ISSN 2959-6122

The Application of Transfer-Appropriate Processing for Enhancing Reading Comprehension of Chinese High Schoolers

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Abstract:

Improving reading comprehension via proper reading skills is crucial to English learning. Nevertheless, the dearth of educators on reading strategies and other factors poses a challenge to the long-range development of high school students' ability of reading comprehension. Transfer-appropriate processing (TAP) is highly consistent with advancing high schoolers' comprehensive application of English, but its introduction into practice has been an under-investigated domain. In light of this, the present study offers some TAP-based pedagogical recommendations for learning and teaching to facilitate reading comprehension. It is broken down into vocabulary memorization and text understanding. TAP states that three factors--the level of processing and the uniformity of activities and situations during memory encoding and retrieval--will modify memory performance. Generating questions involving intensive contemplation boosts the grasp of reading resources; employing initial tests (retrieval practice) and engaging in congruent physical activities during encoding and retrieval aid in nurturing enduring vocabulary retention. Educators and learners may integrate the aforementioned strategies into practice.

Keywords: Transfer-appropriate processing; Question generation; Retrieval practice; Physical exercise.

1. Introduction

General Senior High School Curriculum Standards for English (2017 Edition) emphasises fostering students' passion, developing their capacity for initiative and self-learning, and strengthening the holistic application of knowledge. As one of the most fundamental language skills, reading is essential to English teaching, the improvement of students' core competencies and all-inclusive development of English. The revised standards clearly state that teachers should guide students to actively use English reading strategies, broaden corresponding channels, and strive to improve their English reading efficiency [1].

Reading comprehension, as characterized by Chen, is a clash of ideas between readers and authors, experiencing a transformation and transfer of meaning [2]. It entails the reader's activation of existing knowledge of the language and topic, and the cognitive ability to establish the meaning of the text in the mind. Presently, enhancing the reading comprehension of high school students in China encounters various challenges. Most English teachers still adhere to traditional, exam-oriented teaching methods; they concentrate mechanically on vocabulary and grammar with a sparse focus on students' training in discourse comprehension and reading skills. Additionally, the inflexible summative assessment rubrics lead to discontinuous teaching processes and ineffective outcomes, dampening students' enthusiasm for English learning. There is also insufficient instruction on reading skills and a scarcity of theory-based teaching activities in class. These all underscore the critical need to explore pertinent strategies propped by theories for educational purposes.

Domestic scholars are progressively interested in students' reading techniques; their studies encompass theoretical and empirical dimensions. The former primarily focuses on exhibiting the importance of mastering theory-driven reading strategies in improving students' reading comprehension. Empirical studies mainly hinge on investigating the status quo of students' use of reading strategies, exploring pedagogical approaches to promote this situation, and examining methods to augment usage frequency. The input hypothesis, Schema Theory and Scaffolding Theory rank as the top three theories utilized. Wang, for instance, investigated the successful implementation of Krashen's input hypothesis in high-school English reading comprehension, suggesting that educators should concentrate on the quality and appropriateness of reading materials, try to incorporate background information in reading, and ensure sufficient reading [3]. Tian et al. established corre-

sponding scaffolding-oriented reading strategies for stimulating, maintaining, and promoting reading learning [4].

Transfer-appropriate processing (TAP) accents the depth of processing and the crucial role of contexts, which aligns with the requirements for improving high school students' comprehensive English proficiency. Furthermore, retrieval practice grounded on this theory has been proven advantageous in a broader circumstance in previous studies, improving learning to a greater extent than time dedicated to other classroom activities (e.g., reviewing material and lectures without quizzes) [5]. Despite the importance of TAP, there remains a paucity of research on TAP-based strategies to enhance reading comprehension, and studies relevant to the processing level of the theory mainly zero in on deep learning within English teaching settings. They are featured by underlining the necessity of integrating this theory into educational methodologies and confirming the efficacy of deep learning-based reading instruction [1][6]. Thus, applying the theoretical framework in educational practice is of great heft.

