

Application of the Whole Language Teaching Method in the Teaching of English Vocabulary Based on the Multimedia Environment of the Internet of Things

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Abstract: Multimedia technology has also been cited and developed in the field of education. Its intervention has had a profound impact on education, triggering the renewal of the concept of educators, the renewal of educational methods and the renewal of educational forms. Actively exploring, optimizing teaching modes, innovating teaching methods, and updating teaching concepts are the teaching reform direction of colleges and universities. How to take a scientific and rational mode of teaching based on different disciplines, to students to maximize guidance and inspiration, it is essential. As a teaching theory, the overall language teaching method has a great influence on language teaching. In college English learning, the correct way to master the vocabulary is to learn by use. Only through multiple learning and applications, the combination of language input and output can ultimately improve the language application ability. This coincides with the idea of an educational philosophy, the overall language teaching method. Today, multimedia has become an important teaching device in schools. Therefore, this paper combines the unique advantages of multimedia technology with the overall language teaching method and empirically compares it with the traditional vocabulary teaching method, trying to find an effective teaching method that can promote students' vocabulary acquisition.

Keywords: Multimedia; British Vocabulary Teaching; Overall Language Teaching Method; Vocabulary Learning Mode

1. Introduction

The emergence of the Internet has changed the way people live, work, and learn. Using network technology [1-2], multimedia technology [3-5], streaming media technology, and database technology to build a network multimedia teaching resource platform [6-8], Learning courseware is presented in a virtualized format that makes it easy for learners to learn anywhere, anytime. The multimedia teaching platform disseminates educational information resources to the Internet [9], and conducts education through sharing, and realizes a characteristic teaching mode in which the scope of education is expanded, the mode of education is virtualized, and the forms of education are diversified. Through its interactive platform, teacher Q&A, teacher-student discussion can be realized, which contributes to the formation of academic atmosphere and improves the teaching effect. Moreover, multimedia teaching [10-12] can inspire students' imagination. Through the multimedia teaching resources provided by the Internet, learners can no longer be free to arrange learning by the constraints of time and space. With the introduction of new college English teaching requirements in my country, college English teaching has been upgraded to a new level, and new requirements have been put forward for the English vocabulary level of college students.

The content of English teaching is very rich and the links are also complicated. One of the most important and difficult links is vocabulary teaching. The amount of English vocabulary is large and the application changes a lot, so vocabulary learning has always been regarded by learners as the most boring and difficult to grasp in all aspects of English learning. However, vocabulary learning is the basis of all aspects of English learning. If you cannot master vocabulary well and use the methods correctly, it will be difficult to effectively carry out other aspects of English learning, especially the existing English teaching requires more vocabulary. Come higher. The increase in the amount of reading and information in all kinds of important examinations shows that the focus of English teaching is increasingly inclined to vocabulary teaching. Vocabulary is one of the basic elements of

language [13]. If you do not master the vocabulary, you can't talk about learning language. As the famous British linguist D.A. Wilkins said: "Without grammar, people can't express a lot of things, and without words, people can't express anything." To be proficient in using the language, you must first master the vocabulary. Using multimedia visual means focus on vocabulary, primary and secondary, and teaching in context. Modern teaching emphasizes practical results and methods [14-16] to complement each other. Through the visualization, concrete and contextual teaching methods of vocabulary teaching, it can speed up the direct connection between the students' minds and the objective things, thus truly cultivating students' communicative competence. Of course, do not put every word on average, focus on the key points, and strive to let students master their sounds, shapes, and meanings, but also master their fixed collocations, polysemy and synonyms, synonyms, antonyms, etc.; for words that are not frequently used, etc., it is easy to take them. Of course, you cannot talk about vocabulary in isolation. You should pay attention to the context and follow the principle of "words are not separated from sentences, and sentences are not divorced." It is best to select examples related to the text.

