Impact of Health Education Course through E-learning on the Performance among the Students of KFUPM.

Moataz Bellah Mohammad Hassanain

Department of Health Sport and Bioscience, Faculty of Sports Education for Men, Alexandria University, Egypt.

Abstract

E-learning (EL) is the use of Information and Communication Technology like , Internet, Computer, Mobile phone, Learning Management System (LMS) and others to enhance teaching and learning activities. The great advantages of e-learning include making interactions between learners and instructors. There has been a large increase in the number of colleges and universities in the world that offer fully online courses and blended courses. The blended courses have a face-to-face component along with an online component. These courses are less costly for universities to offer and provide students with more flexibility than traditional classes. King Fahd University of Petroleum & Minerals (KFUPM), Saudi Arabia has an E-learning site designed for teaching and learning using module software package. Health education is a professional field that has expanded rapidly, and emphasizes health promotion and disease prevention. Health education builds students' knowledge, skills, and positive attitudes about health. In KFUPM the students have to undergo compulsory PE classes which have a course syllabus containing health education. This study is about the student's feedback and performance in the traditional and blended health education courses. For this study a total of 480 students (230-term 132 & 250-term 141) were selected as subjects .A questionnaire was selected on the health education for each of the four PE courses, 001, 002. 101 & 102. The students were asked to answer the questionnaire for term 132(traditional course) and 141 (blended). Besides, the performance of the students was analyzed to find the difference between the traditional group and the blended group. The results showed that the percentages of the scores of the blended group for the learning process of the all PE health education course contents were better than the traditional group. Further, the blended group had a significant performance when compared to the traditional group in all health education courses. It was concluded that the e-learning is more effective media in enhancing the performance of the students in the health education course .

Key words: online course, blended course, traditional course, health education.

Introduction:

In the present scenario the technological advancement has taken tremendous stride and Internet is one of the area wherein the development has the potential to change not only the way society retains and accesses knowledge but also to transform and restructure traditional models of education, particularly the delivery and interaction in and with course materials and associated resources. Utilizing the Internet to deliver e-Learning initiatives has created expectations especially in higher education institutions. Indeed, e-Learning has enabled universities to expand on their current geographical reach, to capitalize on new prospective students and to establish themselves as global educational providers (Abdallah & Elgazzar, 2009 & Olojo et al., 2012).

E-Learning is construed in a variety of contexts, such as distance learning, online learning and Networked learning (Wilson 2001). E-learning utilizes information communication technology (ICT) to promote educational interaction between students, lecturers and learning communities (Holley 2002). E-learning (EL) is the use of Information and Communication

Technology e.g. Internet, Computer, Mobile phone, Learning Management System (LMS), Televisions, Radios and others to enhance teaching and learning activities. Learning is a unifying term used to describe the fields of online learning, web-based training and telecommunication technology delivered instructions (Oye, Salleh, & Iahad, 2010). E-learning according to Singh et al., (2005) can be defined as a learning process created by interaction with digitally delivered content, network-based services and tutoring support. E -learning is any technologically mediated learning using computers whether from a distance or in face to face classroom setting (computer assisted learning), it is a shift from traditional education or training to ICT-based personalized, flexible, individual, self-organized, collaborative learning based on a community of learners, teachers, facilitators, experts. E-learning technologies offer learners control over content, learning sequence, pace of learning, time, and often media, allowing them to tailor their experiences to meet their personal learning objectives. To manage access to e-learning materials, consensus on technical standardization and methods for peer review of these resources. E-learning presents numerous research opportunities for faculty, along with continuing challenges for documenting scholarship.

Innovations in e-learning technologies point toward a revolution in education, allowing learning to be individualized (adaptive learning), enhancing learners' interactions with others (collaborative learning), and transforming the role of the teacher. As information and communication technology progresses, e-learning is emerging as the paradigm of modern education. The great advantages of e-learning include making interactions between learners and instructors, or learners and learners through the asynchronous and synchronous learning network models. E-learning characteristics fulfill the requirements for learning in modern society and have created great demand for e-learning in the institutes of higher education (Katz, 2002). Electronic learning has now been recognized to have eased out learning process and have developed achievements of students with the ease of technology usage. Electronic learning or the online education has transformed traditional classroom strategies by broadening its scope which is no more than a genius way of reaching out to those who do not have the necessary resources to finish schooling (Paechter et al., 2010). Many countries are making progress in the field of virtual education and have many disadvantaged areas without any school for children. On the other hand, UNESCO has a lot of interests in such areas, where children are deprived from general education. The e-learning for students in these areas are very important in educational science. This technology can improve students' academic achievement as well as having reached to a certain standard level of education with no access to schools, then by this technology they will achieve to educational provisions. UNESCO has a lot of interests in e-learning and designation of more useful equipped systems for these areas (Magnoson, Dall & Chiland, 2010).

Nowadays E-learning has a competitive advantage and many universities have implemented it and this has impacts on students' performance or GPA. However, still there are other universities and academic institutions that use very low interactive E-learning which is not enough to contribute to the performance of the students. In contrary to that, other higher educational institutions use highly interactive E-learning which directly improves students' performance in general (Rodgers, 2008). Today technology is a tool used to remove geographical barriers and facilitates everybody to learn anytime and anywhere without the presence of the lecturer. The main purpose of E-Learning is to increase accessibility of education and reducing costs and time as well as improving students' academic performance. This approach of learning facilitates different students at different continents to attend the same classes almost at the same time. Nowadays, technology is becoming the medium for

teaching and learning without being at university campuses. It has been found that students in higher educational institutions that engaged in E-Learning, generally performed better than those in face-to-face courses. Holley, 2002, found that students who participate in online/ E-Learning achieve better grades than students who studied traditional approach. As result of this finding E- learning is growing very fast and became popular and that is why many higher educational institutions and universities are adopting to virtual learning system.

While longitudinal studies are done, most of evidences suggests that e-learning can deliver substantial positive effect such as: students' engagement, teachers' positive attitudes and personalized learning, family interaction and parental involvement (Intel, 2009). Richard (2004) examined the differences between the academic achievements of postgraduate business students. His results showed students, on the average, did better in the e-learning mode. Age and gender did not appear to moderate performance in any way except for those students under 33 who did better, on the average, in the e-learning mode. On the aspects of cognitive process on e-learning, Yazdi and Zandkarimi (2012) have found that correlation between cognitive outcomes and using technology between students is significant. They indicated that using technology instruments can clearly increase students' cognitive outcomes. Andrewartha and Wilmot (2001) also have studied the use of multimedia to argue the student's' learning as a strategy for enhancing active learning among students. In this study they developed a multimedia course on 'editing' to replace traditional classroom based teaching on editing subject. The researchers concluded that multimedia was as good as traditional classroom instruction and sometimes is better, because students were more actively engaged with the material.

