The Computerized Educational System Designed For Academic English Reading Technique Training-Take Computer Science Major as an Example

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Abstract. As we all know that computer science is the future in every scientific research field. So, the students who are going to graduate from University or to get higher degree all need to study the advanced techs through articles written in English. Especially for the graduates who major in computer science, for their research, the first step is to understand the English materials. However, English reading seems to be a big problem for them. In this article, the author tentatively proves the idea---common reader, especially computer science major readers can improve reading ability by practicing their eyeball. The author uses this method to help the computer science major students to get the success as quickly as possible, so that they can get the capacity in future research. The author used the computer and a software that a picture moves all the time from left to right. By this way, the author want to train the students’ eyeball ability. And then he fastened the speed little by little and help the students to master the scientific rule of the eyeball movement practicing. The author held a three-step experiment. Each step includes methods and tests. After each step, according to the result of the test, the author improved the method.

Keywords: Computer Science Major, Technique, Reading, Eyeball, Speed, Training

1. Introduction
Reading ability increases in importance as a society becomes complex and industrialized. As technology advances, more occupations require high levels of education or specialized training in which good reading ability is vital. Automation eliminates many unskilled or semiskilled jobs [1].
Students who fail to read adequately, particularly those who are severely disabled readers, are increasingly handicapped as they progress through school. They are almost sure to repeat grades; and if they get into high school, they are practically certain to drop out before graduation. Many scientists had already found several methods to overcome learners’ difficulties. While most of those methods need time and patience to get effect [1]. But most learners cannot keep on those methods and their confidence goes away little by little.

Eyeball movement practicing is the very method the author try to prove. For this purpose, the present paper is divided into three chapters.

Chapter I: Effective motivation—poor readers’ psychological need
Chapter II: Review of literature
Chapter III: Experiment

2. Effective Motivation—Psychological Need
Nowadays, English as a wide spread tool of communication has got a more important place in common people’s mind. While to most of the people, who study English as a foreign language, English reading is a big difficulty they can’t overcome. In this case, they can’t improve their English ability. From this standpoint, one of the main task in remedial reading is to help the learner change his feelings about his competence to learn to read, and raise his self-esteem [2]. A program aimed at this goal has four main aspects: (1). The poor reader should be helped to feel that he is liked, appreciated, and understood. (2). Successful experiences are essential; the reader has to see that he is beginning to make progress. (3). Active effort must be stimulated and sustained by use of both intrinsically interesting reading material and extrinsic or somewhat artificial incentives. (4). The learner can be involved in an analysis of the reading problem, the planning of reading activities, and the evaluation of progress.

Osburn (1951) strongly recommended starting a reading-disabled people with some easy-to-learn skill. He reported that teaching a student one or more magic tricks that he or she can perform successfully before the class is ideal for this purpose. It makes sense to attack total discouragement first by building success in an area where good results can be obtained more quickly than in reading [3]. Axelrod (1975) provided suggestions for dispelling misconceptions that disabled readers have about themselves and remediation [3].

During the course of a remedial program there are inevitable downs as well as ups; discouragement returns and effort slackens. These periods may be induced by events outside the remedial program, such as a quarrel at home, insufficient sleep, a sarcastic remark by another teacher, or being excluded from a game. So if we can find a type of easy way to encourage students in reading, we can solve a big problem. Some English experts had advised that when people read they could use skim, skip, etc to improve the understanding and the speed of reading [4]. The author of the paper even had a certain chance of getting himself on line, the author of the paper found a piece of article which is about a strange way of English reading—eyeball movement practice. The author of the paper was quite interested in this method and aware of its possibility.

3. Review the Literature
In this article, a professor of Japan had set an experiment of eyeball movement. The following is the very experiment: (1). Place: a common Japanese high school (2). Members: 40 students with the same English ability while the age ranges from 13 to 18. (3). Aim of the experiment: through the training to these 40 students they try to increase the speed of reading and improve their understanding level of the content. (4). Process: 1. on may 5th ,1996, the professor held a test that is a paper involving 5 passages: 1. Each passage is about 300 words long and there are 20 new words in 300; 2. Almost the same difficulty level of grammar and structure; 3. These five passages’ difficult level is suitable for the students;
4. The students must finish the reading within 25 minutes; 5. The content should include the type of social science, nature, politics, economics, and medicine [4].

