Integrating and Categorizing Digital English Translation Instruction Resources Through Deep Study

Fang Zhang[1*]

[1]English Department, Taiyuan University, Shanxi 030000, China

Corresponding Author: Fang Zhang, fang13903417357@163.com

Abstract. As information technology continues to advance in the field of English instruction, there is an abundance of digital English instructional resources available to learners. However, this wealth of resources often presents challenges in terms of selection and utilization. Additionally, the practical use and promotion of online English instruction resources have revealed several shortcomings in their design and implementation. Existing internet-assisted instructional resources primarily focus on delivering English knowledge and emphasize the adoption of study formats. However, they often lack well-designed instructional strategies and interactive learning experiences. These resources are rooted in shallow learning methods and ideas, which tend to prioritize rote memorization and basic comprehension. As a result, learners passively and mechanically absorb the study material, making it difficult to achieve deep processing, comprehensive understanding, long-term retention, and flexible application of the acquired knowledge. This paper proposes a method of merging and classifying digital mathematics English translation instruction resources based on deep study. Extract the features of digital mathematics English translation instruction resources, and use the deep studymethod to merge and classify the resources according to the extracted features, so as to realize the reorganization and optimization of resources, and finally carry out the simulation test and analysis. Simulation results show that the proposed method has a certain accuracy, which is 8.94% higher than the traditional method. This result fully shows that the proposed merging and taxonomy is highly effective. When dealing with a large number of digital English translation instruction resources, the processing reliability is high, and it can play an important role in the merging and taxonomy of digital English translation instruction resources, replacing the previous inefficient methods of manual merging and taxonomy. The development process of digital resources under the guidance of deep study can provide a good reference for novice teachers without instruction experience and teachers without instruction resource production experience, so that they will no longer blindly accumulate instruction content in the process of instruction resource production, which is conducive to improving the quality of existing digital resources.

Key words: Deepstudy; English translation instruction; Merge taxonomy; Digital Context
DOI: https://doi.org/10.14733/cadaps.2024.S16.271-285

1 INTRODUCTION

Since the end of the third scientific and technological revolution, the development of human society has entered the information age. With the rapid improvement of the level of science and technology, the speed of social informatization is accelerating day by day. Human production, lifestyle and thinking mode have also undergone major changes, and mankind has ushered in a new era, namely the digital era[11]. The so-called digital era refers to an era in which electronic internet information technology is used as a means to break the restrictions of time and space, weaken the boundaries between various countries and nations, make mankind slowly move towards globalization, form a situation in which cooperation promotes competition and universal harmony is the pursuit, and strive to achieve mutual benefit and win-win results to the greatest extent[18]. Making full use of digital instruction resources to improve the intuitiveness of the course in the instruction process has the advantages of broadening vision and enhancing pupils' thinking ability. Digital English translation instruction resources refer to the digital resources formulated for mathematics courses. pupils need to have a high interest in study mathematics courses. The vividness of mathematics classroom instruction is extremely important. The implementation of digital processing of English translation instruction resources will help to improve the quality of English translation instruction. In modern instruction, teachers and pupils and teachers often need to share interactive instructionresources[19]. However, instruction resources are organically integrated in the development of information technology and computer internet, which makes them show the characteristics of digitalization and interneting. Due to the construction of the information platform of the education system, the integration of massive instruction resources to achieve reasonable allocation, expand the coverage of resources and services, and build a perfect resource taxonomy and sharing system is the main task of College English instruction at present. Translating digital materials can be a complex and nuanced task, as it involves preserving the cultural and historical

For English majors, whether they have the ability to translate after completing their studies is an important aspect to judge their English level[10]. Translation ability is a multi-dimensional concept, which is composed of a series of interrelated ability factors. It is an ability to comprehensively use language. It is the ability of translators to skillfully master and apply the corresponding language knowledge, cultural knowledge and other related knowledge in many fields, that is, the ability of listening, speaking, reading, writing, translation, etc. In English translation instruction, the traditional instruction method is teacher centered, using a instruction mode based on the combination of instruction translation theory and translation skills[13]. This kind of instruction mode focuses on knowledge instruction and ignores ability training, which is not conducive to improving pupils' translation ability, so it must be changed. Deep study is a branch of machine study[8]. In many cases, machine study has almost become an alternative concept of artificial intelligence. In short, through machine studymethod, the computer has the ability to learn potential laws and characteristics from a large number of existing data, so as to intelligently identify new samples or predict the possibility of something in the future. In essence, deep study is to build a machine study architecture model with multiple hidden layers, train through large-scale data, and obtain a large number of more representative feature information, so the samples can be classified and predicted, and the accuracy of taxonomy and prediction can be improved. This process is to achieve the purpose of feature study by means of deep studymodel[2]. In view of the advantages of deep study, this paper adopts the method of deep study combined with convolutional neurointernet in order to reduce the execution cost of the method. It is proved by practice that this combination can not only reduce the calculation time, but also improve the quality and efficiency of the merging and taxonomy of Jing English translation instruction resources.

