

**RETENTION OF COMPUTER SCIENCE ENGINEERING FACULTY IN
ENGINEERING COLLEGE/UNIVERSITY IN INDIA**

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Abstract

The five key groups that are traditionally associated with institutions of higher education— a group made up of people from many walks of life (current students, grads, teachers, and employers) who have a vested interest in —are all present in a typical institution of this type. As the faculty members play a critical and backbone part in the process of creating a highly respected academic institution, the rest of the constituents' expectations are wholly dependent on them. Students receive the education and training they need to meet the demands of the market from the members of the teaching staff. It is possible for any institution of higher education to suffer significant reputational damage and fail to meet the demands of the market if it lets go of faculty members who are knowledgeable, professional, and enthusiastic about their work. In this study, we investigate the various criteria and elements that play a role in determining whether a school or higher education institution is successful in keeping its teaching personnel. After that, these criteria are analyzed against the criteria data of "faculty" and "Institutional support" at Institutions were evaluated for their impact by the Accreditation Board for Engineering and Technology (ABET). Study results show that few teachers have left their positions because of the larger student body or the loss of tenure protections. Most schools also value keeping their teachers happy by reducing the amount of hours they have to teach each week, which translates to fewer lecture hours for students encourage them to engage in research within the institution. This research looked at a total of 737 faculty members from 27 different institutes, and it found that just 0.54% of those academic members had departed ABET-accredited universities.

Keywords: Accreditation Board for Engineering and Technology, Teaching Staff, Recruiting, Sustaining, Higher Education

1. INTRODUCTION

Teaching, administrative responsibilities, and research are the three primary components that make up the bulk of a faculty member's job description at an educational institution of higher learning. Maintaining a healthy allocation between all the three aspects all throughout academics year, whether the educational year is founded on a semester-based structure or on

an annual-based system, is crucial for the work engagement of a college professor. Time, devotion, dedication, abilities, and expertise are all prerequisites for each of these three components. It is necessary to take into consideration the teaching of courses that are pertinent to the faculty members' respective areas of expertise or responsibilities. That is, topics that require minimal time investment in the form of preparation. Administrative responsibilities must be delegated to faculty members in a manner that ensures they have the necessary experience, training, and familiarity with the work at hand. Before they are given any new responsibilities, members of the teaching staff need to first attend a seminar or a workshop where they are provided with the appropriate training, instructions, or handbook. The job of a researcher consists mainly of expanding their knowledge in their field of study by conducting additional investigation into it. In any educational institution, however, the distribution of a workload that is fair and balanced requires careful planning for each of the three primary responsibilities that were mentioned and explained above. It is also believed to be of utmost importance to furnish the teaching staff with a pleasant atmosphere in which they can hone and develop their abilities and expand their knowledge. Because efficient and talented employees have traditionally been at the center point of any establishment who can play a crucial role in developing strong academic research institutions, quality management in skills, understanding, and experience in the field of research and classroom instruction is necessary because it will help train teachers to retain their positions. Institutes that consistently seek productive faculty members must implement rules with the capacity to promote and sustain employee retention. In turn, this will help foster an atmosphere at work that is conducive to the professional and personal growth of both faculty members and their coworkers. It's possible that a professor's employment status (tenure track, temporary, contract, provisional, adjunct, etc.) has a significant role in deciding whether they will continue at their present institution. Employees who are hired permanently have greater leeway in their schedules, and employers often expect them to stay in their jobs for longer. Temporary and contract instructors, on the other hand, often leave their positions in search of better opportunities. There are many more factors to think about, including the accessibility of direct investment opportunities and social advantages, the immigration controls of the nation for the purpose of life-planning, and the educational opportunities for one's children. These factors may also have a major impact on teacher retention. The necessity to evaluate a broad variety of different elements is underscored by the quest for answers to the difficulties of recruiting, keeping, and sustaining scholarly faculty and staff in medical schools (Lo et al., 2020). (Lo et al., 2020). Various types of cross-cultural and peer mentorship need to be included into the educational system, as shown in a research designed to increase the variety of healthcare academic staff from underserved communities who stay in their positions (Julion et al., 2019).

Examining whether Accreditation by the Accreditation Board for Engineering and Technology (ABET) is correlated with faculty retention is central to this research. It is vital to emphasize that the objective of our study is not to build a higher cognitive ability; rather, we have noticed that the academic staff may take into account in order to support the decision-making process they go through concerning their professions.