Volery (2000) argues that the fast expansion of the Internet and related technological advancements, in conjunction with limited budgets and social demands for improved access to higher education, has produced a substantial incentive for universities to introduce eLearning courses. Volery (2000) continues that if universities do not embrace eLearning technology that is readily available, they will be left behind in the pursuit for globalization. Ribiero (2002) argues that if universities are to maximize the potential of eLearning as a means of delivering higher education, they must be fully aware of the critical success factors concerned with introducing online models of education. O'Hearn (2000) contends that university structures are rigid and unproven, regarding the incorporation of technological advancements. Holley (2000) states that eLearning is difficult to implement without the full cooperation and support of lecturers, as

the degree of interaction between lecturers and students is still predominant in eLearning environments. Finally, are traditional universities able to compete with other independent education providers in relation to social demands for 'lifelong learning' and globalized education services? (O'Hearn 2000).

Why E-learning course

Over the past decade there has been a large increase in the number of colleges and universities in the world that offer fully online courses and blended courses (Al-Qahtani, & Higgins, 2013). The blended courses have a face-to-face component along with an online component. These courses are less costly for universities to offer and provide students with more flexibility than traditional classes (Adam Driscoll et al., 2012). In some universities, their E-learning does not add any value to the teaching and learning activities of the University and perhaps they do not investigate the impact of E-learning on student academic performance and achievement (Christian & John Grandzol, 2010). Much research has not been done on the relationship of E-learning use and student academic achievement.

King Fahd University of Petroleum & Minerals (KFUPM), Saudi Arabia has an E-learning site designed for teaching and learning using module software package. Development of comprehensive online courses at KFUPM goes back to 2002 the time of the e learning initiation in the University. The early policy of course development depend on the faculty members efforts in all stages. In that early period Faculty member (as subject matter expert) together with a local team of graphic designer, content programmer from within the university staff involve in the development of the online course. Although, the early developed courses were very useful and comprehensive, they were lacking the scientific standards of course development. Additionally, the full engagement of the faculty member in the development process and the tasks required to be fulfilled put a great load on the faculty. Therefore, from the year 2006 the KFUPM started recruiting a development team that can help in producing online courses that meet the international standards. Moreover, the e learning center under the Deanship of Academic Development at KFUPM developed its own standards and measures that followed in the developing of the online courses (Mustafa Hariri, 2013).

I. Standards of development of online courses

At KFUPM the online course is defined as:

"A distance-education, multimedia-rich course that utilizes the features and tools of Internet/Intranet environment, and is conducted and delivered completely through online medium. The Online Course should use the necessary tools and be comprehensive enough so that it is considered a viable replacement of the traditional face-to-face method of teaching. The course should encourage engaging the learner actively and effectively with the instructor, monitoring, providing prompt feedback, evaluating and facilitating enjoyable, self-directed and active leaning. This definition goes in line with the international standard and definition of online courses and National Standards for Quality Online Courses NACOL(Christian & John, 2010). Main features emphasized in the course are; multimedia-rich, comprehensiveness, actively encourage learner engagement, providing prompt feedback and facilitating enjoyable, self-directed and active Learning (Mustafa M Hariri, 2013).

The developed online courses at KFUPM should consist of; Course Contents, Communications, Assessment, Feedback, and Management components. They should also be designed to put learners into perspective; clearly spells out learning issues, and covers course contents adequately. Those issues are also emphasized in the section A: Content of the National Standards for Quality Online Courses (Mustafa M Hariri, 2013). Additionally, issues related to students engagement and motivation are also considered as part of the requirements of the online course. The courses should also illustrates concepts adequately and provide regular feedback. The developed online courses need to be considering the issues of collaborative learning activities where students interact with the instructor and with each other through the Discussion Boards, Chat, and Private Mail features through Blackboard 9.1. Additionally, active learning in the developed course also achieved through incorporating interactions within the courseware, which make the course engaging and stimulating.

Health Education:

Health education is a professional field that has expanded rapidly, and emphasizes health promotion and disease prevention. Its goal is to facilitate voluntary health-related behavioral and social change through the application of principles of behavioral and social sciences (Enrique, et al., 2011 & Elaine & Jeff, 2011).

Health education is a social science that draws from the biological, environmental, psychological, physical and medical sciences to promote health and prevent disease, disability and premature death through education-driven voluntary behavior change activities as well as the living and working conditions that influence their health (David, et al, 2008).
As such, health education is concerned with motivating

and enabling individuals and groups to assume responsibility for their health by learning and adopting behaviors and supporting social policies that can promote and maintain health and also to improve health knowledge, attitudes, skills and behavior (Mallie et al. 2014). Areas in the health education include environmental health, physical health, social health, emotional health, intellectual health, and spiritual health (Chagas, et al., 2012).

The learning outcomes of health education

Health education builds students' knowledge, skills, and positive attitudes about health. Health education teaches about physical, mental, emotional and social health. It motivates students to improve and maintain their health, prevent disease, and reduce risky behaviors. Health education curricula and instruction help students learn skills they will use to make healthy choices throughout their lifetime (Farid & Sharaf, 2011). Thomas R. Frieden, (2010), states that effective curricula result in positive changes in behavior that lower student risks around:

Alcohol, tobacco, and other drugs

Mental and emotional health

Nutrition

Physical activity

Prevention of diseases

Obesity

Injury prevention

Health Education at KFUPM

Physical Education Department has been existing at KFUPM right from its inception and it was offering sports activity for its students which was compulsory and a core course. It is pertinent to note that KFUPM is the only university in the gulf area which has made physical education mandatory for all its students. Every student has to undergo two hours per week of physical education classes which is one credit hour. The PE courses have been segregated for different levels as per the university norms. PE Department offers PE 001 & PE 002 which is termed as orientation courses and PE 101 &PE 102 which are called as sophomore courses. The syllabus and the course content for each of the course is specifically prescribed and approved by the Ministry of Higher Education, Saudi Arabia. If a student fails to complete any one of the PE courses he is not graded and has to wait for the degree till he completes all the PE courses.

