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The Cost Effectiveness of Food in the Additional Food Plan (AFP/SMP) in Malaysian Primary Schools

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Abstract
The whole study involves two phases and takes 60 days to complete. The first phase is in the form of interactional observation and the second phase is in the form of quasi experimental study with the design of groups similar to pre-test and post-test. Three groups of the AFP (Additional Food Plan) students had treatment and one group of students was without AFP as a controlled group. The treatment given are in the form of food which cost RM 1.80 (G1), RM 2.30 (G2) and RM 2.80 (G3) respectively. Every group consists of 6 students from primary 1 until primary 6. This study is aimed to analyze the cost effectiveness of food in the Additional Food Plan. The analysis from the coupled t-test evaluated on one aspect of cognitive domain (academic achievement) and eight aspects of affective domain shows that the mean of the group of students without the AFP is higher compared to the students treated with the AFP. However from the aspects of achievement increase the AFP students showed greater increase. The analysis of the comparison of the food cost of AFP/SMP discovered that students of AFP (G2) who are allocated RM 2.30 for an individual meal recorded the highest Index Value that is 5.69 compared to the other given treatment and also the controlled group. Thus with the cost of RM 2.30 the treatment is able to provide the best effect for the students in improving academic achievement, learning process and self-management. Thus, the impact of the AFP program is significant in generating high quality student human capital for the nation.
Keywords: *Cost Effectiveness, Additional Food, Primary School*

1. Introduction

The School Nutrition Program includes two main programs that are the Additional Food Plan in Schools (AFPS) and the School Milk Program (SMP) for primary school students. The AFPS was implemented by the Ministry of Education (MOE) of Malaysia since year 1979. In year 1980 this program has expanded to areas outside the Food and Nutrition Practice Plan districts which have been implemented since 1996. The objectives of AFPS are: (1) to give nutritious and balanced additional food to students to help them in overcoming various problems in body growth and lack of energy; (2) to organize direct and indirect health and nutrition practice; and

(3) to instill the culture of politeness, discipline, consideration and other wanted practices that are related to self-cleanliness, food cleanliness and environment cleanliness.

The study on the cost effectiveness of the food in the AFP and SMP programs is based on the teachers evaluation towards the students and stresses on the comparison of food costs and also measures the success of the students based on status, attendance, increase of leadership, increase of social skills, increase in academic achievements, and increase in added values. Measurement in those aspects is related to the policies and aims of the AFP and SMP programs determined by the Ministry of Education of Malaysia.

2. Problem Statement

The AFP program has long been implemented and its importance is undeniable. This is because the AFP program has a positive aim that is to make sure all primary school students who come from low income backgrounds to have nutritious food for ideal body growth and also for their health (Circular Letter Compendium No. 2/1989). A healthy body is said to contribute to the intelligence and the activeness of the students in their learning activities as mentioned in the Circular Letter Compendium No. 2/1989. However, the effectiveness of the program in the sense the achievement of its objective needs to be ensured. A few studies have been made, and as a conclusion, the studies related contributed some important information in improving the implementation of the program. Nonetheless, there is no existence of a study that studied the cost effectiveness of the food in the program. Hence, one specific study on the aspect should be done so that the funds spent can be benefited optimally.

3. Literature Review

This study discusses the Additional Food Plan (RMT) Program and previous studies related to the program. The items discussed are the nutrition status of students, the development history of the Additional Food Plan (RMT), the health plan of the school and the related case studies, problems and issues to the Additional Food Plan (RMT). Hunger, fatigue, lethargy, skin dryness and falling hair are the symptoms of malnutrition (Hatloy et al., 1998; WHO, 1999) which has existed for a long time especially within the citizens of the third world and developing countries. The study on the nutrition status of the primary school students which is presented in the Eating Habits of Primary School Students Workshop is based on methods involving clinical examination, anthropometry measurement, biochemical analysis and studies on consumption and eating patterns. Observations related to nutrition shows that moderate nutrition is still a major problem within primary school students in rural areas. The Ministry of Education is very concerned towards this problem and thus developed a special food plan as a solution.

A Manual on the Additional Food Plan in schools is published in 2007. It describes the history of the development and expansion of Additional Food Plan (RMT) as well as the management of the Additional Food Plan (RMT) which covers the planning and execution strategies along with the roles and responsibilities of the school. In year 1974, the Selangor State Government as started the pilot project, Food Habits Plan in Kuala Langat in the state. The Food Habit Plan (AMP) Committee in the national level has organized additional food under the Prime Minister's Department as an effort in the Food Habits and Nutrition Plan.