2. LITERATURE REVIEW

The Ajzen theory of retention (Ajzen, 1991) and the development of the theory are only two of several retention theories that focus on retention throughout certain stages of change (Anderson, 2011). These ideas are examined by educators, researchers, and policymakers as a tool for measuring student retention, developing new interventions, and conducting studies. However, one study (Heijde and Heijden, 2006) shows that a superintendent's evaluation of on-the-job performance is the foundation for assessing an employee's employment, and that this rating is in turn connected to professional growth (Reynolds et al., 2002). However, there are three distinct methods in which employability may be assessed: in a conversation with a possible employer, via observations of real teaching, as well as through tests designed to assess such characteristics (Espinoza et al., 2020). The percentage of teachers who quit by the end of their fifth year is projected to reach 40%, up from an expected 20% for first-year teachers (Avalos, 2011). The potential to use prior work expertise in industry or operational settings motivates many job-hoppers to pursue teaching as a second career (Mayotte, 2003). In 1999, we acquired datasets for both the Texas legislature and the state of South Carolina, and within both states' databases, we found that 47% of teachers were movers (Kersaint et al., 2007). 56% of positions were filled by people who already had relevant qualifications, while only 16% were filled by fresh graduates; nevertheless, anywhere between 5% and 50% of instructors change jobs or leave the profession altogether during the first five years of their career (Schaefer et al., 2012). We should bear in mind that various educational institutions may use varying strategies and methods to recruit, evaluate, and retain faculty members with a wide range of skills, experiences, and perspectives. Here, we provide a selection of retention standards culled from a wide range of academic institutions.

2.1 Factors Influencing Student Retention in Higher Education

Using the Ajzen theory of planned behavior, Researchers in the United States looked into teacher turnover, retention, and resignation rates, as well as their prospects for future employment (Ajzen, 1991). When it comes to the prospect of a faculty member deciding whether to remain employed at their current position, family matters are considered to be the most significant concern. It is generally agreed that the primary motivators for joining an institution are one's family, the availability of administrative assistance, the pleasure of teaching, the availability of financial support, and the volume of labor. It is possible that dismissal decisions will be made due to a lower student-to-teacher ratio and the hurried hiring of professionals with inadequate qualifications (Kersaint et al., 2007). Family involvement represents one of the most crucial variables for any indigenous pre-service teacher, according to different research on retention factors for local students and faculty because of their limited presence in major organizations around the world. This is because indigenous people are underrepresented in key organizations in Australia (Trimmer et al., 2018).

It's concerning how little educational research actually applies in practice because of cultural differences. Because there is so little willingness among educators to put the findings of educational research into practice, the findings of educational research are almost never

implemented. Concurrently, a key cause for worry in the field of educational research is the relatively small amount of information added by researchers to the body of professional knowledge. The research was validated through the use of an online discussion forum; however, the forum came to the conclusion However, because to the vast range of cultural variables that might change depending on where you are situated, it is impossible to summarize all the research findings that were done at the primary schools. It is not feasible to conduct research and put those results into practice utilizing techniques that will increase quality in two independent cultures (Joram et al., 2020). (Joram et al., 2020).

Zavelevsky and Lishchinsky (2020) built an environment school model on the jargon of a first-year educator. Novice teachers are those who have between three and five years of experience teaching in the classroom. Personal (information, skills), psychological (relationship with other employees), administrative (legislation and standards), community (supportive social norms), and policy factors were shown to be the key drivers of employee retention (local, state and federal).

A survey of elementary school teachers found that extensive vacations, competitive salaries, and a positive working environment were among the most important factors in keeping teachers in their current positions. It is also vital to mention that moral and monetary congratulating of work are seen as extremely exciting and motivating components in retention, which is why they play a role in keeping school administrators in the same employment (Cockburn, 2000).

Within the context of a longitudinal study that was conducted over the course of three years on second careers and movers, the concepts of attrition and retention were identified as major areas of concern for educational institutions such as schools and universities. The aspects of administrative responsibilities, working circumstances, school The factors that were taken into account in the research were support, mentorship (professional growth), and personal convictions (perceptions, and qualities) (Goodwin et al., 2019).

Effective education calls for the right skills and knowledge, which in turn need a functioning market. The principals of numerous schools conducted a study in order to explain the method of maintaining the market dynamics among their individual schools (Donitsa-Schmidt and Zuzovsky, 2014). (Donitsa-Schmidt and Zuzovsky, 2014). It has been shown by the authors that principals used strategies like overworking the teaching assistants, hiring under or educated and competent teachers, and going to employ momentary teachers for long periods of time in order to meet the supply and demand requirements, all of which contributed to a high turnover rate. Long-term use of substitute instructors was another tactic.