PE courses have different syllabus and course content which are as follows:

Health Education – 4 weeks

Pre and Post Physical Fitness Test – 3 weeks

Physical Education Activity- 8 weeks

Each of the above area is given assessment test and the students are graded based on their performance in each category.

The course content for health education for all the PE courses (KFUPM, CASS, PE Dept. 2009) are hereunder:

PE 001

General Personal Health (Teeth- Skin-Feet- Clothes-Sweat)

Nutrition (Balanced Diet- Food Ratio- Malnutrition- Water- Nutrition Chart- Food Pyramid)

General Health and Fitness (Body Composition- Cardio Vascular Endurance)

Glossary of Words

PE 002

Addictive Habits (Addiction- Smoking- Alcohol- Drugs)

Muscular Strength, Muscular Endurance and Flexibility

Obesity

Glossary of Words

PE 101

Blood Pressure- Hypertension- Hypotension- Heart Rate

First Aid and CPR (Techniques and Implementation)

Cholesterol

Diabetes (Types of Diabetes- Blood Sugar- Permissible Limits)

PE 102

Anatomy (types of Bones)

Posture (Posture Examination)

Joints (Types of Joints)

Muscular System (Types of Muscles- Major Skeletal Muscles and their Location)

Sports Injuries- Common sports Injuries and their Treatment.

Taking all the above factors into consideration, the investigator had in the back of his mind to foray into the area of e-learning which in a way is a part of the higher education and try to develop the learning process of imparting health education course content through e-learning. This, in a way is an innovative idea as the literature does not show any single attempt to develop health education course content through e-learning. This paper examines the issues surrounding the implementation of Health Education Course through E-learning on the performance of the students of KFUPM into higher education, including the structure and delivery, the implications to both students, teachers and the global impact on society.

Methodology

A total number of 480 students were selected from the orientation and College courses of KFUPM who were undergoing the PE courses in the term 132 (year 2013-14) & 141(year 2014-15) in the following manner:

Table-1 indicating the terms and the number of students selected from the PE Courses

Term	Course	No. Of students	Course	No. Of students	Course	No. Of students	Course	No. Of students	Total Number of students
132	001	30	002	96	101	30	102	74	230
141	001	90	002	30	101	90	102	40	250

The selection of the subjects was done from the two terms 132 (second semester) and term 141(first semester) as shown in table 1. It is pertinent to note that in the second semester the PE 002 and PE 102 will have more number of sections than in the term 132 while in the term 141 (first semester) there will be more number of sections for PE 001 and PE 101 courses. Hence the subjects for the study were picked as per this norm. In the term 132 the total numbers of students were 230 and they were named as group A, while in the term 141 there were 250 students and were named as Group B. The subjects from the group A underwent the health education course by the traditional method which is the face to face method, while the group B had the health education in a blended fashion since they underwent the health education course by both the traditional method and the online method. The online course on health education was developed for the first time in KFUPM and implemented for use from term 141 i.e. year 2014-15 for the faculty and the students. The online method of health education course material was available to the students through the Website of the KFUPM which had the Black board 9.1. The students were asked to upload the course syllabus, course content and the material through the facility of Black Board 9.1 and make use of the online material for the health education apart from the class room teaching. The performance of the Group A was recorded from the evaluation of the Health education scripts at the end of the health education course for the term 132. In the same way the performance of the Group B was recorded for the health education courses for the term 141. The comparison the performances of Group A were done with Group B to find out the effect of the study variable. Further to this to find out the effect of the health education online learning a questionnaire was designed with the expert opinion in the field of Health education. To find the reliability and objectivity of the questionnaire a pilot study was conducted and the errors were corrected and a final questionnaire was drafted. This questionnaire was made available to the all the subjects of the study in the PE courses of the KFUPM to elicit their feedback. The same was also analyzed after collecting the data. Mean, standard deviation and 't' test were the statistical tools which were used for the analysis of the data.

Results

Table 2 showing the percentages of responses in the health education for PE 001course

	Questions	Term	Strongly Agree %	Agree %	Disagree %	Strongly Disagree %	Undecided %	Weightage %
1	The curriculum of PE and Health (C.pe & H) helps in inculcating personal healthy habits in the students	132	13	70	13	3	0	76.0
		141	39	51	7	1	2	84.2
2	The physical education & Health content aptly gives the details of how to take care of teeth & skin	132	23	67	7	3	0	80.7
		141	39	46	11	2	2	82.0
3	The physical education & Health content gives insight into aspect of taking care of feet and clothes	132	13	43	37	3	3	66.0
		141	36	44	18	2	0	79.1
4	The C. pe & H provides the information with regard to sweat, its affects and the precaution to be taken after the conclusion of the training	132	30	50	13	7	0	78.0
		141	29	56	11	4	0	79.6
5	The C. pe& H gives insight into the right type of footwear for physical activity	132	7	50	33	7	3	64.7
		141	31	46	14	2	7	78.2
6	The information with regard to the type of clothes to be worn while performing physical activity is rightly described in the C.pe &H	132	13	43	37	0	7	66.7
		141	26	51	17	1	6	76.9
7	The C. pe &H provides basic information with regard to the nutrition	132	13	47	17	3	20	70.7
		141	33	50	9	0	8	81.6
8	The information with regard to the intake of calories per day is provided through the C. pe &H	132	17	50	23	3	7	71.3
		141	32	50	11	4	2	79.8
9	The C.pe & H points out the balance diet to be taken every day for an individual's need	132	30	43	20	7	0	75.3
		141	28	50	11	6	6	77.8
10	Through the C.PE & H I had the insight into the Energy resources like carbohydrates, proteins, fats, minerals, vitamins and water	132	40	43	13	3	0	81.3
		141	34	56	7	2	1	83.1

Table 2 indicates the percentages of responses of the students of both the traditional (term 132) and blended courses (term 141) for the PE 001 in health education. There are 10 questions with regard to the personal health, nutrition and general health and fitness of the students for the PE 001course. It is observed that the highest percentage of agreed recorded for the blended courses students was 90% for the questions 1 and 10 and the highest for the traditional course was also 90% for the question no 2. The least recorded for agreed for the 1st traditional group was 56% for the questions 3 & 6 and for the blended group was 77% for the question no.5 & 6. Except for the question 2 which recorded 90% in all other questions the percentages of the blended course outnumbered the traditional one. In the traditional group for question no 3 &5 the percentage disagreed was 40 each which by all standards are high and 20% were undecided for question no. 7. In contrast for the blended group the highest disagreed was 20% for question no. 3 and 8% were undecided for question no 7. Further to this, the table also speaks of the weightage for each of the question for the group A and group B for the PE 001 course. It is observed that the highest weightage for the traditional group A was 81.3% for question no. 10 and lowest of 64.7% for question no. 5, while the blended group B had the highest weightage of 84.2% for question no. 1 and the lowest of 76.9% for the question no. 6.

