

Using Tablet PCs to Develop Engineering Graduates' Employability Skills

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ABSTRACT

Technology and learning shares a symbiotic relationship and their right integration improves students' overall performance. Although academic brilliance plays a significant role in an individual's holistic development, the role of various life skills cannot be ignored in their overall employability. One of the most common technology tools, Tablet PC offers a powerful way to enhance student's employability by improving various essential skills. While poor employability imposes difficulties for functioning in all areas of life and represents a problem in the modern working world, developing these skills through technology integration is likely to be an important solution to the risk of employability. The present paper offers strategies to enhance graduates' employability through the use of tablets PCs in technology education.

Keywords : *Employability skills, Communication skills, Tablet Education, Engineering graduates*

Introduction

In the age of digital literacy, there is tremendous usage potential of new touch interface-driven devices, such as tablets, with a new pedagogical approach to support students to use the technology as learning tools. Academic institutions have started to identify tablet education as having the power to really transform the performance, knowledge and skills landscape. A recent study in India revealed that the employability outcome of Indian engineers sees no massive progress as over 80% engineers continue to be unemployable (National Employability Report, 2015-16). Although the very basis of such surveys are questionable but it is an eye-opener for us and calls for a need to bridge the gap between a rather academic education system and the

realistic demands of the modern workplace by developing 'employability skills' among Gen 'Y' graduates. Employability includes both hard and soft skills, including formal and actual competence, communication and interpersonal skills, and personal characteristics that employers are looking for in any employee. Classroom activities can be greatly productive in an environment where all the students have a tablet PC and receive the teacher's instructions, quizzes, assignments and feedback electronically. Tablet education empowers students to know more and learn faster. It provides information from a large variety of sources and increases access to knowledge. In view of the various benefits of tablet education and mobile learning possibilities, this paper proposes to show how essential skills such

as communication skills, critical thinking, analytical skills, behaviours and technical skills can be developed to enhance employability opportunities of technology graduates' and make them industry-ready.

EMPLOYABILITY SKILLS

a. Communication Skills

The survey 'The National Spoken English Skills of Engineers Report - 2015' finds that poor English speaking skills are limiting the employment and earning prospects of India's Engineering graduates. Most students are not 'industry ready' because they lack communication skills (Infosys, 2008). Employers who took part in NACE's Job Outlook 2013 survey, ranked communication skills at the top of the skills they seek in potential employees. Integrating digital technologies into literacy education will equip students with the new language skills needed for reading, writing, and communicating in digital environments. Tablets may provide potentially useful opportunities for literacy classrooms through digital, interactive books. For example, downloadable books allow students to read text with audio support, word-by-word tracking, and picture animation, highlight text, take notes in the margin and access a dictionary directly within the book itself thereby improving their reading and listening comprehension skills as well as note making and reference skills. Also, the use of text to speech software will help to practice language, and translator software helps to find certain words when speaking in classes. Showing them videos of selected speeches, group discussions, debates etc. followed by a classroom discussion

on observations and analysis will help the students to learn various features of public speaking. Additionally student's performances in the classrooms can be video recorded and shown to them later. Similarly, with options for the reader to further interact by recording and replaying their own voice with the text will improve speaking skills in the form of diction, pronunciation and accent.

b. Critical thinking and Analytical Skills

Tablets can be downloaded with case – studies and scenarios through which language teachers can help technical students to develop their analytical skills. Students can view, observe and analyse these cases at their own pace and discuss analysis in the class rooms in Think-Pair-Share mode. Each case study may have an attached study guide, where students will be asked a series of questions to guide their thought processes and decision-making. The study guide may also include a possible solution, where student can compare their solution with that of the authors of the case. Such scenario- based learning emphasize not only on active learning and problem solving but also foster team work among students.

c. Personal Attributes

Although the possibility of developing soft skills through tablet education is not yet explored, but the use of tablets in the class room certainly improves various individual attributes. The tablet computer will make the students pay more attention in the classroom and concentrate better on learning aspects. The tablet computer will prevent boredom in learning and

improve the student's skills in either playing brain games or solving puzzles and simple problems. These are termed as higher order thinking skills in the parlance of today's education. It will help the students become familiar with new technology which will encourage creativity. Tablet PCs effectively increase interaction between students working in pairs, and promote positive interdependence for the students. Surveys conducted at one university revealed that students report an increase in their attention with the Tablet PC (Brophy and Walker, 2005) and their confidence related to applying concepts learned in class when using the relatively easy notes sharing capabilities associated with the Tablet PC (Cunningham, Sexton, and Williams, 2009). In a study of engineering students, Amelink, Scales and Tront (2012) found that high users of the Tablets were significantly more likely to indicate that they employed self-regulated learning behaviors including: Organization, Metacognitive Self-Regulation, Critical Thinking, Rehearsal, and Peer Learning.