Researchers Zhou and Volkwein (2004) looked at what influences the retention of both appointed and nontenured professors. According to the conclusions of the research, which were drawn from the dataset of the National Study of Postsecondary Faculty (NSOPF-99), tenured faculty members are affected by salary, whereas non-tenured students and faculty are influenced by happiness with job stability. There is a presumption that senior faculty and students will not change positions within the department. Furthermore, seniority, satisfaction with work stability, and satisfaction with pay are the three most influential criteria.

Johnsrud and Rosser (2002) conducted a study to investigate the factors that contribute to the departure of a faculty member from an institution while serving in a variety of academic or administrative capacities. According to a study, the most common reason for departing from an organization is a decline in "morale," which may be understood as "the well-being that an individual or group is experiencing in relation to their work life." The company's culture, the participation of faculty members in decision making, the perception of momentum within the organization, and the degree to which a teacher is known inside the organization are all elements that could lead to better morale.

Faculty members in vocational and technical schools are influenced or enticed to work in the business sector (Rosser and Townsend, 2006). This study provides additional evidence to support the hypothesis that academic staff at public community colleges report high levels of contentment with their workplace. The retention rate of faculty members can be improved through bolstering teachers' access to technology, enhancing the resources available in the library, and modernizing the classrooms itself.

Numerous research and papers have examined the importance of faculty retention in connection to campus life (Anderman et al., 1991; Darling Hammond, 2003; Dee, 2004; Gardner, 2012a; Piercy et al., 2005). If you want your faculty members to be satisfied in their positions long-term, Anderman et al. (1991) say you should create a setting that is both supportive and favorable. Financial investment (Barnes et al., 1998), the time required, and teacher recommendation all contribute to members' level of familiarity with their own institution and are both factors that influence whether or not they intend to resign. As a result, some authors have proposed putting more of a focus on incentives that are based on a timetable and making sure that the environment contains the right stimulus. A recent study has demonstrated that organization Paying top teachers well is crucial to keeping them in their positions (Desselle et al., 2021). Further investigation into the topic by Borman and Dowling (2008) led them to the assumption that mentorship programs, in combination with favorable working circumstances, are crucial in keeping teachers in their positions. Several authors have emphasized the need for robust observational studies or well-designed quasi-experiments to provide a credible assessment. In addition, research by Ponjuan et al. (2011) has shown that faculty members who have a firm understanding of the practicality of the tenure process are more likely to form strong bonds with one another. Many female professors have left the institution in protest of the toxic work environment there (Gardner, 2012a). Recent research showed the need of using IT governance to boost academic achievement (Tawafak et al., 2020). The characteristics of graduates, instructional methods, and assessment standards will all benefit from the use of e-learning technologies.

Coursework, administration, and faculty growth are all subject to change. However, these modifications need to be implemented in a fashion that the faculty finds attractive (Dee, 2004). Interviews and test results are taken into consideration when hiring teachers. Research by Bowles et al., 2014, found that when choosing individuals, it is important to consider not just their experience and education but also their cognitive and interpersonal abilities.

After taking into account all of the elements mentioned above, a few are selected that have the ability to influence the retention rate. The financial rewards, academic prestige of the school, decent working environment, extended vacations, and Employee retention may be influenced by factors such as vacation time, work-life balance, and instructional load. It's also worth thinking about certain other factors, such as Studies that have shown that retention is mostly a matter of opinion, therefore this list is by no means comprehensive. The decision as to whether or not a professor will resign from their position or continue working there is influenced by a wide variety of factors. There is a possibility that the retention rate is also influenced by a good number of additional factors.

2.2 Retention and Professional Development

To retain teachers and engage them in professional development activities, educational institutions make massive investments (in the millions of dollars) in professional development programs (Avalos, 2011). It does not appear that there is a substantial difference between the According to their NTE (National Teacher Examination) ratings, schools are classified as either PDS (leadership training schools) or non-PDS (non-professional development schools) (Long and Morrow, 1995). Comparing PDS with non-PDS, we find that schools emphasizing leadership learning did not influence job commitment (Reynolds et al., 2002). Professional development (PD) organizations often pick exceptional educators to participate in their training and courses. The only benefit PDs have over non-PDS is that their supervisors give them higher grades because they know they do better in the classroom (Reynolds et al., 2002). Teacher training has a little effect on instructional strategies since it often focuses on only one topic, is conducted in small communities, and accounts for a negligible percentage of teachers' working time. Teachers value job security based on regular performance reviews and acknowledgement of their efforts (Gore et al., 2017).

