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## SATISFACTION TOWARDS AN ENRICHMENT PROGRAMMES: *HALAL* ACTION FOR YOUNG SCIENTISTS CAMP

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### ABSTRACT

*Early teenager is a stage to develop individual interest, skills, and preferences which are salient for the future. An enrichment programme is one of the approaches to disclose teenager's interest. This study aims to identify the effectiveness of Halal Action for Young Scientists Camp as an enrichment programme for secondary school students. A week-long camp were administered by Kolej PERMATA Insan USIM to expose 'halal' and 'thoyyib' education with scientific analysis. In addition, this study also identifies the elevation of science interest through five modules that were exposed through this camp. A survey was given to obtain the overall feedback of the camp including trainers, modules and facilities. Participants in this study were 22 students in total from various secondary schools in Malaysia who participated in the camp. The data analysis was calculated using descriptive and inferential statistic. The results of data processing shows that this camp was suitable as an enrichment programme through five related modules. Most of the students have deepened their interest in science after participating in this camp.*



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**Keywords:** *enrichment programme, 'halal' education, gifted and talented, integration 'naqli' and 'aqli'*

## INTRODUCTION

Education plays an important role for a developing country. The nation's success depends on their knowledge, skills and competencies (Ministry of Higher Education, 2015). Current Malaysia education system is developed based on the needs of industrialisation compared to nature creativity and individualism among students as reported in National Report. For example, in last ten years, many new science programmes have been developed due to a high demand by the industries. It makes the students enrol the related course to prevent from being unemployed after completing the study. This situation can make some students less satisfied to uncover their academic potential because of a lack of interest in their courses.

The Malaysian curriculum is an on-going effort to mould a holistic individual. This mission will not be achieved if none of the agencies participated in this agenda. A suitable programme is needed for the students to receive extra educational services, additional courses, challenging environment and others to enhance their potential. This effort can be classified as an enrichment programme. The enrichment programme will be frequently correlated as a gifted and talented programme. However, an issue was raised on who is the gifted student chosen and how the nation claims that the student is gifted.

People believe that every child is gifted. The giftedness need to be nurtured daily. So, the enrichment programme has to be different from the conventional programme that had been participated during the school day. Shaughnessy and Waggoner (2015) identified various programmes which constitute enrichment and was classified into a few categories; higher order thinking skill, critical thinking skills, reasoning skill or project. For the higher order thinking skill category, the enrichment is provided through the higher order of thinking question that utilises higher domains of Bloom's taxonomy. On the other hand, some programmes require examination of the event from multiple perspectives to enhance the critical thinking whilst some enrichments are required to discuss from the case study for

the reasoning skill. Other than that, the development of project as an enrichment is a common programme used by gifted and talented learners. This is mainly because it requires all the skills need by the gifted learners (Baska & Brown, 2015).

All enrichment programme were mostly based on the Enrichment Triad Model suggested by Renzulli (1976). This noble model in gifted education curriculum stated the three types of enrichment. Type I and Type II are appropriate to all learners; general exploratory activities and group training while Type III is a small group investigation of real problem as shown in Figure 1. The Type I aims to bring the learner to explore different areas of potential interest for the students to involve in greater depth and higher level. The students may naturally design in-depth investigation that is require in any training or group activities (Type II). During the training, the learner will develop high level of thinking skill which are either critical thinking, problem solving, reflective thinking, inquiry thinking, divergent thinking, awareness development and creative or productive thinking (Reis & Renzulli, 1984). With the development of thinking skill, learners will develop a group investigation to investigate a real problem or the topic related as suggested in Type III.

