

The Relationship Between Sub-Element Of Integrity With Student Achievement Using Breathing

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ABSTRACT

Integrity is one of the key elements for creating human resource quality. This is because of integrity has direct relationship with the development of the individual self. Lack of integrity can have widespread negative implications to the socioeconomic, politics and culture of a country. This article discusses about the breathing method used to measure the level of discipline and responsibility of an individual. The reason is that lack of integrity is one of the global issues which is becoming more serious and comes to no end. Breathing is a technique which enables an individual to control the flow of (in and out) the breath from the heart to the lungs smoothly, hence maximizing the amplitude of the person's breathing. One of the methods identified which is able to measure the level of integrity of an individual is through respiration (biofeedback). Clinical research has been conducted on 50 respondents to view the individual breathing pattern rate of alteration. There are four breathing rates (BPM), those are: less than 8 BPM (very good), 9-11 BPM (good), 12-17 BPM (normal) and over 18 (not normal). Tests will be given to the respondents. The score for each test will be recorded. As a result, there is a stable relationship between breathing and student academic performance/achievement.

Keywords: integrity, student performance, respiration

1.0 Background

The word "integrity" originally comes from a Latin word "integritas" which means unaffected, stable or true (Widang and Fridlund, 2005). Oxford Dictionary (2007) defines that integrity is the quality of being honest and having strong moral principles, the state of being whole and undivided and the condition of being unified or sound in construction. According to Ezhar Tamam et al. (2006) there are three main domains of integrity; trustworthy, intelligent and prudent, which have been used by *Kementerian Pengajian Tinggi Malaysia* (Ministry of Higher Education of Malaysia). There are three sub-elements in trustworthy, those are discipline, responsibility and honest. These sub-elements play a vital role for the development of a country.

Discipline and sense of responsibility are the main elements that need to exist in every individual self. According to *Kamus Dewan* (2005), discipline refers to the practice of the thought and behavior to be in self-control and obey the disciplinary. A report of Cabinet Committee 1979 on the other hand explains that discipline means the ability of an individual to do something in order, respect other people's right, practicing good behavior and not disturbing other's main interest. Therefore, based on the definitions which had been presented, it can be concluded that the element in discipline consists of work ethics which is high professionalism, high appraisal of time and promise, as well as practicing organized and planned way of work. Responsibility whereas defines as a duty or obligation perform or complete a task that one must fulfill (Business Dictionary, 2014). These two elements are related directly to student achievement.

Ayieko (1988), Wayson and Pinnell (1994) explain that students who have both of these elements tend to get greater achievement. Besides that, the outcome of a study which had been carried out by Njoroge and Nyabuto (2014) resulted that discipline and responsibility are crucial in the process of education. This is agreed by 80% of the involved respondents. This shows that both elements are associated in forming an individual identity.

A variety of procedures has been conducted in order to increase the level of integrity of an individual. One of the strategies that can be used is by the respiration biofeedback method. Biofeedback is the use of technology for reflecting the process of psychology and physiology that happens in human body unknowingly. This system is one method of therapy to control the behaviour and function of human body (Simona, 2010). This technique is introduced by James Mackenzie in 1902 (Iacono, 2008).

With reference to Gilbert & Moss (2003) and Shaffer & Moss (2006), biofeedback is a technique that enables an individual to learn to change physiological activity to improve health. Biofeedback functions to give information about the physiological process that occurs, thus helping the individual realise this process and he/she will be able to control his/her whole body and mind. The result of the study conducted on a patient with cerebral palsy shows that through this therapy, it is able to train to improve the movement of the ankle and the gait function of the patient (Bolek, 2003; Bolek 2006; Dursun & Alican, 2004).

Sensor System will be stuck to certain parts of the individual body to measure the change in the physiological spectrum consisting brain waves (EEG), pulse beat (PPG), heart beat (EKG), change in galvanic skin (GSR), change in muscle (EMG) and respiration (Resp.) and the rate of changeability of the heart (HRV). This signal of changes is displayed on the computer screen. This technique has been used successfully for measuring stress, asthma, migraine, high blood pressure and diabetes.