Study by Educational Planning Research Department (EPRD) in 1991, reports that the Additional Food Plan (RMT) program has achieved the objective of providing additional food, inculcating polite habits, maintaining cleanliness in addition to improving the performance of education and the nutritional habits of students in the low income group.

The Educational Planning Research Department (EPRD) 2006 has carried out a study on the implementation of Additional Food Plan (RMT/PSS) on 687 primary schools. This study reports that the allocation provided is sufficient for the preparation of food according to the menu and can also solve the health problems within students.

The nutrition required by the primary school students are higher compared to the pre-school students due to the increase in body size and physical activities. As a conclusion, the Additional Food Plan (RMT) is very important in producing successful human capital in fulfilling the visions and missions of the Nation towards achieving high performance and the inclusion of all students in the effort of improving the education in the Nation.

History of Additional Food Plan

The 'Buku Panduan Rancangan Makanan Tambahan (RMT)' published in 2005 stated the history of the development and the extent of RMT, the management of the RMT which covers the planning strategy, implementation and roles and responsibility in school level.

After the World War II, the British Military Administrative (BMA) started the food supplementary plan at schools as the act of emergency action. Less than 25 years after, the RMT only conducted at selective schools, mainly located at the city and the programme run by the voluntary organization such as Malaysian Council for Child Welfare, Central Welfare Council and statutory board, such as Felda where the food were supplied by Catholic Relief Services Malaysia. 468 schools were involved, which comprising 98, 910 recipient and the plan ends when the food supplies from the United States stops in 1972.

Allocation of Funds

Since 1976 until 1978, the allocation of funds for the RMT programme for primary schools provided by Department of Prime Minister through the Ministry of Education (MoE) under the Food and Nutrition Practices Plan. Starting from 1979, the plan was fully under the MoE and the allocation of funds prepared by the MoE currently. The rate for a student per day was RM0.10 in 1976, increasing RM0.05 in the next year and becoming RM0.20 in 1978, 1979 and 1980. Starting from 2001, the rate per day increase to RM1.20 in Peninsular Malaysia and RM1.35 in Sabah, Sarawak and Wilayah Persekutuan Labuan.

Headmasters Roles

The headmaster needs to plan and execute the education activities related with the RMT in order to produce permanent impacts towards the student which involved:

a. Prioritize the cleanliness of food and supervise the hygiene regulation especially during preparation and serving to avoid food poisoning.

b. Washing hands before eating
c. Maintaining the dental hygiene with the corrects ways
d. Have manners and eating properly
e. Washing and storing the dishes properly
f. Littering and maintaining environment cleanliness in the corrects ways
g. Discussing about the nutrient content in the balance diet
h. Farming if possible to be used as supplementary food
i. Records the weight and high time by time to see the growth of the student
j. Deliver the knowledge, attitude and practices learn from school to their families.

Supplementary Food Programme (RMT)

Few studies regarding the Supplementary Food Programme or more known as RMT programme has been carried out. Somehow, the studies are more focus on implementation and valuation on the programme. BPPDP 1991 report that, the implementation of RMT achieve the objective in order to gives additional food, to culture manners, to sustain cleanliness and to improve education performance and nutrition intake by the students who are from low-income earners. The menu initially are provided following the guideline prepared by the Ministry of Education (MoE), even though some school need to modified the menu, the menu still supply the equivalent nutrient needed. However, the implementation of the RMT programme meets some problems such as the inconsistency of the method for the selection of student between the Peninsular Malaysia, Sabah and Sarawak. In Peninsular Malaysia, the responsibility made by the School RMT Subcommittees, while in Sabah and Sarawak, the responsibilities are on their headmaster of respective school. Apart from that, there are differences in school facilities such as canteen, water supplies and also electricity where the schools in Peninsular Malaysia receive the basic more comprehensive compare those schools in Sabah and Sarawak.

Studies on RMT by BPPDP 1991 are similar with the study on RMT implementation tracking programme under development programme for the poorest MoE by the BPPDP in 1996 where the results shows the RMT programme meets the objective according to the selection aspect, maintaining students record, method of delivery and the responses from the student. However, the study also reports there are increasing burdens on teacher duties, difficulty in cooperation from the canteen provider, unfavorable menu, less duty officer, difficulty to have fresh raw materials, large school population, have no area for storing and the location of school far from the city.

