

Resolving Ethical Dilemma in Technology Enhanced Education through smart mobile devices

AbdulHafeez Muhammad¹, Farooq Ahamd², Asadullah. Shah¹

¹ Department of Information Systems, Kulliyya of ICT, International Islamic University, Malaysia

²College of Computer Science & Information Technology, Al Baha University, KSA

Abstract *With the recent development of Information and Communication Technologies (ICT) in all sectors especially in education, Technology Enhanced Education (TEE) has become an evolutionary mode in educational institutes by choice and demand. Technology, especially Smart Mobile Devices (SMD) has lot of potential to enrich and accelerate the deepen skills of students, to engage and motivate them in studies for making tomorrow's professionals. Moreover it has helped academic institutions in educational process. On the other hand academic dishonesty and cheating has become an ethical dilemma in these institutions using these technologies. It is a quite concern that graduates producing through TEE are like machines, lacking of ethical and moral values because of this dilemma. To resolve this, authors have proposed to involve traditional players of character development of individual in Learning Management System (LMS) of academic institutions. The paper aims to promote this concept by providing a model to help academic institutions, educationists and researchers to use technology in constructive way for controlling academic dishonesty and transmitting ethical values in educational system.*

Keywords: Education, Technology Enhanced Education (TEE), Academic dishonesty, Learning Management System (LMS), Smart Mobile Devices (SMD).

Received March 20, 2013; Accepted February 19, 2014

1. Introduction

Recent evolution of technological devices and internet has transformed economic and social life style of every individual. These devices have become part and parcel of every one and have made dramatic changes in all sectors of society especially in education, which has reshaped the education into technology enhanced education (TEE). It has become an evolutionary mode of educational institution by choice and demand having lot of potentials to improve and enhance the deepen abilities of students, to engage them in academic activities, to encourage and motivate them to become tomorrow's productive professionals [28]. To build them into skilled professionals, it is necessary for academic institutions to transmit integrity, respect and honesty, and other core social values such as sovereignty, competition, and civil engagement along with teaching domain knowledge and skills [8]. A well-established educational process of higher education produces skilled professionals having ethical and moral values to serve society and nation. This can be seen in figure-1 where a graduate must have both domains.

In TEE, physical infrastructure and class room of academic institutions have been replaced by virtual learning environment providing lot of opportunities for domain knowledge but to transmit ethical and moral values is still a challenge for academic institutions. These technologies are playing vital role in the success of students having lot of opportunities but also challenges. Different studies [17, 3] show that, these

emerging technologies and internet have extended traditional ethical dilemma and have created more opportunities for students to deviate from learning objectives and behave unethically in their academic activities. Academic dishonesty is one the major ethical issues faced by academic institutions in recent technological learning environment. It is defined as students' deviant behavior which contributes negatively on their personality, harm other students and affect the integrity of academic institutions [23]. This flexible virtual learning environment, lacking of face to face interaction of teacher with students and less monitoring are major reasons of these issues. Moreover society members including parents which are primary source of inculcating ethical and moral values are also not playing their roles in TEE as of their busy schedule etc.

Furthermore, reduction in the shelf-life of proficiencies and demand of knowledge has enhanced the significance to bring novelty in educational process to meet the challenges [9]. This paper is an attempt to provide model which can support academic institutions to resolves this ethical dilemma by involving members of society especially parents or guardians along with teachers in virtual leaning environment. The proposed model will not help only to control academic dishonesty among students but also provide opportunities to instill ethical and moral values. In rest of the paper, first we will discuss technology enhanced education and ethical issues in it. After that, a model

would be proposed to help in resolving these issues. Conclusion will be given at the end of the paper.