The emergence of the Whole Language Teaching Method in the United States dates to the mid-1970s, and has attracted widespread attention in the language teaching community since the 1980s [17]. Its main advocate, Goodman (1986), believes that the promotion of the overall language teaching method is the most extensive mass pedagogy reform that has emerged in the US education community to date [18-20]. It has absorbed many research results, including constructivist psychology [21-23], functional linguistics [24-25], psycholinguistics [26], and sociolinguistics [27]. They advocate the use of these scientific theories to study how humans use language to complete communication tasks. If this educational concept penetrates into vocabulary teaching, it will be a great help to change the difficult situation of students' vocabulary learning.

As a student-centered approach, it focuses on the cultivation and development of students' comprehensive language skills. Only by accurately mastering the language can they be used flexibly. If this kind of educational thought is infiltrated into vocabulary teaching, it should be of great help to English teaching and change the predicament of most students' vocabulary learning. Multimedia has become an important teaching method for schools [28]. Therefore, this paper aims to explore a vocabulary teaching model. Combine multimedia technology with a full-language approach. In addition, multimedia has become an important teaching device of the school. This paper combines the ideas of multimedia technology and overall language method in exploring the vocabulary teaching mode.

2. Method

2.1 Multimedia

Multimedia technology was first applied in the field of education with its unique advantages. Western countries such as the United States and the European Union took the lead in introducing multimedia technology, more than 10 years earlier than our country. The design and flexible operation make multimedia teaching the best teaching function, not just simple human-computer interaction. Teaching resources means that all people, media, strategies, methods, and environments that can improve and promote learning and teaching can be called teaching resources. Therefore, the definition of multimedia teaching resources refers to words, graphics, images, sounds, animations, and media such as video that is stored on a certain carrier and is available for educational use [29].

Resources are rich in expressiveness. Multimedia teaching resources are teaching resources presented in text, picture, sound, image, animations, and video media. They can represent the real world of the audiovisual world more vividly and realistically, and can also simulate the phenomena that cannot be observed in the macroscopic and microscopic world, so that the teaching process it's easier to do.

Resources have good interactivity. Use multimedia education technology to improve the organizational form and teaching methods of English classrooms, carry out related teaching activities, and improve students' interest in learning with a new model of openness, dynamics, interaction, and games, and optimize learning effects. The multimedia teaching resources are not only rich in content, but also can be designed and designed for the interaction. According to the specific tasks, the design of certain interactive controls allows students to learn personalized according to the feedback from the interaction and meet their own learning needs.

2.2 Resources Are Extremely Shared

It can create specific situations for students' learning and stimulate students' learning motivation. It can improve the expression of teaching and make the classroom more interesting and interesting. Due to the inconvenience of communication and preservation, the information exchange in some areas is not smooth, which makes the teaching plans written by many excellent and experienced teachers not fully utilized, which largely causes the waste of knowledge and experience. Using multimedia technology to assist teaching, we can create a realistic teaching environment and form a lively learning atmosphere [30]. Through vivid images, simple and concise explanations, pleasant music, timely and effective feedback, we can fully mobilize students' enthusiasm and effectively stimulate students. The desire for knowledge makes their learning state the best.

The multimedia courseware is essentially digital teaching material, which can be widely spread through the network or other means of communication, and is convenient and fast to store. The situation of low resource utilization. The courseware produced by teachers with wisdom and experience can be fully embodied by multimedia teaching equipment. It enriches the students' knowledge, opens up the students' horizons, cultivates the students' self-learning ability, and improves the utilization of teaching information. With the university students and expand, the demand for more teaching resources to the greater, the limited nature of the conflict itself is infinite and teaching resources teaching resources requirements in this case has become an important contradiction with classroom teaching. The establishment of a multimedia teaching resource platform can realize resource sharing, accelerate the cooperation among various institutions to a large extent, share the superior resources within the university, form an atmosphere of complementing each other, and accelerate the expansion of teaching reform and scientific research ideas.

It is very necessary to integrate existing teaching resources and combine the characteristics and requirements of vocabulary teaching in higher vocational colleges to create targeted multimedia vocabulary courseware, so that the advantages of multimedia technology can be reflected in teaching practice, thereby improving vocabulary teaching Quality, stimulate students' interest in learning. In addition, through the multimedia, the teacher completed the teaching task in a short time, and the quality of teaching was also significantly improved. The application of multimedia teaching methods has dual practical significance.

