

A Survey on Satisfaction and Effectiveness of the School Holiday Program at Kolej Komuniti Ledang: A Study on Implementation and Academic Skill Enhancement of Students

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Abstract. The School Holiday Program conducted at Kolej Komuniti Ledang aimed to enhance students' knowledge and confidence in Mathematics and Science through short structured courses. This study evaluated the satisfaction and effectiveness of the program in improving academic skills among primary and secondary school students. A total of 189 participants from Tangkak and Muar joined courses such as Syoknya Sains, Bijak Algebra, Matematik Persediaan Tingkatan 1, and Bijak Pecahan. A quantitative survey design was employed using pre- and post-program evaluation forms. The instrument covered two dimensions: Course Implementation (content delivery, teaching methods, suitability of venue, and time allocation) and Course Effectiveness (knowledge, skills, confidence, and career relevance). Findings indicated high participant satisfaction, particularly in content delivery ($M = 3.66$) and course organization ($M = 3.63$). Paired-samples t-tests showed significant improvements: knowledge increased by 1.413 mean points ($\approx 60.6\%$), while skills improved by 1.381 mean points ($\approx 63.6\%$), with $p < 0.001$ for both. These results confirm the program's effectiveness in strengthening both cognitive and affective learning dimensions. Overall, the program successfully achieved its objectives by enhancing students' knowledge, skills, and confidence, while providing positive exposure to STEM-based learning during school holidays. The study highlights the importance of interactive and student-centered approaches in community-based learning programs and recommends replication of such initiatives in other regions.

Keywords: School Holiday Program, Course Effectiveness, Student Skills, Mathematics, Science

1. INTRODUCTION

Lifelong Learning (LLL) has been recognized as one of the global strategies in developing a knowledgeable and competitive society. UNESCO emphasizes that LLL should be made a central agenda in addressing socio-economic changes, technological advancement, and the challenges of globalization [1]. Malaysia also supports this agenda through the Malaysia Education Blueprint (Higher Education) 2015–2025, particularly its third thrust, “Embracing Lifelong Learning” [2]. At the national level, community colleges play a significant role as institutions that provide flexible training and education to local communities, including school students, youth, industrial workers, and vulnerable groups [3]. One of the concrete efforts carried out by community colleges is the organization of school holiday programs. According to S. Omar [4], the long school holiday period often raises concerns among parents, as it is associated with the phenomenon of learning loss, which refers to the decline in knowledge and skills due to the absence of formal academic activities. H. Cooper [5], through a meta-analysis, found that students could lose academic achievement equivalent to one month of schooling during extended breaks, particularly in mathematics and science. This situation has negative implications on students' motivation and academic performance if left unaddressed.

Therefore, the implementation of school holiday programs that serve as academic interventions is regarded as a strategic step to fill students' free time with meaningful activities while reducing the learning gap. Such programs not

only help students maintain academic performance but also provide opportunities to acquire new skills through interactive and enjoyable learning (V. Tinto [6]). A local study by M. Ali [7] found that participation in holiday learning programs can increase academic achievement by up to 30% compared to students who did not participate. These findings align with J. Kim's [8] study in the United States, which demonstrated the effectiveness of summer school in improving literacy and numeracy skills. Beyond academic aspects, school holiday programs also contribute to students' character development. A. Rahman [9] emphasized that community-based intervention programs can enhance students' discipline, motivation, and self-confidence. R. Hashim and Z. Yusof [10] also found that students' involvement in activities outside the classroom helps them develop soft skills such as communication, teamwork, and leadership. This is crucial because today's education is not only oriented toward academic achievement but also toward holistic student development in line with the National Education Philosophy.

In this context, Kolej Komuniti Ledang has taken the initiative to organize a School Holiday Program consisting of courses such as *Syoknya Sains*, *Bijak Algebra*, *Mathematics Preparation for Form 1*, and *Bijak Pecahan*. These courses focus on subjects often considered challenging, namely mathematics and science. Through interactive teaching approaches, students are not only exposed to fundamental concepts but also encouraged to think critically, solve problems, and explore new ideas (R. Hashim & Z. Yusof [11]). The courses are designed to be enjoyable and engaging, making them suitable for both primary and secondary school students, while at the same time changing the perception that mathematics and science are difficult subjects. This study was conducted to evaluate the level of satisfaction and effectiveness of the School Holiday Program at Kolej Komuniti Ledang. Specifically, the study focuses on two main objectives:

- i) To evaluate participants' level of satisfaction with the implementation of the school holiday program.
- ii) To identify the effectiveness of the program in terms of improving students' knowledge, skills, and confidence before and after attending the courses.

This study is significant as it provides empirical evidence of the effectiveness of non-formal learning models implemented by community colleges. More importantly, the findings can serve as a guide for educational management in designing more effective academic interventions, particularly during school holidays. As argued by J. Hattie [12], the effectiveness of educational programs can be measured not only through academic achievement but also by students' increased motivation, self-confidence, and mastery of skills. Therefore, a systematic evaluation of this program is expected to make a meaningful contribution to educational literature while supporting the national LLL agenda.

