

## M-Learning in EMS Education - Saudi Arabia Perspective

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### Abstract

**Introduction:** The purpose of this study is to evaluate the effectiveness of using m-Learning Methodology in enhancing student driven learning and improve student teacher communication. Different methodology of learning and teaching like the regular face to face classroom teaching method, using medium of social websites like Facebook, U-tube upload of teaching videos, SMS, Assignments etc . **Methods:** This was a qualitative educational study using SMS Interface and Student Feedback. It includes 42 fourth semester students of Bachelor of Sciences – EMS Program at PSCEMS, located in Riyadh, Saudi Arabia. A SMS interface Software was developed with a Virtual Number. Students had to compete by sending answers through their mobile to the virtual number for the Quiz Questions sent to them in the form of SMS. Class Information, Exam Schedule, Homework reminder and Deadlines were also sent to them. A Comparative study was done using Theoretical Examination Airway Management Chapter prior and after to using the Blended Learning Methodology in the same Semester with same level of Difficulty. **Result:** In the feasibility survey the Students were asked to rate the usefulness of SMS based Learning where 98 % agreed. 94% suggested to use SMS as a tool to send deadline reminders and to receive questions from faculty. In comparison study 24 (57%) Students scored 20 out of 20, 12 (28 %) Student scored 18 out of 20 after implementation of Blended Learning Methodology. **Conclusion:** Paramedic students felt comfortable using Blended Learning Methodology. m-Learning should be used in training paramedic students to enhance their Knowledge and boost their confidence in examinations.

**Keywords:** learning, students, assessment, feedback, mobile, and communication

### Introduction

Emerging technologies are leading to the development of several new opportunities to guide and enhance learning that were unimaginable a few years ago. The move towards adopting mobile learning technologies is fast growing in both academic and industrial sectors. Mobile learning uses portable devices linked to a commercial public network, including different types of mobile phones and handheld computers. For mobile users, as well in all mobile applications, SMS messaging is found to be the most useful and convenient way of communication technology. In case of mobile learning, there are only limited forms for conducting tests using true/false method, multiple choice selection method etc. Answering short questions is a better way of testing the students to get more details about a particular entity. The practice of messaging can be thought of highly useful for answering such short answer questions. The case where answers are to be given as short messages to the assessors, evaluating them may not be that much easier when compared to other simple types of tests.

Technology in the recent years has opened up a lot of possibilities for various levels of commercial, industrial, personal applications. These technologies have totally changed the way in which people do business activities, communicate with each other, share information and use any necessary accessories. In this context, technologies are becoming boon for educational sectors also. Both instructors and learners have wide variety of options provided to them to perform content delivery, assess students, access course materials, etc. Both the institutes and industries are enjoying the facilities offered by technologies to a greater extent through the concept of e-Learning.

e- Learning is the form of defining learning and teaching activities with the help of information and communication technologies. One form of e-Learning is the use of mobile technologies where by portable devices are linked to commercial public networks, including different types of mobile phones and handheld computers.

The mobile devices help both the learners and instructors to achieve their goals in 'any time', 'anywhere', 'anything' fashion. Mobile technologies define two types of distance education technologies namely information media in terms of text, audio, video, images, graphics and communication media for defining interactions among various members of the system through different types of interaction modes like audio conferencing, video conferencing etc. With the advent of mobile devices such as portable handheld computers that are normal in current day business activities, the impact is seen in educational environment also. Using m-learning environment, teachers eliminate the need to write assignments on the chalkboard because they can "beam" instructions to students' handheld devices. Educators understand that mobile handheld computers and

wireless connectivity at colleges can enrich the learning experience of students.

### Advantages of mobile devices

Most mobile devices are useful in education as administrative, organizational and instructional teaching aids for practitioners and also as learning support tools for learners.

### Some of the main benefits are

- \* Learners can interact with other students and teachers.
- \* Portability feature makes the devices to be used everywhere with ease.
- \* Sharing and collaboration can be done easily
- \* Due to the sophistication in the technology, young people can have more interest in learning the subjects.

M-learning has many advantages in the mobile world, in educational Institutes and workplace. Technology has made it possible to communicate over vast distances with a very wider audience. M-learning has reached out to many individuals who can now access learning materials at their own will regardless of their commitments.

- No time constraints
- Available wherever and whenever
- Content is adaptable to meet individual needs
- Easier access
- Increases motivation
- Enhances knowledge
- More independent
- Improved communication and organization

Category	Purpose	Example
Course Management	To provide reminder about a planned classroom activity	Quiz on 20th May 2015 Tuesday 10:00 to 10:30 am
Content	To help learner locate / remind important discussion point	Please refer Table 2.1, page 321 for Mnemonic 'Lemon' in Airway Management
Tips	To provide hint/strategies on how to do well in Exams	Revise Tachycardia ECG Rhythms for tomorrow's exam
Motivation	To motivate learners to do their best	We have lots of Hopes on you !! Inshallah perform your best.