Table 3 showing the percentages of responses in the health education for PE 002course

	Questions	Term	Strongly Agree %	Agree %	Disagree %	Strongly Disagree %	Undecided %	Weightage %
1	The C.pe & H gives proper information with regard to addictive habits to the student.	132	46	46	8	0	0	85.8
		141	50	50	0	0	0	90.0
2	The ill effect of smoking are provided to the students through the C.pe & H	132	36	47	13	2	2	81.0
		141	60	33	0	7	0	89.3
3	The addictive effects of Alcohol are explained to the students through the C.pe & H .	132	36	50	14	0	0	81.9
		141	33	60	7	0	0	84.0
4	The effects and precaution to be taken with regard to the use of drugs is provided in the C.pe & H	132	42	42	10	6	0	81.7
		141	40	50	7	3	0	84.0
5	The fitness components of muscular strength and muscular endurance which are very important for sustenance of life are highlighted through the C.pe & H	132	42	36	22	0	0	79.6
		141	30	50	17	0	3	78.7
6	The effect of flexibility on the movement of the body and its relevance to life are explained through the C.pe &H	132	26	47	22	1	4	75.2
		141	33	57	7	3	0	82.7
7	The evaluation procedures of the fitness components through the test of squat , sit up & sit and reach are familiarized by the C.pe &H	132	26	43	16	10	5	73.8
		141	20	67	10	3	0	78.7
8	The gaining of weight, the risks of obesity are explained in the C.pe & H.	132	40	40	16	1	4	80.4
		141	33	50	13	3	0	80.0
9	The methods of assessing obesity are practically demonstrated and familiarized through the C.pe & H.	132	34	36	21	3	5	76.3
		141	23	53	13	3	7	76.7
10	The weight control management is highlighted to the students through the C.pe & H	132	20	42	27	5	6	69.8
		141	27	43	13	7	10	75.3

Table 3 clearly gives the percentages of responses of the students of both the traditional (term 132) and blended courses (term 141) for the PE 002 in health education. There are 10 questions with regard to the addictive habits, muscular strength, muscular endurance, flexibility and obesity for the students undertaking the PE 002 course. It is observed that the highest percentage of agreed recorded for the blended courses students was cent percent for the questions no. 1 and the highest for the traditional course was also 92% for the same question followed by 86% & 84% for question no. 3 & 2 respectively for the traditional group. The percentages with regard to the PE 002 course for the blended course for term 141 outnumbered all the 10 questions when compared to the traditional one. In the traditional group for question nos. 10, 7 & 9 the percentage disagreed was 32, 26 & 24 respectively which by all standards is high and only 6% were undecided for question no. 10. In contrast for the blended group the highest disagreed response was 20% for question no. 10 and 10% were undecided for the same question. This apart the table also gives information about the weightage for each of the question for the traditional and blended group. The highest weightage for the traditional group for this course was 85.8% and the lowest was 69.8% for question no. 1 and question no. 10, while for the blended group the highest weightage was 90.0% for question no 1 and lowest of 75.3% for question no 10 respectively.

Table 4 showing the percentage of responses in the Health Education for PE 101 Course

	Questions	Term	Strongly Agree %	Agree %	Disagree %	Strongly Disagree %	Undecided %	Weightage %
1	The C.pe & H gives information with regard to the risks and management of Hypertension	132	60	33	7	0	0	89
		141	59	36	2	0	3	90
2	The knowledge with regard to hypotension is highlighted in the C.pe & H.	132	50	43	0	3	3	88
		141	52	43	3	0	1	89
3	The importance of heart rate, its effects and how it can be monitored are explained in the C.pe & H.	132	30	50	13	0	7	79
		141	44	42	9	2	2	84
4	The method of improving the heart efficiency through aerobic exercises is familiarized through the C.pe & H	132	47	47	7	0	0	87
		141	42	47	8	2	1	84
5	The effect of cholesterol on the body and its managements is explained in detail through the C.pe & H.	132	40	37	17	0	7	80
		141	44	48	6	1	1	86
6	Diabetes which is considered as the killer disease of the present day society is highlighted and explained in the C.pe & H.	132	40	50	3	7	0	84
		141	49	43	7	1	0	87
7	The management of diabetes through physical activity and different exercise regime are brought out through the C.pe & H	132	20	50	20	0	10	74
		141	38	47	9	3	3	82
8	The knowledge pertaining to cardio – Respiratory Resuscitation(CPR) and its implication is inculcated through the C.pe & H.	132	27	57	13	3	0	79
		141	41	46	8	1	4	84
9	The techniques of the implementation of CPR is thoroughly demonstrated and familiarized through the C.pe & H.	132	33	43	23	0	0	77
		141	39	49	7	1	4	84
10	Through the lessons of C.PE & H I could know the difference between Diabetes type 1 and type 2	132	37	57	0	3	3	85
		141	33	53	8	1	4	82

Table 4 depicts the percentages of responses of the students of both the traditional (term 132) and blended courses (term 141) for the PE 101 in health education. There are 10 questions with regard to the blood pressure, first aid & cardio pulmonary resuscitation, cholesterol and diabetes for the students undertaking the PE 101 course. It is observed that the highest percentage of agreed recorded for the blended courses students was 95% for the questions 1 and 2 whereas the highest for the traditional course was also 94% for the question no 4 and 10. The percentages with regard to the PE101 course for the blended course for term 141 outnumbered in 9 out of 10 questions when compared to the traditional one. In the

traditional group for question nos.9 the percentage disagreed was 23% which by all standards is high and only 10% were undecided for question no. 7 which is on the higher side. In contrast for the blended group the highest disagreed was 12% for question no. 7 and 4% were undecided for question nos. 8, 9 &10. In the above we can also see the weightages for each of the groups. Group A the traditional one had the highest weightage of 89% for question no. 1 and the lowest for the question no. 7 with 74%. In contrast to this the group B which is the blended one had the highest weightage of 90% for question no. 1 and for the lowest was shared by question nos. 7 & 10 with a weightage percentage of 82.