From May 6th, 1996 to May 11th, 1996 professor held the first step of the experiment: he made a soft: a very beautiful lady’s picture moving quickly on the wall from left to right and its speed was controlled just beyond the students’ recognition. So the students looked at the wall all the time within this period and no one got the reward. On the day of May 11th, 1996, professor gave them the second paper which included the same character of the first one but not the same content. Second step From May 12th to May 18th, 1996, professor held the second step of the experiment: he made another soft while the two were almost the same except for the direction of its movement. On the day of May 18th, 1996, professor gave them the third paper which still included the same character of the first one but not the same content [4]. Conclusion. After the study of professor’s experiment, we can learn that his experiment is interesting, new, but not perfect, attractive and also from the result we can get that it is also not efficient.

The reasons are: (1). His device is advanced but not perfect: the speed of the moving pictures are the same all through the experiment that made a lot of trouble to the improvement of the students’ improving ability.

That is to say: maybe at first they got a speed of 1m/s (a common speed the students can adapt easily) for one day and then 2m/s and then 3m/s…… (2). His reward rule is acceptable but not perfect: at the very beginning the students tried it eagerly, but for the youngsters, they can lose interest quicker than you can imagine so professor should add the reward gradually in order to keep the level of their excitement. (3). We can see from the result that there is some but not great improvement which cannot be kept as an evidence.

The reason lie in: first, the subjects of the experiment should be the students of the same age, because the students of different ages have different attentive ability and patience. That is to say maybe an elder students can follow the rules of professor but younger ones can not.

4. Experiment

4.1. Hypothesis
The author plans to hold another experiment of his own to prove the idea that we can improve our reading ability by practicing our eyeballs. Since the author makes this experiment in a college, the number of the students of a class is not very large, only 22, but that is OK. But the author has got a good point that their ages are all 20 years old so that they can understand my rules more clearly and cooperate with me more smoothly. On March 26th, Tuesday, I gave the students a reading text before my real experiment: (1). The text includes 5 passages and each passage is about 400 words (Among 400 words, 30 are new words). (2). Nearly the same difficult level of grammar and structure. (3). These five passages’ difficulty level is just suitable for students. (4). The students must finish the passage within 20 minutes. (5). The content should include the following types: social science, nature, politics, economics, medicine.

4.2. Theoretical Evidence
In 1878 a French physician named Javal (1908) published the first account of systematic observations of the movements of the eyes during reading [5]. His work stimulated others to work on similar problems, and when Huey (1908) published the first important book on the psychology of reading, a considerable store of information had been gathered. The early investigators were handicapped by clumsy and sometimes painful apparatus. After Dodge invented a camera for photographing eye movements, many important studies were made, notably by Buswell (1992) [4]. A brief history of eye-movement research has been given by Weintraub (1977) [5]. Two portable eye-movement cameras are The reading Eye II.
and eye-trac. For special research studies, more precise cameras, which record eye movements electronically, have been built.

The older eye-movement cameras contained a roll of moving picture film which unroll at a steady speed. The duration of each fixation is shown by the length of the vertical line, and the amount of print taken in during a fixation is indicated by the length of the horizontal line representing the movement between fixations. The photocell signals are amplified and recorded on heat-sensitive paper for an instant readout. The efficient reader usually sees one or two words at each fixation. The amount a reader can see at one fixation is called his recognition span [6,7]. The more he can see at one fixation, the fewer fixations are made [8]. The study indicates that if we can improve the students’ eyeball movement ability (that is to say the aim is they get a fast eyeball moving speed and a steady eyeball moving state), their brain can receive more words in the period of fixations, they can read better.

4.3. Experiment Procedure

1) Computer System Model

2) Procedure

| Table 1. Test result of Step1: Preparation |
|-------------------------------------------|
| Preparations                               |
|-------------------------------------------|
| Test 1                                    |
| Over 90                                   |
| 1                                         |
| 80-90                                     |
| 3                                         |
| 70-80                                     |
| 6                                         |
| 60-70                                     |
| 4                                         |
| Less 60                                   |

a) First step. According to the result, the author of the paper roughly get to know these students’ English level and be ready to hold his experiment: from march 26th Thursday to march 30th, the author held the first step of the experiment: he made a similar soft (that is similar to one of professor’s): a very beautiful lady’s picture is moving quickly on the computer and the picture is reflected on the wall. And it’s direction is from left to right, and the speed is 1m/s. (this speed is lower than that of professor’s experiment. They were told there was something but not a black belt as they had seen. Just as what was mentioned before that they show a bigger interest in it and the author try to give them a reward that: the one who gets to know what is on picture, can get a “A” as his score. But a surprise hit the author soon: on the last day of this period, two boys gave the author the right answer.