Currently many Universities globally have formally imbibed Blended Learning Methodology to enhance student knowledge using technology as a medium. It is combined with traditional face to face teaching methods. m-learning has become one of the most important tool in the recent years especially with University Students.

A report by the United Nations Conference on Trade and Development (UNCTAD) shows Saudi Arabia has the largest number of mobile phone users worldwide. The report revealed that there are 180 mobile phones for every 100 residents in Saudi, and that the usage of mobile phones is on the rise among teenagers and children as young as nine years in age.

### Literature Review

1. administrative support – reminding learners of contact session dates and registration deadlines, particularly those who have been missing face-to-face sessions (Ericsson Global, n.d.; Viljoen, du Preez, & Cook, 2005; Kajumbula, 2006; Yousof, 2007; Keegan, Kismihok, Mileva, & Rekkedal, 2009);

2. academic purposes – sending SMSes that contain important course content, which is chunked in small sizes (Uday Bhaskar & Govindarajulu, 2008);
3. learner development support – helping learners to self-manage their studies better (Stone, 2001);
4. learner assessment – sending interactive quizzes for learner self-assessment (Sukaphat, 2007; Clarke, Keing, Lam, & McNaught, 2008).

### **Rationale to select m-Learning Project for Learning and Teaching Excellence Grants**

In any area of endeavor, education and training is indispensable to the success of the final offering. Providing Education and Training in Emergency care is no exception at King Saud University. Prince Sultan Bin Abdul Aziz College of Emergency Medical Services (PSCEMS) has a world class Simulation Centre, and a dedicated team of highly qualified Emergency Medical Professionals who are interested in improving the quality of teaching using innovative methods to enhance student learning outcomes.

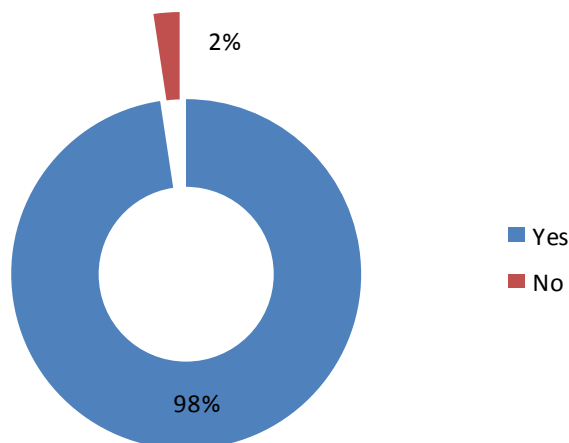
As the is new college and is in its development phase it was important to develop a culture of innovation and sustainability. m-Learning Project was practical unique teaching and learning model globally accepted, research oriented model which was innovative, student addictive and sustainable according to the college needs. It also fulfilled the grants aim in dissemination of effective and innovative teaching practice and improves learning and teaching process.

### **Feasibility Survey:**

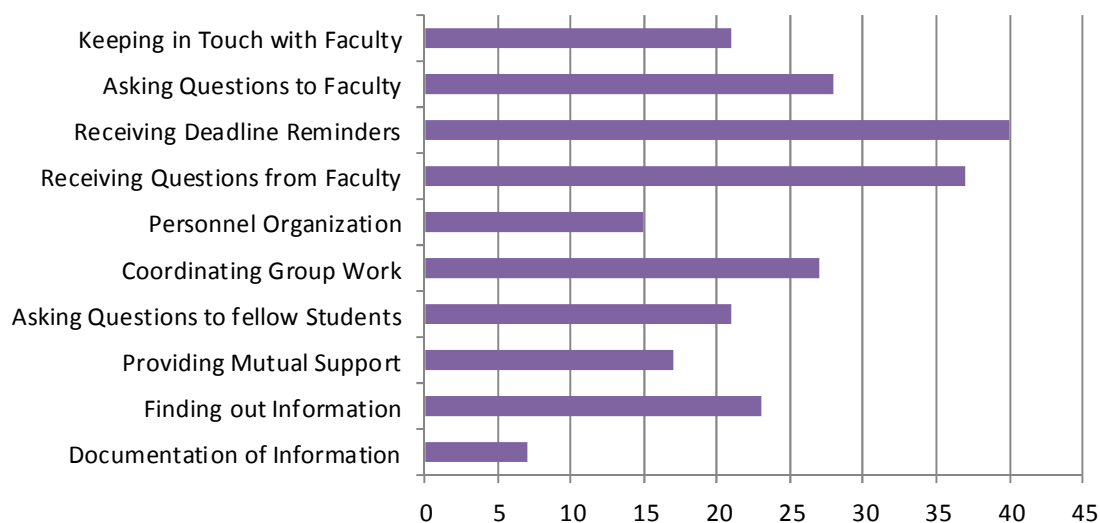
Feasibility studies aim to objectively and rationally uncover the strengths and weaknesses of the existing business or proposed venture, opportunities and threats as presented by the environment, the resources required to carry through, and ultimately the prospects for success.

