

The Usage Of Biofeedback Techniques At Schools In The District Of Maran To Intervene Drugs Abuse And Disciplinary Cases

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Abstract

Biofeedback techniques have been identified to be able to detect emotional disorders and provide intervention for the disorder. This program was being introduced to provide knowledge and skills to the school counselors on the use of Biofeedback equipment, protocols and Biofeedback intervention to help high school students who have been identified as abusing drugs and involved in disciplinary misconducts to recover from the problems. The program started by developing the use of Biofeedback protocol, module development and the acquisition of Biofeedback equipment. A total of 19 schools with 39 teachers and 165 students have been involved with this project. As a result of the program, it has been found that all the four project objectives have been achieved. 80% of the teachers who were involved in this project were able to use the biofeedback devices; they were also capable to use biofeedback protocol which was being developed. About 84% of the students who received guidance from the teachers were able to change the status of coherence score of the heart rate variability. 38% of the students were able to improve their academic performance and 66% of them were able to improve their behaviours. The results of this project had an impact on schools in which teachers were capable in improving counseling sessions through Biofeedback techniques. Students involved were also able to make changes to their attitudes. It is hoped that this project would continue and students would master the knowledge and skills gained through the implementation of this project.

Keywords: Biofeedback, discipline, intervention programs, teacher, school, heart rate variability

1. Introduction

Biofeedback is a technique being used to help an individual to control self (mind, emotion and heart). The Biofeedback devices are being fitted to a client in order to obtain physiological changes data (EEG, PPG, HRV, EMG, GSR). These physiological data are the individual's actual condition at that time. These physiological information are the results of psychological reactions in which any psychological changes would affect the physiology. The combination of this information is important in the intervention training program. The objective of the training, rehabilitation and therapy being implemented was to change the psychological component which is difficult to be seen and measured. Through Biofeedback techniques, the mind changes could be measured by using the EEG. The emotional changes are being measured through the EMG, whereas the changes in the heart is being measured through the HRV. The usage of these techniques are important in the rehabilitation and intervention program in which the extent of the individual's recovery and the ability to control him/herself against drugs addiction could be observed.

The Biofeedback techniques are being used to measure internal characteristic changes such as physiological and psychological changes. An individual's changes could be measured through the brainwave frequency (ECG), Heart Rate Variability-HRV (Karavidas, M.K., Lehrer, P. M., et al., 2007), Galvanic Skin Resistance (GSR) dan Skin Conduction-SC (Alexander, P. M., Trengove, C., et al., 2005; Moss D., 2004). The importance of these techniques are to determine the psychological strength status (mental, emotion, physiology) through the

changes in physiological detection happening to them. Through this technique, the individual would know the status of the mind by the brainwave frequency. (Alpha and Beta), heart status by the Heart Rate Variability changes from HF frequency, to LF dan VLF. This technique is being used to know the individual's emotional condition and the ability to balance the Sympathetic and Parasympathetic systems.

The usage of Biofeedback techniques has the potential in helping an individual doing self changes with the assistance of Biofeedback devices that would detect any physiological changes that occur in a person at a very small scale. Biological data including brainwave, differences in pulse, changes in temperature, respiratory sequences, galvanic skin reactions and differences in muscle strains would be detected and recorded by the Biofeedback devices. These biological data would be detected and cleansed by the Biofeedback encoder for more accurate analysis. Cleansing is required because there are movements or artifacts that would disrupt accurate analysis processes.

The issues of disciplinary violations among secondary school students and the eradication of drugs abuse is the main agenda of the Malaysian Ministry of Education every year. The drugs problem in schools should not be taken for granted because it could become worse if the problem is not eradicated (AADK, 2013). The drugs addiction intervention programs in schools especially secondary schools are important to be implemented in order to monitor and prevent drugs abuse among students (Botvin, 2000). Some of the students who have disciplinary problems are also actively involved in taking drugs, alcohol, cannabis and marijuana (Botvin, 2000).

The problem being faced now is the intervention techniques being used at present could not show the students' changes objectively because there is no clear measurement. This situation complicates the implementation of intervention processes. The level of recovery is seen through behaviours continuously throughout the duration of the students' rehabilitation program. However, through Biofeedback techniques, the students' performance could be clearly measured.

Through this technique, the implemented intervention program could be more effective because students and their counsellors know the status of the students' recovery and how to help them change themselves. The Biofeedback technique not only measures the level of students' recovery but also being used as intervention programs for them. The objectives of the implementation of this project were to 1; train the counsellors to use Biofeedback techniques in the process of detecting the effects of drugs addiction, 2; train the counsellors to use Biofeedback therapies in order to overcome the effects of drugs addiction, 3; train the students who were addicted to drugs treat themselves by using Biofeedback techniques and train the counsellors and students use Biofeedback devices to assist them in recovery processes.

2. Literatures Review

Biofeedback is a technique that enables an individual learns how to alter the psychological and physiological balance in order to increase health and job performance (Gilbert and Moss, 2003). This method has been proven to be effective in dealing with drugs abuse and psychological syndromes such as depression (Yucha and Montgomery, 2008). Biofeedback and Neurofeedback are the alternative approaches to medications and therapies (Lake and Moss, 2003). The public nowadays are looking for alternative therapy methods that 1) give an individual a more active role in taking care of him/her own health, 2) involve holistic considerations of the body, mind and soul, 3) are not invasive in nature, and 4) obtain self healing reactions of the body (Jonas and Levin, 1999).