One of the techniques used is respiration. The breathing mechanism consists of the process of inhalation and exhalation. It will also involve in several changes to the intercostal muscles, ribs, diaphragm, and the volume of the thoracic cavity, and will give air pressure in the lungs. Through biofeedback method, the process of inhaling and exhaling breath will be measured. The reason is this process is important to view the relation between the breathing pattern and the sub-element of integrity of an individual.

The application of biofeedback technique in the development of human is one new element; however, according to Vernon (2005), this technique is effective to help stroke patient recovers from muscle movement issue. Besides that, this also helps to reduce anxiety symptoms and variety of health issues related to stress, for instance, insomnia, headache and back pain (Evseev et al. 2005). A study by Tato et al. (2008) proves that this biofeedback technique is effective to improve individual performance.

2.0 Methods

The methods include the selection of the participants, the procedures of the research and the data analysis used to examine the result.

2.1 Participants

Total of 50 students were willing to participate in this study. The students were from different academic performance, i.e., students who have low academic performance and high academic performance. For this study, Grade Point Average (GPA) is used to measure the students' academic performance. The interpretation of GPA level is presented in Table 1 as follows.

Table 1: Interpretation of GPA level

GPA	Interpretation
< 2.00 – 2.50	Low
2.50 – 4.00	High

2.2 Apparatus

In conducting this study, the main instruments used are Pro Comp 2 and respiration sensor. These instruments are developed by Thought Technology Ltd (picture 1 and 2). Pro Comp 2 is a system that had been existed in conducting study about biofeedback. With the aid of this instrument, human physiological unit can be measured consisting of EMG, GSR, HRV and Resp. Data which is obtained from this method will be recorded in the Multimedia Biofeedback Software BioGraph Infiniti, and then will be analyzed. On the other hand, respiration sensor will record the data of the wave and amplitude of the breathing. This sensor is worn at the waist or chest of the respondent, and then will be connected to Pro Comp 2, and the data will be seen and read from the computer.



Picture 1



Picture 2

Picture 1 and 2: Pro Comp 2 and respiration sensor.

Source: Thought Technology Ltd.

2.3 Procedure

The purpose of conducting this study is to see the relation between the sub-element of integrity and student performance. During this research, respondent will be given a test according to the script prepared by the trainer. There are 8 test sessions which the respondents have to go through. The tests provided consisting of strop test, hidden word game and hypnosis. The period of time for the tests conducted on each respondent is 12 minutes.

The respondent was encouraged to relax and sit on a chair calmly. Respiration sensor will be worn at the waist or chest of the respondent, and next, the data of the rate, wave and amplitude of the breathing will be seen on the computer. In the first procedure, the baseline was fixed at 2 minutes while they were in a normal situation. After every 2 minutes test, respondents will be given one minute rest. The procedure can be seen on the Figure 1 below.