Furthermore, the implementation RMT programme by raising the examination guidelines paper on 129 schools, involving 77 Sekolah Kebangsaan (SK), 31 Sekolah Jenis Kebangsaan Cina (SJKC) and 21 Sekolah Jenis Kebangsaan Tamil (SJKT). Based on the study, for selection of students in this programme, most of school has followed the guidelines by Ministry of Education (MOE). Due of the recommendation of 10 menus prepared in 2 weeks cycle has increased the number of students in food acceptation too. Moreover, the increasing in total of fund for student from RM0.45 to RM0.80 also increases the quality of food. Based on parent's opinion, they were fully supporting this programme should be continued in preventing the poor students from starve during school session.

The study also focusing on wider aspect which is the nutrient provided in the food through the RMT programme. Based on research by the Institute for Medical Research (1984) found that the menu does not fulfil the nutrients requirement as recommended by Malaysian Recommended Dietary Intake in terms of content of thiamine, riboflavin, niacin and calcium. The preparation and cooking methods are the causes of the reduction of nutrients in food.

Cabinet Committee that review the Food and Nutrition Practice Plan in 1979 stated that this programme has increased the healthy body level which not have any retardation effect, reduce the disease infection and increase the potential students learning. Therefore, the Food and Nutrition Practice Plan, especially the RMT programme should be continued and improved.

Meanwhile, BPPDP[7] have do some study on 687 primary school for the implementation of RMT/PSS. The study reports that the financial provision is sufficient and able to provide the food according the menu, and helps to overcome the health problem among the students. The problem of RMT programme implementation is the infrastructure limitation.

Besides that, the delay of RMT budget affects the programme implementation smoothness. Problem more occurs where the teacher cannot give fully commitment to the program because of the burden of works. However, the students join this program show a good moral values, health practise and also the increased the overall attendance of the student.

4. Design of Study

This design consisted of two phases. Phase one is interactional observation. The second phase is in the form of quasi experimentation where the design of the controlled group is similar to the pre and post non-equivalent control group design. Three groups of AFP students had the treatment and one group (without the AFP) is the controlled group G4 (without treatment). The treatment given is in the form of meal with costs of RM 1.80 (G1), RM 2.30 (G2) and RM 2.80 (G3).

4.1 Subject

Five schools have been chosen in the stratified random sampling method. The schools involved are Bau National School, Sarawak; Pulau Beluru National School, Kelantan; Morib National School, Selangor; Jit Sin National Type School (Chinese) B, Penang; and Gopeng National Type School (Tamil), Perak. All the students of the AFP program in the schools are automatically involved as subjects of the study. Besides that, six students from each Standard in each school were selected as subjects without AFP. Thus, every school which is involved consists of 36 students without the AFP and the rest consists of the AFP students. Overall 684 students were involved in this study. The period for this study is 60 consequent days or three school session months.

5. Findings of Study

5.1 Achievement and Learning Process Mastery

In this study, the achievement and the learning process mastery of the AFP students compared to the students without the AFP for one aspect of achievement, and eight aspects of learning process mastery. Overall, the results of the t-test of the two groups of students shows a

significant mean score difference ($p < 0.05$) towards the achievement and mastery of the learning process. The AFP students is slightly lower significantly ($p<0.01$) compared to the students without the AFP (Table 1). However, for the AFP students, the "self-neatness" and "diligence during learning" aspects achieved a mean score of more than 5.00 that is in the good level.

Table 1. Achievement Components and Learning Process Mastery Paired t-test

Aspects	Group	N	Mean	SD	t	DF	Sig.p
Score Increase	AFP	3580	4.67	1.375	-19.754	6871	.000*
	WITHOUT AFP	3293	5.30	1.247			
Neat Schoolwork	AFP	3585	4.75	1.464	-17.205	6875	.000*
	WITHOUT AFP	3292	5.33	1.324			
Finishing homework on time	AFP	3585	4.84	1.512	-16.309	6878	.000*
	WITHOUT AFP	3295	5.41	1.335			
Quality of Exercise (In Class)	AFP	3574	4.72	1.481	-17.072	6859	.000*
	WITHOUT AFP	3290	5.30	1.359			
Quality of Homework	AFP	3576	4.66	1.491	-18.110	6864	.000*
	WITHOUT AFP	3290	5.29	1.346			
Diligence in Learning Activity	AFP	3577	4.98	1.457	-16.413	6865	.000*
	WITHOUT AFP	3290	5.52	1.267			
Diligence during Learning	AFP	3584	4.99	1.451	-15.783	6872	.000*
	WITHOUT AFP	3290	5.50	1.256			
Task completing Initiative	AFP	3578	4.77	1.456	-16.766	6867	.000*
	WITHOUT AFP	3291	5.33	1.301			
Inquisitive	AFP	3585	4.29	1.580	-20.015	6878	.000*
	WITHOUT AFP	3295	5.02	1.454			

