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Part of the Hazards of Tik Tok

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ABSTRACT. *In this experiment, the questionnaire and were used to investigate the effect of playing on the logical thinking. The experimental sample used 90 students from grades 7-11, and let them randomly enter three groups (random assignment): play 60 minutes Tik Tok, play 30 minutes Tik Tok, and not Tik Tok. After playing the Tik Tok of varying time, each participant will get five logic questions, then they need to complete within the prescribed time. After experiment, researcher will record the correct rate of participants' answers. Finally make the conclusion that prolonged playing of Tik Tok will have a huge impact on logical thinking and time judgment.*

KEYWORDS: *Tik Tok, logic question, logical thinking, time judgment*

1. Introduction

The rapid popularity of Tik Tok really affected my life in some extent. Sometimes when I play Tik Tok I will spend plenty of time on it, unconsciously. Tik Tok can really relieve my stress and relax my mind sometimes; but sometimes after playing the Tik Tok, my attention will be inadvertently distracted when I did some homework. Electronic products are the main medium for Tik Tok. Therefore, when we spend time on Tik Tok, it might affect our vision in some extent. However, how does Tik Tok affect our attention and logical thinking? This is also the original purpose of this experiment.

There are three key words (concepts) include in my experiment. Firstly, Tik Tok is now a well-known short video software. This software has been popular immediately in the past two years. This application is a successful software in some extent, however, there are also many teenagers who are addicted to it. Secondly, logical thinking is the way or form of connecting and organizing the content of thinking. Thinking uses concepts and categories as tools to reflect the objects of recognition. These concepts and categories exist in the human brain in a certain form of frame, that is, the structure of thinking. These frameworks can organize different categories and concepts together to form a relatively complete thought, which can be understood and mastered to achieve the purpose of recognition. Therefore, the thinking structure is not only a cognitive structure of man, but also the ability structure of man to use categories and concepts to grasp objects. Finally,

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somatosensory time is used to characterize the speed of the passage of time subjectively felt by living organisms, especially the human body.

2. Methodology

2.1 Aim

This experiment want to investigate whether students in grades 7-11 will make misjudgment of time and correct judgment of logical problems after playing the Tik Tok.

2.2 Hypothesis

H_1: There are significance different of correction of logic question and correction of judgement of time between student play Tik Tok and student don't play Tik Tok. The students who play Tik Tok will think that the time passes quickly (beyond the normal perception of time). The participant who spend longer time on Tik Tok might more blurred the perception of time. The correct rate of the students who played the Tik Tok will be lower than the correct rate of the students who do not play the Tik Tok, and the longer the time to see the Tik Tok, the lower the correct rate (the correct rate is inversely proportional to the time).

H_2: There are no significance different of correction of logic question and correction of judgement of time between student play Tik Tok and student don't play Tik Tok.

2.3 Variables

The independent variable in the experiment is the time to vibrate, there are three conditions in independent variables: 60 minutes, 30 minutes, and no Tik Tok. The dependent variable in the experiment is the correct rate of the students' questions, and Students assess the time they spend to tremble. In order to make the results of the experiment more accurate, some controllable variables were designed: the question can be submitted in 3 minutes in advance; the experiment location is the same; the Tik Tok is not disturbed by others; the environment is quiet when doing the question; the pen and paper are guaranteed consistent.

2.4 Process

First prepare the experimental space for two people to conduct the experiment at the same time, the space includes two tables, two chairs, two computers, two test papers, two time equipment (mobile phone, computer), two pens and then go Each class informs the tested classmates that every time they find two classmates from the same experimental group in two classes to conduct the test at the same time (saving

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time), and then take the tested classmates to the experimental space, and only tell the tested classmates to go play Tik Tok, do questions, and do not inform the subject of the true experiment purpose. The subjects were also not told how long they should shake their Tik Tok. Then time to play the Tik Tok and time to do the questions. Finally, organize the statistical experiment data.

