Design and Implementation of College English Task-driven Network Teaching Platform Based on web Technology

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Abstract

English is a tool language with high versatility, so colleges and universities have set college English as a basic public required course. However, at present, there are many problems in English teaching in colleges and universities, which not only hinder the development of English teaching, but also affect the effect of students' learning English. This paper summarizes the present situation and problems of college English teaching, and uses task-driven teaching to provide methods, directions and theoretical support for solving the problems in English teaching. Combining theoretical research with web technology, this paper develops an English task-driven teaching platform, which is based on Python technology and Django framework, and is designed by using Nginx deployment server. While improving the quality and level of English teaching and expanding teaching methods, it can stimulate students' interest in learning, so as to improve college students' English autonomous learning ability.

Keywords: *College English; task-driven teaching; Python; Django framework*

1 INTRODUCTION

With the rapid development of society, more and more enterprises are in line with the international market. As one of the international common languages, English has become an indispensable language tool for college students. Because of the importance of English in all aspects, English has been set as a subject throughout the whole university stage. Objectively speaking, the importance and necessity of college students' learning English comes from the needs of college students themselves and social reality. English plays an important role in communication, study and work in today's society [9]. Therefore, English is very important for students to continue their studies and broaden their horizons, and it also plays an active role in promoting international exchanges between countries and enterprises, economic, cultural and political cooperation. However, there are various problems in the current English teaching, such as the backward teaching concept and teaching mode of the school, the lack of integration of college English teaching with practice, the boring teaching methods and teaching contents of teachers, and the lack of opportunities for students to really experience English and apply it to real life. It not only restricts the development of college

English teaching, but also restricts students' ability to apply English. This paper attempts to integrate task-driven teaching method into English teaching to solve the problems existing in current college English teaching. The so-called task-driven teaching refers to the practical teaching tasks designed by teachers in the process of learning knowledge and technology, according to the established teaching contents, requirements and needs in real life, combined with students' learning conditions and hobbies. With the help and guidance of teachers, students establish specific task plans according to the learning tasks assigned by teachers, and closely focus on the teaching process of putting the plans into action to complete the tasks. Driven by the hard task motivation, students can more actively apply learning resources, conduct autonomous learning exploration and interactive collaborative discussions, and at the same time, teachers can guide students to generate motivation for learning and practice [8]. In this process, students' exploration and learning through task practice will continuously accumulate a sense of accomplishment, which can stimulate their learning enthusiasm and desire for knowledge to the greatest extent, and gradually form a virtuous circle in which activities drive perception. Thus, students can form the independent learning spirit and

ability of independent thinking, courage to explore and teamwork. Integrating task-driven teaching mode into college English teaching is helpful to change the concept and mode of school English teaching. Combining with actual needs, task-based teaching enables teachers to not only focus on the explanation of words, structures, grammar, etc., but also pay more attention to training students' English communication and application ability. Through the online teaching platform, teachers create favorable conditions for the task form and content of task-based teaching method, and actively guide students to take the initiative to carry out practical English communication tasks, so as to fully stimulate and mobilize students' enthusiasm for dialogue in English and improve their ability to learn and apply English. English teachers have targeted design of practical tasks, so that students can better understand and master knowledge under the hard drive of practical tasks. In order to better promote the implementation of task-driven teaching, teachers should pay attention to guiding students to complete tasks step by step from simple to complex, from easy to difficult. The task should pay attention to the following points: having a clear goal, taking students as the main body, division of labor and cooperation in small groups and teams, and communicative and daily use of English. The author thinks that the online English teaching platform developed by Python technology and Django framework is based on the web, and the task-driven teaching method is integrated into college English teaching. Teachers design related tasks to the platform according to students' needs in five directions: listening, speaking, reading, writing and translation. Students plan and subdivide the tasks according to the tasks, and upload the task list to the platform. After completing the tasks, they collect materials to upload the assessment materials and assessment contents to the platform. The assessment scores are given by teachers and classmates respectively, which can be more reflected [2]. This combination is conducive to the transformation and renewal of the traditional backward teaching concepts in schools, the change of teachers' status from imparting to guiding and the optimization of teaching forms, and the increase of opportunities and occasions for students to apply English.