* Significant level $p<0.01$

5.2 Academic Achievement Increase of AFP Students

The results of the pre experiment and post experiment tests for four subjects for the AFP students group is as shown as in Table 2.

Table 2. Achievement Increase Based on Fields (n=684)

Fields	Pre-Experiment mean unit	Post-Experiment mean unit	Increase mean unit (SD)	Increase %
General Knowledge	7.12	7.47	0.35 (2.93)	2.30
Malay Language	9.19	9.87	0.68 (3.47)	4.54
Mathematics	6.45	7.36	0.91 (3.39)	6.06
Science	6.02	6.55	0.53 (3.17)	3.53

The result in Table 2 shows that there is increase in performance for all the subjects for the AFP students. The results of the pre-experiment and post experiment tests showed mean increase in between 0.35 (SD = 2.93) to 0.9 (SD = 3.39). In the micro level, the performance of the Mathematics test recorded the highest increase percentage that is 6.06 per cent followed by the Malay Language (4.54%), Science (3.53%) and General Knowledge (2.30%).

5.3 The Academic Achievement Increase between the AFP Students and the Non-AFP students

The analysis of t-test in Table 3 shows that the increase percentage mean of AFP students is significant where the increase of AFP student is 4.59 percent (N=548, SD=13.94) and the test score increase percentage mean for the non-AFP student is 2.13 percent (N=136, SD=12.01). The difference between two test score increase percentage mean is 2.46% and this is clearly seen in the results of the t-test (DF=681, p>0.05) as 1.89. Table 3 shows the results of the t-test between AFP and non-AFP students.

Table 3. The t-test of Percentage of Increase of the Pre-Test and the Post Test Scores in AFP and Without-AFP Students

Group	N	Increase Mean %	SD	DF	T	Sig.p
AFP	548	4.59	13.84	684	1.89	0.039
Without AFP	136	2.13	12.01			

*Significant Level p < 0.05

The conclusion of the aim and objective of AFP is relevant for the AFP students, where it records the percentage of test score increase comparable to the students without the AFP.

Thus, the AFP program helps and contributes immensely in the increase of test scores and students' academic performance.

5.4 The Overall Performance of AFP Group 1 (G1) Students

The mean of overall increase for group G1 based on the attendance to school domain and the participation in co-curricular activity, physical weight, height, health and cleanliness, character and good practice and increase in academic achievement is shown in Table 4.

Table 4. Overall Status of Students in G1 (RM 1.80) Based on Domain

Domain	Mean (SD)	Weight	Index Value
Attendance (n=175)	0.0024 (0.13)	3.5	0.0084
Cleanliness and Health (n=173)	0.8264 (2.32)	3.0	2.4792
Character and Practice (n=171)	0.3761 (0.68)	2.5	0.9403
Achievement (n=187)	0.8610 (1.87)	1	0.8610
Total			**4.2889**
Overall Status of Students (1x4.2889)			**4.29**

The result in Table 4 shows the increase level of students based on the domains that are; attendance to school and participation in co-curricular activity (mean=0.0024; SD=0.13) with the index value of 0.0084. For the physical domain which encompasses weight, height and cleanliness status, it records an index value of 2.4792 (mean=0.8264; SD=2.32). While the index value of character and good practice of students records 0.9403 (mean=0.3761; SD =0.68) and the academic performance domain records an index value of 0.8610 (mean=0.8610; SD=1.87). Thus, the overall status of students in this group achieves an index value of 4.29.

5.5 The Overall Performance of AFP Group 2 (G2) Students

The mean of overall increase for group G2 based on the attendance to school domain and the participation in co-curricular activity, physical weight, height, health and cleanliness, character and good practice and increase in academic achievement is shown in Table 5.