A survey of Feasibility of the m-learning Project was conducted to analyze the sustainability and interest of the Students in general. Total number of students participated were 42 from 4<sup>th</sup> Semester of Bachelor of Science in Emergency Medical Sciences(BS-EMS). No prior information of the Project was provided to the students.

### **According to you can SMS be used for Learning purpose**



### Number of Students indicating activity where SMS could be very useful for them



Total Number of Students Participated : **42** from BS-EMS (4<sup>th</sup> Semester – 2 Year)

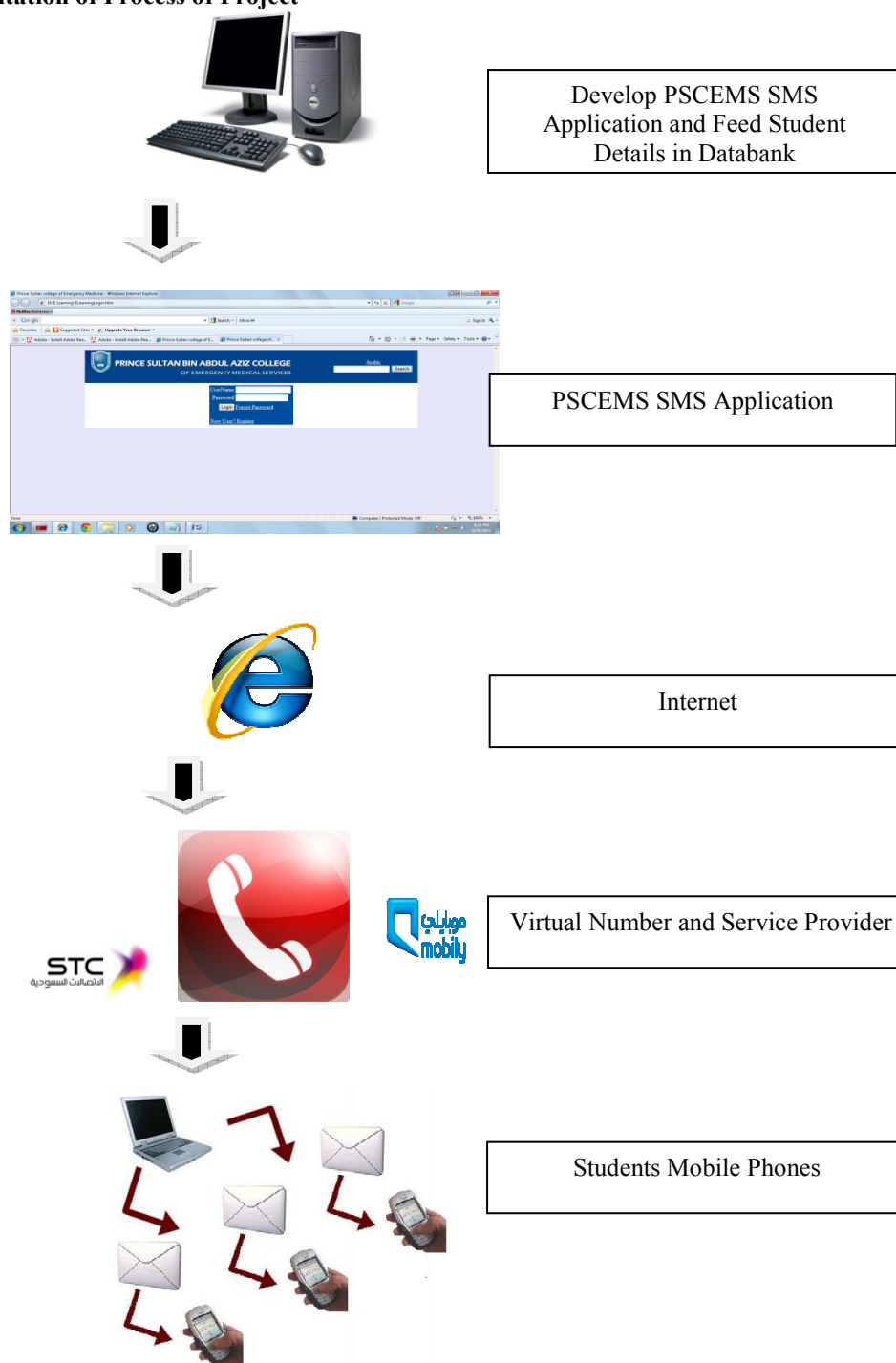
#### Objectives of the Project

1. To remind important dates and timings of the course
2. To inform necessary changes in schedule, venue, time e.t.c if any
3. To involve student to acquire knowledge through reward based quizzes
4. To bring about change in their attitude and approach to time management in their practice
5. To inculcate a habit of preparedness in students