The essence of reading comprehension lies in grammar, vocabulary and discourse understanding. The present study principally discusses TAP-based approaches to enhance reading comprehension from a linguistic perspective. This entails developing skills in vocabulary memorization and discourse analysis. A thorough investigation into these strategies helps educators optimize their instructional patterns and enables students to better engage with reading resources, thus improving their grasp of the text. In summary, this study, underpinned by Transfer-appropriate processing (TAP), probes into three distinct pedagogical tactics; each of them stems from a major element influencing memory performance: depth of processing, the way information is encoded and how it is later retrieved; potential limitations and their solutions are explored in tandem to shed new light on theory-driven strategies in the furtherance of reading comprehension.

2. TAP-based Learning Strategies in Reading Comprehension

Transfer-Appropriate Processing

In 1972, Craik and Lockhart questioned the adequacy of dominant multistore theories of memory at that time [7]. They proposed that memory involved the level of processing, which constituted an extension of the later Encoding-Specificity Paradigm apropos of mental operations. The Encoding-Specificity Paradigm suggests that when contextual factors are identical between memory encoding and retrieval, memory will be more effectively recalled [8]. Godden and Baddeley evaluated divers' ability to recall freely in identical or varied natural environments as those where lists of words were learned and deduced that uniformity of learning setting advanced memory [9]. Morris and his associates engaged participants in either a semantic or phonetic-orienting task, which, according to processing levels, ought to have been meaningful or superficial [10]. They concluded that memory retrieval was the most effective under conditions mirroring the initial encoded experience. This finding questioned Craik's assessment of memory trace duration, which was predicated only on processing depth. Transfer-appropriate processing is thus proposed. As per TAP, memory efficiency is influenced by three key elements.

First, the level of processing. The engram tends to retain longer as learners immerse more profoundly in information processing. It enhances the chances of more effective information storage and retrieval. Here, deep processing in vocabulary acquisition, for example, denotes students paying more attention to the semantic characteristics than phonetic or phonemic characteristics.

Second, the way how information is encoded and retrieved. It accentuates the consistency of how the information is memorized and the form of recall tests.

Third, the circumstances in which these two processes take place. The same circumstance fosters memory retention, and the reinstatement of the initial environment is of avail alike [9].

2.1 Deep Processing--Question Generation

Students may improve their comprehension of reading materials by generating questions.

Questions created by students necessitate pinpointing key details after reading and formulating queries on aspects they deem significant. Compared to restudying, problem generation as a student-centered approach may forward deeper engagement and reflection on learning materials, as well as retrieval practice [11], since the content reflected in the problems is chosen by the learners. Most importantly, this question's self-generation and answering improves learning effectively, akin to the impact of testing.

In King's study, although those previously trained in question generation and answering came second during the immediate test. After a one-week delay, self-questioners outperformed the summarizers and notetaking reviewers (the control group) [12]. Ebersbach et al. compared testing and generating questions conditions (no prior training) with a restudy condition. They found that students' performances in both follow-up learning conditions surpassed those simply reviewing the content [13]. Compared to restudying, there was strong evidence from a further analysis that question generation improved factual and transfer knowledge and moderate evidence that testing improved transfer knowledge. This generative study strategy needs

no preliminary prompt and training [14]. Besides, questions and answers need not be evaluated by the instructor or others afterwards [11].

Concerning means of generating questions, a host of research has been conducted, and a general conclusion was reached that when (at least part of) the learning material remains accessible, generating questions and answers can be taken as an effective tool to boost retention in learning. Ebersbach found that Students in the open-book condition and the cued closed-book condition performed better than students in the restudy condition [14]. In Waldeyer et al.'s experiment, learners flexibly switching between pure open-book or closed-book styles performed the best [15]. Although Ebersbach's research seemingly showed a negligible effect of the questions' depth (potentially owing to the generally low complexity in the case) [14], other studies have found that creating conceptual queries proved beneficial to conceptual testing over rereading, in contrast to producing factual questions that had no impact. And Students who were trained to pose cognitively challenging questions would perform better in recall tests [16].

In conclusion, as much as an appropriate and efficient tool as testing, teachers can employ generating questions in real learning contexts, which can guide students to generate more thought-provoking questions with the available learning resources. Additionally, teachers can inform them that some questions will be included in the final exam to motivate students.

