Implementation of English E-Learning System Based on .Net Framework

Soobin Jeon, Yongtae Jo, Daeho Kim, Kangsik Kim, Dongmahn Seo and Inbum Jung

Abstract — *This paper presents a new English E-learning system in which children can be educated using a smart phone and a web application at home. The proposed system provides three contents based on new designed core framework. Each content is served to users through a smart phone and a web application.*

Index Terms — Internet Integration, .Net Framework, E-Learning , Smartphone, Android.

I. INTRODUCTION

Recently, in the various environments including a company, a school, and a home, the frequency using E-learning systems has been increased rapidly. Usually people use it for a self-development and a study. However, there are not enough systems for children who didn't enter a school yet [1]. In this paper, new E-learning system, The KNU Children English Class(KCEC) E-learning system, is proposed for the children. We assume that users can use not only their own PC for E-learning but also a smart phone in our system.

The KCEC system provides a web application and a smart phone application. We develop a new web application for the KCEC system. It reduces unnecessary page views and minimizes the server traffic. In addition, we develop a customized smart phone application for the KCEC system, because a smart phone has a low computing power. The new smart phone application decreases page loading time.

Fig. 1. An Architecture of the KCEC System

S. Jeon, Y. Jo, D. Kim, and I. Jung are with the Kangwon National University, Chuncheon, Gangwon 200-701 Korea (e-mail: {sbjeon, ytjoe, dh_kim, ibjung}@snslab.kangwon.ac.kr).

D. Seo is with the Korea Institute of Science and Technology, Seoul, 136-791 Korea(e-mail: sarum@imrc.kist.re.kr).

K. Kim is with the Kangsannet Co., Chuncheon, Gangwon 200-160 Korea (e-mail: choigo@kangsan.net).

II. KCEC DESIGN AND IMPLEMENTATION

A. System Design

Fig. 1. shows the entire structure of this system. The users can send a request to the KCEC system using a web browser and a smart phone application. As the KCEC gets a users' request it serves proper service respectively. If the web server and smart phone application receive the response data, they provide a service to the users.

The service of KCEC consists of three classes. As shown fig. 2, the classes are classified to Word Dictation (Dictation), Multiple-Choice (Selection) and Arrange Word(Ordering). Each Class has a course. The course is a definition of progress of each class. In current system, all users use the same service.
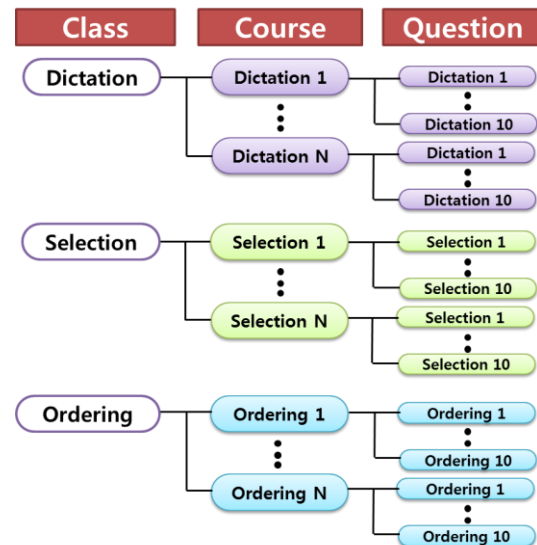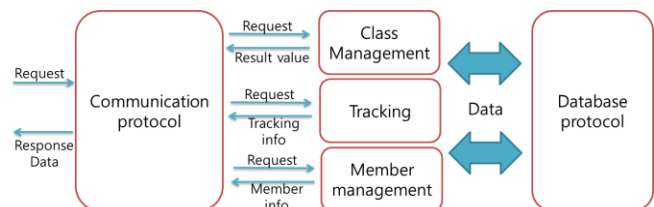

Fig. 2. Curriculum of The KCEC Service

Fig. 3. A Data Flow Diagram of The KCEC Framework

Each course has ten questions. A course manager can select difficulty of each course. Each class can be created, modified, and deleted through course administration page. A course manager and a web administrator must have all authority.