2.5 Problems in experiment

First of all, when students are asked to do experiments, they may encounter the situation that they are not actively participating, so that the number of people needed for the experiment may not be reached. Some devices may not play properly due to network reasons. In the end, the participants may not be active in the question, and the experimental results may be biased.

2.6 Problems solving

For the first problem, you can persuade the class teacher, and the tutor will let the teachers mobilize. For the second problem, you can find a teacher to borrow hotspot signals to minimize the impact of network speed on the experiment. For the third problem, you can conduct enlightenment to ease the pressure on the subject.

2.7 Designing logic question

First of all, the first question is to examine the subject's ability to reverse thinking and find rules and reason. The second question focuses on the ability to find laws and summarize laws. The third question is to examine observation and reasoning ability. The fourth question is basically the observation ability of the inspection. The last one comes from an IQ test, which also examines people's ability to observe and summarize laws. So looking at these questions, the accuracy rate can be a good representation of the activity of the entire brain and the degree of being affected by Tik Tok. See the appendix for the original question of the logic question.

2.8 Designing questionnaire

There are only one question in the questionnaire which is your perception of time. The subject needs to judge how long the Tik Tok has been played by the time of the body. During this period, the subject cannot access any information that can indicate time.

2.9 Type of experiment

There are quantitative laboratory experiments with higher causality and lower location validity.

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2.10 Summary during experiment

There are many people in our experimental group. So it is not a small challenge to organize the whole group. It is not easy to bring everyone together and work hard. So at the beginning, the efficiency of our group was very low, and everyone was pushing off the task. After that, we created a table that included each person's weekly specific tasks and the time for handing in tasks, and refined the groups, dividing the large groups into several groups according to the project to make the tasks more efficient.

2.11 Quantified criteria

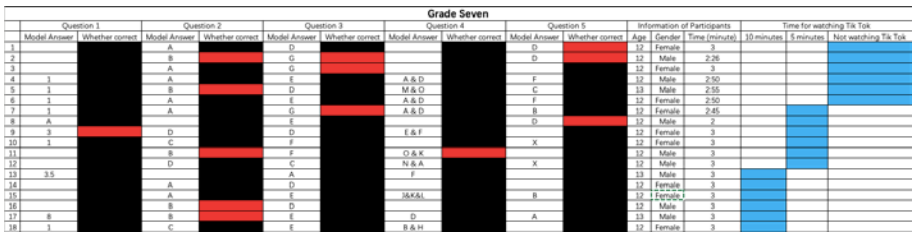
Graph 1. Quantified criteria

	High Score (Accuracy)	Medium Score (Accuracy)	Low Score (Accuracy)
Grade 7	30%-100%	15%-29%	0%-14%
Grade 8	35%-100%	20%-34%	0%-19%
Grade 9	40%-100%	25%-39%	0%-24%
Grade 10	45%-100%	30%-44%	0%-29%
Grade 11	50%-100%	35%-49%	0%-34%

3. Results and discussion

3.1 The results of logic question

This is a statistical chart (Graph 2) of the correctness of the seventh grade experimental samples. Red means correct and black means wrong. From the red density, it can be clearly seen that the shorter the playing time, the higher the red density, the more correct the problem. Two of the six classmates who played Tik Tok for 60 minutes answered 2 of the 30 questions correctly, and the correct rate was 6.7%, which was a low segment; six classmates who played Tik Tok for 30 minutes got the correct for 30 questions Five questions, the correct rate is 16.7%, which belongs to the middle section; six students who did not play the Tik Tok answered 6 of the 30 questions correctly, and the correct rate is 20%, which belongs to the middle section. Seventh graders answered a total of 13 questions correctly.