2.2 Matched Activities-Retrieval Practice

Students can boost their mastery of English vocabulary through retrieval practice.

The term "test-enhanced learning," "classroom testing effect," or "retrieval practice effect" encapsulates the way practice testing improves student learning. It refers to a student's deliberate effort to identify, recall, and recreate the knowledge they initially learned, from which the later test performances benefit. A multitude of research in the fields of cognitive and educational psychology has verified the efficacy of practicing testing as a method for learning. It is both a mnemonic method and a monitoring tool [17]. Quizzes (initial tests) emerge as the most prevalent retrieval technique; other retrieval practice comprises frequent recall prompts and multiple-choice online apps [18]. This facilitation has been elucidated through TAP (alternative accounts include Elaborative Retrieval Hypothesis, Search Set Theory, and Episodic Context Account), as it corresponds with the eventual objective of aiding subsequent retrieval, viz final tests.

In contrast to the condition of restudy, no initial test and elaborative learning with concept learning, retrieval practice facilitates learning effects over a longer period. Roediger and Karpicke examined the impact of initial tests without feedback and restudying on final performances before the later test [19]. They discovered that restudying was more effective than repeated studying when the final test was scheduled 5 minutes later. However, in delayed tests, prior testing proved more helpful concerning memory recall. In an actual classroom study, McDermott et al. sampled exam performances of American seventh-grade science and high school history [20]. It was displayed that prior in-class quizzes positively impacted unit exam grades compared to situations without quizzes, irrespective of how the first three initial tests were structured.

In addition to stimulating the memorization of content during initial learning, retrieval also positively influences knowledge transfer. Karpicke and Blunt examined students' conceptual knowledge and inferential abilities gained via three different means. They observed that the benefits of retrieval practice surpassed those of elaborative learning with concept learning and repeated study. They also extended this conclusion to a broader context of scientific texts [21].

Simultaneously, retrieval can also boost later retention of nontested-relevant materials. The study of Chan et al. revealed a 9% improvement in performance on new questions among participants who had an initial test on related questions without corrective feedback, in contrast to those who underwent extra study in later accurate recall [22]. Dedicating extra time to peruse target materials did not result in such facilitation. This finding challenges the idea that such efficacy leads to losing crucial information via quizzes. It offers a fresh perspective on nurturing long-term memory for directly recalled things and their related information—to take practice examinations.

Therefore, retrieval practice, as a widely applicable and highly robust learning strategy, can be utilized by learners in vocabulary memorization. Students can conduct an initial test before the final exam to enhance memory and bridge possible knowledge gaps.

2.3 Matched Context--Physical Exercise

High school students may maintain the same bodily state during vocabulary studying and testing.

Research studies have been conducted to determine the link between the physiologic state and memory recall. Schramke and Bauer categorized the participants into two age brackets and assessed their recall performances across various states [23]. The results indicated that both groups exhibited better recall when the state was congruent before learning and delayed recall. Miles and Hardman probed how heart rate changes modified memory in two physiological settings: high-intensity cycling exercise and rest [24]. They discovered that recall deficits

caused by changes in physical state were as high as 20%. Applying a more moderate exercise form of treadmill, Yanes et al. evaluated participants' memory performance in a 15-word-list task under various study and testing scenarios [25]. The results revealed improved performance in consistent exercise and resting states during encoding and retrieval compared to non-matching activities.

It can be deduced that one's physical state influences memory capabilities. Maintaining consistent exercise and rest during the encoding and retrieval phases is conducive to memory retrieval. If a high school student memorizes words relaxedly, recalling vocabulary under a similar calming physical environment will be most effective, such as in classroom settings. Correspondingly, for high schoolers who memorize words in an activated physical state, memory recall excels, especially when bodies are stimulated.

3. Limitations and Suggestions

3.1 Deep Processing

3.1.1 Effect of the strategy

Studies on question generation primarily focus on college students, who have been rigidly selected for tertiary education and possess comparatively higher cognitive abilities. Thus, more research is needed for high school students, and low-achieving students may have difficulty formulating questions. It also requires collaborative work from both students and teachers.