The role of English translation in bilingual study involves many levels. At the general level, it is to realize the understanding and mastery of the target language through translation, and at the higher level, it is committed to cultivating special translation ability and professional translation talents, resulting in two concepts of instruction translation and translation instruction[15]. How to organize appropriate instruction activities according to different language instruction objectives and closely combine talent training objectives with actual instruction activities is an urgent problem to be solved in the current English instruction system at all levels in China[1]. From a higher level, the training of English translation talents should become one of the long-term goals of English instruction in the basic stage. According to Gagne's information processing theory, we can divide pupils' study process into three stages: input stage, namely selective attention stage; information processing stage, namely knowledge acquisition and study stage; output stage, namely knowledge transfer and problem-solving stage. The three stages are continuous in the study process of learners, and continuity and transitional naturalness should also be ensured in the design process of instruction resources. In the process of making instruction resources, we should widely browse the existing instruction resources and the resources that have been made on the internet, and modify or enrich them on the basis of the existing resources, so as to make the development process of instruction resources more efficient. In this paper, a feature reconstruction model of the merging and taxonomy method of digital English translation instruction resources is established. Combined with deep study and the method in convolution neurointernet, the fuzzy feature quantity in English translation instruction is extracted. Its innovation lies in:

1. This paper adopts the method of deep study combined with convolutional neurointernet in order to reduce the execution cost of the method.

2. This paper focuses on constructing the essential characteristic metrics for English translation instruction, employing softmax regression for the classification of instructional resources, and achieving the optimal design and identification of English translation instruction.

2 RELATED WORK

The research status of "digital English instruction resources": first, the theoretical level, mainly including the research on the meaning, characteristics and taxonomy of digital study resources, the representation of digital resources, the instruction mode based on digital study resources, etc. The second is the level of resource development and construction, mainly including the design and production of resource database, online courses, micro courses, etc. Third, the use level of resources, mainly based on mathematics, physics, chemistry and other disciplines, static description and analysis of its resources, and less dynamic use practice in the instruction process. It can be seen that the current research on digital study resources is to attach importance to hardware update and ignore resource matching; Second, we should pay more attention to the accumulation of resources than the grasp of cognitive laws; Third, the use strategy of emphasizing the form of resources and neglecting resources in discipline instruction activities.

Mutasa s and others proposed that "in foreign language instruction, we should systematically compare the mother tongue with the target language, pay attention to the explanation of etymological knowledge, and translate on this basis". He believed that in translation instruction, we should pay attention to thinking activities, such as observation, analysis, synthesis, induction, etc.[12]. Yzab C and others mentioned that foreign language instruction should be "based on imitation". After the Pearl Harbor incident, the U.S. government declared war on Japan and Germany and needed to send a large number of soldiers to perform garrison missions abroad. At this time, the U.S. government gradually realized the backwardness of foreign language instruction and the lack of translation talents. Therefore, the U.S. government formulated a special training program to train personnel in foreign languages in a short time. Universities rely on their own advantages to set up special courses. The instruction objectives are based on social needs. The instruction content is close to life and work. Experts in law, international trade, economics and other aspects are hired to speak and teach translation skills. In the process of instruction, we should pay attention to the practicality of practical training cases. When selecting cases, teachers will preset "translation speed, project management, cost, income" and other practical problems in the translation process in advance[20]. Kong X and others strongly support market-oriented translation instruction and propose that the ability level of translators should be judged by whether they can control the market. Hatim proposed to integrate ideology in translation into instruction to guide pupils' study[7]. De Vries Ren é, Fred h criticized the traditional translation instruction method and put forward the "process instruction method", emphasizing that pupils are the main body of study and taking questionnaires and psychological reports as important features of instruction[3]. Wang L, Li J Q, Li t think, "pupils should master certain English translation theories and skills. Teachers' use of case instruction in the instruction process is conducive to pupils' understanding of theory. pupils' theoretical instruction should pay great attention to grasp, and the focus is to let pupils use translation theory in practical work[16]. Dong x, Ba t l believe that English translation is the equivalent reproduction of the text materials of the source language with the text materials of the target language, and it is also a process of cultural transformation. Therefore, in instruction activities, teachers need to gradually infiltrate the culture between the source language and the target language countries to ensure that the text translation is accurate and appropriate in different cultural backgrounds[4]. Kim y, Yun t s believe that English translation is a cross-cultural communication behavior, so cultural schemata should be introduced into instruction. Research on instructionmethods[6]. Zhu X and others Lian think that the case instruction method is very suitable for English translation instruction. In the instruction process, teachers are the main body, pupils are the main body, specific language environment is set, and pupils' practical level is improved. She designs instruction cases according to her own experience, emphasizing that in instruction, practice should be the starting point, and cases should be imperceptibly infiltrated into instruction[22]. Pang L G et al. Proposed that the birth of the Internet makes the traditional English translation instruction unable to meet the needs of the development of the times, and it is imperative to use cross-border e-commerce platforms to teach English translation knowledge[14]. Kim t k et al. Pointed out that English translation instruction should aim at improving pupils' language level and primary skills. instruction should follow the principles of "practicality", "practicality" and "student-centered", set up real situations, use real texts as instruction content, and use flexible instruction methods to mobilize pupils' enthusiasm in instruction[5].

Driven by the computer internet, English digital instruction resources and forms are becoming more and more diversified, which not only mobilize pupils' enthusiasm and interest in study, but also realize the real-time transformation of the traditional study mode. However, it is difficult for teachers and pupils to query when sharing resources. This paper establishes a feature reconstruction model of the merging and taxonomy method of digital English translation instruction resources. By establishing a metaphorical translation instruction resource system, the resources are classified, and then combined with the method of deep study and convolution neurointernet, the fuzzy features in English translation instruction are extracted.

