Location Based Service Technology for Lifelong Learning Information Service

[1]Young-Sun Kwon and [2]Ki-Hwan Ryu
[1]Graduate School of Lifelong Education, Soongsil University, Seoul, South Korea
[2] Institute of Information Technology Department of Computer Engineering,,
Kwangwoon University, Seoul, South Korea

Abstract: This study aims to provide information on lifelong learning by developing a Location Based Service (LBS) algorithm which allows adult learners to find and learn conveniently at the closest lifelong learning centers. These centers offer lifelong learning opportunities to prepare local residents for rapidly changing knowledge and information society and operate region-specific programs to contribute to the development of local communities. In 2015, the Korean Educational Development Institute (KEDI) revealed barriers to the lifelong learning of adult learners including lack of time, limited number of nearby learning centers and insufficient information on lifelong education programs. In particular, lack of time is the common reason that prevents adult learners of all genders and age groups from participating in the programs and makes them withdraw from the programs. To help them overcome such obstacles and encourage their participation in lifelong learning education, we introduced a mobile LBS application that enables adult learners search programs they want and find the closest lifelong learning centers, thus, shortening the travelling distance and helping them manage idle time. Furthermore, through this application, learners can establish learning plans and manage their achievements on their own to motivate themselves to take part in the lifelong learning and they can also accumulate and manage their learning experiences. Based on such accumulated data, learning programs and consultation services tailored to the life cycle of each learner can be designed and provided.

Key words: Lifelong learning, location-based service, lifelong learning center, adult learner, learning, achievement

INTRODUCTION

The development and utilization of smartphone apps and contents based on Location Based Service (LBS) are becoming popular with the explosive growth of smartphones (Lee *et al.*, 2016). LBS refers to services tailored to the situations of users utilizing location information obtained from mobile communication or Global Positioning System (GPS) (Cheon and Park, 2017). These services have been developed since the advent of smartphones with mobility and recently diversified through the combination of location and user information (Lee and Kim, 2018). The smart technology has been advancing through fusion and creation processes in many areas and has introduced new paradigms not only in individual lives but also in economy, society, culture and education in general. Living in the era of centenarians and knowledge society, the members of the modern society show the attributes of 'lifelong learners' who continuously pursue knowledge throughout their lives (Kim *et al.*, 2013). Moreover, the growing demands for new knowledge and education to improve quality of life underline the need for lifelong learning centers. These centers contribute to the development of the local community by offering programs that match local needs and constantly provide lifelong learning opportunities for local residents (Han, 2014) to fulfill its roles in creating a lifelong learning culture and supporting learning programs. Targeting all social classes, they provide lifelong education for social integration.

MATERIALS AND METHODS

The Korean Educational Development Institute Anonymous (2015) investigated barriers to adult lifelong learning which include lack of time and absence of nearby learning centers. The biggest obstacle for the working adults was schedule conflict as the most of the programs are provided during the working hours (Anonymous, 2014). According to the study of Houle (1961) on the motivation of adult learners for lifelong learning, all the adult learners who engage in various forms of lifelong

learning have motivation to obtain achievements through learning, although there is a difference in degree. Learning achievements show the outcomes of learning including changes, development, new knowledge and skills and has important implication as an index to measure the learning achievement of adult learners with strong motivation (Kim and Kim, 2017). Therefore, it is essential to build an infrastructure of spaces for lifelong learning and create a device for verifying the learning achievements in order to narrow the gaps in participation in lifelong learning programs caused by social background and to increase efficiency of the education. To achieve the above-mentioned goals, this study developed a mobile LBS algorithm that allows users to search and find lifelong learning centers closest to their current location and applied it to the services of local lifelong learning centers. The information gathered from location services of social networking services and posts of blogs combined with LBS technology enables users to find the nearest lifelong centers. Furthermore, the learners can manage learning plans and achievements on their own. They can also conduct a group study at the closest affiliated lifelong learning center and share information via. a group chatting room. Initially, a variety of information related to lifelong learning is provided only but with gradual accumulation of data, customized programs and consultation services tailored to the life cycle of each learner can be designed to provide personalized learning information based on the individual attributes (Kwon, 2016).

RESULTS AND DISCUSSION

System model: In this study, the application contents were designed utilizing mobile LBS as shown in Fig. 1 to help users find lifelong learning centers and programs closest to their locations, so that, they can comfortably learn at the desired place. In addition, learning histories can be managed based on the accumulated data of adult learners to provide customized learning information in the future.