3.1.2 Frequency of the strategy

Compared with simply rereading the materials, generating questions means that extra time is needed to enhance recognition, elaboration, and cognitive recording [26]; thus, it is considered an effortful strategy. This accounts for students rarely using the method on their initiative. Active summarizing approaches were students' most popular study strategy for exam preparation, according to Ebersbach et al.'s research on students' study methods before the learning session, and restudying strategies came in second [13]. Methods including testing, elaboration, and other strategies were reported less frequently. The single-use data from generating questions indicated that students had hardly taken it into consideration.

Consequently, future studies are needed to investigate further how this approach can be applied across various age brackets. It's also important for students to use their initiative to adopt this method in reading comprehension; educators should also steer their thinking processes and encourage in-depth analysis of the instructional materials to help students better benefit from this desirable difficulty.

3.2 Matched Activities--Retrieval Practice

Earlier discussions clarified that retrieval is a useful memory aid, yet multiple factors may affect its efficacy. In implementing the classroom-based programs of retrieval practice, educators should be mindful of how easily the test material could be recalled, whether corrective feedback is needed and the likelihood of students' text-induced nervousness.

3.2.1 Retrievability of the content

While retrieval enhances memory retention, the searchability of the content in the initial testing stage could influence the full play of its effectiveness.

Rowland's meta-analysis demonstrated that only when learners performed relatively well on initial tests could the benefits of initial testing (even without feedback) be observed [27]. The greatest testing effect (compared to restudying) was detected when initial test performance exceeded 75% in the condition of no feedback; there was no significant benefit when initial test performance was below 50%. However, in Kornell and Vaughn's study, both groups found the first retrieval attempt—which did not include any target letters—exceptionally challenging [28]. He contends that success or failure in retrieval attempts both contribute to learning. The retrievability of content impacts to what extent this potentiation is manifested, yet it invariably results in a facilitating impact.

3.2.2 Existence of corrective feedback and its form

During the initial testing phase, if information cannot be retrieved, relying solely on retrieval attempts is insufficient to integrate the new input, but feedback can compensate for this deficiency. When learners try to retrieve and receive corrective feedback during the initial test, their capacity for long-term memory will be further strengthened [29]. Regarding the form of feedback, in the study by Ebersbach et al., applying both open-book and closed-book tests coupled with feedback, yielded comparably impressive outcomes, particularly in handling complex knowledge [14].

3.2.3 Text anxiety

A common concern is whether frequent tests will increase students' level of test anxiety. However, a statistical study by Agarwal et al. with a sample size of 1408 showed 92% of American students reporting retrieval-induced facilitation and 72% alleviated anxiety for unit tests and exams [29]. This result may suggest students' high acceptance of this type of assessment. In addition, tests seem to encourage classroom attendance and participation (a mediated effect of testing), but individual and cultural differences in education should be considered. The American education

system highly values individualism, underscoring the importance of the process and motivating students to develop critical thinking. In contrast, China focuses heavily on uniformity and standardization; students persistently aim for outstanding academic achievements [31]. The occurrence of anxiety related to tests in Chinese students could differ.

Meanwhile, teachers should diversify their assessment methods, such as adopting a more comprehensive formative-summative assessment [32] and incorporating preliminary tests that involve low or no-stakes (it means that the tests and quizzes do not count toward students' grades). More premium should be placed on learning rather than on outcomes. This approach helps diminish exam-related stress among students, provides timely feedback, and encourages active reflection and revision—enabling students to learn from exams instead of being solely judged by them.

Accordingly, students can try covert self-testing to alleviate their anxiety; teachers should also be aware of the challenges in the early stages of tests to guarantee that students can fully recall information, thus benefiting from retrieval practice; appropriate and effective feedback should be provided, such as open-book tests or closed-book tests with feedback in prior tests; it is also necessary to improve student assessment standards, value the learning process, and adopt initial tests with lower risk levels to alleviate students' disquiet and aversion to exams.

