Retraction

Retracted: Construction of College English Mobile Learning Model Based on Distributed Terminal

Scientific Programming

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] J. Wang and L. Lei, "Construction of College English Mobile Learning Model Based on Distributed Terminal," *Scientific Programming*, vol. 2021, Article ID 2220096, 7 pages, 2021.

Research Article

Construction of College English Mobile Learning Model Based on Distributed Terminal

Jianmei Wang[1] and Linhai Lei [2]

[1]*Taiyuan University, Taiyuan 0300321, Shanxi, China*
[2]*Taiyuan Normal University, Taiyuan 0306192, Shanxi, China*

Correspondence should be addressed to Linhai Lei; leilinhai@tynu.edu.cn

The quality of English teaching cannot be separated from the students's accumulation and mastery of vocabulary, and sufficient vocabulary can ensure that students feel easy and comfortable in the language application. However, there are still some problems in teaching English vocabulary in colleges and universities, such as single presentation method, lack of real context, and other difficulties. With the rapid development of mobile Internet, the share of smart mobile devices among college students has increased, which in turn has laid the foundation for the development of new learning modes. The mobile terminal-mediated learning mode in English classroom teaching has become a hot topic of research nowadays, of which English vocabulary teaching has become a typical example. This paper is designed as a system model of edge computing, in which the user terminal device can connect wirelessly with each MECS and offload the tasks to be processed on the MECS, which helps the user terminal device to process and return the results to the user terminal device. The research in this paper also provides a basis for students' independent and lifelong learning of English words and for schools' information technology to serve English vocabulary teaching and learning.

1. Introduction

Today, we are in an era of high informationization and globalization; how to efficiently collect and process information has become a necessary skill [1]. There are three components to any language: phonology, vocabulary, and grammar. Michael Lewis said that language is made up of grammatical words, not lexicalized grammar. This shows the importance of the English vocabulary in English language teaching [2]. However, although experts and front-line English teachers have put forward many strategies to reform teaching in junior high schools over the years, such as contextual teaching method and game teaching method, it is difficult for these vocabulary teaching methods to give full play to their theoretical advantages in the context of traditional teaching and to achieve efficient English vocabulary teaching efficiency [3].

The contemporary junior high school students are in an era of network and information technology, and the communication between them has long been not. They no longer stay on paper or face-to-face mode, but a kind of instant communication mode [4]. Mobile terminals such as smartphones and tablet PCs have become popular, and mobile terminal-based English learning third-party applications have become increasingly popular [3], such as Apps for listening, speaking, reading, and writing, and have emerged in large numbers [5]. Mobile terminals have incomparable advantages of traditional vocabulary teaching, such as portability and no time and space limitations, and [6] believes that vocabulary learning is a continuous process with a lifelong nature, and the application of mobile terminals to junior high-school English vocabulary teaching is to cultivate secondary school students' lifelong ability to learn English vocabulary. What are the impacts of mobile terminals on English vocabulary teaching in junior high schools and what are the corresponding strategies to face these impacts? This is a question that needs to be addressed.

Through this study, the author hopes that the majority of English teachers will fully realize the magnitude of the impact of mobile terminals on junior high school English vocabulary teaching in the era of instant communication and given the characteristics of learning and communication of junior high school students in that era [7]. At the same time, the research in this paper provides a basis for students' independent and lifelong learning of English words, and a basis for the construction of information technology in schools to serve the teaching of English vocabulary.

The study also provides a basis for students' independent and lifelong learning of English vocabulary and for the construction of information technology in schools to serve English vocabulary teaching and learning.

The contributions of this paper are as follows:

(1) This paper is designed as a system model of edge computing. The user terminal equipment can wirelessly connect with each MECS and unload the tasks to be unloaded to MECs for processing. MECs help the user terminal equipment process and return the results to the user terminal equipment.

