Development of MySQL-based E-learning Platform for College English

Jie Su¹, Yanan Hao²

¹Shijiazhuang Institute of Railway Technology, Shijiazhuang 050000, China
²Shijiazhuang University of Applied Technology, Shijiazhuang 050000, China

Abstract
Thanks to the network, more information technology has been applied to teaching. College English flipped classroom, among others, applies the MySQL database, which provides technical support for the development of E-learning platform to be stable functioning. Students have established a real-time English learning mode, thus enhancing their English learning efficiency.

Keywords: MySQL Database, English Flipped Classroom, Network Learning Platform.

1. INTRODUCTION

1.1 Literature Review
As a representation of information technology, MySQL database is compatible for various medium- and small-sized websites in providing resources on information technology, which boosts the storage efficiency of information (Xu and Gu, 2017). With its growth, it has constantly been applied to new fields and achieved remarkable results. The globalization has promoted the use of English, and therefore English learning has been increasingly prioritized (Yu and Xia, 2017). The flipped classroom for college English has transformed college English teaching as well as students’ traditional learning method. The integration of MySQL database with English flipped classroom facilitates the integration of flipped classroom with E-learning platform. With the platform, students could acquire information and internalize knowledge to improve their English (Yuan, 2017). Current literature review on this focus on MySQL database and English flipped classroom, which lays a foundation for future research on MySQL database in building flipped classroom for English learning.

1.2 Purpose
This paper starts from the overview of MySQL database, explains the contents of flipped classroom and E-learning platform, and masters the operation process (Yang and Hao, 2017). The MySQL database improves operation process and the operating system for E-learning platform, turning more compatible with English flipped classroom. Thus, with improved interest in English, students could cultivate the learning autonomy in English learning and enhance their comprehensive English capabilities.

2. OVERVIEW
MySQL database, a small-sized data management system, was proposed a Swedish researcher and widely applied to the Internet (Feng, 2016). Its characteristics like small size, fast speed, and low costs enables it to be applied to some medium- and small-sized websites. Open source is another key feature during MySQL development. Medium- and small-sized websites adopt the database of MySQL for its low costs (Wang and Liu, 2016). MySQL database has developed new features in its growth. First, MySQL could be applied in different platforms and websites could store data based on MySQL. Second, it is highly functional. MySQL could be transplanted into any devices and network. Third, MySQL is compatible with many operation systems and works with any computer system (Gao and Wu, 2016). Fourth, MySQL uses several programming languages, which improves the search algorithm of SQL, so its search speed. Five, MySQL has many data connections, including TCP/IP, ODBC, etc. Six, MySQL also provides services like data management, data check, and database optimization (Huang, 2016).
These features widen the scope of its application, including math, then the math database provide abundant resources to classroom teaching. MySQL database is equipped with many default storage engines which can be preset or initiated in the MySQL server. The engines include MyISAM, InnoDB, MERGE, MEMORY (HEAP), BDB (BerkeleyDB), EXAMPLE, FEDERATED, ARCHIVE, CSV, and BLACKHOLE. Each engine is unique, and this paper will analyze some common storage engines: MyISAM specializes in retrieving data and has low requirements for data consistency (Chen, 2015). The process stores one or more MySQL sentences for future use, i.e. batch files, featuring simplicity, safety, and high performance. More importantly, it processes the data faster compared with the basic SQL sentences. But the programming is more complicated and therefore is demanding for programmers. Federated could integrate several separate servers and create a logical database using several physical servers, which is suitable for distributed environment and data mart. For Cluster/ NBD, MySQL’s database engine is especially suitable for applications with high performance searching demands. These demands include maximum working time and availability (Wang, 2015). Other storage engines include CSV, Blackhole, and Example.