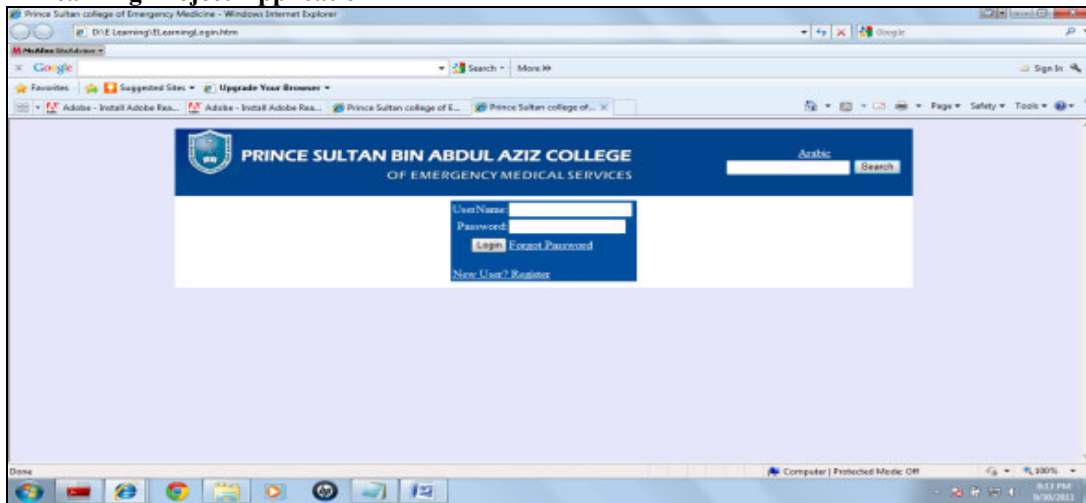
#### Process of the Project

During the start of the Academic Year, the SMS schedule, frequency, type and content is planned. Adhoc request from Faculty and Administrator to send information are also taken into consideration in between the semester. Request Form for m-learning activity with the content information is requested by the faculty, approved by the manager and documented at the Quality Unit. Authorized Personnel namely the Administrator of Quality Unit login in the m-Learning Application to send the SMS, which is manually entered in the Application. The content of the SMS is confirmed from the faculty or the administrator by sending a Test SMS. The faculty or the administrator has to send an affirmation SMS example: LS YES for 'Yes' and LS NO for 'No' to the virtual number provided by the service provider and the response is documented at the receiving Application. SMS is sent after the affirmation from the faculty to all the students with the content and instructions on how to send reply to the receiving Application. Receiving Application records the SMS received which could be retrieved by the Administrator at any time. A report is generated on the date specified by the faculty for reference, analysis and documentation. In addition, delivery of the SMSes is monitored and technical problems that arise such as non-delivery or late delivery of SMSes are noted, and the frequency of such occurrences are analyzed.

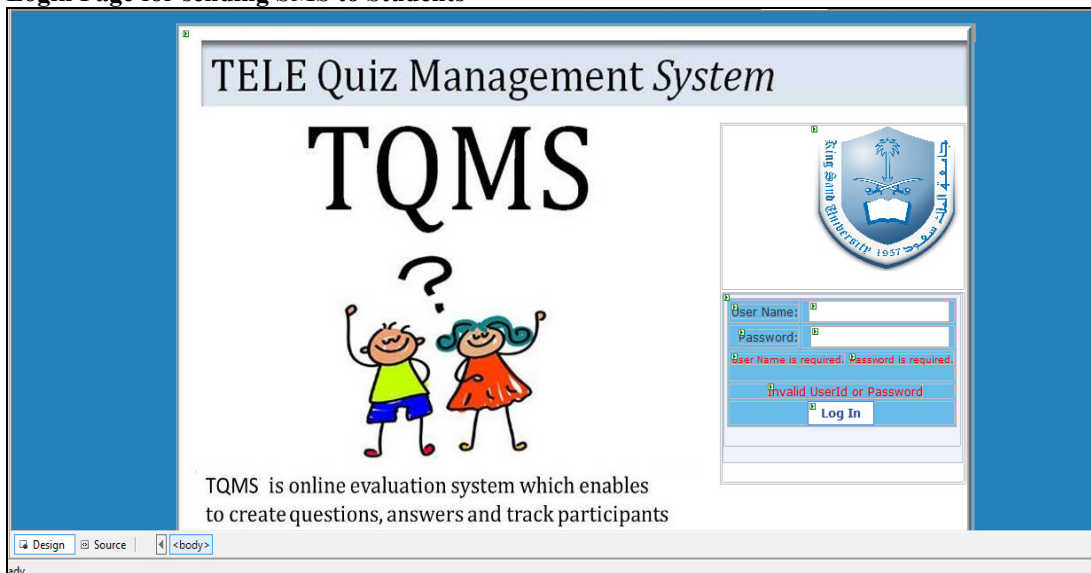
### Diagrammatic Representation of Process of Project