(2) Mobile learning and mobile education are analyzed and summarized. Learning with mobile terminal equipment is a new learning method. With the support of network communication, learners can accept learning anytime and anywhere, and then cultivate learners' awareness, attitude, and habit of lifelong learning.

(3) A large number of experiments have been performed to verify that the problems of college English vocabulary teaching are more concentrated, and show new trends and characteristics, which are summarized by the lack of attention and investment in English vocabulary teaching.

2. Development Status of Mobile Teaching and Learning at Home and Abroad

2.1. Foreign Research Status and Results. In recent years, research on the main areas of mobile learning is growing rapidly, mainly focusing on the feasibility of mobile learning, the development of mobile learning resources, the construction of WAP education sites, and short message services, and as an effective aid to lifelong and collaborative learning [8]. The main areas of research in recent years are growing rapidly, mainly focusing on the feasibility of mobile learning, the development of mobile learning resources, the construction of WAP education sites, short message services and as an effective aid to lifelong learning and collaborative learning [9].

Keegan divides distance learning into three stages according to the form and means of learning: distance learning, e-learning, and M-learning [10]. Compared with the theories of Nipper (Denmark), Bytes (UK), and Taylor (Australia) on "three developmental eras of distance learning," Keegan's theory solves the problem of coexistence of distance learning, e-learning, and mobile learning [11].

Professor Mike Sharples, President of the International Academy for Mobile Learning (IAML) [12–14] discussed how lifelong learning and mobile learning can contribute to each other, what mobile learning means for the traditional classroom, and how to use it to design classroom activities. The study in [15] proposed centralized management for the current situation of mobile learning resources in China and established quality specifications and interoperability standards.

3. Related Work

At present, domestic research is still mainly theoretical, mainly in the basic theory and an overview of mobile learning, technical support, resource development, application objects, and teaching models. In 2008, RongHuai Huang and Jyri Salomaa edited the first domestic monograph on mobile learning: "Mobile Learning - Theory - Current Situation - Trends," which comprehensively introduced the theory and characteristics of mobile learning and technology, sorted out domestic and foreign mobile learning cases and projects, and explained various application models [16]. Finally, it outlooks its future development. After that, scholars in China have published treatises on mobile learning, such as "Mobile Learning Theory and Practice" edited by [17].

In 2008, Jiaoqing Mo explored and researched the development technology of the mobile learning system, aiming to build a mobile learning system based on the JZME/JZEE platform and GPRS network, in order to extend the application of the web-based learning system in the wireless field [18].

In terms of resource development, the study in [8] designed a case study of English word learning resources based on NET mobile development technology in "Design and Research of Mobile Learning and its Resources," based on the discussion of the theory of mobile learning resources and its special features. The study in [19] in "Research on the Design of Fragmentary Learning Resources in Mobile Learning," through the analysis of a large amount of data to derive based on the clustering results, explored the feasibility and specific design strategies of fragmented learning resources in mobile learning.

In terms of the application target, it is mainly focused on two parts: one part is school students, covering students of different ages including young children, primary and secondary school students, students in higher education institutions, college students, and graduate students [20]. The study in [21] explored the impact of mobile learning on higher education and the countermeasures in teaching resources construction and teaching process management. The study in [22] conducted a survey on the current situation of mobile learning for adult learners. In terms of teaching mode, due to the characteristics of English learning, the application of mobile terminals to English learning has incomparable advantages. The study in [23] proposed four models of mobile learning in "The Application of Mobile Learning in College English Vocabulary Learning." The study in [24] discussed the content selection, teaching

process, and evaluation of mobile learning and analyzed the details of the application of mobile learning mode in high school English.

The study in [25] used the UTAUT model as the basis to empirically analyze the factors influencing college students' acceptance of mobile learning through a questionnaire survey of 593 college students at Beihang University and multiple regression. The study in [26] empirically analyzed the demand for mobile learning by sampling college students from Nanjing, Beijing, Shanghai, and other universities across China. The study in [27] studied the application of mobile learning in vocational education by taking the example of "Microcontroller Principle Technology." The study in [28] studied the application of mobile education in medical examination teaching.