2.3 Vocabulary Teaching

English teaching in our country has always been in the process of constantly exploring and constantly changing. From the earliest grammar translation method to the listening and speaking method to the communicative teaching and task-based teaching, English teaching workers have also experienced the transformation of teaching concepts again and again. In the grammar translation method, teachers spend most or all of their class time explaining texts and words, analyzing grammar rules, and students are listening to classes and taking classes. To overcome the dumb English phenomenon caused by the grammar translation methods, it is said that the teaching method is included in the English class, focusing on cultivating students' ability to listen and speak.

This is determined by the status of vocabulary in activities such as listening, speaking, reading, and writing. For low-level learners, too little vocabulary will affect learners. The ability to speak and write, etc.; vocabulary teaching should study the law of word formation. Any word in English is a collection of three elements of sound, form and meaning. This provides a reliable basis for learning and vocabulary. Some students have memorized the vocabulary of death, which is not only poor in effect, but also fast in forgetting. The low ability to remember words has become the primary problem for students in ethnic areas to learn English. One of the main reasons is that students do not have a good grasp of the correct way to remember words. In the teaching process, teachers should give correct guidance to this. If you can use the correspondence between word letters and phonetic symbols to combine memory, form a memory "module", reduce the memory control unit, and accurately read each pronunciation, you can remember the word for a long time. In addition, you can also use a word formation method such as derivative method (pre, suffix, and root), synthesis method, transformation method, etc. to remember a large number of new words; use positive and negative meanings, synonymous relations, slang, idioms, songs and tongue twisters, etc. Ways to help memorize new words. Make learners interesting and happy. Finally, students should read the words and texts frequently, so that "the word does not leave the mouth, the sentence does not leave the mouth", a sublimation of the understanding and use of the word's sound, shape, meaning.

Vocabulary teaching should be combined with communication and communication. Vocabulary is a subsystem in the language system, and its internal components are related and restrict each other. One of the purposes of learning a language is to use language for communication. Creating a language environment allows students to use the vocabulary they learn to engage in communication activities. For example, conduct language dialogues such as thematic dialogues, debates, discussions, and essays, and try to avoid the simple practice of teachers and students. Vocabulary teaching should be centered on students. Traditional vocabulary teaching is mostly teacher-centered. Teachers explain vocabulary usage, control classroom teaching, and students passively listen and take notes. The teachers are highly motivated and the students' initiative is poor. The classroom has become a quiet listening-injective lecture hall. English vocabulary teaching should be centered on students. Questioning, heuristics, discussion and other methods are used to guide students to discover problems, ask questions, think about problems, and solve problems. Teachers must be true. Become an organizer, helper, adviser, and mentor in classroom instruction. And can carry out equal and democratic language exchanges with students, develop students' intelligence, and develop their abilities. Realize teaching and learning, and improve teaching efficiency. In teaching, we should explore the rules of vocabulary teaching from multiple angles and multi-faceted ways, and correctly handle vocabulary teaching. Adhere to scientific and effective methods, use English as a communication tool, inspire students to remember, cultivate their interest in learning vocabulary, sum up memory rules, improve memory methods, and closely integrate vocabulary and context to promote their understanding of memory. Firmly master and use the vocabulary learned to improve reading comprehension and truly achieve the purpose of communication in English.

2.4 Overall Language Teaching Method

Whole language teaching is not a simple language teaching method or technique, but a set of theories and principles of language teaching. However, for the concept of overall language teaching, the language teaching community has not yet had a unified and universally recognized view. The whole is always greater than the sum of parts. Therefore, language should be taught as a whole. It is impossible to divide the language into parts of speech, vocabulary, and grammar, respectively. Whole language teaching advocates people to learn language through the use of words in the process of interacting with others in a variety of forms, purposeful, meaningful, and real speech environments. Whole language teaching defines itself through the integrity of the learning environment, the integrity of the learner, and the overall emphasis of the language itself. The overall language teaching mainly includes the following principles. The language is a whole. Language should not be dismembered into speech, grammar, and vocabulary. Language teaching should be student-centered, taking into account students' needs, goals, interests, abilities, learning styles, and strategies, mobilizing students' initiative, and allowing them to learn and use language in a targeted manner. Language knowledge and skills should be cultivated through a natural language environment, and human language knowledge and skills should not be artificially separated and cultivated in isolation. The teacher's function is transformed from a linguistic knowledge and skill passer to a planner, agitator, and inspiration. The acquisition of language-centered language should not be a process of passively and mechanically imitating speech acts, but through a wide range of language exchanges and exchange of ideas, from which to explore the process of discovering and summarizing the laws of language. In the process of getting, the learner is not simply imitating, but should constantly create a new language to meet the new communication needs. Students should focus on the idea of communication like children, instead of the language form, which requires they have the enthusiasm for learning and the passion for creation that they are anxious to express.

