Supportive framework and innovative mobile application to augment mobile collaborative learning (MCL) activities

Abdul Razaque, Khaled Elleithy, Akram Alhinnawi

Abstract - The trend of competition has been growing rapidly in global market with advent and deployment of new technologies. The leading companies have spent their maximum efforts for introducing human-friendly product. From other side, the demand of people has always been in search of magical device to maximize benefits and utilize their minimum resources for collaboration. The latest technological revolution is emergence of mobile wireless communication technology. Mobile phones are only cheaper hand held device that we can carry and use whole day everywhere.

With incorporation of emerging technologies in mobile devices; such as motion sensors, cameras, global positioning system (GPS), Infra-Red, blue tooth and GSM supported by broadband connections make the mobile as attractive tool. Mobile devices provide smart features like memo diary, address book, reminder, to-do list, alarm, e-mail, WAP enabled, calculator, audio player, video player, flash player, real player etc. They are also more flexible to integrate the existing services by employing web based interface. The combination of these features can help to meet the demand for MCL. The concept of mobile-based learning is completely different from classroom-based learning method. This pedagogical method of learning provides many possibilities, such as providing the opportunities to group of persons, working in same or different organizations to participate for accomplishment of specific goal.

Now-a-days Collaboration has been getting more importance in educational environment. The focus of collaborative learning has been implanted from elementary to higher educational institutions. The demand of collaboration learning has been increasing due to launching the many joint projects. For example, University of Northwestern has started "Oncofertility consortium program" with support of Oregon health and Science University, university of Pennsylvania and university of California for San Diego. This program addresses the medical reforms for cancer-patients, initiating new detection and diagnosing methods. The launched mechanism of health-care also handles issues of young infected cancer patients. The consortium brings various professional together by using Breeze and H.323-based video conferencing protocols. These projects motivate to provide such platform to meet distance and online educational activities.

However, some of major challenges are still unresolved, developing healthy MCL environment for education. This paper is to deploy the mobile devices in multi environment particularly education that helps students to obtain learning materials in open, large scale, dynamic and heterogeneous environments. It proposes and implements linguistic architecture to support mobile devices to meet pedagogical requirements at anytime and anywhere. It involves pre usability testing and ranking method. On the basis of this approach, the basic user requirements are obtained for introducing a new innovative system at server side that helps the mobile users to watch live lectures and obtain faster delivery of contents with quality of service. The challenge is to introduce new "group application" and light weight software threads for client (mobile) and server side. They collectively manage asynchronous, synchronous, multimode collaboration; archive updating, friendly user interface, middleware support and other promising features.

1 Wireless & Mobile communication laboratory Computer science and Engineering department University of Bridgeport, CT, USA, arazaque@bridgeport.edu

2 Wireless & Mobile communication laboratory Computer science and Engineering department University of Bridgeport, CT, USA, elleithy@bridgeport.edu

3 Wireless & Mobile communication laboratory Computer science and Engineering department University of Bridgeport, CT, USA, aalhinna@bridgeport.edu
Figure: 1. Supportive framework for MCL at server side for synchronization of contents

**Keywords:** Framework; Mobile collaborative learning (MCL); mobile devices; Server & client side protocols; innovative mobile application.