Table 5 showing the percentages of responses in the health education for PE 102 course

	Questions	Term	Strongly Agree %	Agree %	Disagree %	Strongly Disagree %	Undecided %	Weightage %
1	I learnt the difference between Anatomy & Physiology through the C.PE &H	132	35	27	35	0	3	72
		141	43	48	5	3	3	85
2	I gained knowledge about the human Skeletal system which includes the number of bones and their types	132	34	41	14	12	0	76
		141	40	50	5	3	3	85
3	The importance of good Posture was familiarized through the C.PE & H	132	41	41	16	1	1	81
		141	55	43	3	0	0	90
4	The Causes ,the corrective measures and how to take care of the Postural Deformities was described through the C.PE & H	132	27	42	20	8	3	74
		141	38	53	5	3	3	84
5	Through the C.PE & H the knowledge on the different Joints and their types was learnt	132	31	55	7	0	7	82
		141	33	58	5	3	3	83
6	The C.PE & H provided information about how to develop the muscles and the mechanics about their functions.	132	26	27	34	9	4	67
		141	38	43	10	5	5	81
7	The definition of Sports injuries , first aid and precautions were indicated through the C.PE & H	132	34	39	14	7	7	77
		141	40	48	8	3	3	84
8	The knowledge of what is a Fracture and their types was provided in the C.PE & H	132	26	41	20	7	7	73
		141	43	45	5	3	5	85
9	The signs & Symptoms along with the treatment of Sprain & strain provided through C.PE & H were the same	132	20	54	18	1	7	75
		141	35	27	35	0	3	81
10	The C.PE & H did not provide any information about skin injuries	132	34	41	14	12	0	80
		141	43	48	5	3	3	55

Table 5 points to the percentage of responses for the students of both the traditional (term 132) and blended courses (term 141) for the PE 102 in health education course. There are 10 questions with regard to the Anatomy, Posture, Joints, Muscular system and Sports Injuries for the students undertaking the PE 102 course. It is observed that the highest percentage of agreed recorded for the blended courses students was 98% for the questions 3 followed by 91% and 90% for the questions 1 & 2 respectively whereas the highest for the traditional course was also 86% for the question no 5 followed by 82% for questions 3. The percentages with regard to the PE102 course for the blended course for term 141 outnumbered in all the 10 questions when compared to the traditional one. In the traditional group for question no. 6 the percentage disagreed was 43%. Further the traditional group had percentages of 43% as disagreed for the questions no. 6. The blended had 35% as disagreed for the questions 9, while 5% were undecided for question nos. 6 & 8 for the same group. In contrast for the traditional group the highest undecided was 7% each for questions 5, 7, 8 & 9. The table also shows the weightages for each of the groups in the PE 102 course. The traditional group had the highest percentage of 81 for question no. 3 and lowest of 67% for the question no. 6, while the blended group had the highest weightage of 90% for the question no 3 and a lowest of 55% for the question no. 10.

Table 6.1 showing the Independent Sample Test for both the groups

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
PE001	Equal variances assumed	13.890	.000	-6.498	118	.000	-1.77778	.27361	-2.31959	-1.23596
	Equal variances not assumed			-5.190	36.855	.000	-1.77778	.34254	-2.47192	-1.08364
PE002	Equal variances assumed	32.180	.000	-4.329	124	.000	-2.65417	.61316	-3.86778	-1.44055
	Equal variances not assumed			-6.252	109.349	.000	-2.65417	.42454	-3.49556	-1.81278
PE101	Equal variances assumed	.504	.479	-14.341	118	.000	-4.68889	.32696	-5.33635	-4.04142
	Equal variances not assumed			-12.826	42.045	.000	-4.68889	.36559	-5.42666	-3.95112
PE102	Equal variances assumed	16.545	.000	-6.843	112	.000	-2.73716	.40002	-3.52974	-1.94458
	Equal variances not assumed			-8.016	111.823	.000	-2.73716	.34144	-3.41370	-2.06062

Table 6.2 showing group statistics for the different health education courses

Course Code	Term	N	Mean	Std. Deviation	Std. Error Mean	' t '	Tabulated value	Sig. (2-tailed)
PE 001	132	30	17.3000	1.76459	.32217	-5.190	1.980	0.000
	141	90	19.0778	1.10390	.11636			
PE 002	132	96	15.3125	3.25192	.33190	-6.252	1.979	0.000
	141	30	17.9667	1.44993	.26472			
PE101	132	30	12.7333	1.81817	.33195	-14.341	1.980	0.000
	141	90	17.4222	1.45322	.15318			
PE 102	132	74	15.3378	2.33659	.27162	-8.016	1.981	0.000
	141	40	18.0750	1.30850	.20689			

Table 6.1 and 6.2 deal with the means and standard deviations of the students of different groups of subjects i.e. the traditional and blended courses for the term 132 and 141 respectively. The analysis of the data showed that the group which had taken the course during the term 141 which is a blended one with traditional and online mixed had greater mean than the subjects of the term 132 who had undergone the health course in a traditional fashion with the mean reading 19.0778, 17.9667, 17.4222 & 18.0750 for 141 term and the mean of 17.3000, 15.3192, 12.7333 & 15.3378 for term 132 corresponding to the

courses 001. 002. 101 & 102 respectively. The above table also indicates the results of the t-test with regard to the data pertaining to the significant difference among the traditional and blended groups for all the courses PE 001. 002. 101 & 102 for health education. For the course PE 001 according to the test of equality of variance (levene's test) , we assume unequal variances, and since the level of significance is 0.000 there is a strong evidence to conclude that the mean of scores in the term 141 is greater than the mean of scores in the term 132. The 't' value of PE 001 course is -5.190 which is more than the calculated value of

1.980 , it clearly indicates that there is a significant difference between the courses.