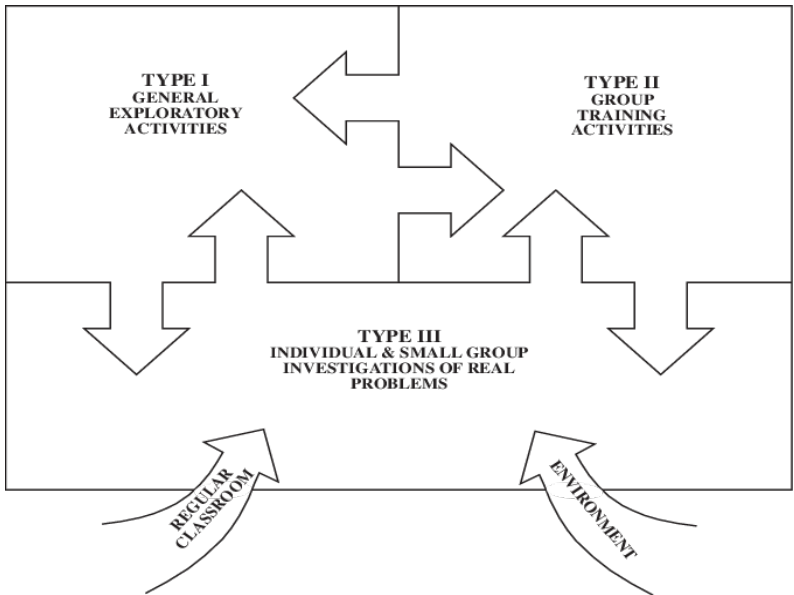


Figure 1: The Enrichment Triad Model (Reis & Renzulli, 1984)

Ji (2018) reported that the former Prime Minister vision about 60% of secondary school graduates would specialise in Science, Technology, Engineering and Mathematics (STEM) by 2014. Often parents make mistakes by looking for extra classes to increase the interest of sciences among their children. Parents need to identify the child’s learning type either from surface learning (cognitively passive learning) or deep learning (cognitively active learning) to understand the point of the subject. This issue had been discussed and characterised by Weimer (2012) and Stanger-Hall (2012). Thus, it is necessary to find a good quality enrichment programme in order to develop a personal, cognitive and social aspects basis by science knowledge as discussed by O’Donoven (2007).

Enrichment programme varies from student’s level, school or any curriculum and project. It depends on how the agencies define the enrichment programme (Shaughnessy & Waggoner, 2015). Dr Maszlee Malik who is the Minister of Education has been acknowledging *Kolej Permata Insan* as one of the gifted and talented schools in Malaysia. The school accepts that the enrichment provides the curriculum a greater depth and breadth than it generally provides as defined by Davis and Rimm (2004). It had done a great deed for the secondary students by conducting an Edu camp; *Halal*

Action for Young Scientists Camp started from 26 November 2017 until 2 December 2017. This enrichment programme has been integrated with *naqli* (Al-Quran) and *aqli* (science).

The programme aimed to broaden the student's knowledge in *fiqh*, *sharia*, food science and chemical analysis by developing the student's cognitive ability and enhancing their laboratory skill for the student's educational experience. This camp also provides opportunity to investigate *halal* food and products using scientific analysis by hands-on the specific instruments based on the selected package. It offers two module packages, which are basic and expert. The basic module package includes Basic Principle of *Sharia* in *Halal*, *Halal* Science for Safe, *Thoyyib*, and Nutritious Food and Basic Investigation of *Halal* and *Thoyyibah*. In addition, Molecular Analysis in *Halal* or Analytical Chemistry in *Halal* and *Thoyyib* Identification has become an expert package.

In basic principle of *sharia* in *halal*, many aspects of *fiqh* and *sharia* were enlightened in this course. It includes the practical of modern Islamic cleansing known as *sertu* and a visit to a slaughtering house on the second day of camp. The visit aims to experience the real process and procedure in the accredited *halal*'s factory. The third day starts with the introduction of food science, Good Manufacturing Product (GMP) analysis and *halal* management from farm to plate. The additional topic discussed in *Halal* Science for Safe, *Thoyyib*, and Nutritious Food's module is fermentation and a comparison between alcohol and *khamr*. In the evening, the participants use their cognitive skills to produce an idea of food innovation with the requirement on GMP and *halal*. It was discussed in five groups in order to improve their social skills. For the Basic Investigation of *Halal* and *Thoyyibah* modules, the participants enhance their laboratory skills through a burning test for some consumable product, microscope and Fourier Transformed Infrared (FTIR) Analysis.

In addition, the expert package; Molecular Analysis in *Halal* provides the theory on Deoxyribonucleic Acid (DNA) and protein synthesis. It also exposes the students on the sample preparation; extraction for biological compounds (DNA) before it was enhances using real time polymerase chain reaction (PCR). The identification of porcine in the food using porcine detection kit was provided by Agilent Technology. On the

other hand, expert package; Analytical Chemistry in *Halal* and *Thoyyib* Identification exposed the student on chemical analysis. The theory of chromatography was exposed using simple and understandable delivery. The sample preparation was needed to be prepared by the students before it was analysed using Gas Chromatography Mass Spectrometer and High Performance Liquid Chromatography.

