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Innovative Trends on Engineering Education

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Abstract- This paper describes innovative and novel trends on engineering education. Among these trends internet-based engineering laboratory with virtual and physical experiments, smart classes, 3G/4G technologies, and e-learning and m-learning facilities can be expressed. Some of the details and basic information for internet-based engineering laboratory and smart class technologies have been presented in this paper. Hardware equipment, software equipment, and other infrastructures required for smart classes and used tools as new educational technologies have been explained in detail.

Combining the internet technologies with engineering education laboratory, this new education technology has provided not only the practical but also the virtual world experiment ways for the students. These ways were: fully simulated, complete physical experiments, combined simulated and physical device experiments. Similarly, the students have compared the obtained results for the same experiment from both physical and virtual lab. Additionally, the differences between simulation and real results have been provided to deepen understanding of the theory for the student.

Today, education must include a technology strategy for the not only classroom but also school-wide learning environment. This technology is called as smart class technology. Based on the obtained results from the evaluation reports from the different universities, smart class technology have provided the means of how can we help keep students engaged, stimulate a positive learning experience, provide more individualized attention, improve classroom management. Furthermore, it is observed that by providing access to technology at school, the smart classes mitigated the digital divide for the students who may not have access at home, as well. Finally, we concluded that the potential benefits of tablets cannot be ignored and the opportunities afforded by bringing an integrated set of hardware and software solutions in to the classroom.

Keywords- Internet-based learning, e-learning, m-learning, smart class.