3.1. Related Concept Definition

3.1.1. Mobile Learning and Mobile Education.
There is no uniform definition of mobile learning [15]. Chara and Figueiredo, in the context of distance education, define mobile learning as the ability to use any device, at anytime, anywhere, to receive learning. As an extension of online education, mobile learning not only has the basic characteristics of online education, but also has its own unique characteristics, as follows:

(1) Networked: mobile learning is realized through the access of mobile terminals to the network. So mobile learning has the characteristics of network education.

(2) Universality: with the continuous development of technology, mobile terminals such as smartphones have flooded into our lives and become popular, providing material support for the popularization of mobile learning and contributing to the realization of educational equity.

(3) Ubiquity: the so-called ubiquity is 3A (anyone, anytime, anywhere).

(4) Personalization: mobile learning can provide personalized education services according to learners' own learning styles and interests, and is also conducive to teachers' personalized teaching and hierarchical teaching [17].

(5) Hypermedia: the learning resources of mobile learning are digital contents, presented in the form of multimedia (such as text, pictures, audio, and video).

According to Professor Cui Guangzuo of Peking University and others, "Mobile education refers to the more convenient and flexible interactive teaching and learning activities by students and teachers through the use of mobile devices (such as cell phones), relying on the current relatively mature wireless mobile network, international interconnection network and multimedia technology."

In the United States and Europe, mobile learning is referred to as m-learning, short for mobile learning, or mobile education, short for M-education. Mobile education is education delivered by means of mobile learning.

3.1.2. Mobile Terminals.
Mobile terminal refers to a computer device that can be used on the move, including cell phones, laptops, and POS machines in a broad sense. But most of the time, it refers to smartphone and tablet personal computer. Smartphone users can install third-party applications such as education, shopping, and gaming applications, depending on the operating system, so that their functions can be expanded [22].

3.1.3. Third-Party Applications (Apps).
Third-party applications for smartphones (the full name is application, abbreviated as App). From system security, communication, audio-visual, photography and video, travel, and hotel to education and learning, a wide variety of Apps are available to meet the needs of cell phone users for personalized software.

3.1.4. System Scenes.
Figure 1 shows the system model of edge computing, where the user end device can connect wirelessly with each MECS and offload the tasks to be processed on the MECS, and the MECS helps the user end device to process and return the results to the user end device.

In this paper, we assume that the system consists of 1 user terminal device and n MECSs. The user terminal device has m tasks to be processed, which can be offloaded to the MECS for processing or processed locally. The set of MECS is modeled as $\text{mecs}_j = (f_j, P_j^D, rs_j)$, and the j-th MECS is modeled as f_j, where P_j^D is the processing power of the j-th MECS. The user terminal device will be modeled as $J\text{User} = (f_1^c, P_1, P^U)$, where f_1^c represents the computing power of the user terminal device.

The task set of the user terminal device is modeled as $\text{TASK} = \{\text{task}_1, \text{tank}_2, \ldots, \text{task}_m\}$, and the i-th task is modeled as $\text{task}_i = (U_i, D_i, p, r_i^s)$, where U_i denotes the data volume of the i-th task, D_i denotes the data volume of the i-th task processing result, p denotes the number of CPU cycles required by the CPU of the user terminal device or MECS to process each bit of task, and r_i^s denotes the number of MECS resources required to process the i-th task. The offloading decision of m tasks is represented as a vector $X = \{x_1, x_2, \ldots, x_m\}$, which means that the i-th task is executed locally [25].

This paper makes the following basic assumptions:

(1) Each task of the user terminal device cannot be split, and there is no dependency between the tasks.

(2) The user terminal device can send tasks to the corresponding MECS for processing through different channels in parallel.