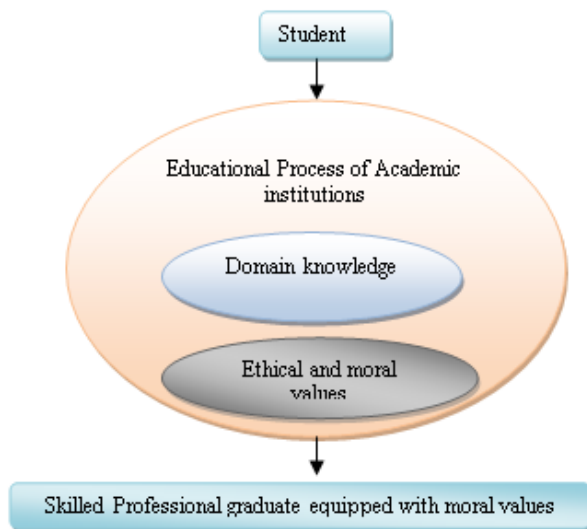


Figure 1. Educational Process.

2. Technology Enhanced Education and Smart Mobile Devices

2.1. Education

Aims and objectives of education, either delivered through any means is to set values, beliefs, understandings, customs and attitudes from adults to youths. It also builds character of students by inculcating rational thinking, self-competence and awareness along with making them literate [27]. Education enlightens us with a purpose and gives the direction of a flourishing life. It is the process that supports upcoming generation to acquire essential knowledge, skills, attitudes and understanding to build the personality of individuals for the welfare of society, while teaching is a sub part of it where a teacher polishes the talents in proportion to their capacity [15].

Different philosophers and educationists have different view about education as follow:

- Developing raw wisdom. (Erasmus)
- Attainment of a sound mind in a sound body. (Locke)
- Creation of sound mind in a sound body. (Aristotle)
- Increasing social efficiency. (Dewey)
- Developing morality.(Herbart)
- Fashioning the will of the individual to enable him to move in harmony with nature. (Huxley)
- Realization of all the possibilities of human growth. (Parker)
- Natural, harmonious, and progressive development of man's innate powers.(Pestalozzi)
- Preparing for complete living (Spencer)
- Character and personality development of the

2.2. Technology Enhanced Education

Technology has provided lot of resources and tools which have made communication and interaction very fast with different synchronous and asynchronous ways. It has also provided lot of opportunities for academic institutions to teach, learn and motivate with diverse methodologies and styles at anywhere and anytime. The simplest definition of technology enhanced education (TEE) is use of ICTs for formal teaching methods. Electronic Learning (e-Learning) and Electronic Education are common terms used for TEE which have become the evolutionary platform for educational process. Different researchers [1, 4] have agreed upon that following are basic elements in e-Learning. The study material

- Communication and interaction
- Assessment and evaluation
- Learning Management System (LMS).

LMS is web based application which has become vital tool platform in education industry to manage, assess and report the teaching and learning process. Physical interaction is replaced by virtual interaction among teachers, students and contents through LMS. Different Learning Management System (LMS) are being used for TEE in academic institution like blackboard (www.blackboard.com), karta (www.karta.com), claronline (www.claronline.net) and Moodle (www.moodle.org). Academic institutions are getting a lot of advantage through LMS like synchronous and asynchronous learning, increased access to information; increased collaboration and interaction, greater communication, pedagogical improvement and cost-effectiveness [16].

Followings are some utilities that all most all Learning Management System have:

- To manage study material.
- To manage asynchronous and synchronous communication.
- To assess, monitor and provide feedback.
- To manage (add & remove) users and guests.