3. CONNOTATION OF ENGLISH FLIPPED CLASSROOM AND E-LEARNING PLATFORM

3.1 English Flipped Classroom

Flipped classroom indicates student-oriented classes and a change of time arrangement, giving students’ learning autonomy into full play (Shao and Yu, 2015). Traditional teaching generally consists of imparting knowledge and absorbing knowledge. The former mainly depends on teachers’ teaching while the latter on students’ learning. The flipped classroom is quite the opposite. Before each class, students are expected to study by themselves. Then the precious class time is no longer for teachers to impart knowledge, rather, it is for students’ self-learning and interacting with teachers to gain a deeper insight into the acquired knowledge (He, 2014). After class, students themselves could decide their learning contents, learning pace, style, and the way of how knowledge is presented. Teachers play the role of promoting individualized learning with instruction and assistance. Flipped classroom flips the traditional teaching method, specifically, the knowledge imparting and internalizing, which improves teaching results and efficiency. Besides, based on information technology, the application and operation of flipped classroom move learning before teaching, aiming to cultivate students’ learning autonomy. It respects individual differences and adopts a tailored teaching principle to illustrate “student-oriented”. With the flipped classroom, students’ academic performance is improved, learning motive enhanced, learning autonomy optimized, and behavior changed for the better. Teachers are more satisfied with their work, and the relations between teachers and students, parents and school will be closer (Zhou, 2013). In the flipped classroom, students learn through the Internet media to acquire knowledge, understand the focus and make notes of their questions. In class, students discuss, ask questions, and do research under the teacher’s guidance. After class, they review the knowledge gained in class, thus optimizing their learning effects.

3.2 E-Learning Platform

E-learning platform system is composed of platform assembly, models, and rules, which determine the functions of hardware and software system during its developing and operation. The specific rules for the Internet platform ensure the compatibility of various assemblies and models so that the platform could run smoothly (Li and Wang, 2011). E-learning platform is a comprehensive teaching-learning service support system that includes services like online teaching, online tutoring, online self-learning, online teacher-student interaction, online homework, online test, and quality evaluation. E-learning platform offers real-time and non-real-time services, enabling administrators to monitor teachers’ teaching and record students’ performance. Teachers could arrange all kinds of teaching activities with this system. The platform provides a condition for distance learning, in which teachers and students are in separate time and space, with each student learning in an individual and independent environment. The idea behind it coincides with that of flipped classroom where students could learn through the E-learning platform, and teachers could upload teaching videos and manage teaching resources to optimize teaching results (Wu and Guo, 2011). Additionally, students and teachers could communicate through the E-learning platform.

4. BUILDING AN E-LEARNING PLATFORM FOR COLLEGE ENGLISH BASED ON MYSQL

4.1 Creating a File for Students’ English

English has become the teaching focus and a required capability for students today. Flipped classroom E-learning
platform provides new ideas to college English teaching. First, MySQL could be adopted in building the E-learning platform for college English. Characterized by low cost and high functioning, MySQL could be used in creating the English learning files for students. The files could be classified into two parts: one is English learning files, including learning objective, detailed plan, performance, process, reflection, etc. The learning file could reflect students’ actual performance to inform students of their progress to boost their confidence and help them to identify their problems to improve themselves. Students, at their disposal, could adjust learning strategies to optimize learning results, enhancing their learning autonomy. Teachers could monitor the process and provide guidance in acquiring knowledge and information. Otherwise the student files, collecting student information through MySQL, including student ID, task achievement, viewing history, Q&A history, log-in times and length, interaction, evaluation, etc. Collecting and managing these data enables students to understand themselves and teachers to arrange teaching contents on the E-learning platform. The application of MySQL enhances the data collection which could be processed rapidly in E-learning platform for users (Figure 1 is the network English student file operation system).

