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Crafting holistic education in the engineering curriculum as an integrated approach to learning for a balanced life

[1] Dr. K Pramila, [2] V Ajit

[1] Associate Professor and Head, Department of English, PSG Institute of Technology and Applied Research, Neelambur, Coimbatore, Tamil Nadu, India

[2] III Year, Department of Mechanical Engineering, PSG Institute of Technology and Applied Research, Neelambur, Coimbatore, Tamil Nadu, India

Abstract
Holistic education also referred to as 'alternative education' focuses on preparing students to meet any challenges that they may face in life and in their academic and professional career. Engineering curriculum developers and all the stakeholders involved in the education process must realize that it is a misconception to think academic achievement and professional success alone is sufficient to lead a happy life. Modern education, has lost sight of the concept of actively cultivating the development of the whole child; his emotions, his social skills, his spiritual beliefs, his participation and contribution to the country and his role in the world in general. Engineering graduates face a very complex life with anxiety and fear about their future. Many professional bodies especially engineering educators are voicing their concerns about how engineering graduates struggle to find balance and meaning in their professional and personal lives. Proponents of changes in the engineering curriculum advocate a holistic and inclusive curriculum wherein technical subjects, science and humanities and soft skills form part of the curriculum. Holistic education helps in conceptualizing philosophical and abstract inquiries of life and also questions regarding the challenges in life and how to overcome obstacles, achieve success in both professional and personal life. Hence, holistic education allows students to evolve while they are young, as a complete individual who is equipped to face complex realities no matter what their apparent similarities or singularities are. A smooth blend of technical and non-technical, social subjects and humanities can enhance the quality of life of an engineer.

Keywords: holistic, alternative education, spiritual values, inclusive curriculum, cross-disciplinary approach

Introduction

A harmonious blend of inner and outer self is the cornerstone of a balanced life. The pioneers of holistic education were Johann Pestalozzi, a Swiss Humanitarian, and American transcendentalists, Emerson, Alcott and Thoreau among others. Emerson and Thoreau were staunch believers in holistic education and were quite vocal in insisting that education should facilitate the moral, emotional, physical, psychological and spiritual dimensions of the child.

It was Ron Miller, founder of the journal *Holistic Education Review*, who gave quite a comprehensive description of holistic education: "Holistic education is based on the premise that each person finds identity, meaning, and purpose in life through connections to the community, to the natural world, and to spiritual values such as compassion and peace. Holistic education aims to call forth from people an intrinsic reverence for life and a passionate love of learning."

Holistic education also referred to as 'alternative education' focuses on preparing students to meet any challenges that they may face in life and in their academic and professional career. With the absence of support from traditional extended family systems, religion or close community network, it is holistic education both in schools and colleges that needs to address the importance of cultivating human goodness, personal greatness and facing the joys and sorrows and successes and failures in life. In today's highly competitive world, it is a misconception to think academic achievement and professional success alone is sufficient to lead a happy life.

The burgeoning of schools and colleges especially engineering colleges in India has resulted in more young graduates being churned out every year. Schools focus on students securing good marks so they could gain admissions into professional colleges, preferably engineering and medicine. Colleges in turn prepare students to be industry ready. Modern education, as opposed to traditional Indian education, has lost sight of the concept of actively cultivating the development of the whole child; his emotions, his social skills, his spiritual beliefs, his participation and contribution to the country and his role in the world in general. One of the major shortcomings of institutionalized education is that it focuses only one dimension of the student's well-being, intellectual development through academic instruction.

Content

Over the last few decades, engineering colleges in India have been on the rise. As a result the country turns out engineers in lakhs every year across various disciplines. Young people are mechanically trained and programmed to make them industry ready, and industries proclaim they want ready to work engineers, much like the entire instant ready to eat food that has flooded the market today. It is appalling that in this mania for placement; education institutions, parents and curriculum

developers have lost sight of the most important factor – that every student is different and has varying potential and interests. Are we slowly but steadily, throwing our young people into the mighty jaws of the corporate world without connecting them to the real world? In the garb of rankings and placement are we mindlessly preparing engineers who are not aware of their social responsibilities? Is the curriculum giving room for young people to learn about moral values, ethics, environment, economics, culture and the emotional quotient to cope with the stress and pressures at work, home and society?

Engineering graduates face a very complex life with anxiety and fear about their future. This looms large over every aspect of their lives, added to this, is the total lack of exposure to the realities that awaits them after graduation, they have only a blurred vision of what is expected of them by their prospective employers coupled with conflicting opinions given by placement trainers, faculty, peers and even alumnus. Students are also anxious that they lack the knowledge and the ability to understand their position in society. The end result is the irreconcilable conflict between the need to provide the ever-increasing technical knowledge that every engineering graduate must acquire and on the other hand, educators agree that engineering graduates must possess intrapersonal and interpersonal skills and communication skills. Hence, proponents of changes in the engineering curriculum advocate a holistic and inclusive curriculum wherein technical subjects, science and humanities and soft skills form part of the curriculum.