(3) The states of the channel during the process of uploading tasks to the MECS and returning the processing results to the user terminal device are the same.
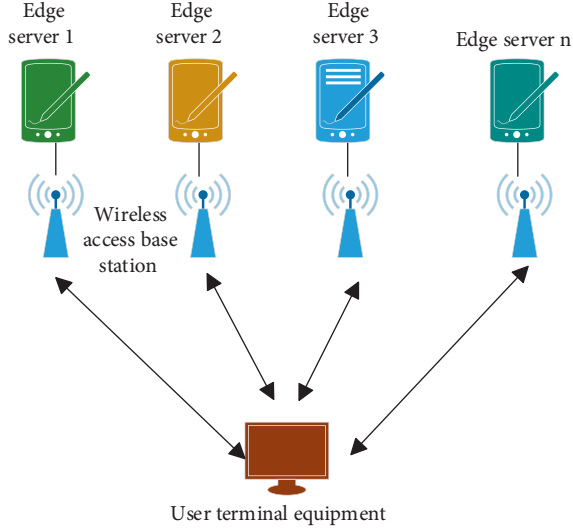
FIGURE 1: System model in edge computing scenario.

(4) The computing power of the user terminal device and the MECS remains stable during the task processing.

(5) MECS is a multithreaded server; that is, MECS can handle multiple user terminal device tasks simultaneously.

(6) The system is in a quasi-static environment; that is, the number of tasks remains constant when the user terminal device is offloading tasks, but the number of tasks of the user terminal device changes at different time periods.

3.1.5. Energy Consumption.

Assume that the energy consumption of the i-th task of the user terminal device processed at the user terminal device is E_i^1, which is given as follows:

$$E_i^1 = t_i^1 * P_1. \tag{1}$$

The second category is the energy consumption generated by the user terminal device when offloading tasks to MECS for processing, which includes the transmission energy generated by the local user terminal device when the user terminal device sends tasks to MECS, the energy consumption generated by MECS when processing tasks of the user terminal device, and the energy consumption generated by MECS when returning calculation results to the user terminal device. Therefore, this paper mainly considers the energy consumption generated by the local user terminal device when uploading data to MECS and assumes that the energy consumption of the user terminal device when uploading the i-th task is E_i^U, which is given as follows:

$$E_i^U = P^U * t_i^U. \tag{2}$$

Then, the energy consumption of the system to process the i-th task E_i is the computational energy consumption of

the user terminal device to process the task and the energy consumption generated by uploading the task of MECS, which is as follows:

$$E_i = (1 - s_i) * E_i^1 + s_i * E_i^U. \tag{3}$$

Therefore, the energy consumption E generated by the system is given in the following equation:

$$E = \sum_{i=1}^{m} E_i. \tag{4}$$

3.1.6. Problem Model.

In edge computing scenarios, latency and energy consumption are the two most commonly used metrics to measure the performance of offloading schemes. In this paper, delay and energy consumption are considered together, and since delay and energy consumption are of different magnitude, they need to be normalized. Assuming that the size of the particle swarm optimized for this problem is N, the delay and energy consumption of the system for the kth offloading policy to handle the user terminal device task are E_k and T_k', and the normalized results T_k' and T_E' are given in the following equations:

$$T_k' = \begin{cases} \dfrac{T_k - T_{min}}{T_{max} - T_{min}}, & T_{min} \neq T_{max}, \\ \\ 1, & T_{min} = T_{max}, \end{cases} \tag{5}$$

$$E_k' = \begin{cases} \dfrac{E_k - E_{min}}{E_{max} - E_{min}}, & E_{min} \neq E_{max}, \\ \\ 1, & E_{min} = E_{max}, \end{cases} \tag{6}$$

where $T_{min}, T_{max}, E_{min}$, and E_{max} denote the minimum delay, maximum delay, minimum energy consumption, and maximum energy consumption generated under all offloading policies, respectively [10]. Assume that the total overhead of processing user terminal device tasks in this system under the kth offload policy is $W(X_k)$, which is given as follows:

$$W(X_k) = \lambda * T_k' + (1 - \lambda) * E_k'. \tag{7}$$

Here, the weight $\lambda \in [0, 1]$.