In classroom teaching, these principles are mainly embodied in the student-centered, full consideration of the students' needs, goals, interests, and differences. The language is no longer split into speech, vocabulary, and grammar, and no longer separate listening and speaking. In the overall language environment in which the language is used for the real purpose, the language rules are internalized through interaction with others [31]. Learn the ability to generate language. And this is the same as the communicative approach.

In teaching, we should explore the rules of vocabulary teaching from multiple angles and multi-faceted ways, and correctly handle vocabulary teaching. Adhere to scientific and effective methods, use English as a communication tool, inspire students to remember, cultivate their interest in learning vocabulary, sum up memory rules, improve memory methods, and closely integrate vocabulary and context to promote their understanding of memory. Firmly master and use the vocabulary learned to improve reading comprehension and truly achieve the purpose of communication

in English.

3. Architecture Design of British Vocabulary Multimedia Teaching Platform

3.1 Demand Analysis

The functional requirements of the user for the multimedia teaching resource platform mainly include: teaching resource sharing and teaching interaction functions.

3.2 Feasibility Analysis

3.2.1 Technical Feasibility

The platform is developed by ASP.NET+Oracle database, and the platform adopts B/S three-tier architecture. The ASP.NET framework is a web server-side scripting technology introduced by Microsoft Corporation [32]. The performance of its cross-platform applications meets the needs of different users and platforms. Oracle Database is a database management system from Oracle that is portable, reliable, shared, scalable, and secure. The B/S architecture has a three-tier structure, including a presentation layer, a functional layer, and a data layer. Each layer is relatively independent. Under the B/S structure, the user does not need the security platform application software and can complete the database directly through the browser. Implementation of access and applications.

3.2.2 Economic Feasibility

The security and reliability of the Oracle database can meet the requirements of platform security [33]. The B/S structure eliminates the need to install a user client, which reduces the cost of the user, and the platform can be managed in the background through management without any user operation [34], which greatly saves the user's overhead and has a practical application of the platform. Economic feasibility.

3.3 Platform Interface and Database Design

This system uses Eclipse as a platform development tool, using the Oracle database (which only contains the relevant teaching resources of English vocabulary, including teaching videos and teaching courseware, etc). Users can choose courseware and video materials to browse on the website, as shown in Figures 1, 2, 3, and 4.