2 TECHNICAL OVERVIEW

2.1 *Python*

Python is a highly readable, high-level and object-oriented programming language. Compared with other languages, Python's design often uses English keys and some special punctuation marks, etc., which has its own grammatical structure characteristics. Python is very friendly to developers who use it for the first time. Compared with other languages, Python has fewer keywords, a clear definition of syntax and a relatively simple structure. Therefore, it is loved by many programming developers and has become one of the most

mainstream languages. The encoding format of Python has become more simplified with the upgrade of the version. The default encoding in Python2 is ASCII. If the content is Chinese characters, it can't be output and read correctly without specifying the encoding [3]. If you want to specify the encoding as UTF-8, you can specify it by adding "# -*- coding: UTF-8 -*-" code at the beginning of Python; The default encoding in Python3 is UTF-8, so you don't need to specify encoding when using Python3. Python's syntax, dynamic type and explanatory language nature make it support a wide range of application programming designs dealing with simple words, browser websites, games and so on. When the server runs the program, it needs connector or reprint software to extract the program from the hard disk and put it in the memory to run. However, the program written in Python language runs the program directly from the source code, omitting the process of compiling other language programs into binary codes. Figure 1 shows the code for the system to calculate the average score.

```
import random
num = []
for i in range(0,10):
        number = random.randint(0,100)
        num.append(number)
print(num)
max_num = max(num)
min_num = min(num)
print(f"Delete the maximum value{max_num}")
num.remove(max_num)
print(f"Delete the minimum value{min_num}")
num.remove(min_num)
sum_num = sum(num)
print("Then start to calculate the average score: ")
print(sum_num/10)
```

Figure 1: The code for the system to calculate the average score

2.2 *Django*

Django is a standard Web application framework based on Python language. It not only has many necessary components for developing Web applications, such as complete and flexible templates, object relationship mapping and the ability to create and manage dynamic background interface content, but also can be used to quickly design and develop web application systems with MVC design level. However, the design mode in Django is MTV. Django framework was born out of the actual project. The functions provided by this framework are especially suitable for the construction of dynamic websites, including the simple Django's own

server that manage.py can manage script files. Django's MTV design pattern mainly includes three. py files, models.py, views.py and urls.py, and the template folder which is responsible for storing html template files. Data tables in Django web are mainly controlled by models.py file [1], so they are called data models. The records in the database are created, deleted, modified and queried by the models.py category, which saves the process of writing SQL statements in the database. The views.py file puts the business logic of the page, urls.py points out the specified URL to call the view, and each template file in the templates folder describes how this page is designed. Figure 2 shows Django's code for obtaining front-end post and get request data.

```
Gets the POST request data
from django.shortcuts import render
# Create your views here.
def login(request):
    print(request.method)
    if request.method == 'POST':
    print(request.POST)
    print(request.POST.getlist('gender'))
    return render(request, 'login.html')
Gets the GET request data
from django.shortcuts import render
# Create your views here.
def login(request):
    print(request.method)
    if request.method == 'POST':
        print(request.POST)
        print(request.POST.get('username'))
        print(request.POST.getlist('hobby'))
    if len(request.GET) != 0:
        print(request.GET)
        print(request.GET.get('username'))
        print(request.GET.getlist('hobby'))
    return render(request, 'login.html')
```

Figure 2: Code of interaction between Django and front-end page

2.3   Development environment

The development environments of the technologies involved in this paper are all deployed under window. To develop a Python project, you must first install a Python interpreter. After installing Python interpreter, an IDLE file will also be automatically installed. The python version downloaded and installed in this article is version 2.7.6 and version 1.6.11 of Django framework, because installing the latest version 1.7.11 will give an error. First, unzip the package. cmd enters the unzipped path after entering the command, and then install it with the python setup.py install command, which installs some files in Django into Python's storage path. Then configure the environment variables. Generally, the installed Django is placed in the Lib\site-packages folder of Python

installation directory, and the D:Program Files\Python26\Lib\site-packages\django\bin; installation path is added to the system environment variable PATH. Close cmd after successful addition, restart cmd and enter the command django-admin.py start project my site. If there is no prompt error, the installation is successful. Python comes with SQLite database, but it is not enough to support the data of this system. Therefore, it is necessary to install a database software. Django supports various mainstream databases. This time, MySQL database is installed as the storage of system data. The installation and configuration of the above environment provide feasible support for the development of task-based college English teaching platform.