In this paper, the objective is to minimize the weighted sum of system delay and energy consumption, which is defined as the problem of P :

$$\begin{cases} P: & \min_{k=1} N(X_k) \\ \\ s.t. & \sum_{i=1}^{m} \varphi_i^j r_i^s \leq rs_j, \end{cases} \tag{8}$$

where equation (8) indicates that the sum of computing resources allocated by the j-th MECS to user terminal device tasks cannot exceed the total resources owned by the j-th MECS.

3.1.7. Case Test.

Mobile learning and mobile education. There is no unified definition of mobile learning and mobile education, but Finnish scholars define mobile learning as a
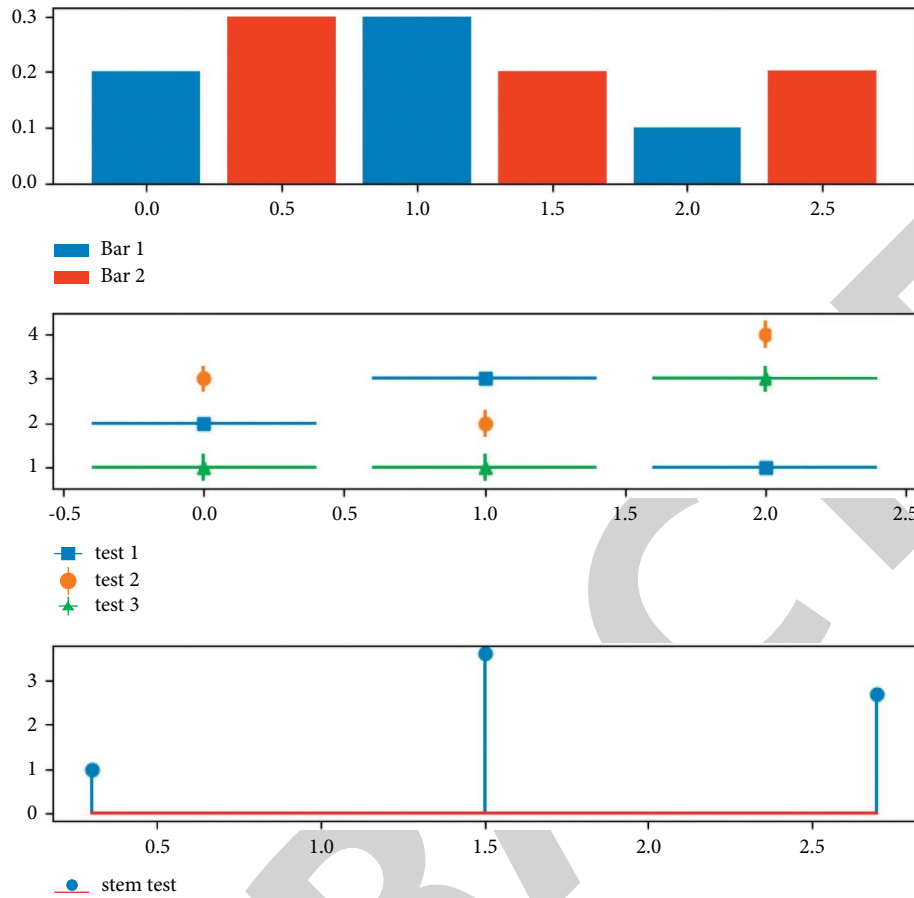
Figure 2: Different test results.

new type of learning method that uses mobile devices for learning due to the increase of people's geospatial mobility and flexible learning needs. In China, mobile learning mainly refers to the use of modern mobile devices, supported by the guarantee of network communication, so that learners can receive learning anytime and anywhere, and then develop the awareness, attitude, and habit of lifelong learning [1].