Table 5. Overall Status of Students in G2 (RM 2.30) Based on Domain

Domain	Mean (SD)	Weight	Index Value
Attendance (n=162)	-0.0034 (0.09)	3.5	-0.0119
Cleanliness and Health (n=163)	1.6905 (2.45)	3.0	5.0715
Character and Practice (n=162)	0.0357 (0.55)	2.5	0.0893
Achievement (n=184)	0.8367 (2.10)	1	0.8367
Total			**5.9856**
Overall Status of Students (0.95 x 5.9856)			**5.69**

The result in Table 5 shows the level of increase or deterioration based on domain that are; attendance to school and participation in co-curricular activity (mean=0.0034; SD=0.09) with the index value of -0.0119. For the physical domain which encompasses weight, height and cleanliness status, it records an index value of 2.4792 (mean=0.8264; SD=2.32). While the index value of character and good practice of students records 0.0893 (mean=0.0357; SD =0.55) and the academic performance domain records an index value of 0.8367 (mean=0.8367; SD=2.10). Thus, the overall status of students in this group achieves an index value of 5.69.

5.6 The Overall Performance of AFP Group 3 (G3) Students

The mean of overall increase for group G3 based on the attendance to school domain and the participation in co-curricular activity, physical weight, height, health and cleanliness, character and good practice and increase in academic achievement is shown in Table 6.

The result in Table 6 shows the level of increase or deterioration based on domain that are; attendance to school and participation in co-curricular activity (mean=-0.0036; SD=0.14) with the index value of -0.0126. For the physical domain which encompasses weight, height and cleanliness status, it records an index value of 2.3613 (mean=0.7871; SD=2.40). While the index value of character and good practice of students records 0.1033 (mean=0.0413; SD =0.47) and the academic performance domain records an index value of 0.3503 (mean=0.3503; SD=2.20). Thus, the overall status of students in this group achieves an index value of 2.52.

Table 6. Overall Status of Students in G3 (RM 2.80) Based on Domain

Domain	Mean (SD)	Weight	Index Value
Attendance (n=163)	- 0.0036 (0.14)	3.5	-0.0126
Cleanliness and Health (n=159)	0.7871 (2.40)	3.0	2.3613
Character and Practice (n=157)	0.0413 (0.47)	2.5	0.1033
Achievement (n=177)	0.3503 (2.20)	1	0.3503
Total			**2.8023**
Overall Status of Students (0.9 x 2.8023)			**2.52**

5.7 The Overall Performance of Group (G4) Students without AFP

The mean of overall increase for group G4 based on the attendance to school domain and the participation in co-curricular activity, physical weight, height, health and cleanliness, character and good practice and increase in academic achievement is shown in Table 7.