3.3 Matched Context--Physical Exercise

Despite sustaining identical body positions throughout the study and testing phases, it's crucial to consider elements that may influence memory capabilities during physical exercise, including its type, intensity, duration and sequence of memory encoding and retrieval.

Engaging in exercise not only boosts cognitive abilities but also significantly elevates language skills in academic performance, as opposed to mathematics [33]. Moreover, physical activities can improve memory by stimulating the prefrontal cortex and cerebellar areas, which play a role in encoding and recalling episodic memory [25]. Numerous studies have shown the favourable impact of both acute and chronic physical activity on episodic memory. For example, Haverkamp has recently employed a meta-analysis to explore the cognitive advantages of the two types of exercise [33]. Nonetheless, this may not hold true in every form of memory processing. The research by Qazi et al. reveals that while post-encoding exercise facilitates memory and positively influences recognition test performance, it minimally affects free or cued-recall memory [34]. Moreover, additional elements could influence memory retrieval.

Types: Haverkamp found that chronic physical activity had a more beneficial effect on working memory than its counterpart [33].

Intensity: Miles and Hardman's studies, which explored different intensities of exercise forms, validated the positive effects of maintaining consistent physical states during learning and recall [24]. Loprinzi et al. found that acute exercise at high intensity outperformed low-intensity acute exercise in enhancing episodic memory, potentially attributable to the disparity in their intensities [35].

Duration: Shorter bouts of acute physical activity yield more pronounced improvements in cognitive outcomes compared to longer durations [33]. Yanes' experiment also showed a slight advantage for the R-R condition over the E-E condition, possibly related to transient hypofrontality [25]. It argues that high-intensity exercise will consume metabolic and cognitive resources in encoding processes.

Sequence of exercise and memory encoding: Haynes et al. discovered enhanced retrospective memory performance when a brief 15-minute exercise bout preceded memory encoding rather than during or after the process [36]. Loprinzi recognized that in any stage besides the temporal period during encoding, enhancement effects on memory could be observed with acute exercise [35]. In Yanes et al.' study, the E-R condition demonstrated better memory retention compared to the R-E condition [25]. The main distinction between the two lies in whether there was a temporal coupling between memory encoding and exercise.

Moreover, given the unfeasibility of using cycle ergometers in school settings, as usually used in experiments, students can adopt other methods like sprinting, shuttle running, or cognitively engaging workouts. Considering young people's preference for high-intensity, enjoyable activities, soccer could be an excellent choice [37].

Therefore, the type, intensity, duration, and sequence of exercise and memory encoding could combine to influence memory efficiency. chronic activities such as yoga are advisable if students choose E-E condition; alternatively, high-intensity acute exercises, such as team sports and aerobic exercise, can also be employed when feasible. And students need to avoid excessive duration and exercise during encoding, i.e., memorizing vocabulary.

4. Discussion

4.1 Bold Application of Strategies

Previous literature also shows other factors that may influence the facilitation effect, including question types (usually involve multi-choice/short answer/essay tests/fill-in-the-blank tests), the congruence in format across initial and final tests, and the level of processing (difficulty

of questions). While an optimal condition is yet to be determined, the fact that retrieval practice confers benefits in nearly all classroom conditions is undeniable [38]. Generally, educators might harbor fewer worries and actively incorporate this approach into their teaching methods. Deliberating on these elements aims to maximize the aiding impact and offers practical advice (vide Agarwal's pedagogical recommendations for educators for more details). The overall beneficial impact on memory recall also applies to physical activity [33].