B. KCEC Framework

Fig. 3 shows a data flow of the KCEC framework. As shown fig. 3, the communication Protocol (CP) module analyzes data received using web and smart phone application to send the Class Management (CM) module, the TRacking (TR) module, and the Member Management (MM) module. Result data received from the CM, the TR, and the MM are served for web and smart phone application. The CM module manages a course and a question part. The TR module manages a user's course, a question tracking, and a result feedback. The MM module manages a user's info, a grade, and a score management. The CM, the TR and the MM modules communicate with database using the Database Protocol(DP).

C. Smart phone and Web Application

In this paper, we propose the web application which provide E-learning using PC. The web application is developed using ASP.NET with .NET Framework [2, 5, 6]. The application composes the page by each class, as shown as Fig. 4. Question pages are loaded after user login and then the course will be selected. The course contains 10 pages with 10 questions, Since each question requires one page loading, the previous method occur unnecessary page view. To address this problem, AJAX (Asynchronous JavaScript and XML) [3] and DOM (Document Object Model) [4] are used. In our new approach, When one page is loaded, 10 questions are loaded in internal buffers together. Therefore, basic frames are reused and corresponding data are changed. Therefore the data traffic will be reduced by this processes as shown as Fig. 5.

Recently, requirements of education with smart phone has been increased. However, when the smartphone web browser load the KCEC page, the page is not normal and screen doesn't fit on smart phone. Also, page loading time is longer than PC web browser. It is why users have to waiting for long time to answer the questions. In This paper, proposed smart phone application provides faster loading time per page than smart phone's web browser as shown as Fig. 6. Also, we produce User Interface(UI) that children use it simply and easily. As shown as Fig. 5. Therefore, the user can use KCEC system simply using proposed system.

III. CONCLUSION

The KCEC E-learning system can be served on diverse devices such as a web and a smart phone. Based on the KCEC framework, it makes children study easier and faster. Especially web application reduces the unnecessary page view occurred by AJAX. In addition, smart phone application uses the exclusive application to address the web loading time problem. In future work, this system needs to be improved to support additional features such as augmented reality. The new features could be served through smart phone application to get user interests.

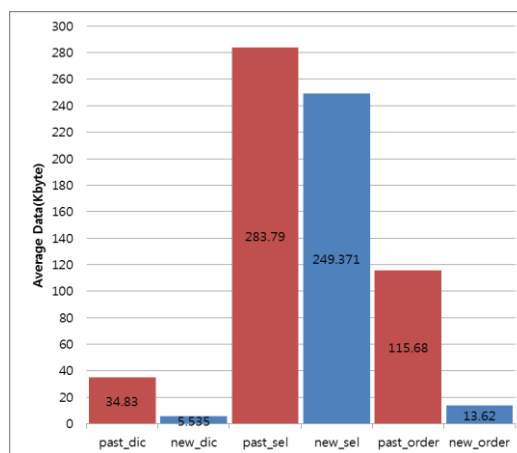Fig. 4. Snapshots of a Web(Top) and a Smartphone(Bottom) Application
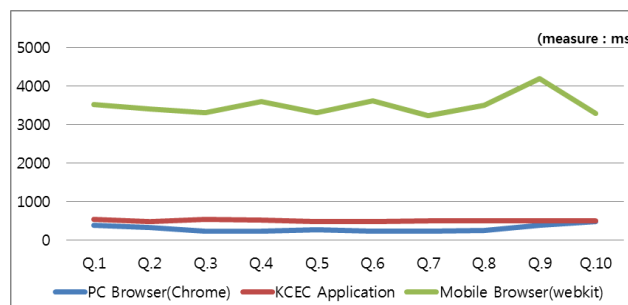

Fig. 5. Amount of Data per Page

Fig.6. Comparison of Loading Time per Page

IV. REFERENCES

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