The modules and activities were in trail of Reis & Renzulli's (2010) suggestion for the enrichment programme. It consists of three levels; exploring activities by providing the appropriate environment, guided activities towards a certain skill and problem solving. This study is aimed to investigate the effectiveness of *Halal* Action for Young Scientists Camp as an enrichment programme among the secondary students in the area's facilities, modules and facilitators. In addition, it also identifies the impact of this camp towards the science interest. This study also aims to identify the relation between modules and the effectiveness of the camp.

## METHOD

### Participants

The population of the study consisted of 22 students (13-17 years old) from various national secondary schools all over Malaysia (five students from Centre Region; three students from Northern region; 12 students from Southern Region and two students from East Coast Region) who participated in *Halal* Action for Young Scientists Camp. 18 of them proceeded with the expert package; nine participants with Molecular Analysis in *Halal* and another nine Analytical Chemistry in *Halal* and *Thoyyib* Identification while the rest only participated for the basic package. They were assisted by two research assistants; two laboratory assistants and eight facilitators from Kolej PERMATA Insan students (15 years old).

## Instruments

In order to achieve the objective of the study, an evaluation form was developed to obtain the feedback from the participants. It consists of 36 questions for four components with the Likert's Scale for Satisfaction. It starts with one mark for not satisfied; second mark for slightly satisfied, three marks for moderately satisfied, four marks for very satisfied and five marks for extremely satisfied. The four components evaluated were based on the modules, facilities, trainers, and overall camp.

## Research Procedure

The evaluation form was given once the participants registered. Four participants submitted the evaluation on day five once they completed the basic package. Meanwhile, other 18 participants had submitted after day seven when the expert modules had completed. The participants need to evaluate for each module once completed to avoid from overlooking the moment of teaching and learning session. The camp was conducted for seven days, which was divided into two packages of basic and expert. The content of the modules are as Table 1.

**Table 1: Halal Action for Young Scientists Module**

Module	Content
Basic Principle of <i>Sharia</i> in <i>Halal</i> <sup>a</sup>	Concept of <i>sharia</i>
	Concept of <i>halal</i>
	<i>Fiqh</i> of food
	Slaughtering
	Practical: <i>Sertu</i>
	<i>Halal</i> issues
	Case studies

<i>Halal Science for Safe, Thoyyib and Nutritious Food</i> <sup>a</sup>	Dimension of food science
	Chemical elements of the food
	Good Manufacturing Product: From raw to plate
	<i>Halal issues</i>
Basic Investigation of <i>Halal</i> and <i>Thoyyibah</i> <sup>a</sup>	Physical properties of
	Spectroscopy
	Practical : Physical analysis for burning test, colour test and functional group using microscope and Fourier Transformed Infra-Red Spectroscopy
Molecular Analysis for <i>Halal</i> Authentication <sup>b</sup>	From gene to protein : Central dogma
	Concept of polymerase chain reaction
	Practical: Sample preparation pre PCR
	Practical: Porcine detection using RT-PCR
Analytical Chemistry in <i>Halal</i> and <i>Thoyyibah</i> <sup>a</sup>	Introduction to analytical chemistry
	Principle of chromatography
	Practical: Sample preparation
	Practical: <i>Thoyyibah</i> analysis using Gas Chromatography and High Performance Liquid Chromatography
<sup>a</sup> Basic package	<sup>b</sup> Expert package

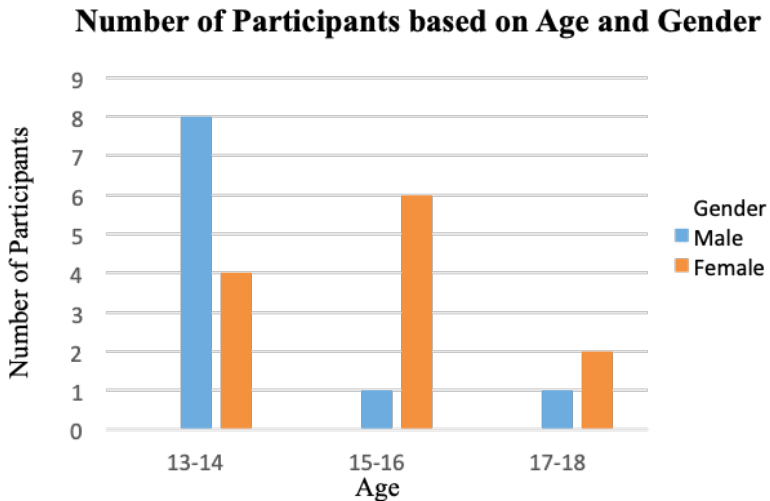


## Data Analysis

Data from the evaluation form was analysed, calculated and tabulated using descriptive and inferential (Partial Pearson Correlation) methods approach of statistical software, SPSS. Graphs and tables were designed in a way that would be best to explain the result.