4.2 Combination of Different Strategies

The three aforesaid approaches are not split from each other; instead, memory retention may be further enhanced when the strategies are combined. For example, integrating generative learning strategies and retrieval practice may be more effective in producing positive learning outcomes (Here, the generative learning strategy refers to generating questions; other approaches also encompass recognition and elaboration). Ideas-generating tasks facilitate the integration of new conceptual components into coherent mental representations. However, they seldom help to cement new information in memory. Thus, incorporating retrieval training, which principally influences metamemory, into generating tasks appears to be a promising approach to maximizing learning effectiveness [15]. Studies in generative learning and retrieval practice have been conducted almost concurrently with scant regard for each other. Numerous learning activities previously categorized as single generative or retrieval practice tasks might be considered an amalgamation of the two task features. When learners execute generative learning tasks in closed-book tests, they have to recall information from memory before participating in these activities [39]; thereby, the practice also partly incorporates retrieval practice. Certain retrieval practice, which encourages enhanced conceptual comprehension, necessitates learners to form fresh connections between idea units they've previously learned, such as by employing them. The process tends to involve learners in both generative learning and retrieval practice. Hence, exclusively ascribing the positive learning outcomes to any of the two follow-up tasks is considered less discreet. The effectiveness of the combination is regulated by various factors. Given the sequence of performing the two activities, it's probably vital to consider how much the earlier successful completion of one follow-up task influences the success of another. Focusing on solidifying their mental representations could be a more advantageous choice when students have already construed the key content in the initial learning stage. By contrast, if students have difficulty digesting new knowledge, sense-making is preferable to consolidating (erroneous) mental representations, namely, retrieval practice. The period between the initial study phase and the following learning activities, the extent to which learners can determine their focusing idea units under the dictates of learning tasks, as well as whether students can give full play to the combining effects of both metamemory (retrieval practice) and metacomprehension (generative learning) might also be relevant. Still, in an ideal scenario, educators might use activities that primarily stimulate memory retrieval or creative thinking at the right time, in appropriate form and complexity, while clarifying the reasons for using these tasks to students; it helps promote their conditional knowledge further.

5. Conclusion

The present study delved into the status quo and challenges Chinese high schoolers face in reading comprehension and provided insights for educational purposes through the application of transfer-appropriate processing from vocabulary memorization and discourse comprehension. TAP identifies three factors that influence memory efficiency: the level of processing and the consistency of activities and situations. Ideal memory efficiency is attained when the tasks performed during encoding correspond with those performed during retrieval.

Therefore, learners may engage in deep thinking by generating questions, which leads to moderate to palpable impacts on understanding the reading materials and problem-solving. Students are encouraged to actively resort to this approach during reading; teachers can also provide training for generating questions, enabling students to pose more questions that tap into cognitive resources, provided they have certain access to learning resources (by open-book format or closed/open switch style).

Furthermore, retrieval practice (this study focuses primarily on initial tests) improves long-term memory. Students can participate in some self-tests; educators need to accommodate students' ability to access resources, ensuring a balanced level of complexity of initial tests. They can also offer effective feedback to students (through open-book or closed-book tests with feedback), further refine academic assessment standards, and choose initial tests with relatively low stakes to help them benefit more from retrieval practice.

Finally, this study discussed the benefits of consistent physical states during memory encoding and retrieval on vocabulary memorization. Students are advised to prioritize chronic physical activity intervention (if they have already decided to exercise while studying and taking tests). More practically, They may incorporate individual preferences, opting for intense acute exercise of moderate

duration, such as trying a more accessible approach of team-based games. And they had better avoid memorizing vocabulary during exercise.

The three aforementioned methods can be combined in a specific practice, such as incorporating generative activities into retrieval practice or vice versa. Besides setting up conventional question types during the initial test, teachers may encourage students to ask insightful questions and try to answer them. To boost students' morale, this part may be set as non-scored, but with a bonus. Rewards can be considered based on the quality of questions raised by students and their answers.

The present study addresses the inadequacies in Chinese research on using TAP for pedagogical purposes. It helps teachers adjust their teaching techniques and assists students in enhancing learning effectiveness. The dominant limitation of this study is that although a wealth of extant research has already demonstrated the positive impacts of TAP-based strategies on learning, the facilitating effects may vary due to individual differences and other factors in practice. Furthermore, learning methods related to TAP mentioned in this article are limited. There are some other TAP-driven learning strategies, such as novel semantic association (involving deep processing), and consistent physical operations (involving matched context). Further research is needed in the future to consolidate these strategies, providing learners with a more comprehensive learning guide. A concerted effort of teachers and students is also required to enhance students' command of grammar and cultivation of good reading habits.