As shown in Figure 2, no physical tests, such as mobile terminals, are allowed. A mobile terminal is a computer device that can be used on the move. Broadly speaking, it includes cell phones, tablets, and laptops. In most cases, it refers to smartphones and tablets. Speakerphones and tablets can be installed with different apps according to users' needs, which can be mainly divided into three applications such as education, shopping, and games. These are also the most used and widely used programs in the study life of students and social people.

Again, as shown in Figure 3 that the existing vocabulary teaching mode is more traditional, even comparable to compulsory and high school teaching, and lacks innovation and flexibility in the selection of ways and means. In particular, the focus is on the effect of memorization, while there is no targeted response to the penetration of the comprehension link, resulting in students' fear and denigration of vocabulary learning. The monolithic teaching mechanism

not only lacks the corresponding contextual guarantee, but also is highly susceptible to forgetting [3].

As shown in Figure 4, there is a double impact on the communication between teachers and students. First of all, in the past, teachers had absolute authority in English classroom vocabulary learning, and students' main position could not be guaranteed, and generally, one-way communication between teachers and students was the main focus. In particular, it increases the opportunities for teachers to listen to students and communicate democratically, thus helping students to build their knowledge of vocabulary learning and stimulate their potential. Second, with the popularity of mobile terminals, teachers and students can effectively communicate with each other in real time by using WeChat, Weibo, QQ, and other Apps, which not only bring the psychological distance between teachers and students closer, but also personalize the learning environment and provide solutions to different chemical situations according to the students' needs, which makes the status between teachers and students equal and the students' resistance gradually disappears. Finally, instant messaging software can easily extend classroom teaching to after-school one-to-one or one-to-many, especially on the basis of text, and the use of voice tone can enter the virtual classroom scenario, which in turn plays a role in enhancing the visual effect of students, and this
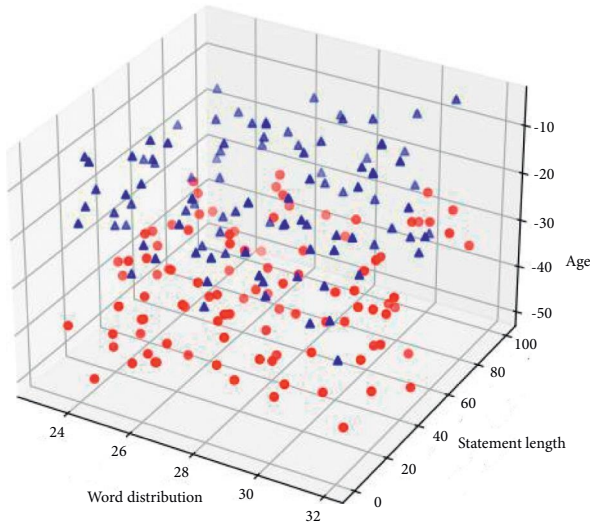
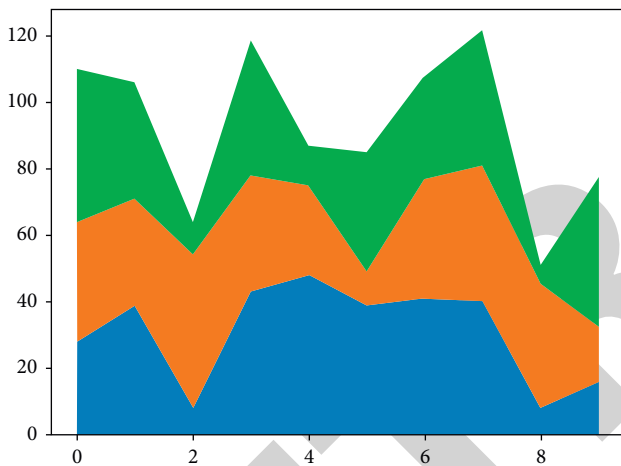FIGURE 3: Learning ability at different ages.