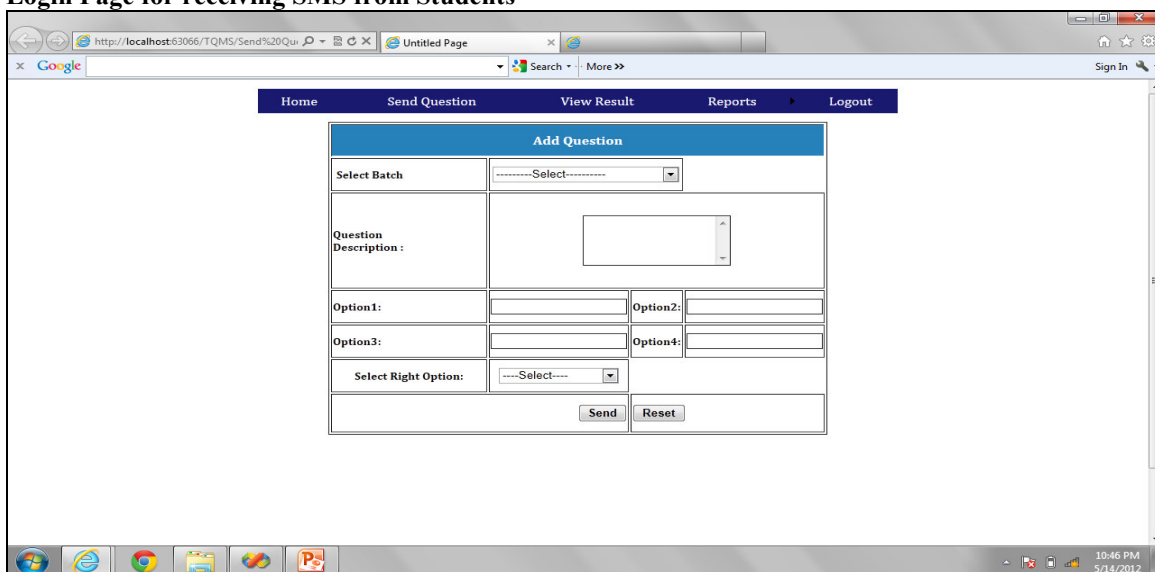
### m-Learning Project Application



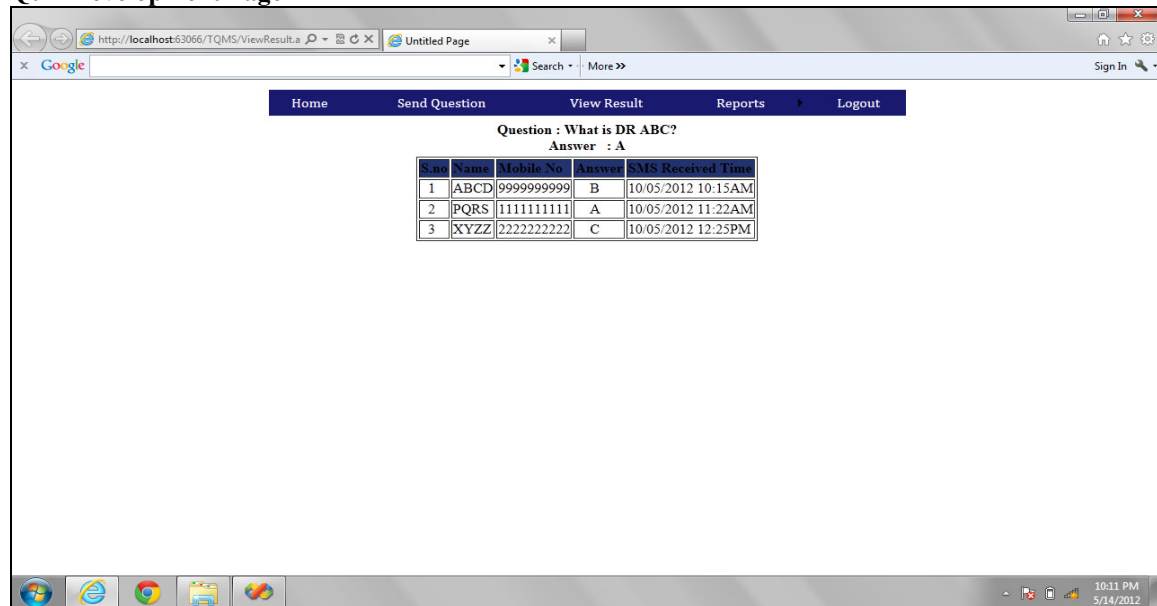
### Login Page for sending SMS to Students