Table 7. Overall Status of Students in G4 (Without AFP) Based on Domain

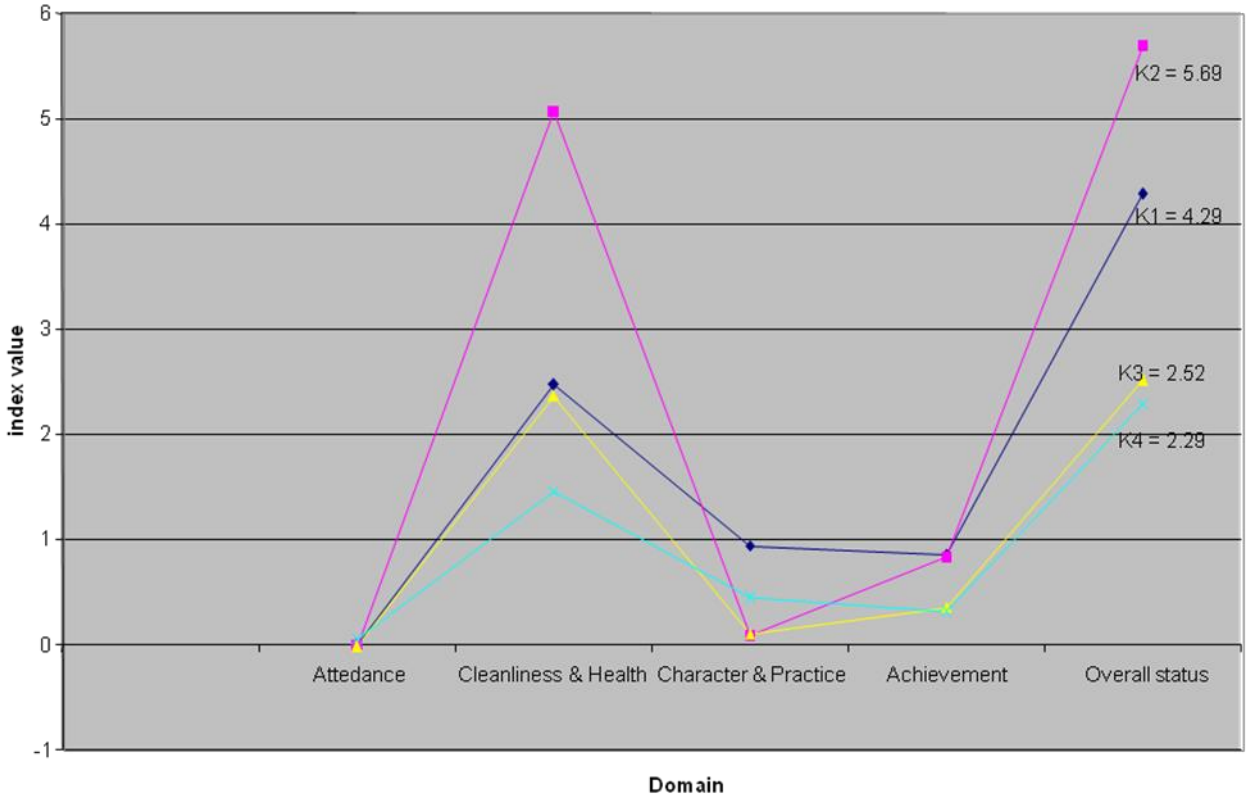
Domain	Mean (SD)	Weight	Index Value
Attendance (n=134)	0.0174 (0.08)	3.5	0.0609
Cleanliness and Health (n=134)	0.4861 (3.59)	3.0	1.4583
Character and Practice (n=135)	0.1814 (0.56)	2.5	0.4535
Achievement (n=135)	0.3204 (1.80)	1	0.3204
Total			**2.2931**
Overall Status of Students			**2.29**

The result in Table 7 shows the level of increase based on domain that are; attendance to school and participation in co-curricular activity (mean=0.0174; SD=0.08) with the index

value of 0.0609. For the physical domain which encompasses weight, height and cleanliness status, it records an index value of 1.4583 (mean=0.4861; SD=3.59). While the index value of character and good practice of students records 0.4535 (mean=0.1418; SD =0.56) and the academic performance domain records an index value of 0.3204 (mean=0.3204; SD=1.80). Thus, the overall status of students in this group achieves an index value of 2.29.

As a conclusion, the overall performance of the students' status shows increase or deterioration of mean in domains of attendance to school and the participation in co-curricular activity, physical weight, height, health and cleanliness, character and good practice and increase in academic achievement. The G2 group of AFP students records the highest overall index value that is 5.69 compared to the G1 group (overall index value = 4.29), G3 group (overall index value = 2.52) and non-AFP students (overall index value = 2.29) record the lowest. All of these aspects can be seen through comparison by referring to Figure 1.

Figure 1. Overall of Student in Group



6. Implications and Discussions

6.1 Increase in Academic Achievement and Learning Process

The retrieval of the survey study show the high increase (mean of 4.2 and above) related to the mastery of learning like increase in test scores, work tidiness, class work punctuality, good class and homework quality, persistence in participating in learning activities, showing initiative in task completion, working hard and interest in questioning. Still, this increase cannot overcome

the non-AFP students with the mean difference of 1.11. However, the retrieval of the experiment study finds that AFP student show the better improvement mean compared to the students without AFP, even though t-test shows that the difference is insignificant. Hence, it is clear that the improvement of AFP students is comparable to the students without AFP in the first phase study. In other words, the AFP program helps students in learning to the point that they are able to compete to improve in academic mastery. This finding was in line with the objective of AFP as recorded in the AFP instructional manual in schools (2003) and National Health and Medical Research Council (2013).