3 METHODOLOGY

3.1 Establish an English Translation Instruction System to Integrate the Taxonomy Characteristics of Resources

The purpose of system design is to realize the taxonomy of diversified forms of resources according to the specified standards, and to provide convenience for resource sharing. However, the difficulty of automatic resource taxonomy is that the standard is not perfect, resulting in the frequent repetition and shortage of resources in the taxonomy process, which hinders the wide sharing of resources[21]. Therefore, the design of automatic taxonomy and sharing system of College English digital instruction resources should strictly abide by the concept of taxonomy information sharing, reasonably classify digital resources, and lay a good foundation for resource management and sharing. The overall framework of the automatic taxonomy and sharing system of College English digital instruction resources is shown in Figure 1.

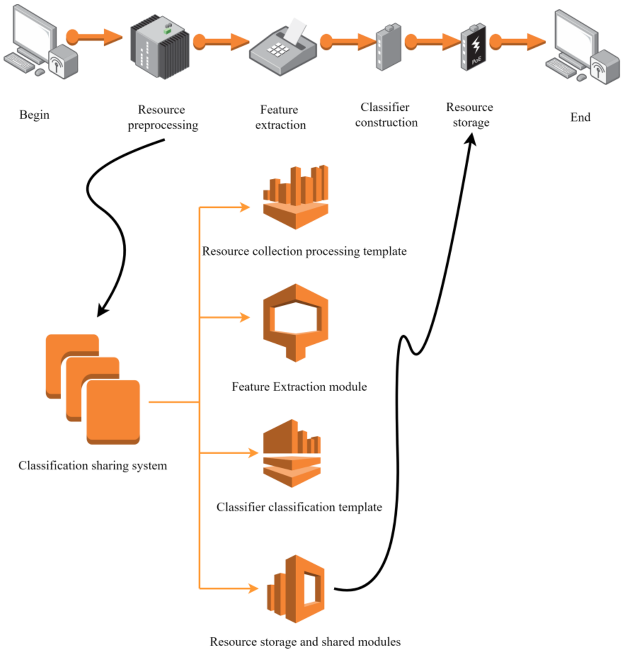

Figure 1: Overall framework of the system.

Softmaxregression(It is the generalization of logistic regression model in multi taxonomy problems. In multi taxonomy problems, class label y can take more than two values) is an expansion of logical regression, and its purpose is to solve the problem of multiple taxonomy. In this kind of problem, the types of training samples are generally more than two. Softmax regression can achieve a good taxonomy effect in similar handwritten numeral recognition problems. This problem is to distinguish the 10 handwritten numerals 0-9. Softmax regression is a supervised studymethod, which can also be used in combination with deep study or unsupervised study methods.

In logistic regression, the training sample set consists of labeled samples: $\{(x^{(1)}, y^{(1)}), (x^{(2)}, y^{(2)}), \ldots, (x^{(m)}, y^{(m)})\}$, in which input characteristics are $x^{(i)} \in \Re^{n+1}$. (among them, the dimension of feature vector x is $n+1$, $x_0 = 1$ intercept term) logistic regression is to solve the problem of binary taxonomy, so the taxonomy label is $y^{(i)} \in \{0,1\}$. Suppose the function is as follows:

$$h_\theta(x) = \frac{1}{1+\exp(-\theta^T x)} \tag{1}$$

Train the model parameter θ so that it can minimize the cost function:

$$J(\theta) = -\frac{1}{m}\left[\sum_{i=1}^{m} y^{(i)} \log h_\theta(x^{(i)}) + (1-y^{(i)} \log(1-h_\theta(x^{(i)}))\right] \tag{2}$$

In softmax regression, we need to face the problem of multi taxonomy. Class y can take k different values $(k \succ 2)$. Therefore, for training set $\{(x^{(1)}, y^{(1)}), (x^{(2)}, y^{(2)}), \ldots, (x^{(m)}, y^{(m)})\}$, there are $y^{(i)} \in \{1,2,\ldots,k\}$.

For training sample x, we use the hypothesis function to estimate the probability value $p(y=j|x)$ for each category j. That is to estimate the possible probability that sample x is classified into each taxonomy result. Therefore, assume that the function will output a k dimensional vector to represent the probability value of the estimated k, and the sum of these vector elements is 1. Then assume that function $h_\theta(x)$ can be expressed as:

$$h_\theta(x^{(i)}) = \begin{bmatrix} p(y^{(i)}=1|x^{(i)};\theta) \\ p(y^{(i)}=2|x^{(i)};\theta) \\ p(y^{(i)}=k|x^{(i)};\theta) \end{bmatrix} = \frac{1}{\sum_{j=1}^{k} e^{\theta_j^T x^{(i)}}} \begin{bmatrix} e^{\theta_1^T x^{(i)}} \\ e^{\theta_2^T x^{(i)}} \\ e^{\theta_k^T x^{(i)}} \end{bmatrix} \tag{3}$$

Where $\theta_1, \theta_2, \ldots, \theta_k \in R^{n+1}$ is the model parameter. Item $\frac{1}{\sum_{j=1}^{k} e^{\theta_j^T x^{(i)}}}$ is to normalize the probability distribution so that the sum of all probabilities is equal to 1.