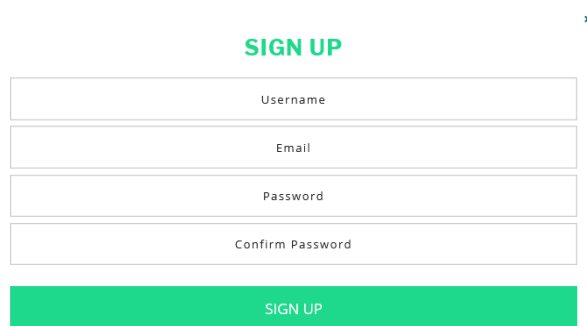


Figure 1: User registration



Figure 2: Platform main interface

OUR COURSE

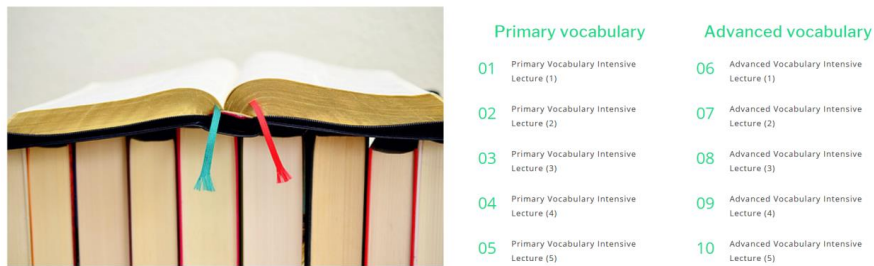


Figure 3: Course interface

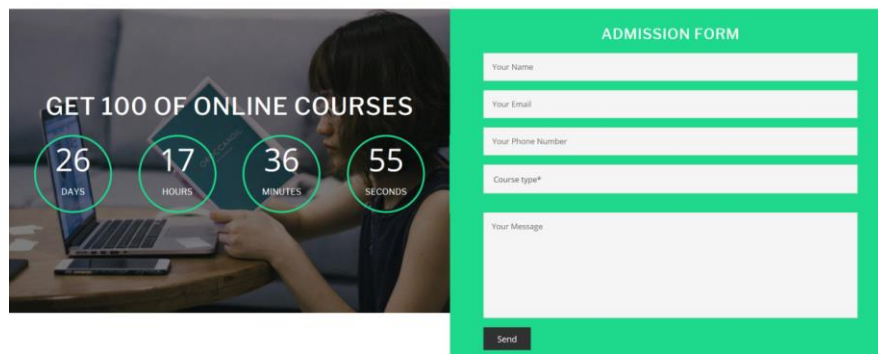


Figure 4: Message interface

According to each module with functional design and a back-end database, so that the platform can add the contents of the plane through the spooler, delete, and modify.

4. Experimental Effect Analysis

4.1 Experimental Design

In the experiment, 68 students in each of the two experimental groups were selected as experimental subjects for vocabulary testing. The first part is the vocabulary breadth test, and the second part is the vocabulary knowledge depth test questionnaire, separated by three days. Both tests were conducted for about thirty to forty minutes. Data collection was performed immediately after the test. Although there were 68 students in the two groups, the experimental group had only 54 valid vocabulary breadth tests, 55 in the control group and 58 in the experimental paper. Therefore, data analysis is based on these valid scores. The experimental group provided a multimedia platform and adopted the overall language teaching method for the teaching of British vocabulary [35]. The control group adopted the traditional method of the control group. As most teachers do in high school, the teacher gives students examples of meaning, collocation, and target words, and then students write them in their notebooks. The results are shown in Table 1.

Table 1: Vocabulary test table for the control group and the experimental group before the start of the experiment

	Group	Number	Average score
VB-score	Experimental group	51	35.1765
	Control group	53	34.9434
DVK-score	Experimental group	51	51.9804
	Control group	53	50.2264

As can be seen from Table 2, the experimental group in vocabulary size test 35.1765, 34.9434 group; lexical depth of knowledge in the test, the average score in the experimental group divided 51.9804, 50.2264 points average in the control group, the test can be seen in twenty-two score gap for the group is very small. Three months after the start of the experiment, the vocabulary breadth and depth tests were conducted again for the two groups of students. The results are shown in Table 2.

Table 2: Vocabulary test table of the control group and the experimental group after three months

	Group	Number	Average score
VB-score	Experimental group	51	83.1645
	Control group	53	84.8464
DVK-score	Experimental group	51	61.9413
	Control group	53	60.3294

It can be seen from the experimental results that the experimental group of multimedia-assisted teaching has made significant progress after a period of teaching. In the control group using the general teaching method, the progress is not very obvious.

5. Conclusion

In theory, the idea of holistic language teaching provides theoretical guidance for the whole process of language teaching, which naturally includes vocabulary teaching, and the overall teaching ideology is consistent with vocabulary acquisition theory, such as providing a real language environment, emphasizing learn to master and develop abilities in use. Therefore, applying the whole language teaching thought to vocabulary teaching will definitely promote vocabulary teaching. In addition, vocabulary teaching in such a teaching mode is not only to teach words to teach words, but also to integrate words into scenes and activities. To reflect the real scenes and complete related activities, the vocabulary that has already been learned is also it will be continuously reproduced and used, which not only activates the correlation between vocabularies, but also plays a role in reviewing and consolidating.