It was noticed that the influence of professional development on a teacher's career had a positive impact on the outcomes for students, although having a lower degree of reliability regarding retention. When teachers are involved in professional development activities provided by their employer, they have a greater perception that they will be able to advance in their current job. Typically, promotions and/or improvements in leadership abilities are the goals of professional development (Coldwell, 2017). A research that examined the link between three elements (distributed management, worked extremely hard, and school teachers happiness) concluded that teachers' levels of job satisfaction are directly related to the degree to which they experience these three aspects in their workplace. It has been shown that organizational development is directly linked to job retention (Garca Torres, 2019), and the strategy that has been applied is jointly team lecturing, watching other instructors, and collaborating on education and training. Participatory learning was also cited as an aspect of professional development. Three colleges in Chile were surveyed to learn more about teacher retention programs within the country's socioeconomic environment. The research found that in low-income regions, employers placed a more significant focus on candidates with strong classroom management skills. In contrast, in high-income areas, employers placed a higher

value on candidates with solid academic understanding. It was thought that starting and maintaining a family was a critical factor in retention no matter where they lived. One way educational institutions in Chile gauge the success of their programs is by how often they hire program graduates (Espinoza et al., 2020).

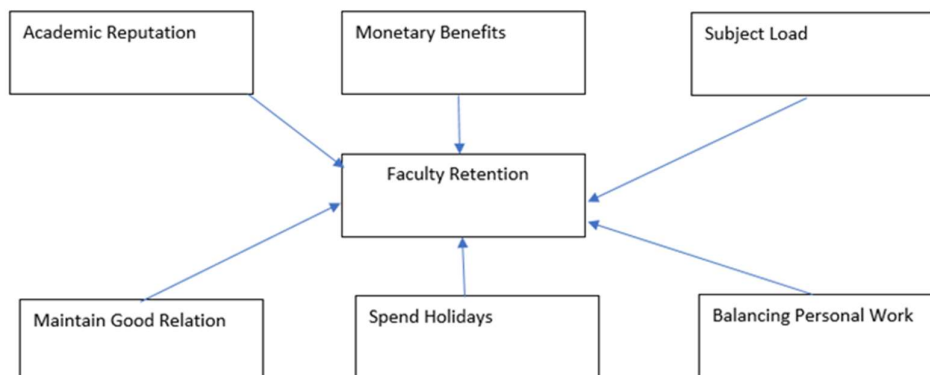


Figure 1 Faculty Retention

3. QUALIFIED EDUCATIONAL INSTITUTION

Any educational institution needs to keep qualified professionals on staff. Faculty members also consider the appropriate equipment arranged by the research centers, in addition to other economic advantages and mineral wealth such as the supply and demand of their professional needs, official resources, opportunities, and the type of relationship for professional training. The design, management, and delivery of assessment findings in terms of learning outcomes are all requirements that must be met by institutes that follow the various academic accrediting standards. It has been claimed that the focus of accrediting is on improving technology, student learning results, and teacher expertise with technology (Tawafak et al., 2018).

Because it is a critical issue that needs prestige for the educational establishment, and they try their best endeavors to keep the high profile faculty, and it plays a role as methods include direct for faculty to decide whether to continue to stay in the position or to quit the job, an institution with ABET accreditation must guarantee the availability of all conceivable required resources for their faculty and students as well as because it is a matter of high prestige for the institution, and it is a matter of high prestige for the institution. Such facilities are readily available in the majority of the To put it another way, one may argue that the faculty and the institution together constitute both a necessary and sufficient condition for the other. It is a common assumption that any institution that wishes to apply for ABET accreditation must meet all of the criteria that are necessary for the achievement of the accreditation goal. We are just interested in two of them, namely criterion number six, which is titled "Faculty," and criterion number eight, which is titled "Institutional Support."

In criterion 6, it is stated that "Each faculty member teaching in the program must have expertise and educational experience consistent with the contributions to the program that are expected from the faculty member." Education, professional qualifications and certifications, professional experience, education and training, contributions to the field, successful teaching,

and communication skills are some of the characteristics that should be considered while evaluating the competency of faculty members. The teaching staff as a whole must possess the breadth and depth necessary to adequately cover the various curricular facets of the program. In criterion 8, it is stated that "Resources offered to the program must be enough to meet program needs. These resources include institutional services, financial assistance, and staff (both administrative and technical)." The program's available resources must be sufficient to entice qualified faculty members, keep them on staff, and support their ongoing professional development in order for the program to be successful. The resources that are available to the program need to be sufficient to purchase, maintain, and run the infrastructures, facilities, and equipment that are appropriate for the program, and they need to provide an environment in which student goals may be attained.