Biofeedback and Neurofeedback are holistic therapies, that show the changes in mind and emotion affect the physiology and also thought and emotion. Biofeedback trains an individual to self regulate, increase mind consciousness, increase control over brain functions, and nervous system as well as increase the flexibility of physiology. The positive effects gained from Biofeedback trainings are to increase health level, learning and performance (Yucha and Montgomery, 2008). These Biofeedback techniques have been widely used in military with the purpose of increasing soldiers' performance, usage in medical field as a therapy for ADHD, handling stress, PTSD, insomnia, hypertension

and others. The techniques are also being used in sports to increase athletes' performance. Biofeedback is also being used in education to upgrade the mind concentration and learning achievements.

According to Rusdi et al., (2008) the problems of drugs abuse among teenagers and youth in Malaysia are considered as chronic and should be eradicated soonest possible because they involve social problems and moral decadence. The drugs abuse among youth is being caused by many problems such as family breakdowns, academic problems, no holds barred socializing, pressures due to poverty, mental health issues and peers' influences (Rusdi et al., 2008). The youth's involvements in juvenile cases have caused negative impacts to the other family members, community and public (Dickinson and Crowe, 1997). From the beginning, youth are easier to be exposed to become drug addicts and this would complicate the intervention process.

Until today, drugs have become a major threat to the country (AADK, 2013). The drugs abuse is getting contagious in Malaysia and involves all walks of life. According to Azman (2005) drugs abuse does not only happen among low income group of people, it has spread to richer group of people beyond age and gender. It shows that, every individual has the potential to become involved in drugs abuse without taking into account status, age or gender (Azman, 2005).

AADK has detected that there are youth who become addicts as early as 13 years old. In average, there are about 398 new addicts and 238 repeated addicts being detected every month (AADK, 2013). The report also mentioned that there has been an increase in cases of drugs addiction among youth up to 15.5%. For that, more holistic strategies are required to handle the drugs abuse problems among school students and biofeedback intervention technique is one of the recommended alternative method (Sinha, 2001). Most theories about drugs addiction indicated that stress plays an important role in increasing the use of drugs and repeated diseases (Sinha, 2001). The main factor that contributes to repeated addiction among youth after undergoing treatment is stress (Rusdi et al., 2008). For that, biofeedback techniques are expedient for rehabilitation intervention in

order to assist youth facing stress problems (HeartMath, 2009).

Statistics show that drugs abuse among youth are being caused by peers' influences that lead to decrease in involvement at school and increase in behavioural and other social problems (King dan lain-lain, 2006). The drugs abuse is closely related to negative behavioural component and disciplinary misconducts among students. Falling school grades, truancy problems and dropouts are being influenced not only by intellectual functions, but also by motivation, organizational and social skills as well as appropriate behaviours (King et al., 2006). Studies in Malaysia indicated that the drugs abuse among youth could be related to aggressive behaviours and suicides (Chan et al., 2013).

The Biofeedback training is changing processes of all human's components simultaneously and the effects of these changes are being observed by computers (Lehrer, 2007). If one of the components were not being involved in the training process, the effects of the trainings would not be accurate (Lehrer, 2007). Behavioural disorders among students occur because there are disorders in human's self components (Nubli, 2008). Therefore, the disorders should be corrected so that changes could progress well. According to Moss D. and Shaffer (2006), the effects of these changes would stimulate mind changes. This is because, the blood which is rich with oxygen is being supplied to the brain, enabling the brain to be more active in accepting changes (Moss D. & Sheffer, 2006). In this program, teachers need to stimulate the students' minds by giving encouragements in order to stimulate the minds to change. However, students with disciplinary and academic problems, they possess hearts which are stressful with high VLF spectrum, minds which could not concentrate on their studies, hyperventilation respiration (fast), restless emotion and weak physiology to learn and perform any duties (Nubli, 2008). The Biofeedback trainings being provided would change negative conditions to positive through



continuous trainings. Repeated trainings are important to familiarize students with the rerquired changes. At the same time, academic basic trainings and behavioural changes are important for students to upgrade the required skills. The Biofeedback training processes are

very important to be related to academic trainings and normal discipline developments because this is where students would learn the actual techniques to apply self changes in order to achieve the provided trainings objectives.