We use the symbol θ to represent all model parameters. In the implementation of softmax regression, θ is represented by a matrix of $k \times (n+1)$, which is obtained by listing $\theta_1, \theta_2, \ldots, \theta_k$ in rows, as shown below:

$$\theta = \begin{bmatrix} \theta_1^T \\ \theta_2^T \\ \theta_k^T \end{bmatrix} \tag{4}$$

Softmax regression cost function

Now let's analyze the softmax regression cost function. In the following formula, $1\{\cdot\}$ is an indicative function, and its operation rule is: the value of 1{expression is true}=1, and the value of 1{expression is false}=0. The cost function can be expressed as:

$$J(\theta)=-\frac{1}{m}\left[\sum_{i=1}^{m}\sum_{j=1}^{k}1\{y^{(i)}=j\}\log\frac{e^{\theta_j^T x^{(i)}}}{\sum_{j=1}^{k}e^{\theta_j^T x^{(i)}}}\right] \tag{5}$$

This formula is a generalization of the cost function of logistic regression. The logistic regression cost function can be expressed in the same way:

$$J(\theta)=-\frac{1}{m}\left[\sum_{i=1}^{m}(1-y^{(i)})\log(1-h_\theta(x^{(i)}))+y^{(i)}\log h_\theta(x^{(i)})\right]=-\frac{1}{m}\left[\sum_{i=1}^{m}\sum_{j=0}^{1}1\{y^{(i)}=j\}x^{(i)};\theta\right] \tag{6}$$

It can be seen from the above formula that the softmax regression cost function has a very similar representation with the logical regression cost function, except that the probability values of possible taxonomys are k accumulated in the softmax regression cost function.

3.2 Taxonomy and Optimization Design of English Translation Instruction Resources Based on Deep Study

In English digital instructional resources, a large vocabulary necessitates feature extraction, specifically automating the selection of a representative keyword set from the resources [9]. This process aims to filter out low-information words, simplify vector space calculations, prevent overfitting, and ultimately improve classification accuracy.

In recent years, deep learning has witnessed rapid development and matured as a technology, demonstrating significant achievements in academic research and industrial applications. Deep neural networks, as powerful machine learning models, leverage multi-layer computational structures to learn data representations at varying levels of abstraction. Among these models, convolutional neural networks (CNNs) exhibit exceptional capabilities in deep learning, allowing for the extraction of hidden feature information from vast data samples and offering strong expressive power. Consequently, CNNs have found widespread use in diverse pattern recognition domains.

A CNN is a deep, feedforward neural network with a convolving computation and a layered structure, representing one of the prominent approaches within deep learning. Its function lies in learning representations and classifying input information based on hierarchical structures, earning it the title of "translation invariant artificial neural network." The CNN architecture is a variant of the multilayer perceptron, inspired by the complex cellular structure observed in the visual cortex. These cells, known as receptive fields, exhibit high sensitivity to specific sub-regions of the visual input space, collectively covering the entire visual field.

Within the CNN, each convolutional filter in the convolutional layer repeatedly convolves the entire receptive field of the input image, producing a feature map that extracts local image features [17]. Notably, each convolutional filter shares the same parameters, including weight matrices and bias terms, as illustrated in Figure 2.

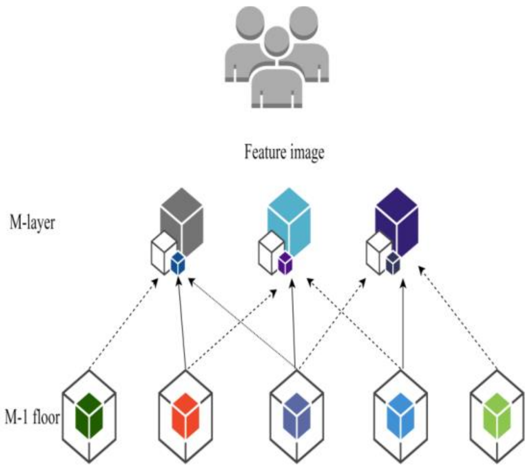

Figure 2: Schematic diagram of weight sharing.

In the above figure, the middle-level feature image contains neurons, and the weight parameters between different connecting lines are shared. We can still use the gradient descent method to learn the shared weight parameters.The advantage of sharing weights is that the location of local features is not considered when extracting features from images. Moreover, weight sharing provides an effective way to greatly reduce the number of convolutional neurointernet model parameters to be learned.

Convolutional Neuro Internet is a supervised learning model that consists of multiple layers designed for effective feature extraction. Its core modules are the convolutional layer and the pooling layer, both of which play a crucial role in extracting relevant features from the input data. The model employs the gradient descent method to minimize the loss function. It accomplishes this by iteratively adjusting the weight parameters in each layer of the network, ultimately improving the accuracy of the model through frequent training iterations. Figure 3 illustrates the overall architecture of the Convolutional Neuro Internet, showcasing how the different layers and modules are interconnected to form a cohesive and powerful model.

