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11/07/25
8th grade Science
Science Fair Logbook

Logbook

Title:

- Morning, Noon, or Night: When Are We the Fastest Thinkers?

Objective:

- Does a person's reaction time vary depending on the time of day (morning or evening)
- Statement of the Problem:
- The problem in this experiment is to determine whether a person's reaction time changes depending on the time of day morning or evening.
- Many people notice that they feel more awake at certain times and more sluggish at others, but it is unclear how much this affects how quickly they can react to sudden events. I want to do this experiment because reaction time is an important part of everyday activities, especially driving, sports, and making quick decisions. By measuring how reaction time varies throughout the day, I can learn whether certain times naturally make people slower or faster.
- The information gained from this experiment can help other people understand when they may be at their quickest or their slowest. This could be useful for students, athletes, and especially drivers who need to stay alert. My experiment is important to the real world because reaction time can influence safety on the road, and it may even help explain why car accident rates are higher during certain times of the day.
- This issue is interesting and critical to me and my community because everyone depends on quick thinking to stay safe, whether they are crossing a street, driving to work, or playing sports. Understanding how our bodies change during the day can help us make safer choices and possibly reduce accidents in our community.

Dependent and Independent Variable:

- Independent- Time Of Day
- Dependent- Reaction Time
- Control- The Same Participants, same reaction time tests, same location, same

noise level, same number of trials

Hypothesis:

- "If people have the slowest reaction time in the early morning and fastest in the afternoon, this could help explain why more accidents happen during certain times."

Materials:

- One Notebook
- One Rubik's cube timer
- One Stop Watch
- One Pencil
- One Chair
- One Table
- One Calculator
- One Timer

Procedures:

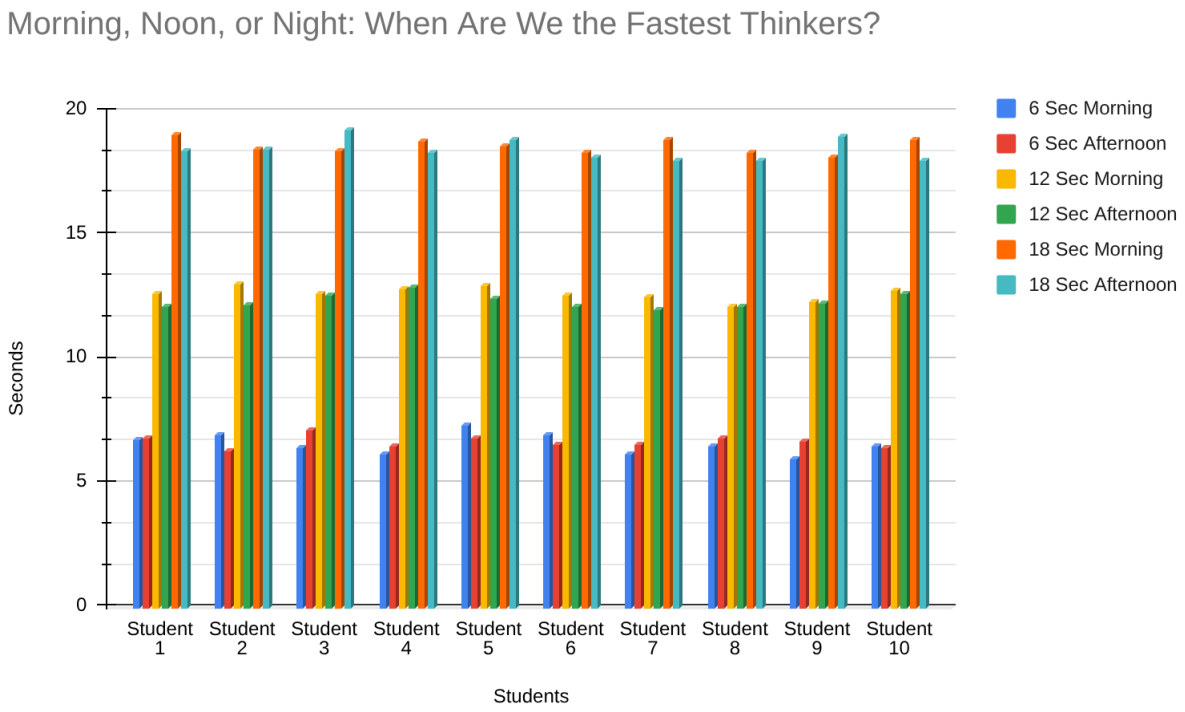
1. Gather my 10 participants.
2. Have them place their hands on the rubix cube timer.
3. Start timer on computer and tell them to let go of the rubix cube timer.
4. Once the timer rings have them hit the rubik's cube timer as soon as there here the ring from the alarm.
5. Record the time on the rubix cube timer and compare it to the time imputed into the timer.
6. Repeat for all 10 participants.
7. Then do it again in the afternoon.
8.

Results:

Narrative: The results of this experiment show noticeable differences in reaction time between the morning and afternoon. In the 6-second trials, the results were mixed. Morning reaction times ranged from 6.020 seconds to 7.332 seconds, while afternoon times ranged from 6.321 seconds to 7.173 seconds. Some students performed better in the morning, and others performed better in the afternoon, showing that there was little difference at the shorter time interval. In the 12-second trials, reaction times became more accurate in the afternoon. Morning results ranged from 12.138 seconds to 13.043 seconds, while afternoon results were closer to the target time, ranging from 12.003 seconds to 12.913 seconds. The biggest difference appeared in the 18-second trials. Morning reaction times ranged from 18.134 seconds to 19.045 seconds, showing that many students reacted late. Overall, the data shows that reaction times were more

accurate and consistent in the afternoon, especially during longer trials, suggesting that time of day can affect reaction performance.

Data/Results:



Students	6 Sec Morning	6 Sec Afternoon	12 Sec Morning	12 Sec Afternoon	18 Sec Morning	18 Sec Afternoon
Student 1	6.756	6.869	12.665	12.128	19.045	18.413
Student 2	6.983	6.321	13.043	12.194	18.49	18.45
Student 3	6.432	7.173	12.64	12.613	18.371	19.265
Student 4	6.211	6.531	12.849	12.913	18.778	18.332
Student 5	7.332	6.822	12.98	12.432	18.6	18.823
Student 6	6.975	6.561	12.593	12.125	18.333	18.144
Student 7	6.175	6.601	12.551	12.003	18.826	18
Student 8	6.535	6.814	12.138	12.133	18.323	18
Student 9	6.02	6.711	12.348	12.242	18.134	18.99
Student 10	6.529	6.482	12.803	12.658	18.856	18

Conclusion:
1:This experiment successfully accomplished its objective of determining whether reaction time changes depending on the time of day. The data showed that students generally had more accurate and consistent reaction times in the afternoon, especially during the 12-second and 18-second trials.

2:This supports my hypothesis, which stated that reaction times would be slowest in the early morning and fastest in the afternoon. While the 6-second tests showed mixed results with little difference between morning and afternoon, the longer trials clearly showed improved performance later in the day.

3:The analysis of the data revealed that as the test duration increased, afternoon reaction times became closer to the target time and less varied, especially in the 18-second trial where all students reached exactly 18 seconds.

4:From this experiment, I learned that time of day can have a small but noticeable effect on reaction performance and that longer tasks make these differences easier to observe.

5:If I were to do this experiment again, I would include more participants, test additional times of day such as evening, and repeat each trial multiple times to reduce error and improve the reliability of the results.

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