

# Personalized Mobile Learning and Course Recommendation System

Madhubala Radhakrishnan, Department of Computer Science, Vels Institute of Science, Technology and Advanced Studies (VISTAS), India

A. Akila, Department of Computer Science, Vels Institute of Science, Technology and Advanced Studies (VISTAS), India

## ABSTRACT

Mobile-based learning provides new experience to the learners to learn anything from anywhere and anytime by using their portable or mobile device. Vast educational contents and also different media formats can be supported by the mobile devices. Access speed of those materials has also improved a lot. With this advancement, providing required content or materials in the desired format to the learner is essential to the learning management system. Also, it is very important to guide the learner based on their interest in learning. With this outset, the proposed mobile learning system helps the learners to access different courses under different levels and different specializations. The course contents are in different formats called learning objects (LO). In order to provide personalized learning experience to the learner, the system finds the learner's preferences and selects the desired learning objects. It also recommends some specializations with level to the learners to achieve higher grades.

## KEYWORDS

Classification, Mobile Learning, Personalized Learning

## INTRODUCTION

Usage rate of mobile phones increased tremendously in the past few years and it creates new way for learning that breaks the boundaries of conventional classroom-based teaching-learning method; hence the learners can learn anything from anywhere and anytime with the help and mobile device and internet technology (Duman et al., 2015). That means disseminating quality learning materials through mobile devices. Most of the learning management system delivers the fixed materials to all the learners. But the success of any learning system is not only delivering educational contents to the learners but also understand the learning nature of the learner and knowledge level and needs. This has led to several research initiatives worldwide that investigate the potentials of the educational paradigm shift from the traditional teaching approaches to adaptive and personalized learning (Lo

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et al., 2012). Personalized learning considers the learning methods and contents are tailored towards the learner's needs, skills and interest and adapt the course content (customizing learning material/ contents). Personalized learning will help both learners and instructors in such a way that learners can get customized learning content/material based his/her learning pace, style and need. This will increase the learning interest, maximize the learner's satisfaction and achieve the learning outcomes. On the other hand, instructor will also understand the need of the each and every learner, learning pace, style, preferences etc. this will help the instructor to customize the learning material and design which is more suitable and attract large learner community. This paper presents the personalized mobile learning recommendation system which considers learning style of the learner in order to select the proper content type and grade achieved by the learner in the courses are considered for course recommendation by using naïve bayes theorem.

Rest of the paper is organized as follows. Section 2 presents the overview of existing personalized mobile learning and recommendation system. Section 3 presents the learner style and content design. In Section 4, describes the proposed system and data analysis and finally we conclude the paper in section 5.

## **PERSONALIZED MOBILE LEARNING AND RECOMMENDER SYSTEM**

Rapid proliferation of mobile and internet technology has potentially promoted the diverse learning approaches. Personalization in learning, boosts the interest in learning process which helps the learner to achieve their learning objective/outcomes (Muna, 2019). In this section, presents the overview of existing personalized mobile learning and recommender system.

Benlamri and Zhang (Benlamri & Zhang, 2014) presented context aware recommender system for mobile learning which has proactive context awareness mechanism that can sense both system centric and learner centric context and adopts the accessed services accordingly at run time. Personalization is achieved based on the learner's background knowledge, preferences, previous learning activity, covered concepts, adapted learning path and consumed learning resources. Then the system will construct new learning sequence for learner that consist of optimized system-centric learning resources to fulfill the current learner's activity and goal.

Inssaf El Guabassi et.al (El Guabassi et al., 2018) presented the personalized course content adaptation system which considers learner profile as the base for content adaption learner. The learner profile consists of four attributes such as Learning Style(Visual, Verbal, Global, Sequential, Reflexive, Intuitive, Active, Sensing), Cognitive Style (Text, Audio, Video), Cognitive State (Beginner, Intermediate, Expert) and Device context(Device, Activity, Environment) . Based on the learner profile, course content will be adapted.

Brita Curum et.al (Curum, Chellapermal, & Khedo, 2017) proposed mobile learning system in which personalization is achieved by adopting the course based on learner age (11-17 -Junior, 18-45 Adult and 46-65 Senior) Junior and Senior learners are presented with courses which carries basic explanations while adults are presented with explicitly detailed contents. Difficulty of the assessment questions depends on the quiz level (beginner, intermediate, advanced) and the user age group.

Tortorella and Graf (Tortorella & Graf, 2012) proposed an approach for providing personalized course content in mobile settings, considering learner's learning style and context. In this system, course is divided into sections and each section into series of lectures. These lectures are further divided into smaller blocks. The material of each of these blocks is recorded in four different modes (video, audio, text and powerpoint). The course material is stored electrically in various appropriate file formats on the server and presented via mobile device. These blocks must be numerous and short enough to allow for a dynamic personalization by changing the delivery mode as required.

Brita Curum et.al (Curum, Gumbheer, Khedo et al, 2017) presented a context-aware mobile learning application "Mobiware" which uses contextual data for content adaptation. Contextual data includes physical context adaptation (Location, Time, Environmental Condition, Network Capabilities)

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