3. Project Methodology

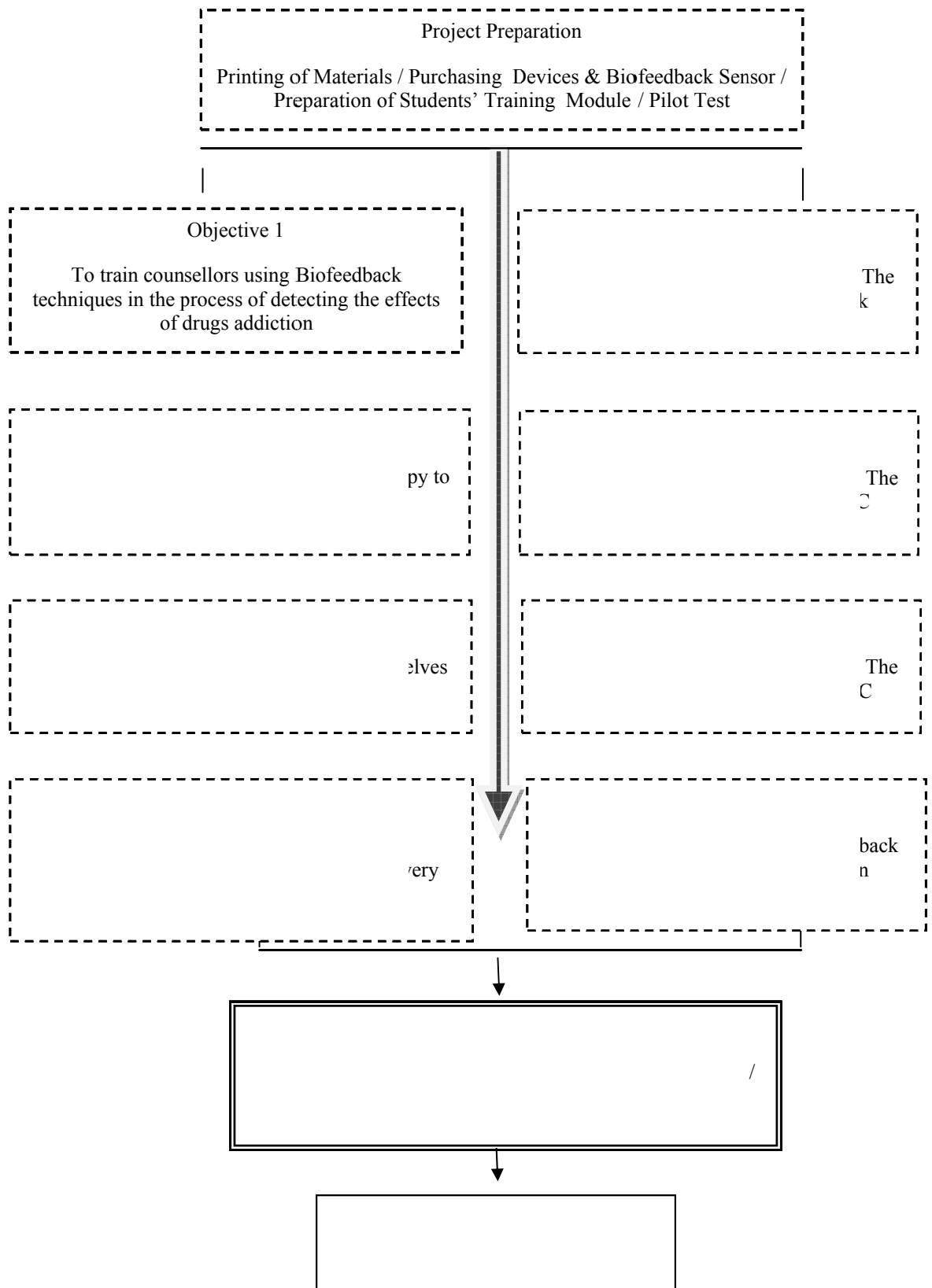


Figure 1: flowchart of project methodology

3.1 Project Implementation Process

The Universiti Malaysia Pahang provided the training module and EmWave biofeedback equipment to the project participants. The intervention protocol module and biofeedback equipment usage module were being given to teachers as references to enable the teachers learn the biofeedback techniques easier and more effectively. The community for this project were Maran District Education Department and 19 secondary schools situated in the district. The Drugs Prevention Education Unit (PPDA) directly involved as a community in the project implementation. Counsellors and PPDA teachers involved in the training processes and courses being provided by the UMP. Maran district was being chosen as a community because most schools in the district are situated in the Felda area and there are many drugs abuse cases in the area. In this project, the UMP conducted courses and workshops as well as trainings to the participants who were Secondary Schools Consellers who were involved in the program through Workshop 1. The UMP provided trainings to the students involved in this program and the students were being selected by their counsellors or school based on drug abuse cases among students. The UMP conducted courses and advanced training workshops to participants covering technical aspects. The workshop participants were being taught biofeedback protocol usage method and EmWave devices. In order to increase the effectiveness of the project, the UMP conducted follow-up visits and advanced discussions with all the schools involved in the program. The UMP visited the schools involved and monitored the project implementation processes in order to identify the problems faced throughout the project implementation. The next phase was report in which the schools provided the data and report required by the UMP in order to determine the effectiveness of the implemented project. Finally, the UMP would analyze and submit the final report to the Malaysian Ministry of Education.

4. Results And Discussions

The results from the program showed that **The Usage of Biofeedback Techniques In Maran Distrist Secondary Schools In Drugs Abuse Intervention And Disciplinary Misconducts Program** had been able to assist in the drugs abuse and disciplinary misconducts recovery program among the students involved. The data obtained from Biofeedback training sessions being conducted were being analyzed to prove that with the usage of the appropriate Biofeedback techniques and equipment, the intervention program being conducted had helped the involved counsellors and schools in handling the disciplinary problems and drugs abuse as well as helping the students involved changed themselves more positively. Based on the analysis being done, 80% of the teachers involved in the project acquired knowledge in using Biofeedback devices and managed to use the Biofeedback protocols being developed to assist problematic students changed themselves. The results indicated that 60% of the students who were being guided by their teachers succeeded in changing their heart rate variability (HRV) coherent scores from 30% to 70%. The results of the analysis done are as follow:

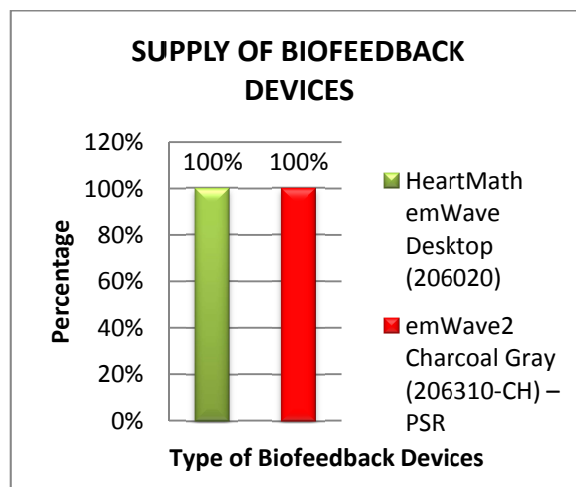
4.1 Project Objectives Results

i) Achievement of objective 1

The objective 1 of this program was to train counsellors using Biofeedback techniques in the process of detecting the effects of drugs abuse. In order to achieve objective 1, the UMP had supplied Biofeedback Emwave and PSR equipment to each school. Each school respectively gets 1 unit HeartMath emWave Desktop (206020) and 1 unit emWave2 Charcoal Gray (206310-CH) – PSR, that were being handed over during the first workshop.