The teacher informatizes the content taught in the teaching work, uploads it to other places through the network, and then classifies it into different categories through the administrator, stores it in different servers, and realizes file sharing through sharing. The construction of a multimedia teaching resource platform management system for colleges and universities can provide a real-time communication platform for teachers and students, which can greatly promote the teaching quality and teaching effect of the classroom.

Teachers can improve their ability to use multimedia to make full use of these devices. For example, create more attractive courseware to increase student enthusiasm; provide more real discourse to familiarize students with the use of vocabulary; and use it as an effective tool in language activities. And teachers can encourage students to provide some interesting topics, discuss in class, and provide students with more opportunities to use words in a real language context.

References

- [1] Pakdaman M, Ahmadian A, Effati S, et al. Solving Differential Equations of Fractional Order Using an Optimization Technique Based on Training Artificial Neural Network. *Applied Mathematics & Computation*, 2017, 293(C):81-95.
- [2] Feng J, Lei Y, Guo L, et al. A Neural Network Constructed By Deep Learning Technique and Its Application to Intelligent Fault Diagnosis of Machines. *Neurocomputing*, 2017:S0925231217312894.
- [3] Santos I, Henriques R, Mariano G, et al. Methodologies to Represent and Promote the Geoheritage Using Unmanned Aerial Vehicles, Multimedia Technologies, and Augmented Reality. *Geoheritage*, 2018, (10):1-13.
- [4] Made Rajendra I, Made Sudana I. The Influence of Interactive Multimedia Technology to Enhance Achievement Students on Practice Skills in Mechanical Technology. *Journal of Physics: Conference Series*, 2018, 953(1):012104.
- [5] Xu J. A Study of Extension Strategies of Multimedia Online Teaching Platform in Sports Teaching of Universities. *Journal of Computational & Theoretical Nanoscience*, 2017, 14(1):94-98.
- [6] Ling, Yang, Xingbiao. Design and Implementation of the Platform for Multimedia Resource Sharing based on Cloud Technology. *Applied Mechanics & Materials*, 2014, 686(7):236-240.
- [7] Wang, Jie Feng. "Design and Implementation of Online English Multimedia Teaching System Based on B/S Mode." *Sixth International Conference on Intelligent Systems Design & Engineering Applications 2016*.
- [8] Zhang L, Liu M, Shi Z, et al. Research on Virtual Basic Laboratory and Experimental Teaching Resources Platform Based on Cloud Computing. *Physical Review*, 2014, 271(2):549-554.
- [9] Lv, Zhihan, and Houbing Song. "Trust Mechanism of Multimedia Network." *ACM Transactions on*