The system model shown in Fig. 1 is the combination of LBS with mobile terminal and map application. With 'Search Course', users can find courses they want and the nearest lifelong learning center. Moreover, the schedule of registered courses will be displayed and courses will be recommended based on the interests of the users. They can also manage their learning achievement to check their learning achievements and open a group chatting room to share educational information. The information on lifelong learning will be provided in real time from the homepages of lifelong learning centers on 'Learning History' and they can also check the completed courses and manage their learning history based on the accumulated data. When users enter a course name in the 'Search Course' field on the main screen of the application in Fig. 2, the closest lifelong learning center will be displayed on the map in Fig. 3. The 'View Timetable' field in Fig. 3 provides notification service when there is an enrolled course for effective schedule management and the timetables of enrolled courses are displayed as shown in Fig. 4. The
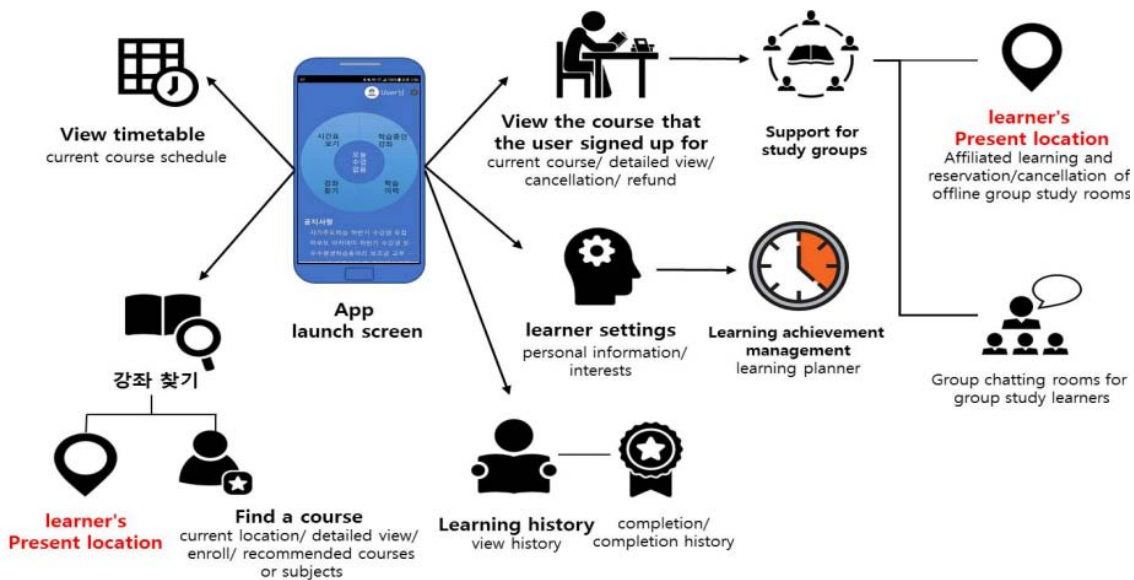

Fig. 1: System model

Fig. 2: Main screen of application
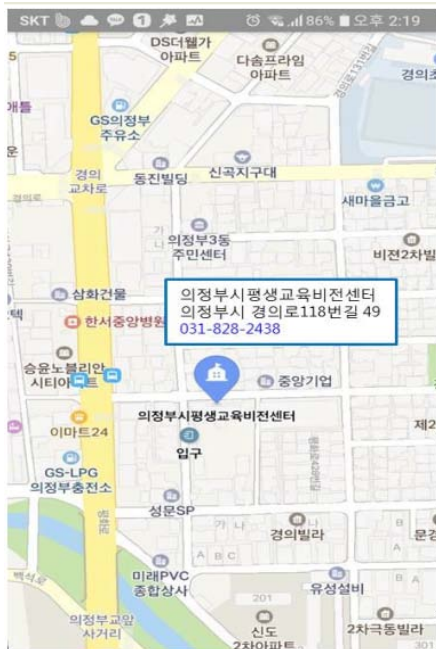

Fig. 4: Program menu

Fig. 3: View lifelong learning center

Fig. 5: View timetable

details of the enrolled courses are displayed in Fig. 5 and users can select an enrolled course and see its details in Fig. 6. Users can also cancel an enrolled course and request a refund. Furthermore, based on users interests and personal information, new courses in the nearby lifelong learning centers that may interest users are notified to them. In addition, the application is designed to enable users to manage their learning plans and learning achievements on their own in Fig. 7. Users can reserve spaces in affiliated nearby learning centers and libraries in Fig. 8 and open a group chatting room to share learning information and conduct group study in Fig. 9. Furthermore, they can add and manage their learning histories and check the completed and cancelled courses in the 'Learning History' field in Fig. 10.

Fig. 6: Program menu

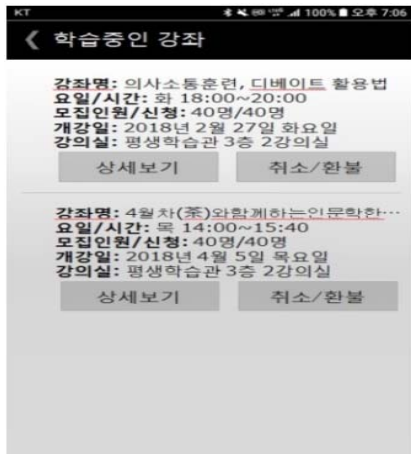Fig. 9: Reserve learning center
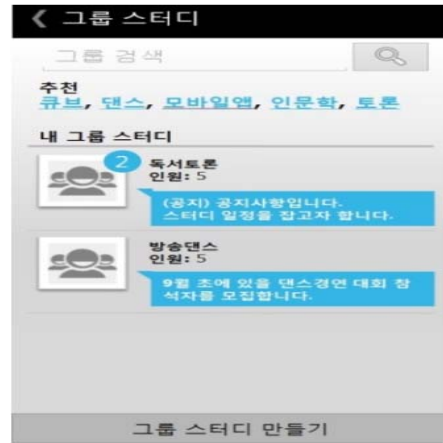

Fig. 7: View details of enrolled courses

Fig. 10: Group study

Fig. 8: View learning planner

Fig. 11: Program menu

CONCLUSION

In this study to provide learners with information on lifelong learning, a Location Based Service (LBS) algorithm was developed and applied to local lifelong learning centers to effectively assist adult learners in searching the closes lifelong learning centers and appropriate programs. This LBS application combined with a smartphone map application that provides the current locations of the users is a highly useful tool to improve convenience and access to lifelong learning, especially for the mobility handicapped such as the disabled and the elderly and people with time constraints such as homemakers and workers. Initially, this application only offers general information on lifelong learning programs and course recommendations based on the interests of users but with the gradual accumulation of data, it will be able to provide customized learning information and systematic learning history management. This will also help lay the foundation for expanding and vitalizing lifelong learning. However, technical and legal safeguards should be arranged beforehand to prevent unwanted privacy issues and leakage of personal information due to the LBS.

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