Need for Distance Education in Application of Construction Chemicals, Repair and Waterproofing

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1.0 Introduction

Distance education, as the name implies, means imparting education from a distance. The student and the teacher need not be physically present at the same place or interact constantly. Distance education is a learning system which permits an individual to study within the four walls of his residence. In fact, it is an excellent opportunity and also the finest alternative to chase and hunt for higher learning, particularly for those who have missed a campus education for some reason or another.

Today, distance education has become much easier and simpler than in the past, with the development of computers and the internet, thereby increasing the effectiveness and efficiency of imparting and acquiring quality education in any field of knowledge or interest. Books, and other study material, are condensed in an e-book, CD or pen drive and can be emailed with lightning speed to reach the desired destination, with a high level of precision and accuracy. With the tremendous advancements made in the communication network in our country, distance education is no longer a distant dream for those who are thirsty for knowledge. Not only are learning processes simplified, but examinations have also become more convenient. Today, with the click of a computer mouse, students can appear for online examinations at most universities.

2.0 Benefits & Career Promotion

Distance learning has a number of advantages when compared to traditional classroom education. Distance education enables students to save time, energy and money. Students can thus focus and concentrate on the core learning aspects. Therefore distance education is becoming quite popular among all working executives and professionals who want to further their higher learning, developmental, training and career needs. Furthermore, distance education helps youngsters build self-confidence by enabling them to successfully take responsibility for their own education. A well-designed virtual learning environment has been shown to result in higher levels of retention than instructor-led teaching, and at the same time, it is more cost-effective than classroom training.

The benefits mentioned above are of utmost importance to civil engineering professionals employed in the construction industry. Today the construction industry encompasses not only normal construction activities, but also includes construction chemicals, repairs and waterproofing in buildings and infrastructure development projects.

A large number of engineers are employed on civil engineering projects located in rural, interior and distant places where it is difficult to update and enhance any development of technology and management due to logistics troubles. To add further woes, civil engineers are transferred frequently and are often subjected to challenging situations on the job which makes it difficult for them to leave the workplace early to study technical and managerial competence. Engineers are seldom granted or spared time by their employers so they can study and gain more knowledge.

3.0 Challenges of Competition

Market place competition becomes stiffer and tougher as larger segments of society enter employment armed with University qualifications. Knowledge and skills acquired by engineers, particularly civil engineers, become rapidly redundant due to the ever changing environment, converging technologies, global competitions and changing lifestyles. Hence the necessity for re-training and continuous learning and refreshing is a must. Civil engineers are expected to be ever proficient with the latest technologies in construction effectively and profitably. Hence to reach the goal or desired ambition or pinnacle of success in today's parlance, distance education remains to be the only solitary hope under the present circum stances.

To cater to this ray of hope for like-minded enterprising students there are only a few avenues of recognized bodies in the distance education field of civil engineering and they too focus on the basics rather than offering specialized courses. One active body in this area is the National Institute of Open Schooling (NIOS) - New Delhi, which is involved in vocational educational training. Another is the Indira Gandhi National Open University (IGNOU), which regularly conducts several courses in civil engineering education.

4.0 Studies in Waterproofing & Repairs

Coming to the core concept, we know that concrete structures are constantly under attack from environmental pollution, moisture and water ingress followed by the penetration of aggressive chemicals like chlorides and sulphates. These reactions cause damage to concrete, which is aggravated with the passage of time. These defects are manifested in concrete at the construction stage itself, mainly due to vibrations,

localized settlement of sub-grades and foundations, movements of formwork, etc. Later on, other defects creep-in due to excessive loading or from natural calamities and disasters like earthquakes, landslides and fires that affect the overall serviceability.

It is a universally accepted fact that concrete structures are hardly ever absolutely free of water leakages. A concrete structure may remain porous to various degrees and is easily vulnerable to water leakage and penetration. The dilemma of water penetration through roofs, walls, bathrooms, kitchens, basements, water tanks, etc. continues to be a serious apprehension for the construction industry the world over. Dripping roofs, damp walls and leaking tanks are perennial woes that beset structures.

It is common knowledge that water gets trapped in concrete during the construction process itself. This excess trapped water can either trickle out or evaporate in due course of time. This movement of water, and its vapour, through the body of concrete or mortar may cause disruptions by giving rise to cracks, loss of bonding between the base concrete and the finishing layers, etc. This is manifested by the gradual peeling off of paint, etc. Capillary rise of water in brickwork can bring up dissolved salts leading to "efflorescence" and further the moisture will lead to corrosion of the steel reinforcement followed by cracking and spalling of concrete.