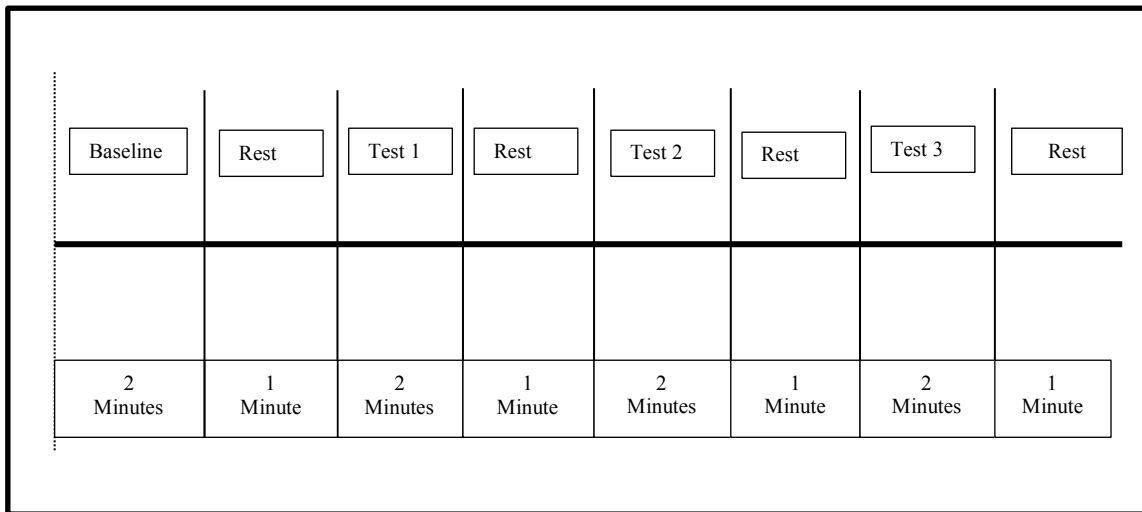


Figure 1: Research Procedure

Source: modified from Mobyen Uddin Ahmed et. al (2011)

2.4 Data Analysis

The data was analyzed using Pearson correlation technique. The correlation measured for normal distribution of data. The significant coefficient and coefficient of correlation are examined to find out the results.

3.0 Result and Discussion

The result presents for demographic of respondents and correlation between the sub-element of integrity and student performance. The finding is displayed below.

3.1 Demographic of respondents

A total of 50 respondents from third year were selected for this research. The respondents' age range is from 20 to 25, and they were from diverse ethnic and socioeconomic background. The demography profile of respondents is presented in table 2 as follows:

Table 2: Demography of Respondents

<i>Demographic info</i>	<i>Frequency</i>	<i>Percentage (%)</i>
Gender		
1. Male	24	48
2. Female	26	52
GPA		
1. < 2.00 – 2.50	25	50
2. 2.50 – 4.00	25	50

3.1 The Relationship of Discipline and Responsibility with Student Performance

Breathing is the most effective technique for controlling the pressure and emotion of an individual. When an individual faces a certain worrisome situation, he/she needs to stabilize their breathing pattern (William and Harris, 1998). According to Lehrer and Gevirtz (2014), the breathing frequency

for a normal individual is between 9-24 breaths per minute. Generally, during the inhalation process, the heart beats faster, and it slows down during the exhalation process. Individuals who have relatively larger inhale-exhale are the individuals who are capable to control their behavior (Brown, 2013).

To assess the relation between discipline and responsibility with the student performance/achievement using the respiration method, correlation analysis is applied. Table 3 shows that there is a significant relation between elements of discipline and responsibility with student academic performance. This can be seen based on the element of discipline, the correlation value for low GPA is $r=0.916$, whereas for high GPA is $r=0.953$. This indicates that there is a strong connection between discipline and student performance, where individuals with discipline and are responsible can manage to maintain their academic performance. This is also proven by a research outcome conducted by Holtzman (1975) and Daiz Guerrero (1976) where the element such as worry will affect academic performance, while Trimmer (1970) states that this problem can be solved by a good control of breathing.

Other than that, score mean for individuals with low performance is higher than individuals with high performance. This can be seen on the table below. The outcome of this study is parallel to the outcome of the research carried out by Berntson et al, 1997 and Vaschillo et al., 2002; that is score mean has direct relationship with individual behavioral change. Individuals who manage to control their breathing are flexible individuals, physically healthy and have high capability to control their behavior continuously. A research conducted by Davis and Sime (2005) to athletes resulted in breathing has direct relation with the improvement in confidence and reduction in the anxiety of the athletes. Kavussanu et al. (1998) on the other hand states that control towards the anatomy system will give physiological reflex/reaction, thus improving individual performance. This can explain that there is a direct relationship between the breathing patterns with the formation of integrity value in the individual self.

Table 3: Relationship of Sub-element of Integrity with Student Performance using Respiration

GPA	Discipline				Responsibility			
	Mean	SD	R	P	Mean	SD	r	P
Low	11.05	2.74	0.916	0.000	11.19	2.85	0.956	0.000
High	10.97	3.23	0.953	0.000	10.93	3.39	0.928	0.000

Note: $p < 0.01$.

4.0 Conclusion

Based on the result obtained from the study shows that there is a positive relationship between elements in integrity that are discipline and responsibility with student academic performance. Respiration Biofeedback Therapy is one of the methods that can be used to improve the control level of the mental and emotion, and consequently improve the integrity level of an individual.

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