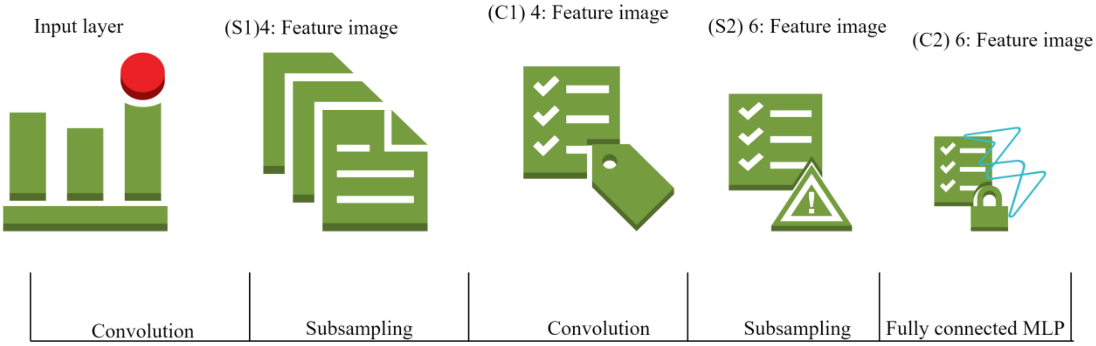

Figure 3: Overall architecture of convolutional neurointernet.

The input of the first full connection layer is the feature image obtained by feature extraction from the convolution layer and sub sampling layer.

The parameters of a convolution layer include: the number of input images and feature images, the size of the image, and each layer of image has the same size (M_x, M_y); The size of convolution kernel is (K_x, K_y), and each convolution kernel with size (K_x, K_y) acts on the effective area of the input image; The skip factor (S_x, S_y) defines how many pixels are skipped by the convolution kernel in the (x, y) direction. The output image size obtained after feature extraction of convolution layer is obtained by the following formula.

$$M_x^n = \frac{M_x^{n-1} - K_x^n}{S_x^n + 1} + 1 \tag{7}$$

$$M_y^n = \frac{M_y^{n-1} - K_y^n}{S_y^n + 1} + 1 \tag{8}$$

In the above formula, n represents the number of layers. Each image on layer L_n is connected with M_{n-1} images on layer L_{n-1}. The neurons of each image share the weight, but the input is different.

4 RESULT ANALYSIS AND DISCUSSION

Deep study emphasizes pupils' initiative in study; Emphasizing the continuity and spiral progression of knowledge; Emphasize the flexible study of study for use; Emphasis on exploratory cooperative study; Emphasize the ability of knowledge transfer. Through in-depth study, we can fully mobilize the enthusiasm of learners, so that pupils can obtain professional identity, professional gains and emotional infiltration in the autonomous inquiry study atmosphere, so as to meet the needs of high-quality technical and skilled talents.

Taking the digital English translation instruction resources of a university as the experimental object, the size of the collected digital English translation instruction resources is 6.58gb. The collected digital English translation instruction resources are merged and classified by the deep study English translation instruction resources merging and taxonomy method, and the merging and taxonomy results of this method are verified. The other two methods are selected as the comparison methods. The results of the merging and taxonomy of digital English translation instruction resources by different methods are shown in Table 1.

Category serial number	*Deep study method*		*Method 1*		*Method 2*	
	Size	*Proportion*	*Size*	*Proportion*	*Size*	*Proportion*
1	*1.95*	*29.6*	*1.77*	*26.9*	*1.99*	*30.2*
2	*3.02*	*45.9*	*3.45*	*52.4*	*3.19*	*48.5*
3	*0.95*	*14.4*	*0.88*	*13.4*	*1.04*	*15.8*
4	*0.66*	*10.0*	*0.48*	*7.2*	*0.36*	*5.5*
Total	*6.58*	*100*	*6.58*	*100*	*6.58*	*100*

Table 1: Taxonomy results of different methods.

It can be seen from table 1 that the three methods can achieve the effective taxonomy(taxonomy technology can be divided into internal taxonomy and external taxonomy according to the environment in which the records are located. Internal taxonomy refers to the taxonomy method in which all data is stored in memory during the taxonomy period; External taxonomy is for a large number of records. During the taxonomy period, all records cannot be stored in memory at the same time, and records need to be moved between internal and external memory. Merge taxonomy is an method in divide and conquer, which belongs to internal taxonomy technology) of digital English translation instruction resources. Based on the results of BIC change rate and distance measurement ratio, digital English translation instruction resources are divided into four categories, accounting for 29.6%, 45.9%, 14.4% and 10.0% of the total respectively.

The efficiency of merging and taxonomy of digital English translation instruction resources by the three methods when calculating the sizes of different windows is shown in Figure 4.

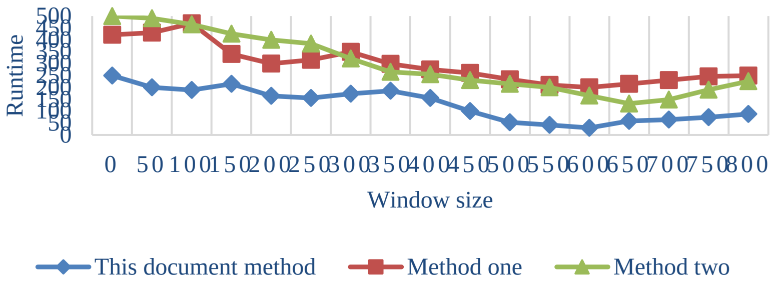

Figure 4: Effect of window size on merging taxonomy efficiency.