## RESULT

The effectiveness of *Halal* Action for Young Scientists Camp as an enrichment programme among secondary students was identified based on the evaluation form. Majority of the participants (12 participants) were 13-14 years old while eight participants were among 15-16 years old and the minority were two participants age 17-18 years old as shown in Figure 2. A total of 12 participants were females and the others were males.



**Figure 2: Number of Participants Based on Age and Gender**

From the overall feedback, *halal* education that has not been taught in school formally was exposed during this camp. The camp's objective, which is to expose *halal* education among secondary students, was achieved when the mean for overall feedback is 4 while the frequencies of extremely satisfied was higher in Table 2.

This follows the criteria for the enrichment’s programme as suggested by Reis and Renzulli (2010)’ syllabus is higher than the normal curriculum.

**Table 2: Overall Feedback of HALFYST Camp**

		<b>N %</b>	<b>Mean (SD)</b>
The objectives of this camp was achieved	Moderately satisfied	1 (4.5)	4.32 (0.57)
	Very satisfied	13 (59.1)	
	Extremely satisfied	8 (36.4)	
This camp increase my knowledge in <i>halal</i>	Moderately satisfied	1 (4.5)	4.64 (0.58)
	Very satisfied	6 (27.3)	
	Extremely satisfied	15 (68.2)	
This camp increase my interest towards science	Moderately satisfied	4 (18.2)	4.41 (0.80)
	Very satisfied	5 (22.7)	
	Extremely satisfied	13 (59.1)	
The modules challenged my mind	Slightly satisfied	1 (4.5)	4.41 (0.80)
	Moderately satisfied	1 (4.5)	
	Very satisfied	8 (36.4)	
	Extremely satisfied	12 (54.5)	
I would like to participate this camp again	Not satisfied	1 (4.5)	4.45 (0.97)
	Moderately satisfied	1 (4.5)	
	Very satisfied	6 (27.4)	
	Extremely satisfied	14 (63.6)	
I would like to invite my friends to participate in this camp	Moderately satisfied	2 (9.1)	4.45 (0.67)
	Very satisfied	8 (36.4)	
	Extremely satisfied	12 (54.5)	

I am satisfied throughout this camp	Moderately satisfied	2 (9.0)	4.23 (0.61)
	Very satisfied	13 (59.1)	
	Extremely satisfied	7 (31.9)	

The camp also succeeded in increasing or deepening the interest towards science subject as it can be seen when all the students' remarks in a range from moderately satisfied to very satisfied while the mean obtained is 4.41 and standard deviation (SD) is 0.80 as in Table 1. Most of the students stated their interest in science especially chemistry and biology due to their extra knowledge gained during the camp.

**Table 3 (a): Correlation for Uncontrolled Variables**

Uncontrolled variable	Modules		Trainers		Facilities	
	Correlation ( <i>r</i> )	<i>p</i> -value	Correlation ( <i>r</i> )	<i>p</i> -value	Correlation ( <i>r</i> )	<i>p</i> -value
Overall feedback on HALFYST's camp	0.26	0.23	0.43	0.05*	-0.16	0.48
Modules	1.00	-	0.51	0.02*	0.19	0.40
Trainers	0.43	0.05*	1.00	-	0.24	0.29

\*significant at  $p < 0.05$

**Table 3 (b): Correlation for Controlled Variables**

Controlled Variables (Trainer and facility)	Overall feedback on HALFYST's camp	
	Correlation ( <i>r</i> )	<i>p</i> -value
Modules	0.85	0.73

\*significant at  $p < 0.05$

The factors of satisfaction among participants were investigated through Partial Pearson Correlation based on modules, trainers and facilities. Table 3(a) shows the significant value (0.05) with fair correlation (0.43) between overall feedback on HALFYST's camp and trainers. Similar result was gained by associating factors of trainer and modules ( $r=0.51, p<0.05$ ). Due to this, the trainers assisted participants effectively during conducting the modules throughout the camp.