Graph 2. Results of logic question of Grade 7 students

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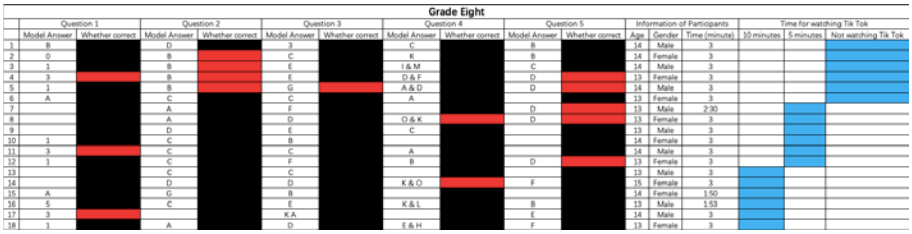
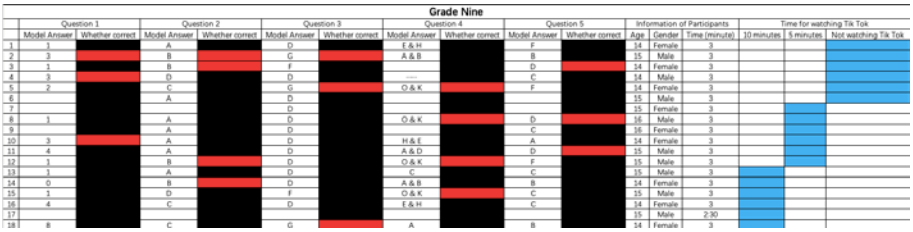
This is a statistical diagram (Graph 3) of the accuracy of the eighth grade experimental samples. Red means correct, and black means wrong. From the red density, it can be clearly seen that the shorter the playing time, the higher the red density, the more correct the problem. If the value is accurate, the six students who played the Tik Tok for 60 minutes answered 2 of the 30 questions correctly, and the correct rate is 6.7%, which is a low segment; the six students who played the Tik Tok for 30 minutes are in the 30 question 5 questions were answered correctly in the middle, and the correct rate was 16.7%, which belongs to the low segment; the six students who did not play the Tik Tok answered 8 of the 30 questions correctly, and the correct rate was 26.7%, which was the middle segment. The eighth graders answered fifteen questions in total.



Graph 3. Results of logic question of Grade 8 students

This is a statistical diagram (Graph 4) of the accuracy of the ninth grade experimental samples. Red means correct, and black means wrong. From the red density, it can be clearly seen that the shorter the playing time, the higher the red density, the more correct the problem. If the value is accurate, the six students who played the Tik Tok for 60 minutes answered 3 of the 30 questions correctly, and the correct rate is 10%, which is a low segment; the six students who played the Tik Tok for 30 minutes were in the 30 question 6 questions were correctly answered in the middle, and the correct rate was 20%, which was a low segment; the six students who did not play the Tik Tok answered 8 of the 30 questions correctly, and the correct rate was 26.7%, which was a middle segment. The ninth graders answered a total of 17 questions correctly.



Graph 4. Results of logic question of Grade 9 students

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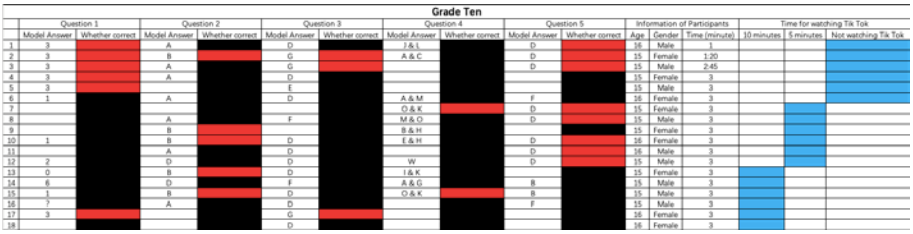
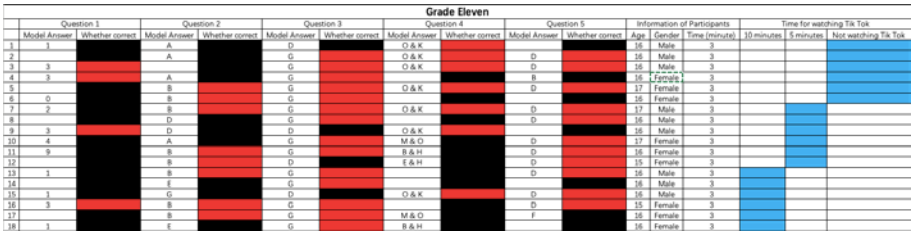
It is a statistical chart (Graph 5) of the correctness of the tenth grade experimental samples. Red means correct, and black means wrong. From the red density, it can be clearly seen that the shorter the playing time, the higher the red density, the more correct the problem. If the value is accurate, the six students who played the Tik Tok for 60 minutes answered 5 of the 30 questions correctly, and the correct rate is 16.7%, which is a low segment; the six students who played the Tik Tok for 30 minutes were in the 30 question 8 questions were answered correctly in the middle, and the correct rate was 26.7%, which belongs to the low segment; the six students who did not play the Tik Tok answered 11 of the 30 questions correctly, and the correct rate was 36.7%, which belonged to the middle segment. The tenth graders answered a total of 24 questions correctly.