Figure 2: Equipment being supplied by the UMP to each school involved in the Intervention program.



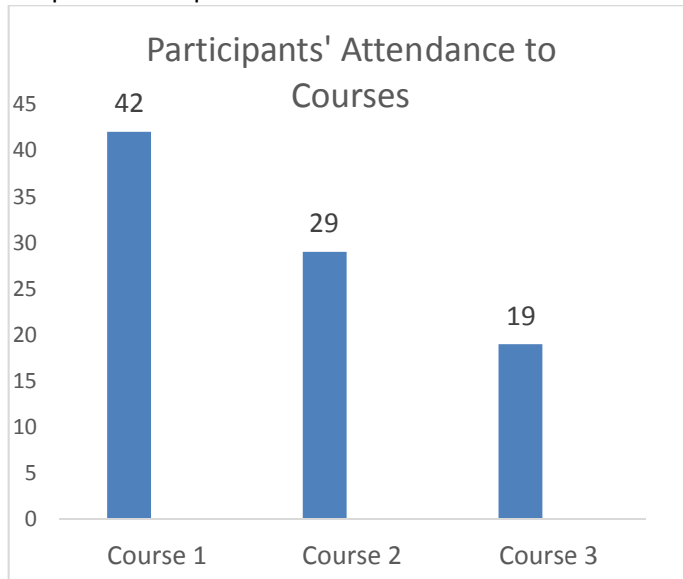
Graph 1: Supply of Biofeedback Devices

Based on the results of the project being implemented, 39 teachers involved had successfully used the Biofeedback Emwave and PSR equipment being supplied to schools in order to detect their students' HRV spectrum readings and to conduct training sessions in schools after attending the workshops done by the UMP. Although it was quite difficult during the introduction of the project, the teachers' persistence in learning how to use the equipment being supplied produced results when they succeeded in adapting the techniques being taught to their students. This showed that the objective 1 of the project was being achieved.

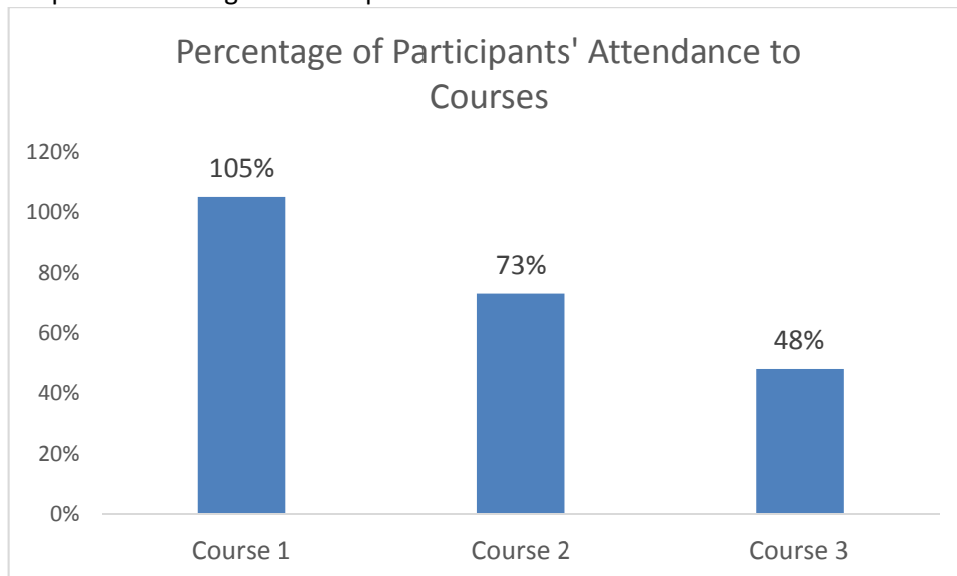
ii) Achievement of objective 2

The objective 2 of this program was to train counsellors using Biofeedback therapy in order to overcome the effects of drugs addiction. As to achieve objective 2, the UMP evaluated the results in terms of the involvement of counsellors and students in this program. The counsellors' involvement and attendance to the courses being conducted by the UMP and the students' involvement in this program from each school were being measured to ensure that the counsellors obtained enough understanding about this program.

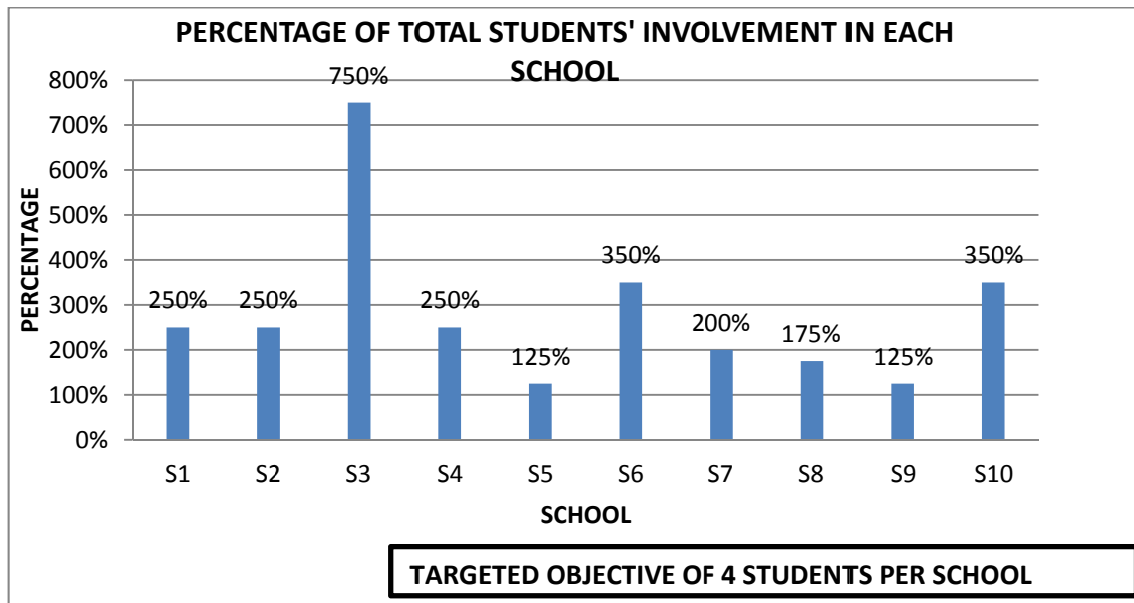
Graph 2: Participants' Attendance to Courses



Graph 3: Percentage of Participants' Attendance to Courses



The program conducted was being attended by teachers who represented their school whether counsellors or PPDA who are responsible in overcoming disciplinary problems at their respective schools.