2.3. Opportunities and Challenges in TEE

We can summarize the different challenges and opportunities of TEE as follows:

2.3.1. Opportunities

Flexibility of geographic place and time

- Asynchronous and synchronous communication and interaction
- Travel and other cost can be saved
- Accessibility to course and study material is 24/7 and easy to interact
- autonomy of Learner
- Collaborative work

- Multimedia learning contents
- Auto assessment and feedback

2.3.2. Challenges

- Lack of physical interaction among students and instructors
- Partial attention
- Flexibility resulting deviation
- extra effort , dedication and motivation is required
- ICT skills and resources are required
- Feedback and assessment is limited
- Difficult to concentrate and easy to deviate regarding studies
- Comparatively higher drop-out rate

2.4. Smart Mobile Devices

SMD are defined as, “The devices that are connected through internet and run an open operating system to operate different applications” [14]. These devices have transformed life style of individuals and the ways to exchange information and communication in more advanced and speedy ways. With the advent of internet, personal computers and even laptops were used to access it through dialup. After that , since the evolution of mobile phones, people preferred to use SMD for internet as compared to other devices and it is assumed that SMD would become primary source for internet by 2020 [6]. Mobile users are increasing day by day and mobile technology is growing with the fastest rate as compared with other technologies. Every member of society is depending on these devices for communication and social purposes which are becoming mandatory part of life rather than leisure. SMDs have also attracted education industry because of their functionality, social interactivity, portability, connectivity, compatibility and personalization. Now a day’s, almost all students have SMD in their hands and using for different purposes. Some of them are getting advantages from these devices by using for educational purposes but most of them use it for amusement by wasting the time. A survey report by Course Smart [7] the largest provider of digital books and material shows that students of higher education level are more dependent on their digital devices including smart phones, tablets and laptops rather than anything other. Another study [2] also describes that 57% student of higher education have their smart phone, 60 % suffer addicted to their cell phones, 88% use short messages in campus through mobiles , 75% sleep with their mobiles, 97% use for social networking if they have smart mobile device, and 40 % use for educational purpose before exams. We can see the Relationship between traditional educational set up and Technologies Enhanced Educational set up in table1, which shows how technology has affected different objects.

Table 1. Relationship between traditional and technology enhanced educational setup.

Objects	Traditional Education	Technologies Enhanced Education
Learning	Fixed time and place	Anywhere , anytime and anyplace
Discussion with teacher	Synchronously In class room or office	Asynchronously and Synchronously
Exercises and activities	Limited	Much
Discussion & Communication	Limited	Variety of channels
Deviation from objectives	Not so easy	Very easy
Assessment	Manual by teacher	Automatic by System
Feedback	Directly provided through teachers and society	Provided through system

3. Ethical Dilemma in TEE

Ethics are vital part of any type of education. These are moral values and principles that are accepted by society as right versus wrong [18]. Moreover, it is about the concerns on values, integrity and morality which are assessed regarding the badness and goodness of things. Unfortunately, innovation and development of technologies have extended many problems related to moral and ethical issues. Among these issues, academic dishonesty in institutions is one of major ethical challenge which is affecting negatively on the character and personality of students. Various studies show that the moral and ethical development is declining among graduates and they behave unethically in their activities [3, 29 and 20].

Stahl et al. [24] also highlighted some moral issues that may take place from latest technologies including privacy, data collection, trust, security, no human contact and over dependency on technologies.

Kracher et al. [12] identified six serious ethical issues because of the use of electronic resources and technologies: Access, intellectual property, privacy and informed consent, protection of children and security of information.

Olt [19] also recognized some academic misconduct due to use of internet and electronic resources by students which include students may work together among themselves while in assessment activities , students may use illegal resources in completing their assignments, Copy/Paste from internet is common practice among students , and students may take advantages of technological faults like interruption of internet etc.

Tarish et al. [25] described the effects of smart mobile devices in technology enhanced learning and mentioned that most of the students do not pay attention on their studies and divert themselves by playing and other luxuries through their devices in online environment.

Furthermore, two more studies [5, 21] have also explored the rapid raise of plagiarism in academic institutions because of unethical use of information

technologies and suggested the need for further investigation.

Due to these emerging issues, UNESCO (*United Nations Educational, Scientific and Cultural Organization*) has started special programs about ethics [11]

Kuldeep [13] suggested that these ethical and moral issues like plagiarism, cheating, academic dishonesty and violation of copyright may be controlled by appropriate configuration and use of tools in Learning Management Systems (LMS).