Graph 5. Results of logic question of Grade 10 students

This is a statistical chart (Graph 6) of the correctness of the 11th grade experimental samples. Red means correct and black means wrong. From the red density, it can be clearly seen that the shorter the playing time, the higher the red density, the more correct the problem. If accurate to the numerical value, the six students who played the Tik Tok for 60 minutes answered 13 of the 30 questions correctly, and the correct rate was 43.3%, which belongs to the middle section; Among the 15 correct questions, the correct rate is 50%, which belongs to the high segment; the six students who did not play the Tik Tok answered 16 of the 30 questions correctly, and the correct rate was 53.3%, which belongs to the high segment. The 11th graders answered a total of 44 questions correctly.



Graph 6. Results of logic question of Grade 11 students

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3.2 Results of questionnaire

This is the result of the questionnaire (Graph 7), which is the pre-judgment of the time by the participants. It can be found that the longer the time of the Tik Tok, the greater the difference in the pre-judgment of time, and the pre-judgment time is less than the actual time. The misjudgment of time for students who beat 60 minutes of Tik Tok was 18.2 minutes, and the misjudgment of time for students who played 30 minutes of Tik Tok was 9.2 minutes.

Graph 7. Results of questionnaire

	60 minutes	30 minutes
Grade Seven	40	21
Grade Eight	38	25
Grade Nine	42	17
Grade Ten	45	22
Grade Eleven	44	19

4. Conclusion

4.1 Analysis of experiment results

Grade seven (Graph 8): I used three charts when analyzing the results, a bar chart; a line chart; and a pie chart. Obtain different information from each diagram. First of all, from the histogram, you can see how much the right and wrong choices are compared, and you can see the right and wrong of each experimental group. Obviously, it can be seen that the orange histogram representing errors is increasing, so it can be seen intuitively that the longer the time, the lower the accuracy. The second is the line chart. The line chart can see more of the trend. As the time for watching the Tik Tok decreases, the tendency of the testee to make the correct question shows an upward trend; while the time for watching the Tik Tok decreases. Short, the tendency of the testee to make the wrong question shows a downward trend. And it can be reasonably inferred that the longer the time of playing the Tik Tok, the higher the error rate. Finally, there is a pie chart. This pie chart represents the percentage of correct rate that the test subjects made in this group of subjects have different durations of Tik Tok. The pie chart can be very macro to see that the correct rate of people who do not see Tik Tok has reached 46%, which is much higher than the other two experimental groups, so through this set of data, we can

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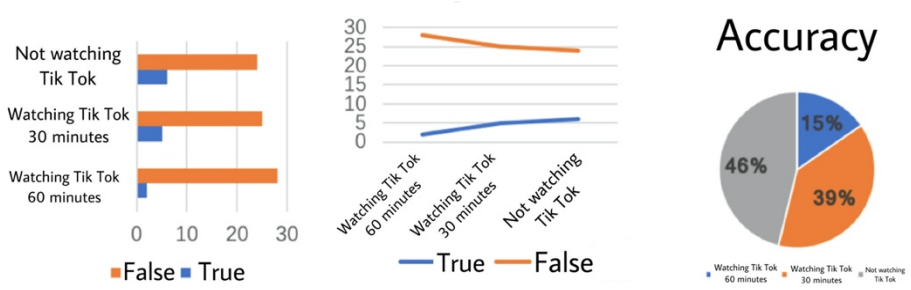
draw conclusions: the correct rate of logic questions and the Tik Tok the time is inversely proportional.