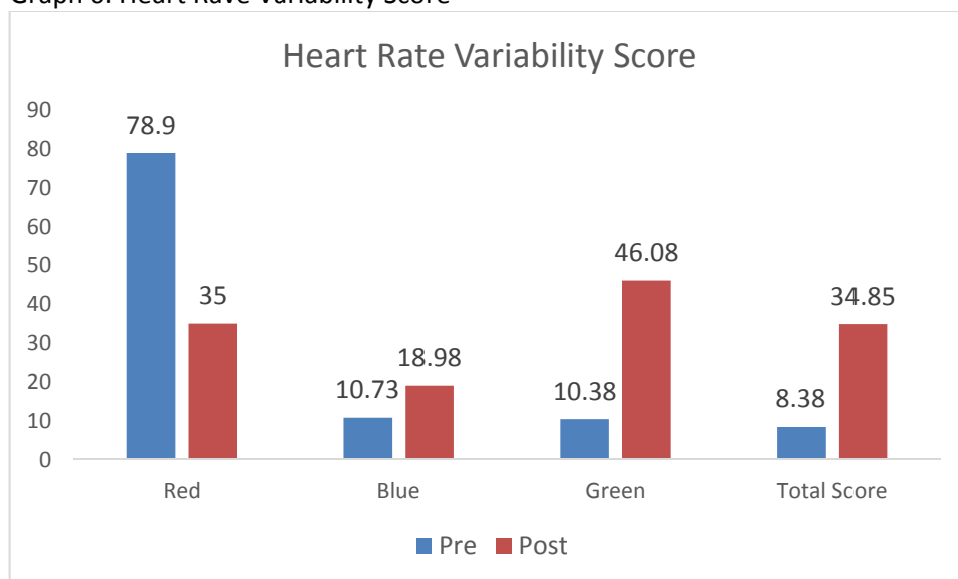
Graph 4: Percentage of students' involvement from each school

The results showed that all counsellors who are also school teachers in the district of Maran who participated in this project had been successful in applying the Biofeedback therapy to their students in order to help the students overcome the effects of drugs addiction by using the intervention protocol being prepared by the UMP. This result showed that the objective 2 had been achieved.

ii) Achievement of objective 3

The objective 3 of this program was to train students who took drugs to treat themselves from addiction by using Biofeedback techniques. The results for objective 3 were measured through the analysis of the students' HRV data.

Graph 6: Heart Rave Variability Score



Graph 6: Students' HRV results

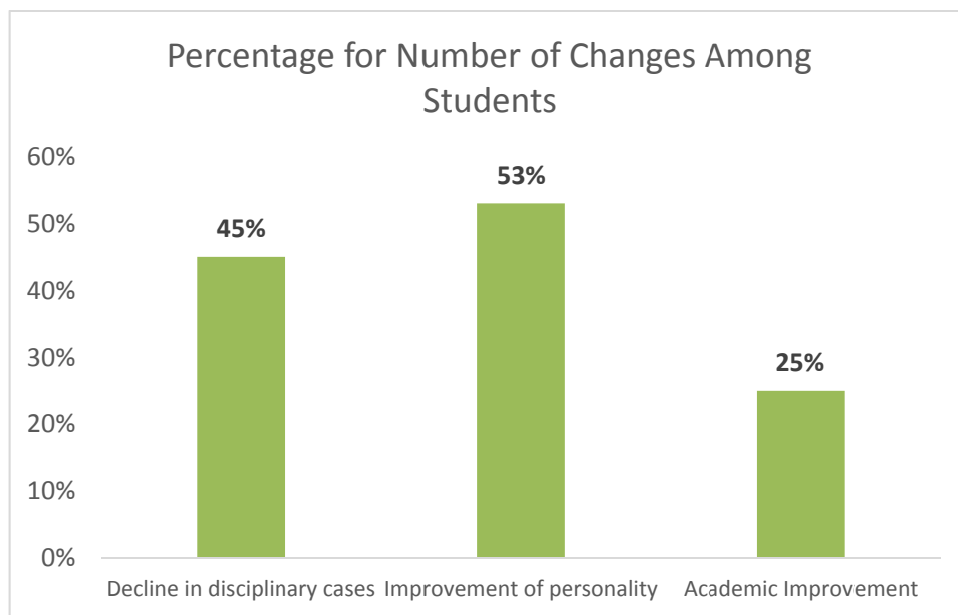
The results indicated that 60% from the students who were being guided by their teachers were successful in changing their heart rate variability (HRV) coherent scores from 30% to 70%. This proved that the Biofeedback trainings given were successfully being applied to help the students changed themselves by putting the efforts to heal themselves from drugs addiction using the intervention protocol being prepared for them and thus achieved the objective 3 of this project. Although it was quite difficult for the students to achieve the best score, but with the determination to change and become better

individuals, they succeeded in increasing their respective coherent scores to more positive.

iii) Achievement of objective 4

The objective 4 of this program was to train counsellors and students using Biofeedback devices to assist in recovery processes. The results were measured based on the changes that happen to students from 3 aspects which were students' academic improvement, decline in students' disciplinary cases and improvement in students' personality.

