emphasis on research and development, robust industry-academia collaborations are all major reasons for this. Moreover, needy students in these colleges are provided financial aid and scholarships. Strong alumni associations in such institutions support the students in various career aspects.

TABLE I DETAILS OF ENGINEERING COLLEGES IN KERALA

Sl No:	Category	Name of Institution/Details	No:s
1.	Government of India (Central Government-controlled)	National Institute of Training (NIT)	1
		Indian Institute of Technology (IIT)	1
2.	Kerala State Government controlled (KGECS)	In various districts in the Kerala State	9
3.	Kerala State Government aided	Private institutions, but funded by State Government	3
4.	State Government controlled Self-financing	Controlled by State Government organisations	24
5.	Private Self-financing	Controlled by Private agencies	106

The nine Kerala Government Engineering Colleges (KGECS) (Category No: 2), which are distributed across the different districts of Kerala State, including remote areas were established with an aim to promote decentralisation of education and to help in reducing the urban-rural gap. Moreover, it also encourages local talent to stay in their regions, fostering regional development by bringing educational opportunities closer to the underserved communities.

This dispersion of colleges facilitates the integration of local cultures and traditions into educational experience. Additionally, it could promote sustainable development by encouraging education and economic growth in less-developed areas. The details of KGECS in Kerala State is provided in TABLE II, (Government Engineering College is abbreviated as GEC in the TABLE II) [9,10]and the locations are clear from the map in figure 1[11].

In comparison to KGECS, institutions belonging to the other categories often have lower rates of faculty transfers, often nil in private and aided colleges. This can be attributed to various factors such as different hiring practices, tenure policies, and organizational structures. KGECS have more bureaucratic processes or regulations that necessitate transfers, whereas private colleges may prioritize stability and continuity in their

TABLE II GOVERNMENT ENGINEERING COLLEGES IN KERALA (KGECS)

Sl no	Name	Established (Year)	Location (District)
1	College of Engineering Trivandrum	1939	Situated in the capital city of Thiruvananthapuram at the southern tip of the State
2	GEC Thrissur	1957	District in north-west of the State
3	GEC Kannur	1986	In the northern-tip of Kerala
4	Rajiv Gandhi Institute of Technology	1991	In the district of Kottayam, situated in the south-west
5	GEC Barton Hill	1999	Second college in the capital city of Thiruvananthapuram
6	GEC Kozhikode	1999	Situated in Malabar coast of Kerala in the north
7	GEC Palakkad	1999	In the north east
8	GEC Wayanad	1999	North east, in the Western Ghats, hilly terrain, rural/tribal area
9	GEC Idukki	2000	South east, in the Western Ghats, hilly terrain, rural/tribal area



Fig 1. Map of Kerala State with the districts in which KGECS are located

faculty. Additionally, KGECS have larger faculty pools and a broader range of departments, leading to more opportunities for transfers. Hence, this research paper delves into the multifaceted impact of faculty transfers within the KGECS.

III. FACULTY MOBILITY IN KGECS

In the State government sector, faculty transfers in KGECS are often part of administrative policies to ensure equitable distribution of resources and expertise among colleges. These transfers are based on factors such as staffing needs, organizational restructuring and faculty promotions. This process is governed by formal guidelines or regulations set by the State government, which is implemented by the Directorate of Technical Education, Kerala. In contrast, the other colleges have different policies, often driven by individual agreements or institutional autonomy and do not have the same level of regulations governing faculty transfers. The service of faculty members in such colleges is influenced by individual institutional policies, contractual agreements, or specific circumstances within each institution. They have more flexibility in managing their staffing and prioritizes factors such as academic specialization, teaching performance or research contributions when considering transfers.

There are many departments in KGECS, such as Civil Engineering, Mechanical Engineering, Electrical & Electronics Engineering, Electronics & Communication Engineering, Computer Science & Engineering etc. To shed light into this TABLE III provides a typical dataset illustrating faculty transfers within a single department, viz; Department of Electrical & Electronics Engineering (to which the author belongs to), between all the nine KGECS. The data is based on the available State Government orders (GOs) of the corresponding years, issued by the Higher Education of Kerala State. The same are available in their website. [12-23]. Transfers of a similar nature have occurred across all other engineering departments as well, contributing to a substantial volume of faculty transfers. Consequently, this has significant implications for various aspects of engineering education. Excluding data from departments other than Electrical was a strategic choice to maintain the conciseness of the paper and to focus on the primary subject matter. The table outlines the various regions where faculty transfers take place and specifies the corresponding academic periods. The diverse geographical and cultural landscape of Kerala poses unique challenges for faculty members, who must navigate the complexities of adapting to new environments, climates and work cultures, potentially affecting their job.