The declarations of both criteria make it abundantly clear that there are stringent conditions that need must be guaranteed and kept up by ABET-approved schools in order to retain qualified professors. To keep teachers on staff, this is essential. It is required of these businesses to show that they have taken reasonable measures to increase the prevalence of retention-boosting features and decrease the prevalence of aspects that may have a negative impact on retention. Therefore, we speculate that institutions that have earned ABET accreditation are more likely to have strong student retention. Based on this foundation, we formulated our study's hypotheses.

Content analysis is a tried and true approach for requirements gathering, much like individual interviews, focus groups, and the nominal group technique (NGT). In this strategy, the accounting transactions of the business, like as documented operational procedures, forms, reports, and current information systems, are utilized for the aim of collecting the organization's needs. Using a document-analysis strategy, we tested our predictions about whether or not criterion 6 and 8 restrictions had an impact on faculty retention at ABET-accredited institutions. For requirements gathering, this is a tried-and-true method. Literature review was the only option available to us at the time since we had the necessary funds to do any other kind of research. Indeed, this is a glaring case in favor of doing methodological triangulation. We would have used more data sources to confirm and validate our results if they had been available to us.

There may be a range of papers accessible at an institution of higher education such as "Faculty Profiles" capable of supplying data on their faculty members. However, because "Self-Study Reports" (SSR) make available baseline user requirements, and the material there is well-structured and ordered, we made the decision to glean such information from them. Faculty profiles are only one example of the many types of institutional paperwork that could be on hand. Take note that submitting a completed SSR document is a mandatory step in the ABET certification process. Therefore, to gather information on teaching size, faculty educational programs, ratio (instructor-students), and academic staff heavy workloads, an analysis of 27 self - concept. self-Reports (for ABET accreditation) was conducted.

Our approach, shown in Figure 1, suggests analyzing documents available at elementary, secondary, and university schools and colleges and evaluating factors that contribute to

retention and dropout rates. We opted to restrict our analysis to colleges and universities that had earned ABET's seal of approval so that we could check the accuracy of our findings against existing data and see how well they stacked up against one another. The fact that we can make this choice was a major factor. Study clearly has been done on the factors that impact students' choices to continue their education beyond high school, and the findings of this research are provided in the form of a table, which can be found in Table 1. (the final column). When compared to the criteria 6 and 8 standards, it will be obvious that accredited colleges go above and beyond to ensure that all retention requirements are satisfied. This leads us to believe that these types of schools have a very high retention rate.

4. FACULTY RETENTION PROCESS

To acquire a dataset consisting of the content analysis method was implemented with backing from institutions and faculty criteria from SSRs at a range of institutions with ABET accreditation. See Table 2 for evidence. Table 2 displays the attrition rate among ABET-accredited institutions: out of a total of 737 students and faculty representing 27 institutions, only 4 (0.54%) have gone. Research conducted by the SSR has shown lead us to the conclusion that the percentage of faculty members being retained at each of these universities is satisfactory. This may be since certain universities are in the process of obtaining ABET accreditation and, as a result, may be adhering to certain requirements in order to keep up their academic performance. Two out of every twenty-seven SSRs disclose that faculty members had left the academic institution, either because they were denied tenure or most likely because the student-to-faculty ratio had become too large. According to the findings of further research, the typical number of classes that a faculty member teaches during a single semester is between two and three.

5. CONCLUSION AND FUTURE WORK

In this research, we looked at the factors that influence whether or not a college or university is able to keep its faculty members. A comparison is then made between these criteria and the qualification data of institutions that have been accredited by the ABET (Accreditation Board for Engineering and Technology), with a focus on the "faculty" and "Institutional aid" categories. The survey found that few teachers have left the institution because of the larger student body and the lack of tenure protections.

Our research isn't aimed at creating an uniform model, but rather at identifying factors that academics might use in making informed choices about their professional futures.

The vast majority of institutions who seek ABET accreditation do so because they are certain that they fulfill all of the criteria for approval. Commonly, the SSR will use procedure documentation to depict the formal system. On the other hand, administrative visits, questionnaire method, and participant observations are superior for evaluating informal systems, or the manner in which the organization really operates. We want to investigate unrecognized, private, and completely unknown organizations in the future to double-check the findings of the current research.

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