FIGURE 4: Distributed acceptance by different students.

emotional resonance is unmatched by previous communication mechanisms.

4. Conclusions

With the rapid development of mobile Internet, the share of smart mobile devices among college students has increased, thus laying the foundation for the development of new learning modes. The use of mobile devices as a medium for learning in English classroom teaching has become a hot topic of research, and English vocabulary teaching has become a typical example. This paper is designed as a system model of edge computing, in which the user terminal device can connect wirelessly with each MECS and offload the tasks to be processed on the MECS, which helps the user terminal device to process and return the results to the user terminal device. The research in this paper also provides a basis for students' independent and lifelong learning of English words, and schools' information technology to serve English vocabulary teaching and learning.

References

[1] X. Huang, Y. Yao, and Q. Hu, "Research on the rapid slicing algorithm for NC milling based on STL model," *AsiaSim 2012 Communications in Computer and Information Science*, vol. 325, pp. 263–271, 2012.

[2] V. L. Bond, "Music's representation in early childhood education journals," *UPDATE: Applications of Research in Music Education*, vol. 31, no. 1, pp. 34–43, 2012.

[3] J. P. Mackenbach, J. R. Valverde, M. Bopp et al., "Determinants of inequalities in life expectancy: an international comparative study of eight risk factors," *The Lancet Public Health*, vol. 4, no. 10, pp. e529–e537, 2019.

[4] S. Kreitz-Sandberg, "The influence of sociocultural and environmental factors on the adolescents' life and development: Japanese youth from a Western readers perspective," *Asia Europe Journal*, vol. 5, no. 4, pp. 499–517, 2008.

[5] P. Giardullo, "Does ""p," *Quality and Quantity*, vol. 50, no. 2, pp. 529–547, 2016.

[6] S. S. Ali, M. M. Riaz, A. Ghafoor, U. Javed, M. W. Baig, and M. U. Arif, "Takagi-sugeno fuzzy system and MTF-based ps," *Soft Computing*, vol. 20, no. 12, pp. 4695–4708, 2016.

[7] R. Marques and P. B. Lourenço, "A model for pushover analysis of confined masonry structures: implementation and validation," *Bulletin of Earthquake Engineering*, vol. 11, no. 6, pp. 2133–2150, 2013.

[8] S. Zhou and T. Zhang, "Research on the construction of flipped classroom model for English teaching based on SPOC," *Revista de la Facultad de Ingenieria*, vol. 32, no. 14, pp. 267–273, 2017.

[9] G. Fayolle, W. Levick, and R. Lajiness-O'Neill, "Amnesic syndrome following a suspected AVM in a 14 year old female: course of recovery, etiology, and MRI findings," *Archives of Clinical Neuropsychology*, vol. 27, no. 6, p. 576, 2012.

[10] C. H. Cao, Y. N. Tang, D. Y. Huang, G. WeiMin, and Z. Chunjiong, "IIBE: an improved identity-based encryption algorithm for wsn security," *Security and Communication Networks*, vol. 2021, Article ID 8527068, 8 pages, 2021.

[11] D. Wu, C. Zhang, L. Ji, R. Ran, H. Wu, and Y. Xu, "Forest fire recognition based on feature extraction from multi-view

images," *Traitement du Signal*, vol. 38, no. 3, pp. 775–783, 2021.

[12] L. Wang, C. Zhang, Q. Chen et al., "A communication strategy of proactive nodes based on loop theorem in wireless sensor networks," in *Proceedings of the 2018 Ninth International Conference on Intelligent Control and Information Processing (ICICIP)*, pp. 160–167, IEEE, Wanzhou, China, November 2018.