4. Proposed Model to resolve ethical dilemma

It is obvious from the above sections that education is primary a tool to build tomorrow's professionals for the welfare of society but flexible learning environment having lot of opportunities academic dishonesty etc are lacking to produce these professionals having ethical and moral values. Moreover, educational process needs five elements i.e. teacher, content, objectives to be achieved and learning environment for effective results [26] but TEE is lacking to produce fruitful results because of evolution in these elements. Stakeholders have already realized to redesign educational process with this evolving learning environment and transformed roles [10]. Our approach is to involve society members like parents and guardians of students along with teachers in the educational process. These are primary sources of inculcating values and missing in TEE which would help to transmit ethical and moral values by controlling ethical dilemma through SMD. Our proposed model is the enhancement in the suggestion provided by Kuldeep [24] that we can control academic honesty by proper configuration of ICT tools in LMS. Our model would not only help only to control the academic dishonesty but also help to incorporate ethical values to students in the LMS of academic institutions.

Following paragraphs show redefined roles and function of society members and teacher in Learning Management system.

4.1. Society

Society members including parents and guardians play a major role in the moral development of the students. They are best observers and judges of the morality of an individual which suffers more in case of depraved behavior of individual. It is anticipated that these members should be involved in Learning Management System of academic institutions. In the start of academic semester, each student has to assign a volunteer family representative that has to register along with student course registration with the consultation of academic institution. The volunteer has

to sign an agreement with the academic institution that he/she should be sincere, loyal and assist the institutions. As the volunteer would become registered member and user of LMS. He /she would have rights to access the system and would be able to interact with other participants and monitor and observe the progress of relevant students.

A questionnaire about ethical assessment of students should be developed with the help of experts and teachers which should also be given to representative at start. It should also contain questions about attitude, conduct and activities of students that would be taken back at the end of the semester. It should be graded and included in final evaluation of student.

4.2. Teacher

Teacher is the main authority to assess and evaluate the overall progress of students. He/ she with the collaboration of volunteers and experts has to prepare the questionnaire. Teacher has to interact and communicate with the assigned volunteer and encourage to provide the necessary feedback. Teacher has to provide the final grading of the student by accumulating moral development assessment along with the domain knowledge grading.

4.3. Learning Management System

The above-mentioned suggestions have to be integrated in the LMS of institution. LMS has the capability to add volunteer who can access, monitor the academic progress and collaborate with the teacher and student. Shawaar et al. [22] said that the amount of interaction plays a great role in effectiveness of educational process. LMSs have lot of tool to make to have interaction among teacher, student and society member. We suggest to use SMS facility, provided by Blackboard Learning Management System which is the easiest and fastest way of communication. Volunteers should receive all updates on their SMDs from the system.

Other than these, academic institutions must have strict ethical policies which must be implemented by tools over LMS. We recommend to use *Respondus LockDown Browser* [29] which can be easily integrated with all most all LMS and produces focused and controlled testing environment, when the student use this browser for test they are not allowed to other activities like copy/paste. They don't have right to switch on other application or URLs until the test has submitted. Other than this, *Netop* [30] can be used to manage and control online activities of students.

Moreover, each institution must have proper ICT infrastructure where system should notify and

