DEVELOPMENT OF CALMNESS KIT IN EEG APPLICATION

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ENDORSEMENT

"I hereby acknowledge that I have read this report and I find that its contents meet the requirements in terms of scope and quality for the award of the Bachelor of Electronic Engineering Technology (Medical Electronic) with honours"

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DECLARATION

"We hereby declare that the work in this report is our own except for quotation and summaries which have been duly acknowledge"

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ABSTRACT

Currently, stress is one of the reasons that will lead to mental illness. The development of Calmness kit is a simple circuit to generate the Rain sound. A total 22 sets of DASS21 questionnaires were distributed to subjects to gain information about the problem of stress. The Calmness kit will provide data regarding the effectiveness of Rain sound with regard to Calmness by using Electroencephalogram (EEG) application. 22 subjects were selected among Diploma Semester 2 students of Politeknik Sultan Salahuddin Abdul Aziz Shah. A sound-proof room was used to ensure better results. Each subject was given two 5-minute sessions, one using the Calmness kit, and the other session without Calmness kit. Excel and Matlab software were used to analysis the Fp1 and Fp2 on EEG application. The Calmness kit has been verified to affect different levels of Graph reading during analysis using Excel and Matlab software. The Calmness kit will enable students to undergo a Calmness Therapy to reduce stress.

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CHAPTER 1

INTRODUCTION

Stress entails a sense of mental, emotional or physical strain. Stress is a natural consequence of change even positive change. Not all stress is the same. Certain type of stress really hurt learning, but some types of stress *boost* learning. Second, it's difficult to detect when someone is experiencing stress[1]. Stress arises when individuals perceive that they cannot adequately cope with the demands being made on them or with threat their well-being[2]. Basically, stress has more impact for individual which effect with life. Furthermore most people don't know how to manage their lifestyle and causing them to undergo stress. Nowadays, a lot of device to reduce stress were invented but the calmness kit is a device which made up rain sound as output. The benefit of rain sound is to give relaxing effect. Thus, electroencephalogram (EEG) equipment is using to validate the effect of calmness kit.

1.1 OBJECTIVE

The aim of this research is to develop calmness kit. In order to achieve this project, below are step must be follow:

1. To develop the suitable schematic circuit for "Calmness Kit".

2. To testing the Calmness Kit.
3. To validate the result based on EEG brain waves analysis by using EEG application.

1.2 PROBLEM STATEMENT

Stress arises when individual perceive that they cannot adequately cope with the demands being made on them or with threats to their well-being. Thus, almost the student can't handle their stress when their get problem. Stress also related such as being unhappy at, Campus, Work, more Assignment or too much responsibility. Therefore, as are student need to know how to handle the Stress. Furthermore, when the Final Exam around the corner almost the student also will be Stress when they're not prepared well or covered the all subject. Normally, high level of stress will lead into study unsatisfactory, class absentee, and delay the coursework. Stress adapting reactions of a student includes psychological reactions (anxiety and sadness), physiological (headache, high blood pressure) and attitude related (alcohol and smoking addiction, lifestyle and insomnia). Furthermore, bad studies environment will lead into stress factor and causing result for grade point average (GPA) and Cumulative Grade Point Average (CGPA).

As are result the calmness kit is alternatives tool to reduce stress. In addition, stress management can be complicated and confusing because there are different types of stress such as acute stress, episodic acute stress and chronic stress an each with its own characteristics, symptoms, duration and treatment approaches. Stress treatment consists mostly such as sleeping, listening music and doing something can reduce our stress. More device or kit is popular already build, but this calmness kit is one of alternatives to give relaxing effect and validate the result by using EEG application. From this project will show and focus to analysis the Alpha and Beta waves.

1.3 SCOPE OF PROJECT

The purpose for this project is Develop the "Calmness kit" is simple circuit can generate the rain sound. Collect all information about stress, Electroencephalogram (EEG) and find the result. After the product done develop, get the 22 subject and ensure their in stress condition. The target sample for this survey comprised all the full-time students according to semester 2 students, various Cumulative Grade Point Average (CGPA) and different Department of studies. In addition, this study used questionnaire and laboratory test to recognize the level of stress. Testing the product on subject and get the waveform. Then, from that result, do analysis that waveform and observe the Alpha waveform. If the waveform get different with the stress waveform, so that this result is validated.

1.4 COSTING

Before build calmness kit ensures the all component have it. Table 1.1 shown the quantity and type of component is using to build calmness kit.

Table 1.1: Type of component

Bil	Description	Quantity	Price
	Hardware		
1	Resistor (270k)	2	Rm 0.20
2	Resistor (100Ω)	2	Rm 0.20
3	Resistor (220k)	2	Rm 0.20
4	Resistor (2.7k)	2	Rm 0.20
5	Resistor (47Ω)	2	Rm 1.40
6	Capacitor (10n)	2	Rm 0.60
7	Capacitor (1n)	2	Rm 0.60
8	Capacitor (0.1μ)	2	Rm 0.60
9	Capacitor (10μ/25V)	2	Rm 0.40
10	IC 741 and Socket	2	Rm 2.50
11	Headphone(modified)	1	Rm 20.00
12	Battery	1	Rm 8.00
13	Transistor (BC107A)	2	Rm 2.00
14	Transistor (2N1613)	2	Rm 11.20
15	Preset (47k lin)	2	Rm 1.40
16	Preset (100k lin)	2	Rm 1.40
17	Another item	random	Rm 100.00
Documentation/Management			
18	Conference	2	Rm 850.00
	Total		**Rm 1850.30**

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