3   REQUIREMENTS ANALYSIS

3.1   System requirements analysis

Based on the research on the current situation of college English and the analysis and application of countermeasures, the task-based English teaching platform developed in this paper is designed on the basis of the web forms that students are interested in, and the interface is vivid and beautiful. According to the positioning of different roles, the demand subjects are divided into two parts: teachers and students. Teachers are mainly responsible for task design before class, supervision and guidance in class and assessment after class. Before class, a comprehensive task outline is designed for English listening, speaking, reading, writing and translation, and uploaded to the platform. When designing tasks, teachers should arrange tasks step by step according to the cognitive growth law of students of this age group and the current cultural trend, and organize teaching with a targeted aim to ensure that students can participate in tasks effectively and finish them with good quality. Before class, teachers assign task groups to students on the platform and release task materials and outlines for students' preview. Teachers should change their identities in the process of task practice, and students should be the task subjects and guides themselves, giving help and tips in class to guide them to actively and cooperatively complete their learning tasks [6]. After class, teachers arrange assessment according to the theme of classroom tasks, and give students a certain preparation time to collect relevant materials and complete the assessment independently. Teachers organize students to watch and show through the platform, and give scores and evaluations. Students are mainly responsible for collecting materials and doing pre-class preview according to the task outline designed by the teacher in the classroom, and then planning tasks with the team members by using the platform, and completing the tasks in the classroom by division of labor and cooperation. After class, students review and design their own interesting forms for assessment reports

according to the task content, which can be done independently or in cooperation with team members. Besides reporting the results, they also have the task of checking others' reports and giving them a grade. The combination of teachers' evaluation and students' mutual evaluation reflects the fairness and democracy of teaching evaluation.

3.2   Global design

Figure 3 shows the overall architecture of the system: the application layer architecture of the system is that HTML5 presents the page content, CSS3 decorates the style of HTML elements and provides some animations, JavaScript completes the dynamic interaction effect of user behavior, and orderly generates data into the page. The Server layer uses Nginx and uWSGI interface as the server of the system, and Nginx can handle concurrent requests well. Its advantage is that it occupies less memory. Therefore, Nginx is selected to be responsible for the load balancing of the server and H to handle the related static requests in the TML page, and the dynamic requests that cannot be handled are thrown to uWSGI interface. The business layer mainly encapsulates some functions realized by students and teachers, and the data interactive operation written by Django framework in MTV mode. In the data layer, the relational database MySQL and MariaDB are used as the data support of the platform. The specific interaction process between the front-end and the database is as follows: At first, the client converts the request into JSON format through http protocol, and initiates the request of data interaction and resource call to Django back-end through Ajax asynchronous technology. In order to provide services to the web, realize load balance and operate efficiently, the nginx server is set as a direct external service interface, and the request sent by the client is unpacked, and then analyzed and judged. If the request is a static file, the requested data resource will be returned according to the static file directory configured by nginx. If the request is dynamic data, nginx will forward the request to uwsgi interface through configuration file, which will accept and process the packet and then pass it to wsgi. wsgi will call a file or function set in django project according to the request. After processing, django will return the requested data to wsgi, and WSGI will package and forward the returned data to uWSGI, which will forward it to Nginx after receiving it. Nginx will finally return the return value to the client. The model layer in Django uses MariaDB as relational database [4], and uses the built-in ORM engine module of Django to interact with the database. A series of data operations, such as adding, deleting, and searching, are performed by accessing the data tables in the database. The template layer solves the logic of the display part, monitors various events in the HTML page and transmits the specific needs to the corresponding background logic View in the View layer through the URL list. At the same time, it receives the

data information returned from the view through the embedded DTL. The view layer handles all kinds of related logic and is responsible for communicating models and templates.
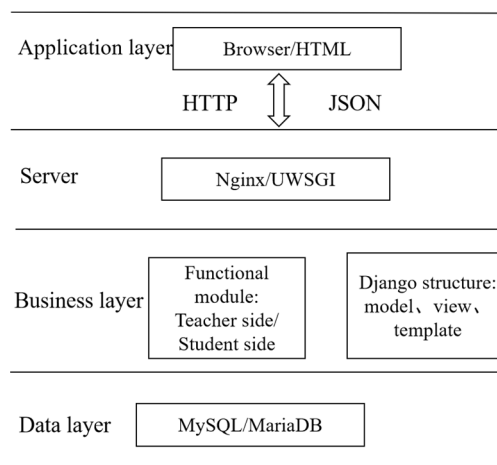