Graph 8. Analysis of grade 7 participant's experiment results

Grade eight (Graph 9): In the analysis of the results, I used three kinds of charts, bar charts; line charts; pie charts. Obtain different information from each diagram. First of all, from the histogram, you can see how much the right and wrong choices are compared, and you can see the right and wrong of each experimental group. Obviously, it can be seen that the orange histogram representing errors is increasing, so it can be seen intuitively that the longer the time, the lower the accuracy. The second is the line chart. The line chart can see more of the trend. As the time for watching the Tik Tok decreases, the tendency of the testee to make the correct question shows an upward trend; while the time for watching the Tik Tok decreases. Short, the tendency of the testee to make the wrong question shows a downward trend. And it can be reasonably inferred that the longer the time of playing the Tik Tok, the higher the error rate. Finally, there is a pie chart. This pie chart represents the percentage of correct rate that the test subjects made in this group of subjects have different durations of Tik Tok. The pie chart can be very macro to see that the correct rate of people who do not see Tik Tok has reached 53%, which is much higher than the other two experimental groups, so through this set of data, we can draw conclusions: the correct rate of logic questions and the Tik Tok the time is inversely proportional.

Graph 9. Analysis of grade 8 participant's experiment results

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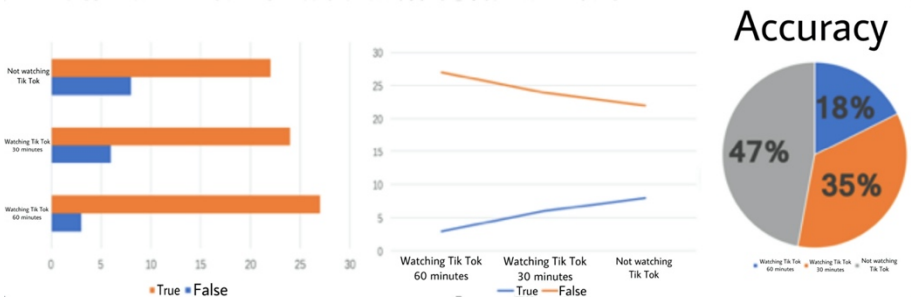
Grade nine (Graph 10): I used three charts when analyzing the results, a bar chart; a line chart; and a pie chart. Obtain different information from each diagram. First of all, from the histogram, you can see how much the right and wrong choices are compared, and you can see the right and wrong of each experimental group. Obviously, it can be seen that the orange histogram representing errors is increasing, so it can be seen intuitively that the longer the time, the lower the accuracy. The second is the line chart. The line chart can see more of the trend. As the time for watching the Tik Tok decreases, the tendency of the testee to make the correct question shows an upward trend; while the time for watching the Tik Tok decreases. Short, the tendency of the testee to make the wrong question shows a downward trend. And it can be reasonably inferred that the longer the time of playing the Tik Tok, the higher the error rate. Finally, there is a pie chart. This pie chart represents the percentage of correct rate that the test subjects made in this group of subjects have different durations of Tik Tok. The pie chart can be very macro to see that the accuracy rate of people who do not see Tik Tok has reached 47%, which is much higher than the other two experimental groups. The time is inversely proportional.