TABLE III DATA OF FACULTY TRANSFER IN KGECS

Year	Faculty Transfer in the Department of Electrical & Electronics Engineering within the nine KGECS			
	Total transferred	Between city and tribal/ hilly area	From city to city	Whether mid-semester
2019	25	15	10	Yes
2020	4	nil	4	Yes
2021	<i>online classes during Covid period and hence no transfers</i>			
2022	14	6	8	Yes
2023	12	8	4	Yes

This negative impact is more profound and distressing when such a transfer is imposed on the faculty in the middle of an academic semester, which is often the case in KGECS

A. Impact of Faculty Transfer

The Outcome Based Education (OBE) concept adopted in KGECS rely on faculty members to design, deliver and assess learning outcomes effectively[24]. Faculty transfers can have a detrimental impact on the effectiveness of OBE. There can be a damaging effect on the mentality of a whole batch of students, if the faculty is a staff advisor for the batch. The sudden unexpected change in the advisorship will affect the students adversely, as they play a crucial role in providing academic guidance, mentorship, and support to students throughout their academic journey. The loss of a familiar and trusted advisor can lead to feelings of uncertainty, confusion, and anxiety. Another area which is hugely affected is research, which is the backbone of any engineering institution. Research projects and collaborations could face interruptions, impacting the college's innovation and industry partnerships. This section provides an insight into the various ramifications, both advantages and disadvantages, of faculty transfers within KGECS.

1) Academics

Faculty transfers can contribute to a dynamic and vibrant academic community, fostering student growth, learning, and development to any college, especially an engineering college. A faculty member who was previously employed in a college in an urban area is transferred to a college in a rural area, can bring fresh and diverse perspectives, enriching experiences and valuable opportunities for engineering students, especially in their project work, innovation concepts, thus preparing them for successful careers.

The negative consequences of faculty mobility in engineering colleges extend beyond the emotional toll on both students and faculty, as elaborated in this section.

- Faculty transfers may disrupt the consistency of OBE implementation if there is a lack of alignment between the transferred faculty member's approach and that of their successor, particularly, if the departing faculty member was responsible for assessing specific outcomes. This has a devastating effect on the whole concept of OBE, resulting in the potential failure of its original intent.
- If a faculty member who teaches essential courses is transferred, it can disrupt the continuity of the curriculum. In KGECS, faculty members are selected from a common pool, with transfers often not considering the specific areas of research/ postgraduate expertise of individual faculty members. Hence, this challenge is particularly pronounced in postgraduate specialized courses, where the availability of expert faculty members is limited.
- The employability and job offers via campus placements can be impacted when the faculty in charge of the Career and Placement Unit of the college get an unexpected transfer. A similar situation arises when faculty members in charge of the Innovation Center, Business Incubation Center, or Industry-Institute Interaction Centers are transferred. This impact is accentuated in engineering colleges due to the inherent nature of the education.

- At times, vacancies may occur due to faculty transfers, often resulting in less experienced contractual faculty filling these positions. This is primarily because faculty members in KGEs are all state government employees, selected through a systematic process by the Kerala Public Service Commission only at specific intervals.

2) Research:

Research serves as the bedrock of every engineering institution. Faculty transfers can invigorate research activities within engineering colleges, driving innovation and collaboration, especially because of the networking that the faculty possesses. The availability of new expertise will expand the range of research topics and methodologies explored within the institution. Faculty transfers can facilitate knowledge exchange between different academic institutions, thus enriching the research ecosystem.

In engineering colleges, faculty members shoulder a unique set of responsibilities compared to their counterparts in other institutions. Beyond teaching, they often play pivotal roles in research, innovation, and practical application of knowledge. But, the relocation of faculty members, especially the ones renowned for their research prowess, to another college can greatly disrupt projects poised to make substantial contributions to technology.

- The transfer of a faculty member who is a supervisor for PhD scholars disrupts the continuity of the work of their research scholars, who rely on the specialized knowledge and experience of their faculty mentor. In extreme cases, this leads to the discontinuation of research projects.
- Often, the hardware experimental setup for research may remain in the previous college, posing challenges.
- It can be challenging and confusing to determine the affiliation of faculty in research publications when they are transferred from one college to another. This negatively impacts the institution's grading system, which heavily relies on research outcomes and publications.
- Engineering students should engage in projects that are relevant to the local community, which is difficult for new faculty members who may not be fully acquainted with those needs upon arrival to a new region.
- When a faculty member who is serving as the principal investigator (PI) for sponsored projects is transferred to another college during the project period, several disadvantages like disruption of project continuity and potential concerns of the funding agency arises.
- When a faculty member is relocated to a new college without a department matching their expertise, numerous challenges can emerge.

To tackle these obstacles, it is crucial to formulate policies that bolster the research pursuits of the faculty, by offering a grace period for transfer to ensure uninterrupted research.