In the same way for the course PE 002 according to the test of equality of variance (levene's test) , we assume unequal variances, and since the level of significance is 0.000 there is a strong evidence to conclude that the mean of scores in the term 141 is greater than the mean of scores in the term 132. Here The't' value is -6.252 which when compared to the tabulated value of 1.979 gives the indication that there lies a significant difference between both groups.

The results pertaining to the course PE 101, according to the test of equality of variance (levene's test) , we assume unequal variances, and since the level of significance is 0.000 there is a strong evidence to conclude that the mean of scores in the term 141 is greater than the mean of scores in the term 132. In this course the table value is 1.980 and the 't' value is

-14.341 showing a significant difference between the blended and traditional groups.

The observation with regard to the course PE 102, according to the test of equality of variance (levene's test) , we assume unequal variances, and since the level of significance is 0.000 there is a strong evidence to conclude that the mean of scores in the term 141 is greater than the mean of scores in the term 132. When the't' value of the PE 102 is observed it can be seen that it is -8.016 which is more than the tabulated value of 1.981 showing a marked significant difference among the groups.

Discussion

The main findings of this study have shown some interesting observations with regard to the E-Learning on the health education courses at KFUPM, which is construed in a variety of contexts, such as distance learning, online learning and Networked learning. One is aware that the present day scenario has drastically changed with the new technological advancement and mass communication. As stated by Oye, Salleh, & Iahad, 2010, learning is a unifying term used to describe the fields of online learning, web-based training and telecommunication technology delivered instructions. We all know that e-learning is any technologically mediated learning using computers whether from a distance or in face to face classroom setting (computer assisted learning), it is a shift from traditional education or training to ICT-based personalized, flexible, individual, self-organized, collaborative learning based on a community of learners, teachers, facilitators, experts. E-learning technologies offer learners control over content, learning

sequence, pace of learning, time, and often media, allowing them to tailor their experiences to meet their personal learning objectives. Paechter et al., 2010, has categorically observed that electronic learning or the online education has transformed traditional classroom strategies by broadening its scope which is no more than a genius way of reaching out to those who do not have the necessary resources to finish schooling. Almost all faculties in the field of academic learning have switched on to the new mode of the learning process successfully. Health education is one of the leading areas of study which revolves around the well-being of an individual. There are many health related issues which are essential for survival of a human being in successful way. Not many institutions stress on the importance of this area and it is a neglected one. Incidentally KFUPM is the only university in the Gulf area which has made physical activity and health education mandatory for the students undertaking an academic course. This study has been undertaken to find out how the new technology has made a difference in the learning process of health education in the KFUPM student community.

At KFUPM the health education courses offer different issues related to the health of an individual. The four courses i.e. PE 001, 002,, 101 & 102 give the students of how to take care of his health and also take remedial measures to lead a healthy life. This is the first time that a study has been made to find the performance of the students in the traditional course and also the blended health education course apart from finding out how the course content help them in reaching the main aim of health through the traditional and blended courses.

In the PE 001 health education course the health content is with regard to the personal health, nutrition and general health and fitness.

The results pointing to PE 001 have indicated that the students in the traditional course which was undertaken by students during the semester 132 scored highest percentage of 90 for the questions no. 2 dealing with taking care of teeth and skin, whereas they scored a least of 56% for the question no. 3 and 6 with regard to the aspect of taking care of feet, clothes and also the type of clothes to be worn during activity. In contrast to this the blended group scored the highest of 90% for the question no. 1 & 10 of inculcating personal healthy habits and the knowledge of energy resource like the carbohydrates, proteins, fats, minerals, vitamins and water . The least scored by this group for the term 141 was 77% for the question no. 5 & 6 of wearing the right type of footwear for physical activity and the type of clothes to be worn during activity. It is to be noted that the above groups

scored the highest and the least in different questions with different percentages. Both the groups scored a highest of 90% for different questions. This clearly explains the curriculum need to address the above matter seriously for making necessary changes. Besides to the above results, the weightages for each of question also throws some light on the feedback of the subjects belonging to both the groups. It is observed that the highest weightage for the traditional group A was 81.3% for the question 10 which is about the energy resources and the lowest of 64.7% for the question 5 which deals with the right type of footwear, whereas the blended group had the highest weightage for the question no. 1 with 84.2% dealing with the personal health habits and the lowest of 76.9% for the question no. 6 about the type of clothes to be worm for physical activity. With regard to the performance of the subjects of both the groups it is imperative from the results that the blended group had significant differences when compared to the traditional group. According to the levene's test of equality of variance and also the 't' value of -5.190 (calculated value 1.980) it was found that the scores in term 141 are greater than the term 132. This clearly indicates that the blended course students outscored the one in the traditional group which corroborates the studies done by Adam, et al. 2012 & Ali Farhan, 2009.

Analyzing the PE 002 health education course the health content is with regard to the addictive habits, muscular strength, muscular endurance, flexibility and obesity. It is observed that the highest percentage of agreed recorded for the blended courses students was cent percent for the questions no. 1 concerning about the information of addictive habits and lowest of 20% was for question no. 10 with regard to the weight control management. In contrast to this the highest for the traditional course was 92% for the question no. 1 followed by 86% & 84% for question no. 3 & 4 about alcohol and drugs respectively for the traditional group. The percentages with regard to the PE 002 course for the blended course for term 141 outnumbered all the 10 questions when compared to the traditional one. In the traditional group for question nos. 10, 7 & 9 for weight control management, fitness components and assessment of obesity the percentage disagreed was 32, 26 & 24 respectively which by all standards is high and only 6% were undecided for question no. 10 about weight control management. In contrast for the blended group the highest disagreed response was 20% for question no. 10 about weight control management and 10% were undecided for the same question. The results point out to the fact that both the groups had recorded the highest and the lowest for the same questions i.e. 1 and 10, but with different percentages. With regard to the weightages for each of question the review shows many similarities of the

subjects belonging to both the groups. It is observed that the highest weightage for the traditional group A was 85.8% for the question 1 which is about the proper information with regard to addictive habits and the lowest of 69.8 % for the question no. 10 which deals with the weight control management, whereas the blended group had the highest weightage for the question no. 1 with 90.0% dealing with the proper information with regard to the additive habits and the lowest of 75.3% for the question no.10 about the weight control management . In this course it is interesting to note that both the groups scored the highest and lowest for the same question. While taking stock of the comparison between the performance of the traditional and blended groups according to leven's test and 't' value of -6.252 (tabulated value of 1.979) it is construed that there exists a significant difference at 0.000 level of confidence. This shows that the blended group has outsmarted the traditional group in their performance in the health education PE 002 course confirming the studies done by Oye, et al., 2012 & Elaine & Jeff, 2010.