Graph 7: Percentage for Number of Changes Among Students



Graph 7: Students' HRV changes

Based on the results from the previous analysis that indicated the success in achieving objective 1, 2 dan 3, this program that had been conducted by the UMP succeeded in training the counsellors and students to use the Biofeedback devices in students' recovery process at their respective schools. The program that has been implemented for almost a year showed its

achievement when 39 teachers involved managed to apply the techniques and protocols being transferred to them in helping the problematic students at their schools in recovery processes and to achieve objective 4 of this project. The implemented program has improved the problematic students' behaviours when the students undergoing the Biofeedback intervention program showed

positive changes. For example, students who were not interested to learn changed to students who were inclined to be interested in subjects that were not their favourites. Besides that, the school truancy or class truancy had been reduced and smoking among students had also been significantly reduced.

iv) Expectation of The Project Achievement

Based on the expectations of the project results before this, the program has shown achievement towards fulfilling the expectations, that are :

- 1) The school counsellors involved in the program became well versed about the methods to detect drugs addiction among students by using Biofeedback methods.
- 2) The school counsellors also knew the methods of drugs addiction rehabilitation process among students by applying the Biofeedback methods.
- 3) The school counsellors involved now know how to use the Biofeedback devices and protocols to help their students that were involved with drugs addiction.
- 4) Students who underwent the intervention program changed to more positive throughout the duration of the program.
- 5) The identified students' changing grades could be evaluated and implemented.
- 6) The students' academic performance had improved.
- 7) The involved students now are more capable in handling emotional problems, heart and manage themselves better.

v) Data Analysis Results

The Intervention Rehabilitation Program utilizing the Biofeedback methods was being implemented at nineteen (19) schools in the district of Maran, Pahang. A maximum of fifteen (15) students or less from each school were being taken as subjects for this research. Each school was being given a period of six (6) months or less according to certain capacity in order to execute the studies to the selected subject. The effectiveness of the program was being evaluated in terms of;

- 1) *The Heart Rate Variability Readings (HRV)*
- 2) *The students' disciplinary improvement*
- 3) *Academic Improvement*

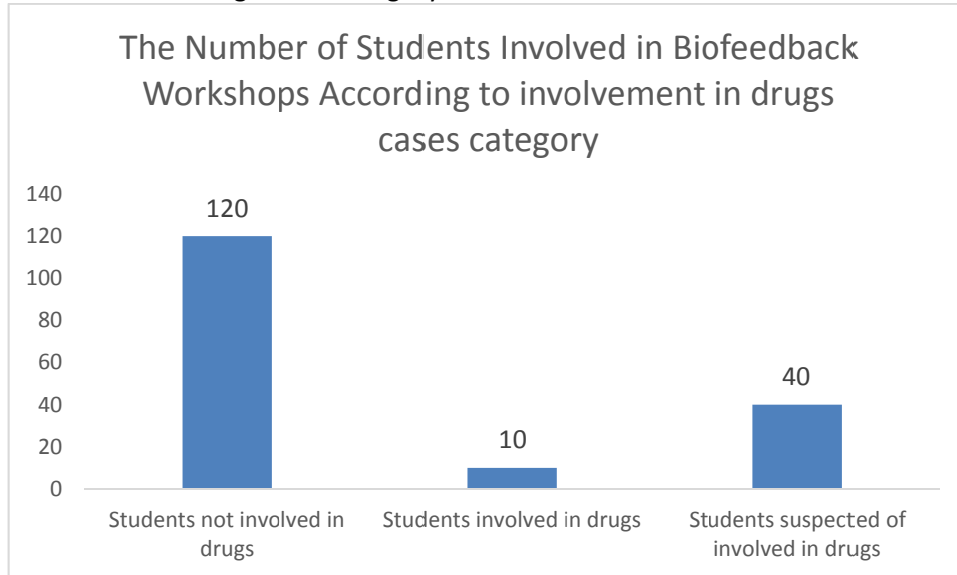
The results from the research could be divided to;

- 1) *Schools without subjects involved in drugs (10 schools)*
- 2) *Schools with subjects involved in or suspected to be involved in drugs (9 schools)*

As an overall, the number of students being involved in this Biofeedback workshop could be categorized to 3 groups as follows;

- 1) *The number of students not involved in drugs: 120 students.*
- 2) *The number of students involved in drugs: 10 students.*
- 3) *The number of students suspected of involved in drugs: 40 students.*

Graph 8: The Number of Students Involved in Biofeedback Workshops According to involvement in drugs cases category



Graph 8: The overall number of students according to involvement in drugs cases category.

4.2.1 Heart Rate Variability (HRV)

The research through Heart Rate Variability (HRV), showing how far an individual made self changes (heart changes, mind, emotion, physiology), had been conducted on the subjects from the schools involved. Two best readings were being taken involving pre (baseline) that was before the program implementation and post, where readings were being taken after the program implementation. The best readings from these two phases were being made as standard for further research and summary.

4.2.2 HRV Analysis for schools without drugs cases

Below is a list of schools without any drugs cases, ranked according to the improvement in HRV readings that were being recorded from the research being done on students involved.

- 1) SMK Jengka 18 (100%) 6) SMK Cedung Jaya (75%)
- 2) SMK Jengka 21 (86%) 7)

- SMK Jengka Pusat (71%)
- 3) SMK Jengka 16 (80%) 8) SMA Al Mahmudi (60%)
- 4) SMK Sri Jaya (80%) 9) SMK Sri Jengka (58%)
- 5) SMK Maran (79%) 10) SMK Jengka Pusat 2 (56%)

4.2.3 HRV Analysis for schools with drugs cases

Below is a list of schools with drugs cases, ranked according to the improvement in HRV readings that were being recorded from the research being done on selected students.