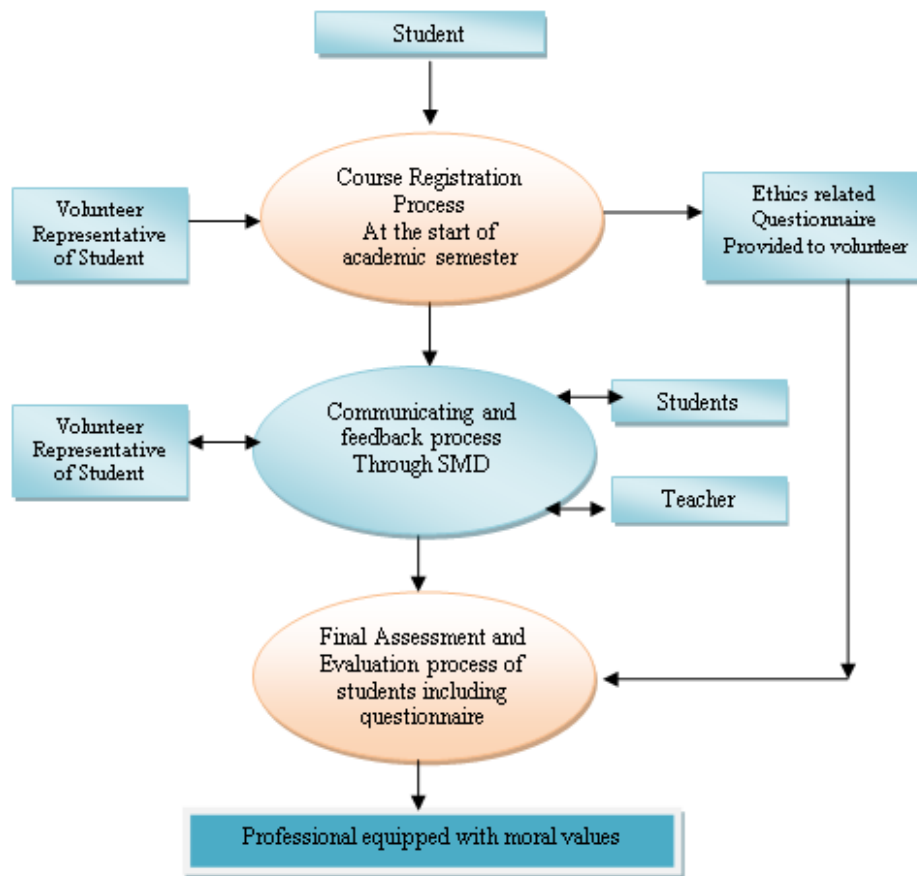


Figure 2. Proposed Model showing three process i.e. Registration, Interaction and evaluation in LMS.

warn automatically when any misconduct or ethical violation is being observed by the students. Furthermore, there must be focused virtual learning environment to monitor and control unethical activities.

The proposed educational process can be seen in figure-2, where only three processes i.e. course registration, communication/interaction and evaluation of student have highlighted.

5. Discussion and conclusion

Although there are huge advantages of technology to assist the process of teaching and learning but deficiency to instill ethical and moral values and developing good character of a student can be easily observed. Much has been written to discuss ethical issues in technology based electronic learning but how these issues can resolved to develop character of a student who will serve the nation in future. The traditional actors and primary source of character development of youth i.e. teachers, parents and guardians of students which are gradually diminishing in technology dependent educational set up , can again be involved in LMS educational platform of academic through different tools and technology . Moreover unethical behavior like academic honesty can be

controlled by making strict ethical polices which can be implemented by latest technologies. Controlled and focused virtual learning environment can be monitored by society members. It is expected that by following this model, the passing graduates would have domain knowledge and good character to serve their family, society and nation as well.

Authors are still working on provided proposed model which would be implemented and validated on academic institution where they are working. It is hoped that with matured questionnaire, feedback of representative volunteers and the methods of communication and interaction would help to develop matured level of mode. It is anticipated that provided mechanism shall compensate deficiency in technology enhanced education in future.

References

- [1] AbdulHafeez M., Asadullah. S., Rosydi. M., & Farooq A. (2013), "Inculcating ethical values in the students through e-learning platform", 5th International. Conference on Information and Communication. Technology for the Muslim World (ICT4M), Morocco, March, 2013.