The PE 101 course is a Sophomore course and the health education content deals with the blood pressure, first aid & cardio pulmonary resuscitation, cholesterol and diabetes for the students It is observed that the highest percentage of agreed recorded for the blended courses students was 95% for the questions 1 & 2 dealing with regard to hypertension and hypotension and a least of 85% for the question no. 7 highlighting management of diabetes through physical activity. In this group the highest disagreed was 12% for the question no. 7 about the management of diabetes through physical activity and 4% were undecided for 3 questions namely the 8, 9 & 10 dealing with CPR, its implication, techniques and the difference of type I and II diabetes. The highest for the traditional course was also 94% for the question no 4 & 10 informing about the method of improving heart efficiency with aerobic exercise and the difference between type I and II diabetes. The least recorded for this group was 70% for the question 7 about the management of diabetes and the highest disagreed was 23% for question no 9 with regard to implementation of CPR. The traditional group recorded more than 90% for questions 1, 2, 4, 6 & 10. The percentages with regard to the PE101 course for the blended group for term 141 outnumbered in 9 out of 10 questions when compared to the traditional one. The traditional group had outscored the blended one in only one question no. 4 of improving heart efficiency in which it has scored 94% agreed than its counterpart which could only score 89%. Coming on the question of weightage it is seen that group A which is the traditional had the highest percentage of 89 for question no. 1 about hypertension and least weightage for the question no. 7 informing the knowledge of management of diabetes with

74%. It is interesting to note the blended group B also recorded the highest of 90% for the same question no. 1 about hypertension and least recorded was 82% for the two questions nos. 7 & 10 regarding management of diabetes and also the difference between the type I and type II diabetes.

When the question of comparison of the performance was observed it was found that the 't' value of -14.341 was found to be significant between the blended group and the traditional group as the table value was 1.980 . These points to the results obtained by Edith et al., 2011 & Rodgers, 2008 with regard to the importance of performance in online learning course.

Finally the last of the PE 102 health education course which is also considered as a sophomore course has health education issues concerning about Anatomy, Posture, Joints, Muscular system and Sports Injuries for the students.

It is observed that the highest percentage of agreed recorded for the blended courses students was 98% for the questions 3 with regard to the posture followed by 91% and 90% for the questions 1 & 2 dealing with difference between anatomy and physiology and human skeleton respectively, whereas the highest for the traditional course was also 86% for the question no 5 depicting the knowledge of joints followed by 82% for questions 3 with regard to importance of good posture. The percentages with regard to the PE102 course for the blended course for term 141 outnumbered in all the 10 questions when compared to the traditional one. In the traditional group for question no. 6 pertaining to the information about how to develop the muscles and the mechanics about the functions the highest disagreed was 43% whereas the blended one scored 81% as agreed and 15% as disagreed for the same question. Further the traditional group had percentages of 35 & 28 as disagreed for the questions 1 & 4 regarding muscles, difference between anatomy and physiology and postural deformities respectively. The blended had 35% as disagreed for the questions 9 dealing with signs, symptoms and treatment of sprain and strains while 5% were undecided for question nos. 6 & 8 about muscles and fractures for the same group. In contrast for the traditional group the highest undecided 7% each for questions 5, 7, 8 & 9 about joints, sports injuries, knowledge of fractures and treatment of sprains and strains.

The comparison of the performance in the health education of the blended and the traditional groups also yielded the same results as has been recorded for the other 3 courses. The 't' value was -8.016 which when compared to the table value of 1.981 were more at 0.000 level of confidence showing that there was a significance difference which is in line with the studies already undertaken by Yuliang Liu, 2004 & Igor Ryabov, 2012.

Abstracting it has been seen that the blended had a march over the traditional group in all the health education courses with regard to the performance and also the feedback elicited from the students undertaking the respective courses.

Conclusion

Based on the results and the discussion thereby the following conclusions were reached for the study:

It was concluded that the percentages of the scores for the learning process of the PE 001 health education course content of blended group was more in 9 out of 10 questions when compared to the traditional group which could only score more in only one question.

It was concluded that the performance of the subjects of the blended group had significant differences when compared to the traditional group for the PE 001 health education course.

Further, it was concluded that the percentages of the scores for the learning process of the PE 002 health education course content of blended group was more in all the 10 questions when compared to the traditional group which shows that the effect of the mixed learning process.

It was concluded that the performance of the subjects of the blended group had significant differences when compared to the traditional group for the PE 002 heath education course.

Besides, it was concluded that the percentages of the scores for the learning process of the PE 101 health education course content of blended group was more in 9 out of 10 questions when compared to the traditional group which could only score more in only one question.

It was also concluded that the performance of the subjects of the blended group had significant differences when compared to the traditional group for the PE 101 health education course.

Lastly, it was concluded that the percentages of the scores for the learning process of the PE 102 health education course content of blended group was more in all the 10 questions when compared to the traditional group.

It was concluded that the performance of the subjects of the blended group had significant differences when

compared to the traditional group for the PE 102 health education course.

References

1. Abdallah El-Arif and Abdul-latif Elgazzar (2009). The Effect of e-learning Approach on Students' Achievement in Biomedical Instrumentation Course at Palestine Polytechnic University, *The International Business Information Management Association (IBIMA)*. Vol. 9

2. Adam Driscoll1, Karl Jicha, Andrea N. Hunt1,Lisa Tichavsky, and Gretchen Thompson, (2012).Can Online Courses Deliver In-class Results? A Comparison of Student Performance and Satisfaction in an Online versus a Face-to-face Introductory Sociology Course, *American Sociological Association*, pp. 312-331

3. Ali Farhan AbuSeileek (2009).The effect of using an online-based course on the learning of grammar inductively and deductively, *European Association for Computer Assisted Language Learning* ; Vol. 21, Issue 03

4. Al-Qahtani, A.A.Y.and Higgins, S.E. (2013), Effects of traditional, blended and e-learning on students' achievement in higher education. *Journal of Computer Assisted Learning,* Vol. 29: pp 220–234.