### Login Page for receiving SMS from Students



## Quiz Development Page



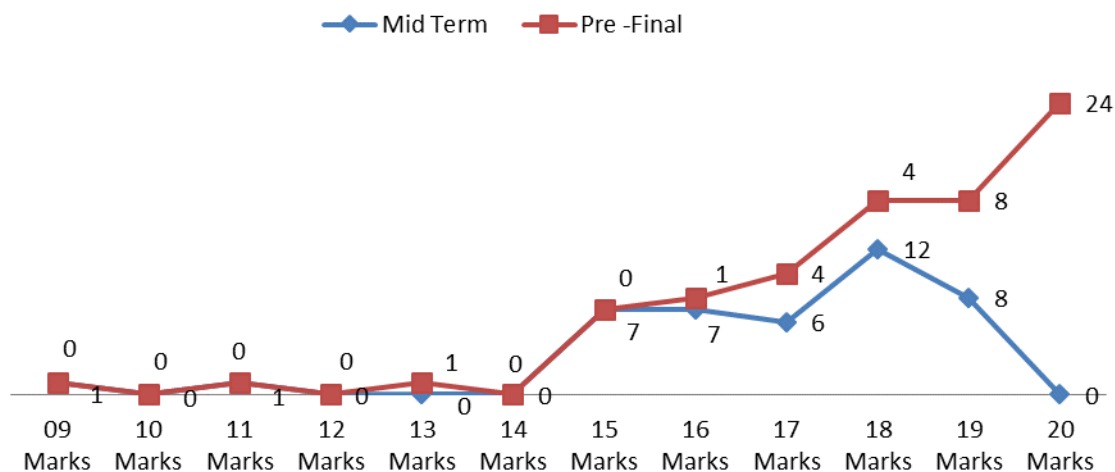
## Tracking / Report Page

### Result and effectiveness of the Project:

Different methodology of learning and teaching like the regular face to face classroom teaching method, using medium of social websites like facebook, U-tube upload of teaching videos, SMS, Assignments e.t.c . The blended Teaching Methodology allow learners to review certain content at any time for help in understanding a concept or to work ahead for those students who learn at a faster pace. (Alvarez, 2005). Because of the ability of students to self-pace, there is a higher completion rate for students in blended learning classrooms than to those in strictly e-learning situations. (Flavin, 2001)

Prior Information of Exam dates, syllabus, reference, and difficulty level were inform to the students. Theoretical Examination (20 Maximum Marks) was conducted under strict supervision within the stipulated time. Total Number of Students who attended the exam were 42 in number from BS-EMS (4<sup>th</sup> Semester).

## Student Evaluation after Introduction of Blended Learning Methodology



**Course: EMS 337 – Pulmonology for Paramedics (Year -2015)**

### Project Applications in learning and teaching sustainability:

A report by the United Nations Conference on Trade and Development (UNCTAD) shows Saudi Arabia has the largest number of mobile phone users worldwide. The report revealed that there are 180 mobile phones for every

100 residents in Saudi, and that the usage of mobile phones is on the rise among teenagers and children as young as nine years in age.

SMS, text messaging, is the simplest of all the technologies available in the mobile environment and various interactive learning activities can be devised with very basic equipment linking a variety of people including learners, instructors, administrators etc. SMS is highly useful in dealing with variety of activities such as asking questions, providing answers, information delivery, providing feedback, grading etc.