- [2] Aladejana, F.O., Idowu, L. (2006), “ICT in Teaching and Learning: The Obafemi Awolowo University, Ile-Ife Experience”, 1st International Conference on ICT for Development, Education and Training, Berlin, Germany ICWE, GmbH, pp. 25-28.
- [3] Ali, K. K., Salleh, R. & Sabdin, M. (2010), “A study on the level of ethics at a Malaysian private higher learning institution: Comparison between foundation and undergraduate technical-based students”, *International Journal of Basic and Applied Sciences*, vol 10 No pp. 35-49.
- [4] Alves P., J. Uhomoibhi. (2010), “Issues of e-learning standards and identity management for mobility and collaboration in higher education”, *Campus-Wide Information Systems*, Vol. 27, No. 2, pp. 79-90.
- [5] Baruchson-Arbib S, Yaari E. (2004). “Printed versus internet plagiarism: A study of students' perception” , *International Journal of Information Ethics*,
- [6] Caverly D., Ward, A.& Caverly,M.(2009), “Techtalk: mobile learning and access”, *Journal of Developmental Education*, Vol 33 ,No1, pp. 38-39.
- [7] CourseSmart (2011), “Digital dependence of today's college students revealed in new study from CourseSmart™”, available at <http://www.reuters.com/article/2011/06/01/idUS141122+01-Jun-2011+PRN20110601> Retrieved Feb 13, 2013.
- [8] Croy, M. (1998), “Distance Education, Individualization, and the Demise of the University”, *Technology in Society*, 20, pp. 317-326, 1998.
- [9] Gianluca E., Alessandro M., Cesare T.(2009), “Enhancing managerial competencies through a wiki-learning space”, *International Journal of Continuing Engineering Education and Life-Long Learning* , Vol.19, No.2/3 pp.166 – 178.
- [10] Hasnain, Z., Aziziah A.& Noorminshah A.(2012), “Mobile Collaborative Informal Learning Design: Study of Collaborative Effectiveness Using Activity Theory”, *International Journal of Interactive Mobile Technologies (iJIM)*. Vol 6, No 3 pp.34-41.
- [11] Have, H. T. (2006). The activities of UNESCO in the area of ethics. *Kennedy Institute of Ethics Journal*, Vol 16, No 4, pp. 333–351.Also available at <http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SHS/pdf/KIEJ-2006.pdf>
- [12] Kracher, B., & Cynthia, L. (2004). “Is there a special e-commerce ethics?”, *Corritore Business Ethics Quarterly*, Vol 14, No. 1,pp. 71-94.
- [13] Kuldeep Nagi (2006). “Solving Ethical Issues in eLearning” ,Third International Conference on eLearning for Knowledge-Based Society, August 3-4, 2006, Bangkok, Thailand.
- [14] Litchfield,S.(2010).”Defining the Smartphone” , available at http://www.allaboutsymbian.com/features/item/Defining_the_Smartphone.php. Retrieved on Jan 12, 2013.
- [15] Mucella, U., Melis, S. O., & Eryilmaz, A.(2011),“The effects of teachers’ attitudes on students’ personality and performance”, 2nd World Conference on Psychology, Counseling and Guidance (WCPCG-2011), *Procedia - Social and Behavioral Sciences* , Vol 30 pp.738 – 742.
- [16] Nawaz. A.& Kundi. GM.(2011),“Users of e-learning in higher education institutions (HEIs): Perceptions, styles and attitudes”, *International Journal of Teaching and Case Studies (IJTCS)*, Vol. 3, No 2, pp. 161-174.
- [17] Nejati, M., Jamali, R. (2009), “Students’ Ethical Behavior in Iran”, *Journal of Academic Ethics*, Vol 7, No 4, pp. 277-285.
- [18] Nickels, W.G., McHugh, J. M., & McHugh, S. M. (2008). *Understanding business* (8th Ed.), Irwin: New York: McGraw Hill.
- [19] Olt, M. R. (2002). “Ethics and distance education: Strategies for minimizing academic dishonesty in online assessment”, *Online Journal of Distance Learning Administration*, vol 5, No.3.
- [20] Patel, K. B., Taghavi, M. (2011). “Evaluation of cheating detection methods in academic writings”, *Library Hi Tech*, vol 29, No. 4, pp. 623-640.
- [21] Scanlon, P. M. (2004). “Student online plagiarism: How do we respond? “, *College Teaching*, Vol 51, No 4, pp. 161-165.
- [22] Shawar, B., Al-Sadi, J. & Sarie, T. (2007). “Integrating the Learning Management System with Mobile Technology.” *Proceeding of 2007 International Conference on e-learning, e-Business, Enterprise Information Systems, and e-Government, USA, June 25-28, 2007* pp. 31-36.
- [23] Staats, S., Hupp,J.M., Allace, H. & Gresley, J. (2009), “Heroes don't cheat: An examination of academic dishonesty and students' views on why professors don't report cheating”, *Ethics and Behavior*, Vol 19 , No 13, pp. 171-183.
- [24] Stahl, B.C., Rogerson, S. & Wakunuma, K. J. (2009), “Future technologies: The matter of emergent ethical issues in their development”, *Computation World: Future Computing, Service Computation, Adaptive, Content, Cognitive, Patterns, ComputationWorld 2009*; Athens; 15-20 November 2009, pp.603-607
- [25] Tarish A., Laurel, E., Roben, S., & Ruth, W. (2011). “The ethics of m-learning: Classroom threat or enhanced learner agency?”10th World Conference on Mobile and Contextual Learning, Beijing, China, 18-21 October 2011.