![Figure 1. Network English Student File Operation System](image)

4.2 Establishing English Class Learning System

In establishing the E-learning platform, flipped classroom combines MySQL in building E-learning models, where students could learn English based on own conditions. For the E-learning Q&A model, students’ questions could be answered, and typical questions could be gathered and given out for others to see. Meanwhile, students could submit their questions on the bulletin board to be analyzed and answered through MySQL. Q&A system can be divided into two categories: one is response system which forwards questions to teachers to answer and then feedback; the other is automatic Q&A where key words of questions are identified to match the online data in search of answers to similar questions, and then feedback. If no similar questions can be found in MySQL, these questions are forwarded to teachers whose answers will be included in the database, so these answers could be shown for future similar question. In the micro video model, teachers’ micro videos could be accessed in the MySQL for students to learn English. The strength lies in ensuring students to have a command of knowledge. For those who cannot learn in class again, micro videos on E-learning platform enable students to learn for the time it takes until they fully understand. This model could provide additional learning materials based on their learning pace. This micro video learning could minimize their learning time and reduce students’ burden. The last is administer model, which is further divided into two parts: one is teacher administer system where teachers log in to upload micro videos of teaching materials or engage in Q&A and monitor students’ learning through the administer system; the other is E-learning platform administer system which regularly maintains the platform to ensure a safe operation of the E-learning platform to achieve its functions. The figure 2 is the English flipped classroom network platform operation system, which helps to form a clear understanding of the E-learning platform operation.
4.3 Establishing Learning Evaluation System

The learning evaluation system includes students’ English learning situation in MySQL for a systematic evaluation. The flipped classroom evaluation highlights students’ dominating role, involving not only the result but also the process. Their learning autonomy is a critical part of flipped classroom and should be included into the evaluation mechanism so that students themselves in addition to their classmates and teachers are all evaluators, and their attitude, behavior, and performance should be factored into the evaluation. Evaluation runs throughout the learning and adopts many angles and aspects, enabling students to understand their learning performance and have a clear goal. In evaluating their classmates, students could compare them with themselves to learn from them. In evaluating students, teachers are able to make a more accurate judgment regarding the teaching result and students’ learning. Their feedback as well as guidance for students optimize the teaching methods and improve students’ learning autonomy. The evaluation system should operate under certain rules to provide an overall evaluation of students’ English learning situation.

In evaluating students with the formula,

\[ N \]

represents the number of students

\[ K \]

represents the relevant output of English results and English capabilities
For the number of students (i), the learning input and output can be represented by \( y_i \) and \( x_i \) respectively

\[
x_i = (x_{i1}, x_{i2}, \ldots, x_{in})^T
\]

\[
y_i = (y_{i1}, y_{i2}, \ldots, y_{in})^T
\]

\[i = 1, 2, 3, \ldots, n\]

\[
\max_{u,v} (u^t y_i, v^t x_i)
\]

\[
s \cdot t \cdot \begin{cases} u^t y_i, v^t x_i \leq 1 & j = 1, 2, 3, \ldots, n \\ v \cdot u \geq 0 \end{cases}
\]

If the restrictions are \( v^t x_i = 1 \)

\[
\max_{v,v} (u^t y_i, v^t x_i)
\]

\[
s \cdot t \cdot \begin{cases} v^t x_i = 1 & \\ u^t y_i - v^t x_i \leq 0 & \\ v, u \geq 0, j = 1, 2, \ldots, n \end{cases}
\]

According to the duality principle of linear programming, the figure is:

\[
-s \cdot t \cdot \begin{cases} -y_i + y\beta \leq 0 & \\ \beta - x\beta \geq 0 & \\ \beta \geq 0, l = 1, 2, \ldots, n \end{cases}
\]

Then students’ evaluation result comes out, which is ready for analysis.

5. CONCLUSION

The integration of MySQL database with English flipped classroom E-learning platform provides technical support for establishing E-learning platform, which could identify students’ learning needs more precisely. Teachers could be more flexible in tutoring students to help them improve their English learning and capabilities.

REFERENCES


He Y.B. (2014). Online course selection system based on MySQL database, Computer knowledge and technology, 10(5), 883-885.