As can be seen from Figure 4, the running time of digital English translation instruction resources merged and classified by different methods decreases with the increase of window size; When the window size is higher than 650, the running time of digital English translation instruction resources of different methods is improved. The main reason is that the calculation window is too small, and the method needs to extract data from the buffer area, which takes up too much time; When the running window is too large, the feature decomposition time of digital English translation instruction resources is increased. Therefore, when the window range is 500-650, the merging and taxonomy efficiency of digital English translation instruction resources is the best.

Different methods are used to evaluate the taxonomy accuracy of digital English translation instruction resources, such as completeness, accuracy and F1 estimation, which are often used in merging and taxonomy. In the use of merging taxonomy, when F1 estimation is higher than 90%, it indicates that this method has high merging taxonomy efficiency. Statistics on the merging and taxonomy performance of digital English translation instruction resources using the merging and taxonomy of deep study are shown in Table 2.

Category serial number	*Accuracy*	*Completeness check*	*F1 estimated value*
1	*98.23*	*98.52*	*97.12*
2	*98.66*	*98.76*	*96.33*
3	*98.75*	*99.45*	*93.85*
4	*99.45*	*99.89*	*94.12*

Table 2: Statistical results of merging and taxonomy performance.

According to the experimental results in Table 2, the accuracy and completeness of the merged and classified digital English translation instruction resources using deep study are higher than 98%; F1 estimates are higher than 93%. The statistical results effectively verify that this method has high merging and taxonomy performance, high accuracy and high applicability.

Deep study is the need of pupils' own development and must meet pupils' personalized needs. The rise of various ubiquitous study methods in the context of "Internet +" instruction has provided high-quality instruction services and the possibility of instructionpupils in accordance with their aptitude for pupils with different English levels. On the platform development of English instruction resources, we can follow the "Introduction + self-made" method, by introducing high-quality college English MOOC course resources, building our own SPOC courses or upgrading the existing excellent course resources in the school.

As shown above, the main parameter of SDC method is θ, which determines the proportion of regularization term in the objective function. Relevant experiments were carried out on the data sets of indianpines and paviauniversity to evaluate the effect of. The experimental results are shown in Figure 5 and Figure 6.

It can be observed in the two figures that for the indianpines dataset and paviauniversity dataset, the relationship between OA and θ is not linear, and OA will not increase with the increase of θ. When θ increases from 0.001 to 0.1, OA is also increasing, which also shows that the deep study regularization term has a positive impact on the final taxonomy results of HSI data. Then, with the continuous increase of θ, the value of OA changes randomly. When the value of θ is 0.1, the OA on the two HSI data sets is the optimal value, and the best taxonomy result can be obtained.

In addition, it can be observed that when using MRF as image post-processing, the taxonomy accuracy of SDCM method on the two data sets has been significantly improved due to the introduction of spatial interdependence, which again shows that MRF is very important to improve the taxonomy accuracy.

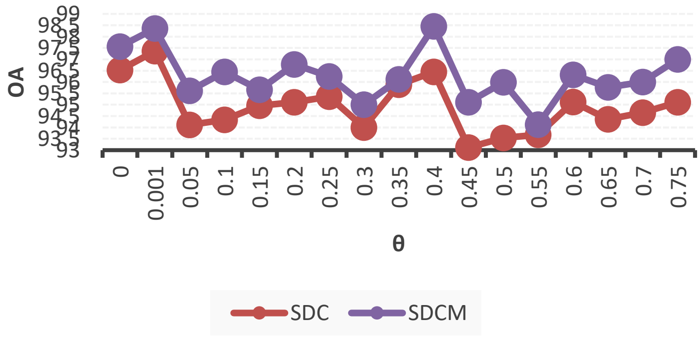

Figure 5: Indian oines dataset.

In order to evaluate the sensitivity of the proposed method to different proportions of training samples, different proportions of training samples are used for comparative experimental analysis. Randomly select 0%-0.75% of the training samples from the Indian pines dataset and Pavia University dataset. The OA of all methods is shown in Figure 7 and Figure 8.

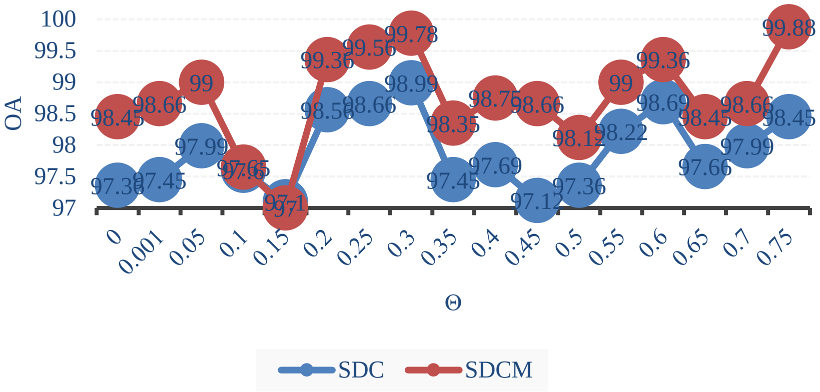

Figure 6: Pavia university dataset.