- [26] Tatjana, S., Pogar, I., & Raspor, S. (2010). "ELearning: The influence of ICT on the style of teaching", Proceedings of the 33rd International Convention MIPRO May 24-28, 2010, Opatija, Croatia.
- [27] Wan, N.N., Noor, H., Wan J. & Kamaruzaman J. (2009). "Using Multimedia in Teaching Islamic Studies", *Journal Media and Communication Studies*, Vol.1, No5, pp. 086-094
- [28] Yusuf, M.O. (2005), "Information and Communication Education: Analyzing the Nigerian national policy for information technology", *International Education Journal*, Vol. 6, No. 3, Pp. 316-321.
- [29] <http://www.respondus.com/products/lockdown-browser/>
- [30] <http://www.netop.com/>



AbdulHafeez Muhammad is pursuing his PhD (IT) from Kulliya of Information and Communication Technology, International Islamic University Malaysia. He is graduated MS in Software Engineering from International Islamic University Islamabad, Pakistan. His research area is ICT based higher education and management in ethical perspective through Virtual Learning Environment. This work is carried out as part of his area of research interest and higher studies. He has almost 7 years experience of teaching, research and management in same field.



Farooq Ahmad is a Professor and Head Information Technology Department at College of Computer Science & Information Technology, Al Baha University, Al Baha, Kingdom of Saudi Arabia. He Completed PhD in 1991 from Strathclyde University, Glasgow, UK. His Master's Degree in Computer Science and an MS in Nuclear Engineering both degrees were completed with distinction and awarded Gold Medal. He has more than 22 years of teaching experience in various universities in Pakistan, Malaysia, and Saudi Arabia. His current research interests are in ethical development in computing programs. He has more than 28 publications (journal and conference) and 5 books and chapters in books.



Asadullah Shah is a Professor at Department of Computer Science, Kulliya of Information and Communication Technology, IIU Malaysia. Dr. Shah has a total of 25 years teaching and research experience. He has more than 70 research publications in International and national journals and conference proceedings along with book publications. Dr. Shah has done his undergraduate degree in Electronics, Master's degree in Computer Technology from the University of Sind, Pakistan, and PhD in Multimedia Communication, from the University of Surrey, England, UK. His areas of interest are multimedia compression techniques, research methodologies, speech packetization and statistical multiplexing.