

Creating an Enabling Environment in Technical Institutions for Hands On, Minds On, and Hearts On

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Abstract

The quality of graduates from technical institutions is a cause of concern as a number of surveys highlight that the graduates lack fundamental knowledge, lack practical skills, not willing to work with hands, unable to communicate either orally or in writing effectively, lack interpersonal skills and working in teams. Information Technology (IT) and Information Technology Enabled Services (ITeS) have become the first choice of graduates and in this race they are leaving their core branches of engineering. Technical graduates require thorough professional knowledge and skills as well as a host of generic skills to successfully compete in this globalized world. In addition, they need to be more sensitive to the requirements of the society in order to find solutions to some of the problems being faced by people and in turn improve their quality of life. With mushroom growth of technical institutions during the past two decades, quality of technical education has come under severe criticism. There is a need to create an enabling environment in the technical institutions in order to enable the graduates acquire necessary skills (hands on), higher level cognitive abilities (minds on) and sensitize them to the needs of the society (hearts on). The paper attempts to describe the strategies that can help in achieving the three-fold purpose.

Keywords: Quality, Technical graduates, Enabling environment.

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Factors influencing Engineering Undergraduate students to pursue Higher Education

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Abstract

The education sector in India is growing fast in terms of intellectual resources, newer fields and large funding. In spite of such rapid growth, the number of engineering students opting for higher education remains alarmingly low. Literature suggest that among various factors, college and family related factors play a crucial role in influencing the student's decision to pursue higher studies. With this background, the present study attempts to understand the effect of institutional and family related factors on motivation of undergraduate engineering students to pursue higher studies. A survey questionnaire was developed and circulated among students in government and private colleges and private universities, in and around the city of Chennai. Independent sample t-tests and linear regression test were used to analyze the effect of the independent variables on the dependent variable. Results showed that 'internet' facility or the lack of it at the institute is found to have a statistically negative relationship with students' intention to choose higher education while the factor, 'institute-industry interface' has a positive effect in motivating them to pursue higher education. Moreover, 'family' seems to play a critical role in the decision making process of individuals, confirming the available literature results.

Keywords: Motivation; undergraduate students; engineering education in India.

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Surface Roughness Improvement by Using Deep Cryogenic Treated Aluminium Tool Electrode in EDM

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Abstract

Electrical discharge machining (EDM) has been recognized as an efficient production method for precision machining of electrically conductive hard materials. The most important performance measure in EDM is the surface roughness; among other measures material removal and tool wear rates could be listed. Deep cryogenic processing makes changes to the crystal structure of materials. It makes the crystal more perfect and therefore stronger. Major advantages of these changes are to enhance the abrasion resistance and fatigue resistance of the materials.

In this study, experiments were performed to determine the effect of deep cryogenic treatment of tool electrode on the surface roughness of the work piece. Current intensity (I), pulse on-time (ton), duty factor (τ) and gap voltage (v) were considered as the machining parameters. The data obtained for performance measures have been analyzed using the design of experiment method. Analysis of the influence of cryogenic treatment on the response has been carried out and presented in this study. Results show that it is possible to reduce surface roughness by machining with deep cryogenically treated electrode.

Keywords — Aluminium tool electrode, Deep cryogenic treatment, Electrical discharge machining, Surface roughness.

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Effectiveness of conventional Treatment Processes on Toxicity removal in Cotton Textile Manufacturing Industry

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Abstract

Textile manufacturing industry is highly chemical and water intensive as far as use of these two important resources is concerned. Obviously the chemicals used in the processing of textiles find access into the environment and result in pollution of aquatic environment. Most chemicals used in the textile processing are toxic in nature. Effluent from two independent textile industries manufacturing fiber/yarn and fabric were collected and used to assess the toxicity. This study has been conducted to assess the efficacy of the conventional treatment processes comprising physico-chemical and biological components for toxicity removal. Standard Operating Procedures prescribed for conducting the bio-assay were followed. The study reveals that conventional effluent treatment plants under optimum operation and maintenance conditions are effective in removal of toxicity in the effluents of textile units instead of adopting separate expensive detoxification procedures and technologies.

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Development of Traveling Wire Electro-Chemical Spark Machining (TW-ECSM) Setup

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Abstract

Traveling Wire Electro-Chemical Spark Machining (TW-ECSM) is a way-able method for slicing of several electrically non-conducting materials such as glass and some ceramics. Keeping the capability of wire cutting into consideration for non-conducting materials, in this paper in-house TW-ECSM setup is described including power supply system, electrolyte supply system, electrode feeding system and wire driving system. A preliminary observation of accuracy of cut profile in a borosilicate glass workpiece has also been observed using optical measuring microscope and findings are reported in the present paper.

Keywords: Borosilicate Glass, Spark, Traveling Wire Electro-Chemical Spark Machining (TW-ECSM) Setup.

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An Integrated Model for Institutional Development to create Excellence in Technical Education

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Abstract

Institutional development embraces all its functions, and activities: planning curricula for engineering programmes, teaching, research, recruiting faculty and staff and developing them, training students, constructing buildings & facilities, procuring equipment, offering services to the community and maintaining the academic environment. Internal self-evaluation is vital for enhancing quality. Due attention should be paid to specific institutional development activities to know their opportunities for growth and development by the Governing Council which should be assisted by various professional cells like Academic Council and Cell, Student Services Cell, Industry-Institute Interaction Cell, Research and Development Cell, and Faculty Development Cell. The institutional development activities facilitate the institution's insight about various methods and opportunities to improve the faculty strengths and develop their potential to meet the fast changing global needs and also to create centers of excellence. The proposed Institutional Development model will help to improve the potentials to enhance the academic activities and add value to the technical education imparted. This activity will help the institutions to become centers of excellence in their respective field of specialization if the governing council is supported by the professional cells.

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