The effect of water penetration commonly seen are in the form of rotting, staining, moulding, swelling, shrinkage, warping, decomposition of adhesives, loosening of renderings and weakening of materials, besides corrosion of reinforcements. The problems of water leakages are multifold and each needs to be handled differently. The problem of water leakages from roofs and terraces is different from bathrooms and kitchens or from basements of buildings. After having established the causes of water leakages it is important to know how to carry out the inspection, diagnosis and repair of these leakages scientifically. Thus, on the whole, a clearer understanding of water-tightness is very essential as far as modern construction practices are concerned.

5.0 Exploring an Evergreen Opportunity

It is found that in spite of the tremendous demand and necessity of scientific repairs needed in our country, only a limited few trained engineering professionals were actually available. In addition, the few available were not well-versed with modern construction technology and its developments in the area of using construction chemicals, which makes the scenario even worse and more complicated. Such situations often arise due to lack of exposure of our civil engineers to modern methods of construction using specialized chemicals.

The Dr. Fixit Institute of Structural Protection & Rehabilitation aims to highlight and impart education in this niche area providing scientific and durable solutions for the prevention of water leakages and thereby revolutionizing the very concept of waterproofing technologies. The civil engineers of our generation basically need development in this specific area of the renovation and rehabilitation of structures. The Dr. Fixit Institute of Structural Protection & Rehabilitation specially caters to this specific need of civil engineers in India.

As stated earlier, the Dr. Fixit Institute of Structural Protection & Rehabilitation is fully aware of and understands the difficulties of the current generation of working executives, construction professionals and civil engineers related to upgrading their knowledge and skills. It has recently introduced a one-year part-time graduate level distance education course in concrete technology, waterproofing and repair management in collaboration with the National Institute of Construction Management and Research, Pune to equip and provide professional training in this niche area.

The detail of course modules of this programme is given below:

Module 1

Concrete Technology and Waterproofing of Concrete Structures

- Concrete Technology
- Basics of Waterproofing Technology
- Waterproofing Materials and Applications
- Waterproofing-Standards, Guidelines and Codes of Practices

Module 2

Technology and Management of Maintenance and Repair

- Building Maintenance – Concept and Perspectives
- Distress Analysis for Concrete Buildings
- Repair, Materials and Applications
- Management of Repair, Restoration and Renewal Projects

In fact, no educational institute had ventured out in the past with substantial investment. The Dr. Fixit Institute courses are specially designed keeping in mind degree and diploma holders in civil engineering engaged in the colossal mission of nation building by infrastructural projects of varying sizes. These engineers have to deal with several project authorities and government bodies involving energy, irrigation, transportation, communication, environment and

ecology in the technology, and management and financial understanding.

The special distance education programme in construction technology will appeal to engineers, quantity surveyors, architects, construction project managers, planners, contractors and property developers, as they will acquire competencies to manage the overall construction environment and be empowered to oversee the entire construction business operations. This course addresses the professional concerns and aims to provide students with a competitive edge to realize their distant dream of enhancing their academic qualifications while working or engaging in other professional activities.

6.0 An Opportunity for Academicians too

Now teachers and lecturers in engineering colleges are more occupied and engaged in routine work than professional engineers are at construction sites. They hardly have time for their own learning and development. The teachers themselves are forced to forgo the principle of continuous learning and updating their knowledge bank. The Dr. Fixit Institute of Structural Protection & Rehabilitation seeks to support the Government's aspiration and become a partner in enhancing the skills of in-service teachers in the country through C.I.D.C (Construction Industry Development Council) of the Planning Commission of India and The Indian Institute of Technology, Delhi. The Ministry wants to train more and more teachers, who in-turn could train others so as to create a big chain. The Dr. Fixit Institute wishes to be seen as a provider for this kind of distance education to teachers so that these engineering colleges can send, delegate and improvise lecturers who seek to learn more in the areas of the specializations stated above. Teachers should also look into this wonderful opportunity for a career in this field, as these courses in the Dr. Fixit Institute are now introduced in the University of Mumbai and elsewhere. These successful graduates can gain easy employment as teachers, lecturers, academics, administrators and professional educators.

7.0 Conclusion

Distance education has helped many engineering professionals to furnish and equip themselves with higher education and not to miss out on the opportunities that life throws their way.

The Dr. Fixit Institute of Structural Protection & Rehabilitation is fully confident that this distance education learning will give the participants the desired professional edge in the construction industry and help them gain all the available knowledge in the industry.