Result. On the day of march 30th, I gave them the second paper which include the same character of the first one but not the same content. But the result is not very good. From the form we can see: although the students who got more than 80, 60 are more than the first text, other number decreased. Discussion. After that, the author thought the reasons of the failure are: 1). Maybe, the speed of moving picture is too low to practice their eyeball’s reaction. Everyone knows that if you want to reach a higher place, you’d better use a longer ladder. 2). Maybe since the author is not a former teacher here, the students were very curious all the time and more or less they did not pay much attention to the device[8].

| Table 2. Test result of Step2: Application |
|------------------------------------------|
| Applications                              |
|------------------------------------------|
| Test 2                                    |
| Over 90                                   |
| 0                                         |
| 80-90                                     |
| 2                                         |
| 70-80                                     |
| 7                                         |
| 60-70                                     |
| 9                                         |
| Less 60                                   |
| 4                                         |

b)Second step. So with last time’s failure and these two possible reasons, the author start his second step of the experiment. This time, the author fastened the picture’s speed from 1m/s to 1.5m/s. and then the last two successful students showed the author a difficult expression. While the author thought this time he’ll be successful. From March 31st to April 4th, the author was anxiously expecting good effects.

At the end of this period, the students’ actions shocked the author: “ teacher, that is a dog”, “ teacher, that is a cup”, “ I know. That is a car” ......the author thought that maybe they still cannot recognize that lady, their eyeball ability had already been increased. Result. So the author held the third text but the result almost destroyed him completely: the result is the same as last time.
Table 3. Test result of Step3: Adjustment

| Test | Over 90 | 80-90 | 70-80 | 60-70 | Less 60 |
|------|---------|-------|-------|-------|--------|
| Test 3 | 0       | 2     | 7     | 9     | 4      |

Discussion. From the result we can see there are two possibilities: one is that in this period, their eyeball ability has no improvement, but the author’s idea is right; the other is that idea is definitely wrong.

After recalling the process of the last two training periods, there are some different actions happen among students: (1). They stare at the picture in different ways: some just looked at the middle of the wall all the time but others’ eyes are moving from left to right following the picture spot. (2). Some are looking at the picture all the time for more than 10 minutes while others watch for a while and rest for a while. From these two phenomena, I drew a possible conclusion that I should have told them the theory and scientific methods of eyeball exercises. The author studied a lot from many modern research articles and make it clear that: (1). When one practices his eyeball movement, he should follow the moment of the subject, that is to say the students’ eyes should move from left to right; (2). They should practice between action and rest.

c) Third step. From April 5th to April 14th, the experiment was continued with confidence: (1). the theory was taught to the students in order to make them know more about this experiment and cooperate with the teacher more closely. (2). The speed was fastened from 1.5m/s to 1.7m/s. (3). The time was lengthened in order to make the effect more obviously. Result. With all these mature conditions, the author held his experiment confidently to the end. At the end of his experiment I began to receive many secret pieces of paper asking him: “why do you choose this ‘ugly’ lady?” , “don’t forget my reward”, “why not give me a handsome gentleman instead of a lady, give me my reward”…… And that tell me that I’m successful. Later the result conform the good news again.

Table 4. Test result of Step3: Reinforcement

| Test 4 | Over 90 | 80-90 | 70-80 | 60-70 | Less 60 |
|--------|---------|-------|-------|-------|--------|
|       | 3       | 4     | 9     | 4     | 2      |

5. Experiment Discussion

A. Limitation.

First, the author doesn’t have enough knowledge to control a suitable speed so that he wastes the time. Second, all through the experiment, he can’t control the passages in a suitable difficulty level so that more or less it interfere the good effect of our training. Third, the number of student is so small.

B. Conclusion. The result of the experiment indicates that English learners can improve their reading ability by practicing their eyeball movement.

C. Further research. The number of student is so small even if we get the success, scientists still need further evidence.

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