Graph 10. Analysis of grade 9 participant's experiment results

Grade ten (Graph 11): In the analysis of the results, I used three kinds of charts, bar charts; line charts; pie charts. Obtain different information from each diagram. First of all, from the histogram, you can see how much the right and wrong choices are compared, and you can see the right and wrong of each experimental group. Obviously, it can be seen that the orange histogram representing errors is increasing, so it can be seen intuitively that the longer the time, the lower the accuracy. The second is the line chart. The line chart can see more of the trend. As the time for watching the Tik Tok decreases, the tendency of the testee to make the correct question shows an upward trend; while the time for watching the Tik Tok decreases. Short, the tendency of the testee to make the wrong question shows a downward trend. And it can be reasonably inferred that the longer the time of playing the Tik Tok, the higher the error rate. Finally, there is a pie chart. This pie chart represents the percentage of correct rate that the test subjects made in this group of subjects have different durations of Tik Tok. The pie chart can be very macro to see that the correct rate of people who do not see Tik Tok has reached 46%, which is much higher than the other two experimental groups, so through this set of data, we can

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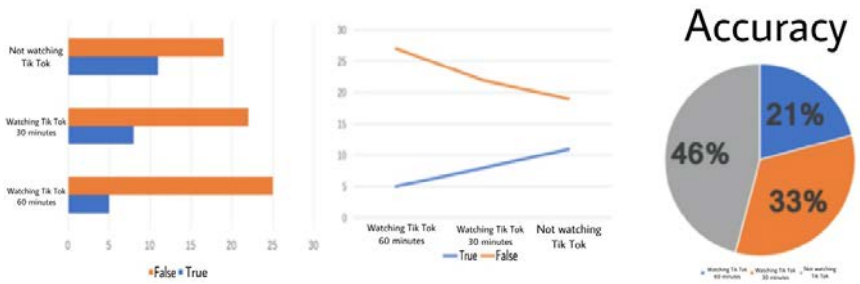
draw conclusions: the correct rate of logic questions and the Tik Tok the time is inversely proportional.



Graph 11. Analysis of grade 10 participant's experiment results

Grade eleven (Graph 12): I used three types of charts in the analysis of results, bar charts; line charts; pie charts. Obtain different information from each diagram. First of all, from the histogram, you can see how much the right and wrong choices are compared, and you can see the right and wrong of each experimental group. Obviously, it can be seen that the orange histogram representing errors is increasing, so it can be seen intuitively that the longer the time, the lower the accuracy. The second is the line chart. The line chart can see more of the trend. As the time for watching the Tik Tok decreases, the tendency of the testee to make the correct question shows an upward trend; while the time for watching the Tik Tok decreases. Short, the tendency of the testee to make the wrong question shows a downward trend. The biggest difference between this picture and the previous ones is that the two polylines have the focus, indicating that the accuracy rate has changed greatly at different times, and the accuracy rate of the group that is not looking has exceeded the error rate. At the same time, it can be reasonably inferred that the longer the time of the flickering, the higher the error rate. Finally, there is a pie chart. This pie chart represents the percentage of correct rate that the test subjects made in this group of subjects have different durations of Tik Tok. The pie chart can be very macro to see that the correct rate of people who do not see the Tik Tok has reached 44%, which is much higher than the other two experimental groups, so through this set of data, it can be concluded that the correct rate of the logic question and the Tik Tok The time is inversely proportional.

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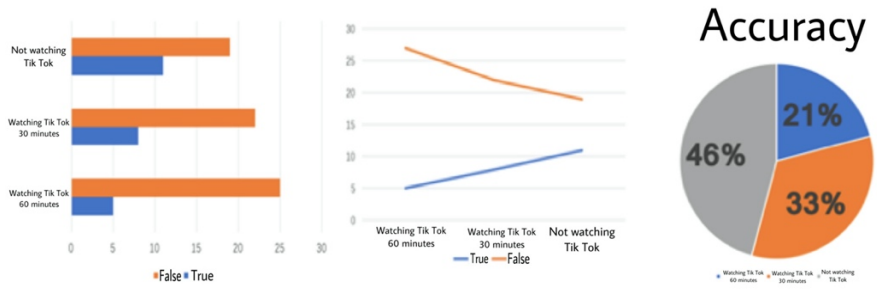