3) Personal challenges

Managing personal issues during unexpected college transfers poses a challenge for faculty members. The diverse geographical and cultural landscape of Kerala State present

supplementary hurdles for faculty members who experience mandatory yet most often unexpected transfers between KGEs in different regions. For instance, transitioning from a city like Thiruvananthapuram, known for its moderate climate, to hill stations like Idukki or Wayanad, characterized by extreme climates and challenging terrain, can be particularly demanding. The abrupt relocation from Thiruvananthapuram, located at around 4 meters above sea level, to higher-altitude regions such as Wayanad, approximately 2000 meters above sea level, or Idukki, approximately 750 meters above sea level, could pose health challenges for the transferred faculty, further exacerbated by the difficulty of travelling. The abrupt relocation also has implications for the family of the faculty including the education of their children. Adapting to new surroundings, climates, and professional cultures can induce stress and potentially affect job satisfaction and effectiveness.

Offering prior notice of an impending transfer to a specific location, coupled with providing housing arrangements by the authorities, would partially address these issues. This paper forms an integral part of the ongoing research endeavours in this domain, with the aim of understanding the far reaching and extensive implications of faculty transfers in KGEs.

IV PROPOSED METHODOLOGY

The proposed methodology entails a systematic analysis of all aspects outlined in the paper by collecting data from all pertinent stake holders. This will be accomplished through the utilization of questionnaires and individual communications, with the objective of obtaining a sizable sample size for subsequent analysis. Given the unique context of faculty transfers in KGEs, it is important to tailor the survey methodology to capture the specific nuances and challenges faced in this region. The steps involved are as follows:

- **Survey Questions:** Design questions on teaching quality, student satisfaction, institutional support, research productivity, and faculty morale.
- **Pilot Testing:** Conduct a pilot test with faculty, students, and parents to refine the survey.
- **Sampling Strategy:** Target a population of at least 100.
- **Data Collection:** Administer the survey via online platforms, email, or paper-based methods.
- **Data Analysis:** Analyze survey responses for trends, patterns, and correlations.
- **Interpretation and Reporting:** Interpret findings to reveal the impact of faculty transfers in KGEs.
- **Discussion and Recommendations:** Use findings to recommend ways to address challenges or enhance benefits.

V PRELIMINARY RESULTS AND DISCUSSION

A very foundational survey of few faculty members in different KGEs are conducted using Questionnaire with questions on three broad categories, viz, Academics, Research and Personal challenges, the details of which are provided in TABLE IV. The graph in Fig. 2, derived from faculty responses, reflects a small indication of a larger issue within the field of technical education in Kerala State.

TABLE IV QUESTIONS FOR INITIAL SURVEY

No:	ACADEMICS (category 1)	RESEARCH (category 2)	PERSONAL CHALLENGES (category 3)
1.	Was the continuity of OBE affected	Supervisor of PhD scholar	Influence on physical and mental health
2.	Did the transfer take place in between semesters	Did your research get delayed	Adverse effect on education of kids
3.	Was the job placement of students affected	PI of sponsored project	Difficulty in conveyance
4.	Vacancy filled by contractual faculty	Research outcome affected	Transfer between valley and hilly terrain

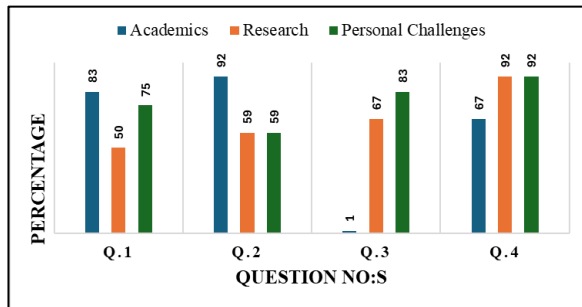


Fig 2. Graph based on responses from faculty members

The clear impact of faculty transfers on different facets of the teaching and learning process in KGEs underscores the need for further intensive research. Expanding the study to include a larger population and other stakeholders beyond faculty members highlights the importance of this WIP paper.

VI CONCLUSION

The paper sheds light on a unique issue of faculty mobility, encountered in the engineering education sector in Kerala State, India which may not be as prevalent in any other state in India or globally. Elsewhere, faculty members typically have the freedom to choose their place of work, be it a college or university. Faculty transfer can be beneficial because it contributes to the growth and development of engineering colleges by bringing in fresh perspectives. However, unexpected and sudden transfers not only disrupt progress towards patents and hinder in-depth technological investigations but also impede engineering contributions to societal advancement and industries. Consequently, the loss of valuable engineering contributions by some of the best faculty members in Kerala State is inevitable.

This paper mainly draws on the personal experiences of the author and several colleagues at KGEs, in addition to the results of a basic initial survey on the topic. The findings strongly suggest the presence of a major underlying issue that requires comprehensive study and analysis. Effective policies and support mechanisms can be framed based on inferences drawn, to optimize positive outcomes and alleviate any adverse effects associated with frequent faculty transfers in KGEs.

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