Application of Computer Mind Mapping Software in Primary School English Teaching

YaoYao Li1,2, Wen Si1,2*
1Xinjiang Normal University, China, 830000
2Xinjiang Children's Education Practice & Innovation Research Center, Urumqi, Xinjiang, 830054, China

*Corresponding author e-mail: 15346646@qq.com

Abstract. Computer mind mapping software features intuitiveness, which can assist teachers to improve the efficiency of lesson preparation and enhance classroom teaching when it is applied to primary school English teaching. In addition, it is very helpful to improve the listening, speaking, reading abilities and vocabulary memorizing in primary school students. The main function of mind mapping is to concretize radiant thinking. In this paper, the application of computer mind mapping software in primary school English teaching is analyzed.

Keywords: Mind mapping, Primary School, English Teaching, Computer

1. Preface
Tony Buzen, a British psychologist and educator, created a mind mapping in the early 1970s, which refers to a visual representation of scholars building a new knowledge structure through the knowledge of a specific subject structure [1-2]. It mainly aims to concretize radiant thinking. Radiant thinking is a natural way of thinking[3-4]. Given the unique advantages of the mind mapping in the organization and representation of knowledge[5], it is embedded in primary school English classroom teaching as a teaching strategy and tool[6]. The difference between the mind mapping and traditional note-taking method is that it is a learning interaction mode derived from brain and neurophysiology while fully leveraging the multi-sensory learning characteristics of the body so that the classroom learning can be more active and creative for students.

2. Function of mind mapping software in the learning of students
“The palest ink is better than the best memory.” In any listening, speaking, reading and writing
activities, there will be information to be received, which is inseparable from notes. Compared with the traditional method of note-taking, using mind mapping to record notes is more vivid and interesting. This way can not only strengthen students’ memory of words, but also improve students’ writing and expression ability. Mind mapping has a clear structure from the subject to the end, which makes it play a guiding role in students' learning. The brain's unimaginable storage capacity has accumulated a large number of basic data for people. Through the radiant thinking of mind mapping, these data can capture more data. At the same time, it can classify and manage the characteristics of data and the relationship between data, making the storage and use of data systematic and clear. Therefore, mind mapping can combine the association and memory of learners to achieve the role of learning guidance. Through the use of mind mapping, students can improve the efficiency of using brain data, enhance the ability of association and imagination and deepen the understanding and memory of knowledge more effectively.

Based on the mind mapping software, the problems in English teaching are addressed. The adaptability of the design of the English teaching model directly affects whether the algorithm can solve the resource conflicts in English teaching problems and find the optimal solution of combinatorial planning. As a multi combinatorial goal planning problem, English teaching problems are affected by multiple constraints. The comprehensive evaluation of these constraints is taken as the fitness function of this algorithm, which is expressed as follows

\[ f_g = \frac{1}{1 + \text{crash}_g} + \text{reward}_g + \sum_{\lambda=1}^{\text{ngcourse}_\lambda} \left( \sum_{i=1}^{\text{ntime}} u_{\lambda i} + \sum_{j=1}^{\text{ntime}} v_{\lambda j} + w_{\lambda} + r_{\lambda} \right) \]  

(1)

Where \text{crash}_g represents the number of conflicts for the individual student; \text{reward}_g represents the reward index for the individual student; \text{ntime} represents the total number of courses of the teaching group after stratification. Statistics of the teaching time distribution records of the course in the group, \text{ntime} represents the total number of teaching time periods allocated to the course. The uniformity of the course allocation in the teaching time period is as follows

\[ u_{\lambda i} = \frac{\sum_{\alpha, \beta=1}^{\text{ntime}} d_{\alpha \beta}}{\text{ntime}(\text{ntime} - 1)} \]  

(2)

In style \( d_{\alpha \beta} \) curriculum the first \( \alpha \) teaching period to \( \beta \) distance between teaching periods.

Every course should be reviewed. As a language subject, English needs to be consolidated and reviewed in time according to the memory curve. There is a big difference between review and preview. Preview is to contact new knowledge, while a review is to re-contact the learned knowledge. To achieve efficient review, we must avoid “re-preview” of all teaching materials. The way of review word by sentence is not scientific and inefficient. The mind mapping solves this problem. It exports the known information from memory and reviews it in the way from the central knowledge to the detailed instruction. It avoids the boring reading and review class. At the same time, it deepens the
memory, helps the students to organize their ideas, and makes the students better contact and classifies the knowledge.

Being able to express your thoughts and emotions is the ultimate goal of language learning, and English learning is no exception. In this regard, mind mapping software is a great power tool to express thinking. When it is necessary to communicate in class speech or speech even in ordinary English communication, students can use mind mapping software to help memory and clarify ideas in preparation work, so that speech and speech are more organized and easier to remember. At the same time, through the related display of mind mapping software, the audience can understand the topic more clearly. In the speech, mind mapping can reduce the anxiety caused by lack of organization, at the same time, it can cultivate students' association ability and improve their ability to absorb new knowledge and integrate old knowledge. Also, it effectively saves time and improves the efficiency of speech. The most important thing is that it makes the speech more logical and organized, and dramatically improves the clarity of the speech content.

3. Function of mind mapping software in the teaching process of teachers

The most effective way to use mind mapping software is to record lesson preparation Notes, which not only makes the complicated work of lesson preparation simple and clear, but also can systematically display the knowledge with more image and structure, and such lesson preparation Notes are more conducive to the adjustment of its content. Besides, by using the frame structure of mind mapping, teachers can keep the balance between copying textbooks and free teaching in the teaching process, so that the teaching content not only meets the requirements, but also is not too rigid, restricted by the frame when free play, and does not deviate from the focus of knowledge. Through the interesting thought map, it can also achieve the effect of attracting the students' attention, thus realizing the efficient classroom, and also strengthening the students' receiving ability and memory ability. Writing is a major difficulty in English learning, especially for elementary school students with a weak foundation. It not only needs to master certain vocabulary and grammar, but also requires students to have clear thinking and specific expression skills. To this end, mind mapping software divides English writing into the following steps.