2. LITERATURE REVIEW

Lifelong Learning (LLL) has become a global agenda in developing a knowledgeable society. UNESCO emphasizes LLL as a strategy to address technological changes and globalization [1]. In Malaysia, LLL is strengthened through the Malaysia Education Blueprint (Higher Education) 2015–2025, with community colleges serving as key hubs for short courses and educational interventions for the community [2], [3]. In the school context, long holiday programs are often associated with the phenomenon of learning loss. H. Cooper [4] found that students could lose up to one month of academic achievement, particularly in Mathematics. This justifies the need for academic interventions such as holiday programs. A local study by M. Ali [7] showed that students who participated in holiday learning recorded a 30% improvement in performance. This finding aligns with the work of J. Kim [8] in the United States, who evaluated the effectiveness of summer school in enhancing literacy and numeracy.

Beyond academic achievement, holiday programs also have a positive impact on students' character development. A. Rahman [9] emphasized that community-based interventions improve discipline, motivation, and confidence. Similarly, R. Hashim and Z. Yusof [10] found that participation in extracurricular activities fosters soft skills such as communication and leadership. Thus, the effectiveness of such programs should not only be measured through academic performance but also through the holistic development of students. Mathematics and Science are often perceived as challenging subjects, particularly for students with weak foundational skills. Interactive and student-centered approaches are key in enhancing interest and understanding. The study by N. Ismail and H. Hassan [11] revealed that STEM modules based on practical activities increase student engagement. Globally, S. Freeman et al. [13] reported that active learning methods can improve academic performance by 6% compared to traditional lecture-based methods. While these studies provide evidence of the benefits of holiday programs, most were limited to either cognitive outcomes or specific subject areas. Few studies integrated satisfaction, effectiveness, and confidence

simultaneously, particularly within the community college context. This gap highlights the need for a holistic evaluation framework that goes beyond test scores to include affective and motivational factors.

From the perspective of satisfaction, J. Smith and P. Johnson [14] highlighted the importance of factors such as clarity of delivery, facilitator competency, venue suitability, and program duration. A. Ahmad [15] added that successful intervention programs are those that integrate content with student-friendly approaches. This is further supported by V. Tinto [6], who emphasized student engagement as a key determinant of satisfaction and academic achievement. Program effectiveness is commonly measured through changes in students' knowledge, skills, and confidence levels before and after the program. In this regard, higher post-test scores reflect the effectiveness of both the content and teaching methods. A. Rahman [9] demonstrated that community interventions enhance learning effectiveness and self-confidence. Although numerous studies have emphasized the importance of holiday programs, research gaps remain within the context of community colleges. Most previous studies have focused on schools and universities [5], [6], [10]. A. Ahmad [15] stressed the need to adapt assessment instruments to local contexts. Therefore, this study addresses the gap by evaluating the effectiveness of holiday programs at Kolej Komuniti Ledang through a systematic approach.

2.1 Conceptual Framework

Based on the reviewed literature, this study proposes a conceptual framework to explain the relationship between the school holiday program and its impact on students' academic development. The framework is built on prior studies that highlight satisfaction as a precursor to program effectiveness [14], which subsequently enhances confidence [9] and strengthens academic skills [7], [13].

As illustrated in Figure 1, the school holiday program (independent variable) is expected to influence participants' satisfaction, which in turn improves the perceived effectiveness of the course. Higher effectiveness leads to increased confidence among students, and ultimately contributes to the enhancement of academic skills, particularly in Mathematics and Science.

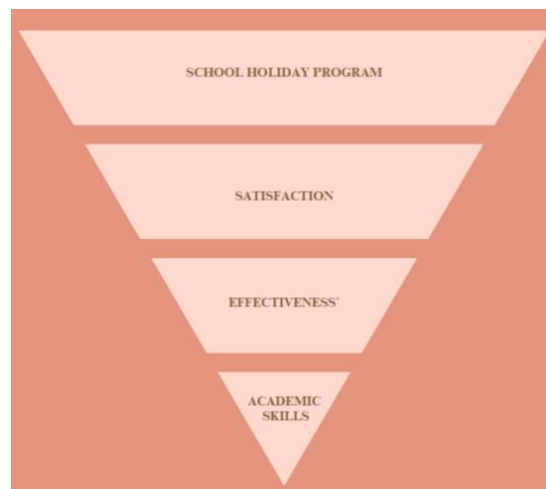


Figure 1. Conceptual Framework of the Study

This framework guided the research design and data analysis, where both satisfaction and program effectiveness were measured through participants' evaluation of implementation, learning outcomes, and confidence levels. This framework also aligns with Kirkpatrick's Four-Level Training Evaluation Model [20], where satisfaction represents "Reaction," knowledge and skills represent "Learning," confidence reflects "Behavior," and improved academic skills or career interest reflect "Results."