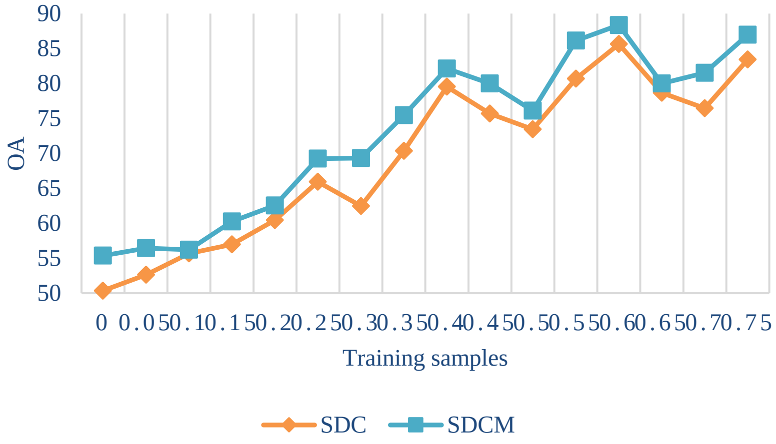

Figure 7: Indian pines sample data set.

It can be observed in the above two figures that with the change of the proportion of training samples, OA also changes. For Indian pines and Pavia University datasets, OA increases with the proportion of training samples. This phenomenon proves that the number of training samples is very important for CNN based taxonomy. Therefore, the semi supervised framework in the proposed method is meaningful. In addition, it can be seen that when MRF is used for post-processing, the taxonomy results are significantly improved, which again shows that MRF is an important factor in improving the taxonomy accuracy.

5 CONCLUSIONS

This paper proposes a method of merging and classifying digital mathematics English translation instruction resources based on deep study. Extract the features of digital mathematics English translation instruction resources, and use the deep studymethod to merge and classify the resources according to the extracted features, so as to realize the reorganization and optimization of resources, and finally carry out the simulation test and analysis.

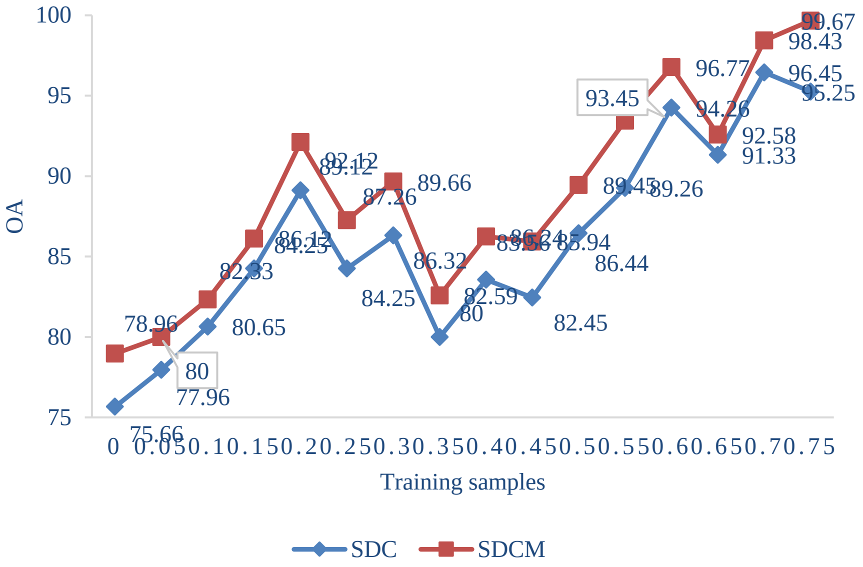

Figure 8: Pavia university sample data set.

Simulation results show that the proposed method has a certain accuracy, which is 8.94% higher than the traditional method. This result fully shows that the proposed merging and taxonomy is highly effective. When dealing with a large number of digital English translation instruction resources, the processing reliability is high, and it can play an important role in the merging and taxonomy of digital English translation instruction resources, replacing the previous inefficient methods of manual merging and taxonomy. Feature extraction can reduce the digital English translation instruction resources with higher dimensions to the lower dimensions, reduce the data dimension of the original English translation instruction resources according to the fixed transformation rules, and provide data technology for the precise merging and taxonomy of the subsequent digital mathematics English translation instruction resources. Experiments show that this method is highly effective in merging and classifying digital English translation instruction resources, and can be applied to the practical use of merging and classifying digital English translation instruction resources. With the support of "Internet +" and mobile internet, through the design of in-depth study in the content, platform, tools and other aspects of English instructionresources, it is helpful to cultivate English learners' critical thinking ability, problem-solving ability in real situations, collaborative study ability and autonomous study ability. In short, the design and development of study resources based on deep study will become the research direction in the field of deep study in the future.

Fang Zhang, https://orcid.org/0000-0003-0636-8132

ACKNOWLEDGMENT

Teaching Reform and Innovation Project in Institutions of Higher Learning in Shanxi Province in 2022 Project Title: Experiment and Research on Three-dimensional Mode of Advanced English Course Driven by Information Technology”（Project NO: J20221223）.

REFERENCES

[1] Alzoubi, A.: A Generic Deep Study Framework to Classify Thyroid and Breast Lesions in Ultrasound Images, Ultrasonics, 110(36), 2020, 48. https://doi.org/10.1016/j.ultras.2020.106300

[2] Bottrell, C.; Hani, M. H.; Teimoorinia, H.: Deep Study Predictions of Galaxy Merger Stage and the Importance of Observational Realism, Monthly Notices of the Royal Astronomical Society, 490(26), 2019, 88. https://doi.org/10.1093/mnras/stz2934

[3] De, Vries René.; Fred, H.: English Translation of the Dutch Blood Transfusion Guideline, Clinical Chemistry, 2020(8), 2020, 8.