Figure 3: Overall Structure

4   FUNCTION IMPLEMENTATION

In this paper, the functional modules of task-based English teaching platform are divided into teacher module and student module according to users.

Teacher module: Before class, teachers need to design tasks from four aspects: listening, speaking, reading, writing and translation. When designing tasks, teachers can collect data, materials and videos from all aspects and upload them to the task data module of the platform for students to preview and use in class. One hour before class, the task will be published to the task outline module in the form of topic+examples, which is convenient for teachers to integrate materials and publish materials, tasks and assessment requirements. The design of the task should be realistic, such as setting up situational dialogues in comprehensive listening and speaking, such as thematic interviews, interviewing programmers in an Internet company, showing an example to talk about the methods and rules of the dialogue first, and then having students perform different role exercises in the classroom, in which teachers participate in the dialogue to correct students' pronunciation and language sense [7]. After the task is finished, arrange for them to adapt the theme of interview, and publish the requirements and standards to be assessed to the task assessment module. For example, the comprehensive task of listening and speaking is uploaded to the platform by audio and video as an assessment work [5]. The assessment function is divided into written assessment and audio-visual assessment. Audio-visual assessment is aimed at comprehensive listening and speaking tasks, while written assessment is aimed at comprehensive reading, writing and translation tasks. The assessment is that after each student uploads the work, the teacher downloads and views it and gives the

corresponding score according to the designed topic and report content. The online assessment and scoring saves the link of sending and receiving homework and saves the teacher's time.

Student module: As the main body of task-based teaching for students, the functions in the system are set with different functional modules for the three processes before, during and after class. The three modules corresponding to the processes are task data, task outline and task assessment, which are convenient for students to preview, learn, review and assess. Before class, students can log in to the platform and click on the task outline module to download and read the task materials released by the teacher, such as pictures, audio and video, and documents for preview. During class, download the cases published by the teacher in the task outline module and complete the task according to the teacher's guidance. After class, the task assessment module of the platform receives the assessment tasks issued by the teacher, collects data, completes the assessment and uploads them to the platform. Under the teacher's organization and instructions, other students' works are downloaded to view and graded according to the assessment criteria. The complete process of the task is as follows: synthesize the listening and speaking tasks, download the task data for preview and download the task outline in class. Complete the situational dialogue according to the topics and examples assigned by the teacher, such as interview, interview with an internet company, and start a dialogue with the group members according to the examples. In the process, the teacher will participate in the dialogue and correct pronunciation. After class, design a situational dialogue with the group of students according to the interview topic issued by the teacher in the task assessment module, complete the dialogue and publish the recorded audio and video to the platform for the assessment of listening and speaking. Score the works of other students on the platform after the completion of tasks and examinations at each stage. Students should check the works of others in the scoring process, which can also consolidate their knowledge. Finally, the system will integrate the scores, remove the highest score and the lowest score, and calculate the student's performance in this examination. Systematic calculation improves the scoring efficiency [10].

5 CONCLUSIONS

To sum up, task-based teaching method, as an advanced teaching method with students as the main body and teachers as the guide, can help teachers create a better teaching environment, effectively arouse students' enthusiasm and initiative, and thus improve the quality of English classroom teaching and the efficiency of students' learning. English teachers combine students' learning situation and actual needs, rationally design and arrange learning tasks, comprehensively adopt different

teaching activities, and guide students to participate in different learning links in a group cooperation way, so that students can make up for their own learning deficiencies, and make students better apply what they have learned through assessment and peer evaluation mechanism. In view of this, it has improved the mode of school English teaching, promoted the role transformation between teachers and students, and made them have more exchanges and interactions.

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