Graph 12. Analysis of grade 11 participant's experiment results

4.2 Conclusion from different aspects of the experiment

First of all, as you get older, the number of correct questions also increases. The reason for this may be due to the increase in age and the increase in knowledge reserves. Another possibility is the improvement of intelligence, the evidence of which is Bloom's intelligence development curve. It can be seen from the figure that the intellectual development of the 17-year-old has reached its peak, and the corresponding age of the 17-year-old is exactly the 11th grade. And you can also see from the picture that the intelligence of people from 8 to 17 years old has a relatively obvious increase, so this is also the reason why the correct questions of each grade are quite different.

The longer you watch the Tik Tok, the lower the accuracy. This is in line with the experimental hypothesis, and can also prove that Tik Tok directly affects logical thinking. This can also be seen in the different sections of the questions answered correctly by each experimental group in each grade.

The difference between the number of correct answers in the 60-minute group and the 30-minute group is greater than that in the 30-minute group and the non-view group. The reason may be that watching Tik Tok for a short time will not greatly affect fast food thinking. So if you just relax, it's no problem to watch Tik Tok for a while, but you must control the time

4.3 Conclusion of questionnaire

From this line chart (Graph 13), it can be clearly seen that the time difference between the 60-minute group and the standard time is more than that of the 39-minute group. In the figure, gray is the standard time of 60 minutes, and blue is the evaluation of the time by the experimental group of 60 minutes. Yellow is the standard time of 30 minutes, and orange is the experimenter's assessment of time. So the longer you indulge in Tik Tok, the more obscure the assessment of time. In the design of Tik Tok, time is intentionally blocked, so if you are too addicted to Tik Tok, it will be a waste of time.

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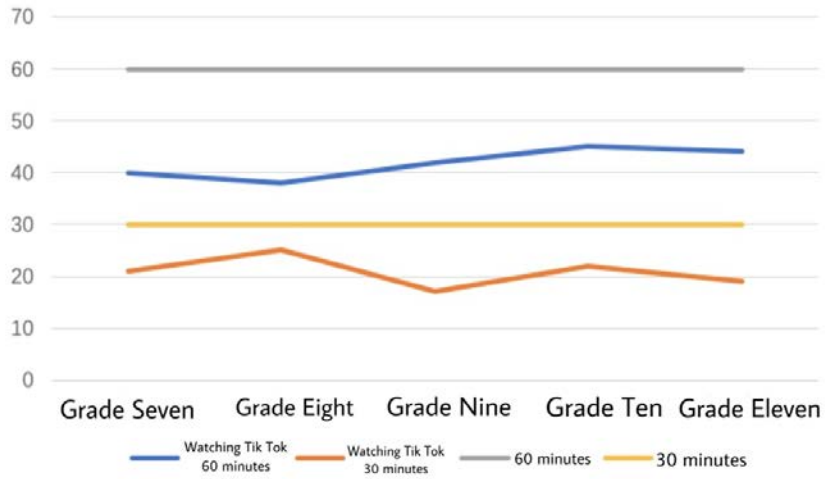

Graph 13. Statistic of results of questionnaire

4.4 Experiment evaluation

The samples of this experiment are mainly aimed at the youth groups with more Tik Tok, which has advantages and disadvantages. The advantage is that it is very targeted, and it summarizes the "high-risk crowd" addicted to Tik Tok. The disadvantage is that the personnel validity is very low, the experimental results can only be used in the youth group, not in other groups. And this experiment is done in the laboratory, so there will be lower position validity, and the behavior of the subject may be different from life. Although we have tried our best to restore the natural state, there is still room for strengthening. Our experiment is that two experimenters correspond to one subject, so the credibility and accuracy of the experiment are very high.

4.5 Conclusion of questionnaire

There are too few questions in the questionnaire, there should be more dimensions, so that the results of the survey will be more accurate.

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