On the other hand, the main purpose of the enrichment programmes is to evaluate the area of scientific knowledge and the level of experience with science skills. It is measured through the activities or modules conducted. Therefore, the feedback towards the overall camp was correlated within the modules conducted when the facility and facilitator were controlled. Table 3(b) shows high correlation between the overall feedback of camp and modules ( $r=.85, p<.05$ ) due to increasing of value when it was not controlled from 0.26 to 0.85 when it was controlled.

Since there is a high correlation between the value of overall feedback towards the camp and the feedback of modules, this study would like to identify the best module during the camp that may become as a motivation among students.

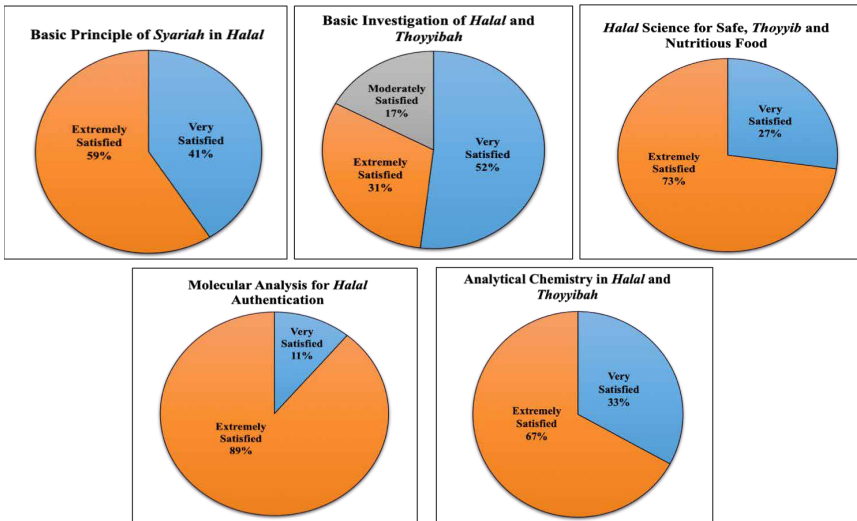


Figure 3: Percentage of Feedback for the Modules

Referring to Figure 3, all the modules received high satisfaction feedback ranged from moderate satisfied to extremely satisfy. It starts with Molecular Analysis in *Halal* (89%), which received extremely satisfied continues with *Halal* Science for Safe, *Thoyyib*, and Nutritious Food (73%), Analytical Chemistry in *Halal* and *Thoyyib* Identification (67%), Basic Principle of *Sharia* in *Halal* (59%), Basic Investigation of *Halal* and *Thoyyibah* (31%).

## DISCUSSION AND CONCLUSION

The participants from 13 to 18 years old received some extra knowledge compared to school. Even though all the modules are usually taught in the university level, the acceptance of these modules will become higher when the participants participate the camp in future. It showed the well-trained trainers especially facilitators from *Kolej Permata Insan*'s students who are only 15 years old can guide their peers advance subjects.

The modules also received good feedbacks without the influence of the facilities and the trainers. It is because the camp was designed well to engage the participants in fun, hands-on activities and challenge student's mind while developing the subject content and awareness towards *halal*. It proves that the higher-level content is suitable to be taught towards the secondary students for the enrichment programme.

HALFYST's camp also similar with the enrichment programme conducted at New York City School, which based on Schoolwide Enrichment Model. O'Donoven (2007) reported the school emphasizes on broadening learning experience by combining enrichment activities such as field trips and assemblies, the development of thinking and problem-solving skills, and interest-based projects and tasks delivered by trained teachers and specialists.

Enrichment models' are based on objective for HALFYST's camp when all characteristics as enrichment programme that were suggested by few similar models to develop high level thinking (higher order thinking skill, critical thinking skills, reasoning skill) and the project was based on appropriate environment, guided activities. However, it has been integrated with the science (*aqli*) and *syariah* (*naqli*) to nurture Muslim Scientists. The feedback of modules and the effectiveness of this camp indicate high relationship when the other factors were controlled. In brief conclusion, the modules received satisfied feedback ranges during the evaluation by participants. As a conclusion, HALFYST's camp is an integrated enrichment programme supplied greater depth and breadth curriculum for the secondary students.

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