Another matter in a quasi-experiment is that it is implemented in a more organized and systematic manner. The study finds that the performance of the pre-test and post-test score increase of AFP students are higher than students without AFP. This result clearly strengthen the point that even though a big amount of money is being spent by the government, the difference in gap can be decreased in the cognitive and affective aspects of students and it also supports the result of EPRD study (2006). This can be seen in the overall performance of AFP students. The impact of the AFP program is big in the view of human capital investment of students to the country in the long run. Because of that, this policy must be continued by the government to be in line with the hope to become a developed country in the year 2020. However, the effectiveness of this program is depending on the school administration, teachers, parents and society to realize it based on their roles respectively (Reicks et al., 2014).

6.2 Overall Increase in the Status of AFP Students

The measurement of the overall increase in the status of AFP students account for the data from all series of component recorded for seven times and also other important information collected along the process of the experimental study that is 3 months or 60 school days. The components here refer to the increase in the attendance of students to school and their participation in co-curricular activities, improvement in students' physical status that encompasses weight and height and also cleanliness, character and practice status cum improvement through special tests implemented. The comparison of status is also done between the AFP students' groups and the non-AFP student group. The overall status analysis of the comparison on the four groups shows that G2 that was maintained with milk drink (100ml) shows the highest index value performance that is 5.69, followed by G1 (without milk), G3 (200 ml of milk) and G4 (without AFP). This shows that the best food cost for the AFP program is RM 2.30. The optimum cost of milk in the study is RM 0.50 that is provided with flavored UHT milk of 100ml.

The discreet analysis of AFP food cost (except Sabah and Sarawak) on the G2 group shows that at average the minimum cost of drink costs 30 cent and the average cost of the food is RM 1.50. The average cost of UHT milk for every 125ml is 50 cent and the average cost for a box (90 cent, 200ml) of SMP milk for a month and the averaged cost a day is 18 cent. Thus, all the cost borne by the government is averaged 70 cent a day. With this the AFP food cost borne per day by the government is 70 cent a day. Thus the food cost borne by the government (RM 1.50) and the drinks cost (30 cent) and the SMP milk cost (20 cent) per day is totaled at RM 2.30 per day (the real total). This shows that the treatment if G2 involves cost as much as RM 2.30 is

the real cost where it does not need extra allocation from the government. Generally the students like the flavored UHT milk.

Thus as an alternative this milk is can also be given as a supplement as in SMP project, and it is practical to have daily supply for the reason of growth and health of the AFP students. The more practical management of supplying and keeping milk based on locality can be implemented. Indirectly, it can reduce the problem of keeping and maintaining the quality of milk and is more controlled and suitable in one integrated management with the AFP food entrepreneurs. To strengthen the points towards the AFP food cost with is the most effective by taking account of the cost package with the milk which is proven to give significant impact towards the overall performance of students in all aspect of achievement (cognitive) and development in affective and social domains of students.

7. Conclusion

The status of students' attendance to school of the AFP and non-AFP students is almost the same that is 97.0 percent. However in aspects of participation in co-curricular activities of the non-AFP students, records show 10.0 percent lower than AFP students. In aspects of weight, only students of the G1 group recorded a decrease but in aspects of height, all group record mean increase of 1.06 till 2.65. Comparatively, AFP students in G2 group records the highest overall index value that is 5.69 compared to the G1 group (overall index value of 4.29), G3 group (overall index value of 2.52) and the non-AFP students records the lowest overall index value that is 2.29. Because of that, the AFP G2 shows the optimum cost for the highest index value.

The AFP program has given a positive impact towards the less able students. The AFP program gave them chance to compete healthily with luckier students. Thus this program should be continued and these are the improvement suggestions. Thus, it is suggested that the AFP teachers need to be given special courses that are related to food nutrition, balanced diet, food management, diseases and effects of malnutrition to ensure that they understand the responsibilities and strategies that are used to ensure good flow of the implementation of the program.

Furthermore, proper record on procedure that requires the school to keep special records on the development of AFP students. If there is such a record, the development and effectiveness of the policies and aims of AFP, as mentioned in the book "Guide to Additional Food Planning in Schools", can be observed effectively. The improvement record of AFP can be a data source that can measure the program impact of AFP in a more detailed manner.

Generally for schools where canteen is available, the AFP food and drinks are managed by the canteen owner. However, the supply of SMP is managed by other party that still requires the canteen owner to store the milk. This condition is a burden to the AFP and SMP management. A more practical approach needs to be drawn to integrate the preparation of food and milk to the local entrepreneurs so that the quality of food and drinks can be controlled effectively. This practice has been proven effective along the three months of the experiment.

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