

The Effect of Various activities on Brainwave patterns of students

Summary

We researched the effects of activities on the brainwaves, using Neurosky Mindwave mobile headsets bought from Myndplay

Research Aims

To see which brainwaves were prevalent in each activity.
To expand our knowledge
Learn communication skills and teamwork

Background Information

Brainwaves looked at were: alpha, beta and gamma waves, which are active when we are conscious. Alpha waves are active when we are calm, relaxed and being creative, Beta waves are active when we are alert and concentrating, and lastly gamma waves which are active when you are concentrating and problem solving, such as when you are processing something that is complicated, as we demonstrated when we worked out math's problems. As a group we tried to include a variety of "resting" and "non resting" activities and designed our experiments to make them fair.

Experimental Method

Neurosky Mindwave mobile headsets bought from Myndplay, Dell Laptops, Myndplayer Pro Software, our teacher and Science Partner. The following activities were investigated: Origami, silent reading, vocal reading, walking, drawing, listening to music, resting, and maths problems. The whole thing was to test our brain waves to see how relaxed we were or not. We were interested mainly in: mid Gamma, high Alpha, and high Beta waves, as these are active when we are conscious. To record data during the activity, we firstly had to pair our NeuroSky headset by Bluetooth to our laptop. Thereafter, we had to record our brain wave patterns whilst carrying out the respective activity for 2 minutes. All data was then saved and analyzed using the Myndplayer Pro Software.

Results

Table 1

	Origami	Drawing	Listening to Music	Reading silently	Reading aloud	walking	Maths Problems	Resting
MAJORITY Wave	ALPHA BETA	ALPHA BETA	ALPHA BETA	ALPHA BETA	ALPHA BETA	ALPHA	ALPHA BETA GAMMA	ALPHA BETA
Outcome	Relaxed Focussed	Relaxed Focussed	Relaxed Focussed	Relaxed Focussed	Relaxed Focussed	Relaxed	Relaxed Focussed Processing information	Relaxed Focussed

Analysis screenshot



Analysis and Conclusions

How you transfer it all over to Excel What you do is you have to download the Myndplayer Pro software to your computer and open it up. After that you have to go to the computer icon at the bottom of the screen. Once you have clicked on it, you must click on a tab that says "open recording" click that and it will take you to "my computer". You need to go to your area where you saved your file, and open that file then it will show it all on the screen. Then you go to the bottom left hand side and you will select low Gamma, high Alpha, high Beta to show just three wave types. After that you click on the "Export Log File", and it allows you to create an Excel csv. file, then from this you can create an Excel xls. file, which allows you to create a graph. We found out the mean of the three waves, and plotted a bar chart for each 2 minute set of data and recorded the majority wave. Looking back at the experiment there were factors that could affect our results, such as interruptions from people entering and leaving the room we were data collecting in, photographs being taken, weather, temperature, incidents in lessons prior to data collection, mood, talking with others. Ideally, it would have been good if we could have another person start and finish the data collection. Other improvements would be to have a controlled environment to carry out data collection, without disturbances. What the results mean for us as students, is that some activities like walking, were purely relaxing for us, but activities like drawing and reading aloud were activities where we were focussed and relaxed, and activities like maths problems, require processing of information. This kind of data can be useful when you want to get yourself to a certain state, or help teachers when they want a calm atmosphere, or a busy environment, where students are engaged in higher learning tasks like math's problems. Teachers can manipulate the learning atmosphere in the classroom by altering the type of activity given to their students.

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