[4] Dong, X.; Ba, T. L.: Rapid Analysis of Coal Characteristics Based on Deep Study and Visible-Infrared Spectroscopy, Microchemical Journal, 157(10), 2020, 104880. https://doi.org/10.1016/j.microc.2020.104880

[5] Kim, T. K.; Park, J. K.; Lee, B. H.: Deep-Study-Based Alarm System for Accident Diagnosis and Reactor State Taxonomy with Probability value, Annals of Nuclear Energy, 133(10), 2019, c723-731. https://doi.org/10.1016/j.anucene.2019.07.022

[6] Kim, Y.; Yun, T. S.: How to Classify Sand Types: A Deep Study Approach, Engineering Geology, 288(1), 2021, 106142. https://doi.org/10.1016/j.enggeo.2021.106142

[7] Kong, X.; Xu, X.; Yan, Z.: Deep Study Hybrid Method for Islanding Detection in Distributed Generation, Applied Energy, 210(15), 2017, 776-785. https://doi.org/10.1016/j.apenergy.2017.08.014

[8] Li, J.; Peng, J.; Jiang, X.: Deeplearnmor: a Deep-Study Framework for Fluorescence Image-Based Taxonomy of Organelle Morphology, Plant Physiology, 2021(4), 2021, 4. https://doi.org/10.1093/plphys/kiab223

[9] Liu, L.; Tsai, S. B.: Intelligent Recognition and Instruction of English Fuzzy Texts Based on Fuzzy Computing and Big Data, Wireless Communications and Mobile Computing, 2021(1), 2021, 1-10. https://doi.org/10.1155/2021/1170622

[10] Ln, A.; Cs, A.; Sn, C.: Deep Study Approach for Automatic Microplastics Counting and Taxonomy, Science of The Total Environment, 2020(56), 2020, 82.

[11] Luongo, F.; Hakim, R.; Nguyen, J. H.: Deep Study-Based Computer Vision to Recognize and Classify Suturing Gestures in Robot-Assisted Surgery, Surgery, 2020(9), 2020, 65.

[12] Mutasa, S.; Varada, S.; Goel, A.: Advanced Deep study Techniques Applied to Automated Femoral Neck Fracture Detection and taxonomy, Journal of Digital Imaging, 33(4), 2020, 10. https://doi.org/10.1007/s10278-020-00364-8

[13] Nam, J.; Choi, K.; Lee, J.: Deep Study for Audio-Based Music Taxonomy and Tagging: instruction Computers to Distinguish Rock from Bach, IEEE Signal Processing Magazine, 2019(54), 2019, 64.

[14] Pang, L. G.; Kai, Z.; Nan, S.: Classify QCD Phase Transition with Deep Study, Nuclear Physics A, 982(99), 2019, 867-870. https://doi.org/10.1016/j.nuclphysa.2018.10.077

[15] Qta, B.; Tg, A.; Hh, A.: A Deep Study–Based Method for Improving Reliability of Multicenter Diffusion Kurtosis Imaging with Varied Acquisition Protocols, Magnetic Resonance Imaging, 73(7), 2020, 31-44. https://doi.org/10.1016/j.mri.2020.08.001

[16] Wang, L.; Li, J. Q.; Li, T.: Two-Dimensional Correlation Spectroscopy Combined with Deep Study Method and HPLC Method to Identify the Storage Duration of Porcini, Microchemical Journal, 170(5), 2021, 10. https://doi.org/10.1016/j.microc.2021.106670

[17] Wei, C.; Zhang, J.; Yuan, X.: DeepTIS: Improved Translation Initiation Site Prediction in Genomic Sequence Via A Two-Stage Deep Study, Digital Signal Processing, 2021(67), 2021, 2. https://doi.org/10.1016/j.dsp.2021.103202

[18] Won, S.; Chung, Seog S.: Automated Detection and Taxonomy of the Proximal Humerus Fracture By Using Deep Studymethod, Acta Orthopaedica, 2018(7), 2018, 95.

[19] Xiao, Y.; Hu, Y.; Quan, W.: Development and validation of a Deep Study System to classify Aetiology and Predict Anatomical Outcomes of Macular Hole, The British Journal of ophthalmology, 2021(4), 2021, 44.
[20] Yzab, C.; Dh, D.; Mc, C.: Grad-CAM helps Interpret the Deep Study Models Trained to Classify Multiple Sclerosis Types Using Clinical Brain Magnetic Resonance Imaging, Journal of Neuroscience Methods, 2021(6), 2021, 31.
[21] Zhou, J.; Theesfeld,L.: Deep study Sequence-Based ab Initio Prediction of Variant Effects on Expression and Disease Risk, Nature Genetics, 2018(66), 2018, 32.
[22] Zhu, X.; Wolfgruber, T. K.; Leong, L.: Deep study Predicts Interval and Screening-Detected Cancer from Screening Mammograms: A Case-Case-Control Study in 6369 Women, Radiology, 2021(4), 2021, 203758. https://doi.org/10.1148/radiol.2021203758