- Multimedia Computing, Communications, and Applications (TOMM)(2020).*
- [10] Tian L, Ling B. *Design and Application of Multi-layered Foreign Language Network Teaching Resource Platform International Conference on Computer Science & Software Engineering*, 2008.
- [11] He B X, Zhuang K J. *Research on the Intelligent Information System for the Multimedia Teaching Equipment Management International Conference on Information System & Artificial Intelligence*. 2017:364:394.
- [12] Armenteros M, Liaw S S, Sánchez-Franco M J, et al. *Analysis of FIFA referees and assistant referees' motivational factors towards the Multimedia Teaching Materials*. *Education & Information Technologies*, 2017, 22(3):1-32.
- [13] Hasegawa T, Koshino M, Ban H. *An English vocabulary learning support system for the learner's sustainable motivation*. *Springerplus*, 2015, 4(1):1-9.
- [14] Sundqvist P, Wikstrom P. *Out-of-school digital gameplay and in-school L2 English vocabulary outcomes* ☆. *System*, 2015, 51:65-76.
- [15] Ashraf H, Motlagh F G, Salami M. *The Impact of Online Games on Learning English Vocabulary by Iranian (Low-intermediate) EFL Learners*. *Procedia - Social and Behavioral Sciences*, 2014, 98:286-291.
- [16] Chou M. *Assessing English vocabulary and enhancing young English as a Foreign Language (EFL) learners' motivation through games, songs, and stories*. *Education 3-13*, 2014, 42(3):284-297.
- [17] Huang L Y. *Learning to Read with the Whole Language Approach: The Teacher's View*. *English Language Teaching*, 2014, 7(5):71-77.
- [18] Ghalib T K, Al-Hattami A A. *Holistic versus Analytic Evaluation of EFL Writing: A Case Study*. *English Language Teaching*, 2015, 8(7):225-236.
- [19] Muñoz Campos D. *Problem-Based Learning: An Experiential Strategy for English Language Teacher Education in Chile.. Profile Issues in Teachers Professional Development*, 2016, 19(1): págs. 29-40.
- [20] Bukor E. *Exploring teacher identity from a holistic perspective: reconstructing and reconnecting personal and professional selves*. *Teachers & Teaching*, 2015, 21(3):305-327.
- [21] Tok M. *Examining Pre-Service Teacher Views on the Implementation of Screen-Based Writing Instruction*. *International Electronic Journal of Elementary Education*, 2015, 7(2):235-252.
- [22] Daniel K, Hirshleifer D, Subrahmanyam A. *Investor Psychology and Security Market Under - and Overreactions*. *Journal of Finance*, 2010, 53(6):1839-1885.
- [23] Tversky A, Kahneman D. *The framing of decisions and the psychology of choice*. *Science*, 1981, 211(4481):453-458.
- [24] Martin J R. *Evolving systemic functional linguistics: beyond the clause*. *Functional Linguistics*, 2014, 1(1):1-24.
- [25] Noor M, Ali M, Muhabat F, et al. *Systemic Functional Linguistics Mood Analysis of the Last Address of the Holy Prophet (PBUH)*. *Social Science Electronic Publishing*, 2015, 3:1-9.
- [26] Fernã•Ndez E M, Augusto D S R, Agustina C. *Bilingual innovations: Experimental evidence offers clues regarding the psycholinguistics of language change*. *Bilingualism Language & Cognition*, 2017, 20(2):251-268.
- [27] Herk G V. *Globalising sociolinguistics: challenging and expanding theory*. *Journal of Multilingual & Multicultural Development*, 2017, 38(6):1-2.
- [28] Lv, Zhihan, Liang Qiao, and Houbing Song. "Analysis of the Security of Internet of Multimedia Things." *ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM)(2020)*.
- [29] Lv, Zhihan, Liang Qiao, Amit Kumar Singh, Qingjun Wang. "Fine-grained Visual Computing Based on Deep Learning." *ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM)(2020)*.
- [30] Zhang, Y., He, Q., Xiang, Y., Zhang, L. Y., Liu, B., Chen, J., & Xie, Y. (2017). *Low-cost and confidentiality-preserving data acquisition for internet of multimedia things*. *IEEE Internet of Things Journal*, 5(5), 3442-3451.
- [31] Lv, Zhihan, Alaa Halawani, Shengzhong Feng, Shafiq Ur Rá•man, and Haibo Li. "Touch-less interactive augmented reality game on vision-based wearable device." *Personal and Ubiquitous Computing* 19, no. 3-4 (2015): 551-567.
- [32] Fabisiak, L. 2018. "Web Service Usability Analysis Based on User Preferences," *Journal of Organizational and End User Computing* (30:4), pp. 1-13.
- [33] Lv, Z., Li, X., Wang, W., Zhang, B., Hu, J., & Feng, S. (2018) "Government Affairs Service Platform for Smart City", *Future Generation Computer Systems*, 81, pp.443-451.
- [34] Mahmoud Zaher, Abdulaziz Shehab, Mohamed Elhoseny, Farahat Farag Farahat, *Unsupervised Model for Detecting Plagiarism in Internet-based Handwritten Arabic Documents*, *Journal of*

Organizational and End User Computing (JOEUC), Vol 32, No. 2, pp. 42-66, 2020

[35] Nasir N. Hurrah, Shabir A. Parah, Nazir A. Loan, Javaid A. Sheikh, Mohammad Elhoseny, Khan Muhammad, *Dual watermarking framework for privacy protection and content authentication of multimedia*, *Future Generation Computer Systems, Volume 94, May 2019, pp. 654-67 (DOI: <https://doi.org/10.1016/j.future.2018.12.036>)*