First of all, let students choose the theme of writing. Second, think about the topic and record the relevant points. If you encounter words that cannot be spelled, replace them with Chinese first. And discuss in groups, express their own opinions and then make a mind guide chart. Thirdly, organized by teachers, students’ mind mapping will be displayed and modified, followed by writing thinking, so that students can make coherent statements on mind mapping, and determine the way and order of statements. Finally, it is to practice writing and learn the vocabulary which is not mastered at the same time. This way not only makes the writing regular and logical, but also spreads the students' thinking, avoids the confusion of thought and the inability to write in the way of writing, and also makes the students have certain logicality in the face of writing, so that they will not write in a hurry when they should take the exam.

Table 1. Comparison of entrance teaching results between experimental class and control class

| Class                        | Number | Mean   | Standard deviation | Standard error | t      | p   |
|------------------------------|--------|--------|--------------------|----------------|--------|-----|
| Total score of the experimental class | 66     | 67.39  | 9.098              | 1.590          | -.268  | .789|
Through one academic year's teaching experiment, the subject team members will use the pre-test and post-test teaching results and total scores of the experimental class and the control class to perform independent samples t-test using SPSS17.0. The differences between the two groups before and after the experiment were tested, and the reasons were analyzed and discussed. The primary school English teaching mode of mind mapping software has significantly improved the students' English teaching level in primary school before and after the experiment. This study conducted an independent sample of the component scores of the experimental class. The results of the control class t-test are shown in table 2 shown.

**Table 2.** Statistics of pre-test and post-test groups of composition scores in experimental class and control class

|                     | Number | mean value | standard deviation | Mean standard error |
|---------------------|--------|------------|--------------------|---------------------|
| Control pre shift test | 63     | 8.56       | 1.899              | .239                |
| Control post shift test | 63     | 9.70       | 1.227              | .155                |
| Control pre shift test | 66     | 8.53       | 2.047              | .252                |
| Control post shift test | 66     | 10.74      | 1.293              | .159                |

Table 2 shows that the average score of composition in the experimental class is 10.74 and that in the control class is 9.70, with an increase of 2.21 and 1.14, respectively. The standard deviation of the experimental class is reduced from 2.047 to 1.293, which shows that the composition teaching level of the experimental class has improved as a whole. Through the independent samples of the pre-test and post-test of the component scores of the experimental class and the control class t test, The improvement of composition teaching level in the experimental class is significantly higher than that in the control class.

Mind mapping software can be used to make plans because it can help teachers master the teaching plan of the whole school year so that the annual plan can be broken down into different districts. In addition, the planning is combined with each course. After determining the general objective, the detailed objective shall be arranged. Such a planning method can not only make a reasonable arrangement, but also avoid the situation that the general objective is limited to the specific objective and ignored, or the general objective is over-exaggerated, and the detailed objective is unreasonable.

The purpose of the test is to understand the students' understanding of the knowledge taught by the teachers, which is the direct feedback of students' learning. When the main goal of the test is to test students' understanding and mastery of knowledge, mind mapping is the most ideal test method. Through the mind mapping, teachers can test students from the total knowledge points to the details, so that they can not only know the overall learning situation of students but also know which part of students' learning has problems, so as to provide guidance according to local conditions, so as to avoid the situation that students cannot understand their own learning state.

Through the application of mind mapping software, students can better construct knowledge networks, learn new knowledge efficiently, integrate old knowledge and improve their self-study ability. Applying mind mapping software to teaching is great progress in education. It is based on radiant thinking and becomes a favorite and efficient learning tool for foreign language learners.
4. Conclusions

Занков Леонид Владимирович believed that “Teaching can play a highly effective role once it accesses the spiritual field of students.” Many years of teaching practice have demonstrated that the combination of mind mapping with other teaching tools can achieve twice the result with half the effort in giving lectures. It not only enables students to quickly grasp the knowledge structure of the course but also makes learning more rational and systematic, which can effectively shorten the time required for students to get familiar with the textbook and enhance their memory of knowledge. The application of mind mapping as a teaching tool to practice requires that teachers and students should cooperate and adapt to each other, thereby achieving the teaching purpose of efficient learning and learning in order to practice.

References

[1] Yan, Kong. (2016). The construction and application of the corpus system in primary school english classroom: taking hainan province as an example. Journal of Computational and Theoretical Nanoscience, 13(12), 10385-10390.

[2] H. Ku, & R. Fulcher. (2012). Using computer software packages to enhance the teaching in engineering management science-part 2: programming techniques. Computer Applications in Engineering Education, 20(1), 114-123.

[3] Yan, Kong. (2016). The construction and application of the corpus system in primary school english classroom: taking hainan province as an example. Journal of Computational and Theoretical Nanoscience, 13(12), 10385-10390.

[4] Dianjun Lu, & Lanfen Ji. (2014). Evaluation model of medical english teaching effect based on item response theory. Lecture Notes in Electrical Engineering, 269, 3019-3024.

[5] Z.-Y. Ke, J. Wang, J.-Y. Zheng, S.-C. Lai, & Y.-Y. Zhang. (2011). Pm2.5 exposure assessment of school children at a primary school in guangzhou, china. Zhongguo Huanjing Kexue/china Environmental Science, 31(10), 1618-1624.

[6] Mirosław Adamczyk, & Andrzej Milecki. (2014). Application of artificial neural network for modelling of electrohydraulic drive. Advances in Intelligent Systems and Computing, 267, 3-10.