- 1) SMK Desa Jaya (100%)
SMK Jengka 12 (80%)
- 2) SMK Jengka 10 (100%)
SMK Jengka 6 (56%)
- 3) Kolej Vokasional
Pertanian Chenor
(100%)

- 4) SMK Ampuan Afzan Chenor (100%)
- 5) SMK Maran 2 (90%)
- 6) SMK Jengka 12 (80%)
- 7) SMK Jengka 6 (56%)
- 8) SMK Kg Awah (50%)
- 9) SMK Jengka 2 (40%)

4.2.4 HRV Analysis on students not involved in drugs

The total number of students not involved in drugs was 120 students. According to the HRV analysis, students, not involved in drugs who recorded increment in HRV readings were 81 students. The percentage of students not involved in drugs and able to make self changes was 68%.

4.2.5 HRV Analysis for students involved in drugs

The total number of students involved in drugs was 10 students. HRV analysis indicated that all these 10 students were able to make self changes. The recorded percentage was 100%.

4.2.6 HRV Analysis for students being suspected of drugs involvement

The total number of students being suspected of involvement in drugs was 40 students. The HRV analysis showed that 36 out of 40 students were able to make self changes. The recorded percentage was 90%.

4.2.7 HRV Analysis on the overall

On the overall, from the total number of students involved in the Biofeedback workshops, 127 out of 150 students involved managed to achieve HRV changes.

4.2.8 Academic Improvement

Academic improvement is one of the important aspects that acts as a measurement to the effectiveness of the Biofeedback Program in each school. However, academic improvement could not be seen from only a few healing sessions, instead the cooperation from the subjects and teachers involved is

needed in order to ensure that the students would always be focused and understand their objectives in life and their future. With that, the students would give optimum concentration while learning and consequently, they would produce good academic results.

4.2.9 Academic improvement analysis for schools without drugs cases

Below is a list of schools without drugs cases, being ranked in terms of disciplinary improvement being recorded from the results of the resesarch on the students involved.

- 1) SMK Jengka Pusat (86%)
- 2) SMA Al Mahmudi (80%)
- 3) SMK Jengka 18 (50%)
- 4) SMK Jengka 21 (43%)
- 5) SMK Cedung Jaya (38%)
- 6) SMK Jengka Pusat 2 (22%)
- 7) SMK Sri Jengka (17%)
- 8) SMK Sri Jaya (0%)
- 9) SMK Jengka 16 (0%)
- 10) SMK Maran (0%)

4.2.10 Disciplinary improvement analysis on schools involved in drugs cases

Below is a list of schools involved in drugs cases, ranked in terms of disciplinary improvement being recorded from the research results on selected students.

- 1) SMK Kg Awah (83%)
- 2) SMK Jengka 6 (78%)
- 3) SMK Jengka 2 (50%)
- 4) SMK Desa Jaya (33%)
- 5) SMK Jengka 10 (27%)
- 6) SMK Maran 2 (20%)
- 7) SMK Jengka 12 (20%)
- 8) SMK Ampuan Afzan Chenor (15%)
- 9) Kolej Vokasional Pertanian Chenor (0%)

4.2.11 Academic improvement analysis on students not involved in drugs

The total number of students not involved in drugs was 120 students. According to the disciplinary analysis, students not involved in drugs and having records of academic improvement were 46 students. The percentage of students not involved in drugs able to make self changes were 38%.

4.2.12 Academic improvement analysis on students involved in drugs

The total number of students involved in drugs were 10 students. The academic improvement analysis indicated that 1 out of 10 students were able to make self changes. The percentage recorded was 10%

4.2.13 Academic improvement analysis on students suspected of involvement in drugs

The total number of students suspected of involvement in drugs was 40 students. The academic improvement analysis showed that 11 out of 40 students were able to make self changes. The percentage recorded was 28%.

4.2.14 The overall academic improvement analysis

Overall, the total number of students involved in the Biofeedback workshop and succeeded to improve academically were 58 out of 150 students involved.

4.2.15 Disciplinary Improvement Changes

The positive changes in the students' discipline was being evaluated through the records being obtained from the school computer programming system (e-disciplin) and the observations on the involved school's counsellors' records. Generally, it is difficult to achieve drastic disciplinary changes for each student involved because each individual has various disciplinary performances and backgrounds. Therefore, the changes in each

individual would give impacts to the percentage of positive changes in each school involved.

4.2.16 Disciplinary improvement analysis for schools without drugs cases

Below is a list of schools without drugs cases, being ranked according to disciplinary improvement being recorded from the research on the students involved.

- | | |
|-----------------------------|----|
| 1) SMK Jengka 16 (100%) | 6) |
| SMK Jengka 18 (33%) | |
| 2) SMA Al Mahmudi (90%) | 7) |
| SMK Jengka 21 (29%) | |
| 3) SMK Sri Jengka (58%) | 8) |
| SMK Sri Jaya (20%) | |
| 4) SMK Jengka Pusat 2 (56%) | 9) |
| SMK Jengka Pusat (14%) | |
| 5) SMK Maran (50%) | |
| 10) SMK Cedung Jaya (13%) | |

4.2.17 Disciplinary improvement analysis for schools with drugs cases

Below is a list of schools with drug cases, being ranked according to disciplinary improvement being recorded from the research on selected students.