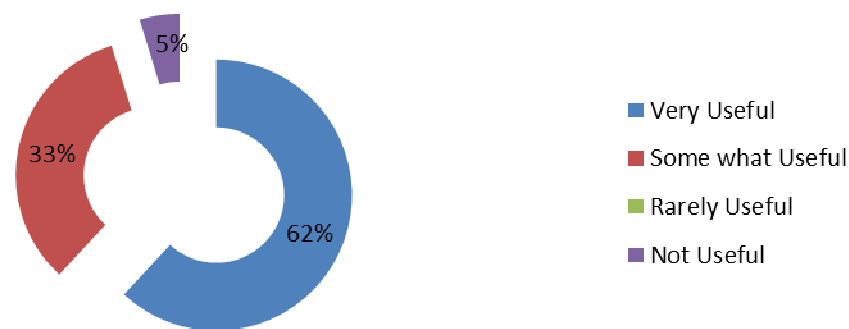
Currently many Universities globally have formally imbibed Blended Learning Methodology to enhance student knowledge using technology as a medium. It is combined with traditional face to face teaching methods. m-learning has become one of the most important tool in the recent years especially with University Students.

Measures and Quality Assurance Tools need to be developed to monitor the sustained performance and effectiveness

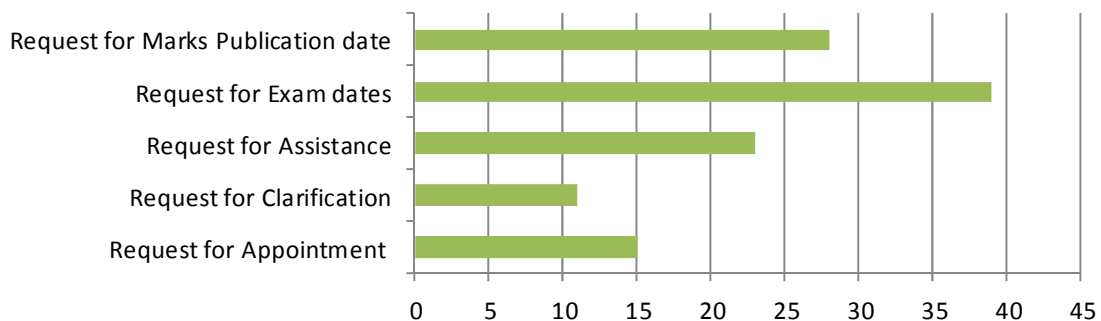
### Feedback Analysis of m-Learning Project

A survey of Feedback of the m-learning Project was conducted to analyze the effectiveness and interest of the Students, as a quality assurance measure. Total number of students participated were 42 from 4<sup>th</sup> Semester of Bachelor of Science in Emergency Medical Sciences(BS-EMS). No prior information of the Survey was provided to the students.

### How useful has the SMS Texting service has been for you

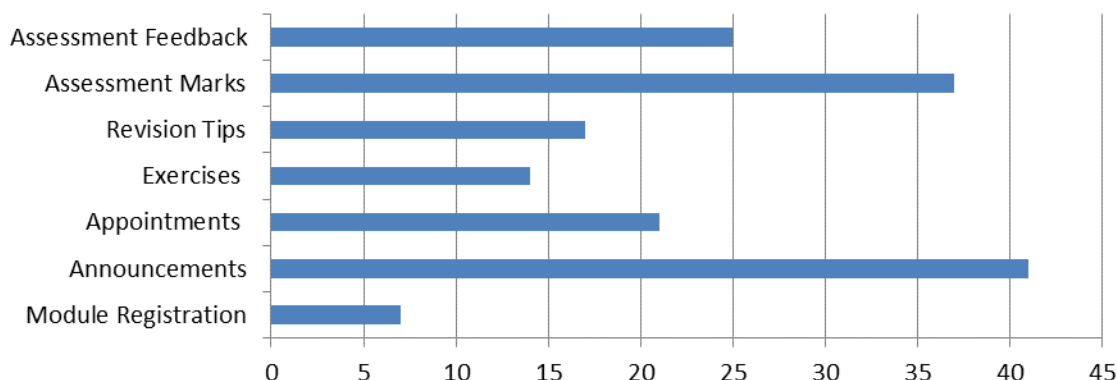


### What Information would you like to be able to send to your lecturer by SMS





## What Information would you like to be sent to you by SMS



### Obstacles and Challenges

Financial Sustainability needs to be explored with operational cost varying on the number of SMS sent to each student each course per semester. In Monetary terms each SMS would cost 20-50 Hala depending upon the scheme, service provider, size of the content and material. When developing the SMS content, much care has to be taken in ensuring the message is meaningful yet concise and the language used is simple. If one were to compare that to the benefits of possible successful retention and progress of a learner in his studies, one might safely say it is a great investment in terms of ensuring learner success and satisfaction. While it is noted that a proper cost-effectiveness study on the use of SMS in retaining students and recouping costs would be able to shed light on how viable the initiative is, it ought to be also emphasized that not all things valued may be measured in monetary terms. Helping even a single learner to enjoy and succeed in learning is what counts for a responsible distance education provider. (Tina Lim,2010)

### Conclusion and Recommendations

Mobile Learning via SMS helps reduce the transactional distance of psychological and communication space often faced by distance learners who are separated in terms of geographical distance and time (Moore, 1997). It also enables the university to reach out to learners outside of conventional communication spaces, and it helps to keep learners connected to the university, their peers, and their tutors.