d. Conceptual Skills

Tablets are effective devices in engineering education since they allow digital note taking and sharing of handwritten notes, development of eLearning applications incorporating handwritten examples, classroom presentations which can integrate handwritten notes and most importantly in-class collaboration between faculty and students with portable PCs. Students can write freeform symbols, structures and equations and work through problems, take notes, organize class materials, and store these materials electronically for

future use or for submission to the faculty. With the use of tablets, students can study at their own pace, discuss the meaning of concepts that are being taught, access the online resources and develop a deeper understanding of the material than if they had "crammed" the material on their own from private publishers' study guides. Earlier researches (Frolik and Zurn, 2004; Moore and Hayes, 2008) reported that capabilities associated with the Tablet can assist engineering undergraduates who are enrolled in courses that cover material that is often mathematically and graphically intensive. A pilot study was conducted by Clemson university (2009) between the two groups of engineering students, one group working on paper and the other on tablet PCs. Frequency of actions such as talking, writing, reading and listening as well as scores on relevant test questions and in-class assignments were not significantly different between the two groups. However, significant differences were observed between students working on paper and tablet PCs in terms of how often students were actually focused on each other rather than working alone (36% for Paper vs. 50% for Tablet). Students in the tablet group agreed more strongly with the statements, "Collaborating with a partner on problems helps me understand concepts in this class," and "I paid attention most of the time," compared to students in the paper group. In a study by Department of Electrical Engineering at Virginia Tech (Tront, 2005), ninety percent of the respondents indicated that the digital exercises helped to clarify and solidify the demonstrated concepts.

e. Numeracy Skills

Numeracy or quantitative skill is not just

about competency in manipulating basic number skills. Numeracy is the knowledge and skills required to effectively manage and respond to the mathematical demands of diverse situations (Ginsberg, 2006). It involves developing confidence and competence with logic and reasoning, and requires an understanding of how data are gathered and presented in diagrams, graphs, tables and charts (Graphic organizers). These skills which employers value from any technology graduate are the part of many employee selection processes. Apps with study material covering ample number of numerical problems along with discussion of their solution may be installed on tablets. Here, clicker software may offer great opportunities in resolving quizzes, puzzles related to mathematics and such assignments in the classroom. Such interventions will boost up competitiveness among the students to do better and will prepare them for written tests conducted by the companies during campus placements and enhances the possibility of their placements.

Conclusion

At workplaces, different employability skills are often used in conjunction with one another. The required skills often overlap and are necessary for any task, for example, completing a job might entail gathering and analysing information; using number or mathematical skills; reporting; using computers; working within a team setting; and possibly demonstrating some initiative (Townsend, 2008). The 2010 Horizon Report highlighted that, with mobile computing on the near horizon, “sense-making and the ability to assess the

credibility of information are paramount ... digital media literacy continues its rise in importance as a key skill in every discipline and profession” (Johnson et al., 2010). Here incorporating tablet education gives a clear employability advantage to be gained from better engagement and collaboration, more confidence, decreased ‘time to learn’ and enhanced skills and knowledge retention. Bringing devices such as tablets into the classroom and everyday life of students will in itself be a great learning experience. This coupled with the resources a tablet computer can deliver, such as text and reference books, audio and video resources, internet research, document preparation and review, and specific eLearning applications and activities may offer better educational value. With the use of tablets, m-learning is possible everywhere and anywhere, dependent only on battery life and wi-fi access, but although the technology may aid learning, “the way a technology is used cannot be determined until it is actually used by real people in real settings” (Sharples, 2007). Moreover, in order for tablet education to make a positive change, it is equally important the faculty must revise the way they teach so that their students get the best learning. Using tablets in less typical scenarios, such as developing employability skills offers opportunities for research, evidence gathering and presentation.

Suggestions for future research

The present paper provides way to integrate Tablet education in order to improve employability of technical graduates; however, there is further need for empirical results to substantiate

the same. A focused study to develop and assess employability skills may be conducted on two different groups of students; one with-using and second group without-using Tablet PCs and comparing the ratio of campus placements and selections among the two groups may pave the way to innovative learning strategies and practices in this field.

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