- | | |
|---|----|
| 1) SMK Ampuan Afzan (100%) | 6) |
| SMK Maran 2 (50%) | |
| 2) SMK Desa Jaya (100%) | 7) |
| SMK Jengka 12 (40%) | |
| 3) SMK Jengka 10 (93%) | 8) |
| SMK Jengka 6 (33%) | |
| 4) SMK Kg Awah (83%) | 9) |
| Kolej Vokasional Pertanian Chenor (18%) | |
| 5) SMK Jengka 2 (80%) | |

4.2.18 Disciplinary improvement analysis for students not involved in drugs

The total number of students not involved in drugs was 120 students. According to disciplinary analysis, students not involved in drugs and have disciplinary

improvement records were 62 students. The percentage of students not involved in drugs and able to make self changes was 52%.

4.2.19 Disciplinary improvement analysis for students involved in drugs

The total number of students involved in drugs was 10 students. The disciplinary improvement analysis showed that 3 out of 10 students were capable in making self changes. The percentage being recorded was 30%.

4.2.20 Disciplinary improvement analysis for students suspected of involvement in drugs

The total number of students being suspected of involvement in drugs was 40 students. The disciplinary improvement analysis showed that 34 out of 40 students managed to make self changes. The percentage recorded was 85%.

4.2.21 The overall disciplinary improvement analysis

On the overall, the total number of students involved in the Biofeedback workshop and succeeded in showing disciplinary changes were 99 out of 150 students involved.

4.3 Problems In Project Implementation

Based on the project that had been implemented, there were a few problems that arose throughout the program; one of the problems was time constraint being faced by the counsellors in undergoing the workshop and trainings. This happened because the teachers were involved in various program related to their responsibilities to their schools and students. Moreover, each school has only a counsellor and this situation discommoded the counsellors to be focused in undergoing the training sessions if there were many problematic students. The counsellors' busy schedules in attending multiple programs being planned by the Ministry of Education such as attending counselling courses,

seminars and motivational workshops has been one of their difficulties to accommodate their schedules with the schedules being planned by the UMP for the intervention program. For the students involved, their class teachers' difficulty to allow them attending the intervention programs has been the main barrier for them to undergo the intervention trainings being planned.

5. Conclusion And Recommendations

The use of Biofeedback techniques in the individual's performance improvement and intervention program is a new alternative in the field of human resources development. The project implemented had shown its achievement when the program results showed that 80% of the teachers involved in the project managed to use the Biofeedback devices, and they were also able to use the Biofeedback protocols being developed. Moreover, 60% of the students being guided by their teachers succeeded in improving their heart rate variability (HRV) coherent scores achievement status from 30% to 70%. The results being obtained from this project showed that the expected results were being achieved and affected the schools in which the teachers managed to improve the counselling sessions by applying the Biofeedback techniques. Moreover, the students involved succeeded in improving their behaviours. Based on this program, various benefits were being gained by the counsellors involved, the school, specifically and the Malaysian Education Ministry, generally. Through this program, the counsellors participating in the program being conducted had learned the method of detecting drugs addiction by using Biofeedback techniques. The transfer of knowledge program had enabled the counsellors to gain the knowledge of using Biofeedback devices and protocols in order to help students make behavioural changes and handle the disciplinary problems. As for the students, the benefits being gained had helped them to make more positive behavioural changes. Besides that, the protocol being

developed had indirectly determined the grades of the students' gradual changes. Followed by the changes, The students' achievement could be clearly observed and thus helped to upgrade the students' self management ability. It has been hoped that programs of this type would be continued and students would get beneficial knowledge and skills.

The application of Biofeedback techniques in the field of human development has been proven in various researches. According to Sheffer (2006), Biofeedback techniques were effective in helping stroke victims get back the movements of paralyzed muscles. Besides that, according to Stoyva and Budzynski (1974), the Biofeedback techniques had helped to reduce the symptoms of anxiety and various diseases related to stress such as insomnia, headaches and back pains. The effectiveness of Biofeedback techniques have been significant to increase and individual's performance. The usage of Biofeedback Emwave and PSR modules in this program had helped the counsellors, schools and students involved in disciplinary and behavioural problems as well as drugs abuse to recover faster without using medications and complicated methods. The success being achieved in this program could be implemented to the involved students' daily lives to improve their inner physiology through the psychological changes that occurred.

This program has introduced a new dimension to the education world, specifically and human development, generally. Other than the usage of Biofeedback trainings limited to the secondary school students in the district of Maran, Pahang, the same intervention program could be expanded to the other District Education Department offices throughout the country as an alternative method to eradicate drugs abuses in schools. This program is also suitable to motivate teachers in schools and the Malaysian Education Ministry staff to increase working performance excellence. Although the cost of purchasing the Biofeedback software and

devices is quite high, it should not be a barrier to the Malaysian Ministry of Education to use the Biofeedback method with the purpose of increasing the students' academic performance and teachers' KPI. The schools could also expand the idea of recovery protocols by the establishment of Human Development Clubs in their schools not only for the problematic students but also for other students as a strategy to deal with disciplinary misconduct problems and drugs abuses in the schools.

It has been the UMP hope that the program could be continued and expanded to schools throughout Malaysia so that the strategies and objectives of the Malaysian Education Ministry to solve the students' disciplinary problems and the spread of drugs in schools and the ministry. The drugs abuse is a serious issue that could give negative implications to individual and community especially among youth because they are easily exposed to negative desires and peers' lure. Schools are the best place to develop the students' personalities other than their homes. The Biofeedback intervention program, as a method already being proven in increasing self control, is not invasive and could be a good instrument to be used in intervention programs for students that are being suspected of drugs abuse.

Generally, the program being organized by the Universiti Malaysia Pahang with the cooperation of the Maran District Education Department was the first being organized to prove the effects of using HRV Biofeedback to behavioural changes among problematic students and its suitability in applying it as an alternative therapy to drugs addiction among students. As a conclusion, the HRV Biofeedback technique is suitable as a basic training in the strategy of drugs addiction rehabilitation in increasing the human performance system and youth personality improvement for the nation's future which is more intellectual and free from drugs abuses.

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