I would recommend to allot more time for completion of any project. I would be happy if briefing session kept during the start of the project to be extended in the middle and at the completion of the project. 'Necessity is the Mother of Invention' - More Grants to be developed according to the needs of the college, student and the faculty.

Workshops on Writing Grant Proposal and documentation for Faculty and passing out Students.

**Road Ahead:** Monetary analysis based on effectiveness, comparative studies and studies involving SMS durations

### Acknowledgement

Firstly I would like to thank Almighty Allah for guiding me to do my best. This research project would not have been possible without the support of many people. I take this opportunity to express my gratitude to the people who have been instrumental in the successful completion of this project. I would like to gratefully acknowledge the King Saud University and the Center for Excellence in Teaching and Learning for providing me this opportunity.

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**Appendix:**

**Prince Sultan Bin Abdul Aziz College of Emergency Medical Services  
 m-Learning Project Feasibility Survey**

**Please Note that all Information will be kept confidential**

According to you can SMS be used for Learning purpose, if yes how ? Request you to Tick on the following:

	Very Useful	Some what Useful	Rarely Useful	Not Useful
Recording Information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Finding out Information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Providing Mutual Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Asking Questions to Students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coordinating Group Work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personnel Organization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Receiving Questions from Tutor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Receiving Deadline Reminders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Asking Questions of Tutor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Keeping in Touch with Tutor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Prince Sultan Bin Abdul Aziz College of Emergency Medical Services  
m-Learning Student Information Details**

**Please note all information will be kept confidential**

Name : \_\_\_\_\_ ID Number: \_\_\_\_\_

Date of Birth: \_\_\_\_\_ Educational Qualification: \_\_\_\_\_

Mobile Number: \_\_\_\_\_ Email: \_\_\_\_\_

Parent / Guardian Contact Number: Name : \_\_\_\_\_ Number: \_\_\_\_\_

Address: \_\_\_\_\_

Native Place: \_\_\_\_\_ Region: \_\_\_\_\_ City / Town/ Village

Residence in Riyadh : with Family / Relatives or Friends / Hostel

Do you have someone to guide you professionally: Yes / No

if yes who: \_\_\_\_\_

**Prince Sultan Bin Abdul Aziz College of Emergency Medical Services  
m-Learning Student Feedback Form**

- |  | Very Useful              | Some what Useful         | Rarely Useful            | Not Useful               |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 1) How useful has the SMS Texting service has been for you                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2) What Information would you like to be sent to you by SMS :                  |                          |                          |                          |                          |
| <input type="checkbox"/> Module Registration                                   |                          |                          |                          |                          |
| <input type="checkbox"/> Announcements   |                          |                          |                          |                          |
| <input type="checkbox"/> Appointments  |                          |                          |                          |                          |
| <input type="checkbox"/> Exercises   |                          |                          |                          |                          |
| <input type="checkbox"/> Revision Tips   |                          |                          |                          |                          |
| <input type="checkbox"/> Assessment Marks                                      |                          |                          |                          |                          |
| <input type="checkbox"/> Assessment Feedback                                   |                          |                          |                          |                          |
| 3) What Information would you like to be able to send to your lecturer by SMS: |                          |                          |                          |                          |
| <input type="checkbox"/> Request for Appointment                               |                          |                          |                          |                          |

- Request for Clarification
- Request for Assistance
- Request for Exam dates
- Request for Marks Publication dates

**4) How could the SMS Service be improved :**

**Prince Sultan Bin Abdul Aziz College of Emergency Medical Services  
4<sup>th</sup> Semester Pre Final (2015)  
Pulmonology for Paramedic**

**Total Marks: 20  
Total Time: 1 Hours  
Version: B**

**Name of Student:**

**Roll No:**

- 1) The tongue is a large muscle that is attached to the mandible and the \_\_\_\_\_
  - a. Maxilla bone
  - b. Palate Bone
  - c. Hyoid Bone
  - d. Sinus Bone
- 2) The spasmodic closure of the vocal cords is known as:
  - a. Vocal Spasms
  - b. Erythema
  - c. Esophagitis
  - d. Laryngospasm
- 3) In children the most common cause of unconscious airway obstruction is:
  - a. Liquid
  - b. Food or Toys
  - c. Tongue
  - d. None of the Above