[13] H. Li, D. Zeng, L. Chen, Q. Chen, M. Wang, and C. Zhang, "Immune multipath reliable transmission with fault tolerance in wireless sensor networks," in *Proceedings of the International Conference on Bio-Inspired Computing: Theories and Applications*, pp. 513–517, Xi'an, China, November 2016.

[14] L. Zhang, H. Wen, J. Lu, D. Lei, and S. Li, "Comparing the time-varying topology-based dynamics between large-scale bus transit and urban rail transit networks from a mesoscopic perspective," *Nonlinear Dynamics*, vol. 106, no. 1, pp. 657–680, 2021.

[15] C. Huo and B. Shen, "Teaching reform of English listening and speaking in China based on mobile micro-learning," *Creative Education*, no. 20, pp. 2221–2226, 2015.

[16] M. Jaber, "Centralized and distributed implementations of correct-by-construction component-based systems by using source-to-source transformations in BIP," *Université Joseph-Fourier - Grenoble I*, vol. 21, no. 2, pp. 121–138, 2010.

[17] S. Lee and H. S. Lim, "Brain-operated typewriter using the language prediction model," *KSII Transactions on Internet and Information Systems*, vol. 5, no. 10, pp. 1770–1782, 2011.

[18] C.-C. Chang, C. Liang, C.-F. Yan, and J.-S. Tseng, "The impact of college students' intrinsic and extrinsic motivation on continuance intention to use English mobile learning systems," *The Asia-Pacific Education Researcher*, vol. 22, no. 2, pp. 181–192, 2013.

[19] T. Xie, C. Zhang, Z. Zhang, and K. Yang, "Utilizing active sensor nodes in smart environments for optimal communication coverage," *IEEE Access*, vol. 7, pp. 11338–11348, 2018.

[20] P. Zhang, X. Gou, and T. Xu, "Platform construction and application strategy on mobile learning for college English," in *Proceedings of the 2021 2nd International Conference on Computers, Information Processing and Advanced Education*, pp. 1012–1016, Ottawa, Canada, May 2021.

[21] Z. Li, "The construction and application of college english blended teaching model based on mobile APP," in *Proceedings of the 4th International Conference on Culture, Education and Economic Development of Modern Society (ICCESE 2020)*, pp. 901–906, Atlantis Press, Moscow, Russia, March 2020.

[22] L. Xiao-Dong and C. Hong-Hui, "Research on VR-supported flipped classroom based on blended learning—a case study in "learning English through news," *International Journal of Information and Education Technology*, vol. 10, no. 2, pp. 104–109, 2020.

[23] G. Miao, "The construction and development of university mobile learning system," *IEEE* in *Proceedings of the 2013 6th International Conference On Information Management, Innovation Management And Industrial Engineering*, vol. 2, pp. 588–590, Xinxiang, China, June 2013.

[24] Z. Zhang, C. Zhang, M. Li, and T. Xie, "Target positioning based on particle centroid drift in large-scale WSNs," *IEEE Access*, vol. 8, pp. 127709–127719, 2020.

[25] C. Zhang, T. Xie, K. Yang et al., "Positioning optimisation based on particle quality prediction in wireless sensor networks," *IET Networks*, vol. 8, no. 2, pp. 107–113, 2019.

[26] G. Dai, Y. Liu, and S. Cui, "A study on the mobile learning of English and American literature based on w public account," *English Language Teaching*, vol. 11, no. 6, pp. 47–66, 2018.

[27] X. Li and Q. Heng, "Design of mobile learning resources based on new blended learning: a case study of superstar learning app," in *Proceedings of the 2021 Ieee 3rd International Conference On Computer Science And Educational Informatization (Csei)*, pp. 333–338, IEEE, Xinxiang, China, June 2021.

[28] D. Shi, "Research field of mobile learning in China: current situation and enlightenment," in *Proceedings of the 2020 International Conference on Computers, Information Processing and Advanced Education (CIPAE)*, pp. 306–312, IEEE, Ottawa, Canada, October 2020.