References

[1] Wang Dan. An Action Research on Improving Senior High School Students' English Reading Ability Based on Deep Learning Strategies. Huaibei: Huaibei Normal University, 2020.

[2] Chen Zehang. Teaching and Researching English Reading. Beijing: Foreign Language Teaching and Research Press, 2016.

[3] Wang Baiyan. A study on the application of input theory in English reading teaching in high school. Overseas English, 2023, (03): 192-194.

[4] Tian Wenyan, Zhang Xinqi, Zhou Xuanfeng. Construction of Senior High School English Reading Teaching Strategies on Scaffolding Theory. Journal of Heilongjiang College of Education, 2019, 38(9): 80-82.

[5] McDermott, K. B. Practicing Retrieval Facilitates Learning. Annual Review of Psychology, 2021, 72(1): 609-633.

[6] Zhang Wenjia. A Study on English Reading Teaching Strategies of Senior High School Based on Deep Learning Theory. Haikou: Hainan Normal University, 2018.

[7] Craik, F. I. M., Lockhart, R. S. Levels of processing: A framework for memory research. Journal of Verbal Learning and Verbal Behavior, 1972, 11(6): 671-684.

[8] Tulving, E., Thomson, D. M. Encoding specificity and retrieval processes in episodic memory. Psychological Review, 1973, 80(5): 352-373.

[9] Godden, D. R., Baddeley, A. D. CONTEXT-DEPENDENT MEMORY IN TWO NATURAL ENVIRONMENTS: ON LAND AND UNDERWATER. British Journal of Psychology, 1975, 66(3): 325-331.

[10] Morris, C. D., Bransford, J. D., Franks, J. J. Levels of processing versus transfer appropriate processing. Journal of Verbal Learning and Verbal Behavior, 1977, 16(5): 519-533.

[11] Song, D. Student-generated Questioning and Quality Questions: A Literature Review. Research Journal of Educational Studies and Review, 2016, 2(5): 58-70.

[12] King, A. Comparison of Self-Questioning, Summarizing, and Notetaking-Review as Strategies for Learning From Lectures. American Educational Research Journal, 1992, 29(2): 303-323.

[13] Ebersbach, M., Feierabend, M., Nazari, K. B. B. Comparing the effects of generating questions, testing, and restudying on students' long-term recall in university learning. Applied Cognitive Psychology, 2020, 34(3): 724-736.

[14] Ebersbach, M. Access to the learning material enhances learning by means of generating questions: Comparing open- and closed-book conditions. Trends in Neuroscience and Education, 2020, 331(6018): 772-775.

[15] Waldeyer, J., Heitmann, S., Moning, J., Roelle, J. Can generative learning tasks be optimized by incorporation of retrieval practice? Journal of Applied Research in Memory and Cognition, 2020, 9(3): 355-369.

[16] Bugg, J. M., McDaniel, M. A. Selective benefits of question self-generation and answering for remembering expository text. Journal of Educational Psychology, 2012, 104(4): 922-931.

[17] Rivers, M. L. Metacognition About Practice Testing: A Review of Learners' Beliefs, Monitoring, and Control of Test-Enhanced Learning. Educational Psychology Review, 2021, 33(3): 823-862.

[18] Agarwal, P. K., Nunes, L. D., Blunt, J. R. Retrieval Practice Consistently Benefits Student Learning: A Systematic Review of Applied Research in Schools and Classrooms. Educational Psychology Review, 2021, 33(4): 1409-1453.

[19] Roediger, H. L., Karpicke, J. D. Test-Enhanced Learning: Taking Memory Tests Improves Long-Term Retention. Psychological Science, 2006, 17(3): 249-255.

[20] McDermott, K. B., Agarwal, P. K., D'Antonio, L., Roediger, H. L., McDaniel, M. A. Both multiple-choice and short-answer quizzes enhance later exam performance in middle and high school classes. Journal of Experimental Psychology: Applied, 2014, 20(1): 3-21.

[21] Karpicke, J. D., Blunt, J. R. Retrieval Practice Produces More Learning than Elaborative Studying with Concept Mapping. Science, 2011, 331(6018): 772-775.