Educators need to understand the world of the young engineers and interweave in the curriculum and implement on a daily basis activities that would promote their holistic development. Students should be guided to self-introspect as deep self-knowledge engages the person morally and spiritually with the life around himself. Once this is cultivated, the students develop healthy relationships and positive social behaviours, emotional balance, self-discipline, resilience and acquire the aesthetic sense. Holistic education helps in conceptualizing philosophical and abstract inquiries of life and also questions regarding the challenges in life and how to overcome obstacles, achieve success in both professional and personal life.

The inclusion of traditional courses into the engineering curriculum is often met with much skepticism and apathy. Engineering educators argue that by incorporating soft skills, languages, sociology economics etc only waters down the engineering curriculum. Moreover, core engineering subjects have more credits and hence, require more time and effort. While acknowledging the importance of core engineering subjects, it is equally if not more important to empower young engineering graduates to become globally competitive. This can be done by providing holistic engineering training that includes exposure to social, economic, cultural, ethical and value-added programmes which is dynamic in all aspects. There is a huge market for such engineering talent and thus, the problem of unemployable engineers can also be redressed.

Many professional bodies especially engineering educators are voicing their concerns about engineering graduates' struggles to find balance and meaning in their professional and personal lives. Students' attitudes toward personal, professional and social responsibility need to be developed. The immediate challenge facing engineering educators is to rethink and re-engineer education to ensure that engineering education is not transformed into producing just a group of skilled technicians. Engineering education needs to be reinvented and engineers must complement their technical and analytical capabilities with a broad understanding of the world and life as a whole. A broad range of social subjects in the curriculum would equip young engineers with necessary social and communication and interpersonal skills.

Engineering has become increasingly dogmatic and a cross-disciplinary approach; science and engineering and humanities foster a healthy anti-dogmatism. Engineering educators must take a closer look at how engineering students are being prepared to enter the "real world." The curriculum developers must work on the premise that one size does not fit all and the curriculum must be developed with sensitivity to the learners' needs and giving room to value teachers' knowledge and skills. The students should be able to successfully develop and interact within today's globalised world. This can be made possible if the teaching system uses the three teaching approaches advocated by Dr. Jack Miller, transmission, transaction and transformation. Miller claims that such a curriculum supports an integrated approach to learning.

By integrating humanistic studies in the curriculum is not including philosophical musings and preaching from the scriptures. All great thinkers agree on the integration of spiritual and scientific perspectives as necessary for a balanced life. Gandhi says,"By spiritual training I mean education of the heart. A proper and all round development of the mind, therefore, can take place only when it proceeds with the education of the physical and spiritual faculties of the child. They constitute an indivisible whole." A smooth blend of technical and non-technical, social subjects and humanities can enhance the quality of life of an engineer. Sri. Aurobindo emphasized the emergence of spiritual energies during successive stages of growth. Hence, holistic education allows students to evolve while they are young, as a complete individual who is equipped to face complex realities no matter what their apparent similarities or singularities are. Students must be taught to face difficulties in life and how to overcome them, and students should be inspired to observe truths, natural beauty and the meaning of life. This would leave them with a positive impact and alter their behaviour and outlook on life for the best.

Conclusion

Engineers need to be educated in a way that enables them to tackle work tasks of interdisciplinary nature, practicing teamwork, and training in social responsibility, ethics and critical thinking. Engineers also find themselves in management positions, and they have to transmit and share their knowledge and accept multiplicity of views and perspectives. Hence, educators must not only encourage team work and friendship but also accommodate differences and support conflict and fear. Education should not be a linear, sequential process; it should strengthen the whole young person as well as acknowledge and strengthen the broad and complex world around young people. Education should help young people to at least try making sense of the world around them and this is possible only if the education system is fluid and dynamic and not standardized. All the stake holders involved in the education process must keep the whole vision

in mind and for the whole thing to be successful; they must have values-driven vision which must be implemented in every context.

Engineering education should not be viewed as a mere technical process which only a few specialists decide what is to be taught and how it is to be taught. Instead every student should through his graduation as a challenging quest and during this journey every individual discovers the joy of learning with the support of the facilitators.

This call to a holistic approach to engineering education is restore the true spirit behind engineering profession. A paradigm shift can be done by offering parallel alternative education that helps engineers to be holistic thinkers and be adaptive in the face of challenge. It would be in the best interest of engineers and society if the engineering curriculum developers embrace the holistic approach as it would benefit future generations.

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