5. Andrewartha.G and.Wilmot.S, (2001), "Can multimedia meet tertiary educational needs better than the conventional lecture? A Case Study", *Educational Technology*, vol. 17, no. 1, pp. 1-20

6. Chagas, Isabel; Faria, Claudia; Mourato, Dulce; Pereira, Goncalo; Santos, Afonso, (2012) Problem-Based Learning in an Online Course of Health Education; *European Journal of Open, Distance and E-Learning*, n1

7. Christian J. Grandzol, John R. Grandzol (2010). Interaction in Online Courses: More is NOT Always Better, *Online Journal of Distance Learning Administration*, Vol. XIII, No. II

8. David A. Cook, MD, et al, (2008). Internet-Based Learning in the Health Professions: A Meta-analysis, JAMA, *The Journal of the American Medical Association* , Vol. 300, No. 10

9. Edith Galy, Clara Downey, and Jennie Johnson (2011). The Effect of Using E-Learning Tools in Online and Campus-based Classrooms on Student Performance, *Journal of Information Technology Education* Vol. 10, pp 209- 229

10. Elaine Allen, Jeff Seaman, (2010). Class Differences Online Education in the United States, *Babson Survey Research Group,USA*, pp1 – 25

11. Elaine, M, Auld, Susan M. Radius, Regina Galer-Unti, Johanna M. Hinman, Audrey R. Gotsch, Patricia D. Mail. (2011) Distinguishing Between Health Education and Health Information Dissemination. *American Journal of Public Health,* Vol, 101,Issue 3, pp 390-391.

12. Enrique Regidor, Luis de la Fuente, Juan L. Gutiérrez-Fisac, Salvador de Mateo, Cruz Pascual, José Sánchez-Payá, Elena Ronda. (2011) The Role of the Public Health Official in Communicating Public Health Information. *American Journal of Public Health*, Vol. 97:Supplement_1, S93-S97.

13. Farid M. Midhet, Fawzy K. Sharaf, (2011). Impact of health education on lifestyles in central Saudi Arabia, *Saudi Medical Journal*, Vol 32, No. 1, pp 72- 76

14. G. Singh, J. O'Donoghue, H. Worton (2005) .Study Into The Effects Of eLearning On Higher Education, *Journal of university teaching & learning practice* , Vol. 2 issue 1, pp13 -24

15. Holley, D. (2002). "Which room is the virtual seminar in please?" Education and Training,, 44(3), 112-121.

16. Igor Ryabov,(2012). The Effect of Time Online on Grades in Online Sociology Courses, *MERLOT Journal of Online Learning and Teaching*, Vol. 8, No. 1,

17. Intel.W. A. P, (2009) "Positive Impact of E-Learning, Http://www.intel.com.

18. Katz.Y.G., "Attitudes Affecting Collage Students' Preferences for Distance Learning", *Computer Assisted Learning*, vol. 18, (2002), pp. 2-9

19. King Fahd University of Petroleum & Minerals, College of Applied and Supporting Studies , Physical Education Department(2009), *Preparatory Health and Physical Education, PE 001 & 002,Health Education Course Material*.

20. King Fahd University of Petroleum & Minerals, College of Applied and Supporting Studies , Physical Education Department(2009), *Health and Physical Education, PE 101 & 102,Health Education Course Material*.

21. Mallie J. Paschalla, Chris Ringwaltb, Todd Wyattc & William DeJongcd, (2014). Effects of an Online Alcohol Education Course among College Freshmen: An Investigation of Potential Mediators, Journal of Health Communication: International Perspectives, Vol. 19, Issue 4

22. Magnoson.T, Dall.A and Chiland.A.T, (2010), "Compact Set of National and International Documents in the Field of Education", Inclusive Education Coordination Working Group,

23. Mustafa M Hariri, (2013). Effective use of LMS (Learning Management System) in teaching graduate geology course at KFUPM, Saudi Arabia, *The 4th international Conference on e-Learning.*

24. Olojo Oludare Jethro, Adewumi Moradeke Grace, Ajisola Kolawole Thomas (2012). E-Learning and Its Effects on Teaching and Learning in a Global Age, *International Journal of Academic Research in Business and Social Sciences,*, Vol. 2, No.1,pp 203 -210

25. O'Hearn, J. (2000). Challenges for service leaders: setting the agenda for the virtual learning organization. International *Journal of Contemporary Hospitality Management*, 12(2), pp. 97-106

26. Oye, N. D.; A.Iahad, N., Madar, M. J. and Ab.Rahim, N (2012). The Impact Of E-Learning On Students Performance In Tertiary Institutions, *IRACST – International Journal of Computer Networks and Wireless Communications (IJCNWC)*, Vol.2, No.2, pp. 121 – 13

27. Oye , N. D., Salleh, M., & Iahad, N. A. (2010). Holistic ELearning in Nigerian Higher Education Institutions. *Journal of Computing*, 2(11), 20-26.

28. Paechter.M. Maier B.and Macher, (2010), "Students' Expectations of and Experiences in E-learning: Their Relation to Learning Achievements and Course Satisfaction", *Computers & Education*, vol. 54, pp. 222–229.

29. Ribiero, T.(2002). From a distance: Look at distance learning's increased following. Education, 152(9), p. 85.

30. Richard.K.L, (2004), "E-learning compared with face to face: Differences in the academic achievement of postgraduate business students", *Educational Technology*, vol. 20, no. 3, pp. 316-336.

31. Rodgers, T.(2008). Student Engagement in the E-learning process and impact on their Grades: International Journal of Cyber Society and Education, 1(2), 143-156.

32. Thomas R. Frieden,(2010), A Framework for Public Health Action: The Health Impact Pyramid. *American Journal of Public Health*: Vol. 100, No. 4, pp. 590-595

33. Volery, T.(2000). Critical success factors in online education. *The International Journal of Educational Management*, 14(5), pp. 216-223

34. Wilson, J. (2001). Lessons of a Virtual Timetable: Education. *The Economist*, p. 1 (CDROM).

35. Yazdi.S.M and. Zandkarimi.G, (2012),"The Importance of Learning Context: A Comparison of Students Academic Achievement among Different Field of Studies Using Virtual Learning", Planning and Management in Educational System, vol. 5, no. 9, pp. 44-60.

36. Yuliang Liu (2004). Effects of Online Instruction vs. Traditional Instruction on Students' Learning, *The International Congress of Psychology in Beijing, China.*