[22] Chan, J. C. K., McDermott, K. B., Iii, H. L. R. Retrieval-

Induced Facilitation: Initially Nontested Material Can Benefit From Prior Testing of Related Material. Journal of Experimental Psychology: General, 2006, 135(4): 553-571.
[23] Schramke, C. J., Bauer, R. M. State-Dependent Learning in Older and hunger Adults. Psychology and Aging, 1997, 12(2): 255-262.
[24] Miles, C., Hardman, E. State-dependent memory produced by aerobic exercise. Ergonomics, 1998, 41(1): 20-28.
[25] Yanes, D., Frith, E., Loprinzi, P. D. Memory-related encoding-specificity paradigm: Experimental application to the exercise domain. Europe's Journal of Psychology, 2019, 15(3): 447-458.
[26] Endres, T., Carpenter, S., Martin, A., Renkl, A. Enhancing learning by retrieval: Enriching free recall with elaborative prompting. Learning and Instruction, 2017, 49: 13-20.
[27] Rowland, C. A. The Effect of Testing Versus Restudy on Retention: A Meta-Analytic Review of the Testing Effect. Psychological Bulletin, 2014, 140(6): 1432-1463.
[28] Kornell, N., Vaughn, K. E. How Retrieval Attempts Affect Learning. In Psychology of Learning and Motivation. Elsevier, 2016, 65: 183-215.
[29] Butler, A. C., Iii, H. L. R. Feedback enhances the positive effects and reduces the negative effects of multiple-choice testing. Memory & Cognition, 2008, 36 (3): 604-616.
[30] Agarwal, P. K., D'Antonio, L., Roediger, H. L., McDermott, K. B., McDaniel, M. A. Classroom-based programs of retrieval practice reduce middle school and high school students' test anxiety. Journal of Applied Research in Memory and Cognition, 2014, 3(3): 131-139.
[31] Ma, Y. Ambitious and anxious: How Chinese college students succeed and struggle in American higher education. New York: Columbia university press, 2020.
[32] Ismail, S. M., Rahul, D. R., Patra, I., Rezvani, E. Formative vs. summative assessment: Impacts on academic motivation, attitude toward learning, test anxiety, and self-regulation skill. Language Testing in Asia, 2022, 12(1): 40-62.
[33] Haverkamp, B. F. Effects of physical activity interventions on cognitive outcomes and academic performance in adolesc. JOURNAL OF SPORTS SCIENCES, 2020, 38(23): 2637-2660.
[34] Qazi, A. S., Schmid, D., Gridley, N., Lambourne, K., Daly-Smith, A. J., Tomporowski, P. D. The effects of acute exercise on long-term episodic memory: A systematic review and meta-analysis. Frontiers in Cognition, 2024, 3, 1367569.
[35] Loprinzi, P., Blough, J., Crawford, L., Ryu, S., Zou, L., Li, H. The Temporal Effects of Acute Exercise on Episodic Memory Function: Systematic Review with Meta-Analysis. Brain Sciences, 2019, 9(4): 87-107.
[36] Haynes, J. T., Frith, E., Sng, E., Loprinzi, P. D. Experimental Effects of Acute Exercise on Episodic Memory Function: Considerations for the Timing of Exercise. Psychological Reports, 2019, 122(5): 1744-1754.
[37] Williams, R. A., Cooper, S. B., Dring, K. J., Hatch, L., Morris, J. G., Sunderland, C., Nevill, M. E. Effect of football activity and physical fitness on information processing, inhibitory control and working memory in adolescents. BMC Public Health, 2020, 20(1): 1398-1411.
[38] Agarwal, P. K., Nunes, L. D., Blunt, J. R. Retrieval Practice Consistently Benefits Student Learning: A Systematic Review of Applied Research in Schools and Classrooms. Educational Psychology Review, 2021, 33(4): 1409-1453.
[39] Jensen, J. L., McDaniel, M. A., Woodard, S. M., Kummer, T. A. Teaching to the Test…or Testing to Teach: Exams Requiring Higher Order Thinking Skills Encourage Greater Conceptual Understanding. Educational Psychology Review, 2014, 26(2): 307-329.