3. METHODOLOGY

This study employed a quantitative survey design, deemed suitable for obtaining direct feedback from participants in evaluating both satisfaction and program effectiveness. A pre- and post-test approach was applied to compare students' knowledge, skills, and confidence levels before and after completing the courses. The primary instrument

was a structured course evaluation questionnaire, divided into two sections. Section A focused on program implementation, covering items such as clarity of delivery, teaching methods, venue suitability, and course duration. Section B assessed program effectiveness, including students' knowledge, skills, self-confidence, and the perceived impact on career interests and entrepreneurial motivation. The instrument adopted a 4-point Likert scale (1 = Poor to 4 = Excellent).

Instrument validity was ensured through expert review under the Lifelong Learning Unit, Jabatan Pendidikan Politeknik dan Kolej Komuniti (JPPKK), which confirmed the appropriateness and comprehensibility of the items. Reliability was tested through a pilot study, producing a Cronbach's Alpha value of 0.845, indicating good internal consistency and confirming the suitability of the questionnaire for measuring the intended constructs. A total of 189 primary and secondary school students from Tangkak and Muar, Johor, participated in the study. Participants were selected through purposive sampling, specifically those who registered and attended the holiday courses. The courses offered included Syoknya Sains, Bijak Algebra, Mathematics Preparation for Form 1, and Bijak Pecahan. Data were analyzed using the Statistical Package for Social Sciences (SPSS) Version 30. Descriptive statistics such as mean, standard deviation, and percentage were used to evaluate participants' satisfaction, while a paired t-test was conducted to compare pre- and post-test scores. This approach enabled the researchers to determine the extent of improvement in students' knowledge, skills, and confidence following the program.

4. RESULTS

A total of 189 primary and secondary school students participated in the holiday program. Table 1 presents the distribution of respondents according to gender, age, ethnicity, and religion.

Table 1. Respondents' Demographics by Number and Percentage

| Demographics | Demographic data | Number (<i>n</i>) | Percentage (%) |
|--------------|------------------|---------------------|----------------|
| Gender | Male | 96 | 50.8 |
| | Female | 93 | 49.2 |
| | Total | 189 | 100.0 |
| Age | 7–12 years | 145 | 76.7 |
| | 13–15 years | 44 | 23.3 |
| | Total | 189 | 100.0 |
| Ethnicity | Malay | 188 | 99.5 |
| | Indian | 1 | 0.5 |
| | Chinese | 0 | 0.0 |
| | Lain-lain | 0 | 0.0 |
| | Total | 189 | 100.0 |

Based on Table 1, the respondents were almost evenly distributed by gender, with 50.8% male and 49.2% female. In terms of age, the majority were primary school students (7–12 years) at 76.7%, while lower secondary students (13–15 years) accounted for 23.3%. Ethnically and religiously, nearly all respondents were Malay and Muslim (99.5%), with only one Indian Hindu student (0.5%)

Table 2. Course Implementation Data

| Statement | Mean | Standard Deviation |
|--|-------------|--------------------|
| Content delivery achieved the objectives | 3.66 | 0.48 |
| Interesting delivery method | 3.60 | 0.49 |
| Course content was well-organized | 3.63 | 0.48 |
| Course venue was appropriate | 3.59 | 0.49 |
| Delivery was clear and understandable | 3.54 | 0.50 |
| Course duration and time were sufficient | 3.33 | 0.50 |
| Overall Mean | 3.56 | |

Descriptive analysis of six items evaluating course implementation revealed mean scores ranging between 3.33 and 3.66, with standard deviations around 0.48 to 0.50. The overall mean score was 3.56, indicating a moderately high level. The highest-rated item was “content delivery meeting course objectives” ($M = 3.66$), followed by “well-structured course content” ($M = 3.63$). Other positively rated aspects included “engaging delivery methods” ($M = 3.60$) and “suitability of course venue” ($M = 3.59$). However, “clarity and comprehensibility of delivery” received a moderate score ($M = 3.54$), while “course duration and time allocation” recorded the lowest mean ($M = 3.33$).

The 0.33 gap between the highest and lowest means reflects a moderate disparity, suggesting that while course content was clearly structured, time remained a perceived constraint. This finding aligns with N. Ismail and H. Hassan [11], who highlighted time limitation as a key challenge in implementing short-term community programs. Nevertheless, the strong ratings in delivery and course organization indicate the success of interactive teaching strategies in sustaining student interest, consistent with S. Freeman et al. [13], who emphasized the effectiveness of active learning compared to traditional teacher-centered methods. Overall, the moderately high average score suggests that participants were satisfied with course implementation. The implication is that organizers may need to improve time management or introduce follow-up modules to ensure deeper content mastery.

Table 3. Comparison of Pre- and Post-Course Mean Scores for Course Effectiveness

| Statement | Mean Difference | SD | t | df | Sig. (2-tailed) |
|--|-----------------|-------|--------|-----|-----------------|
| Knowledge in the course subject | 1.413 | 0.043 | 32.826 | 188 | <0.001 |
| Skills in the course subject | 1.381 | 0.043 | 31.904 | 188 | <0.001 |
| Confidence in applying acquired knowledge & skills | 1.418 | 0.042 | 33.417 | 188 | <0.001 |
| Helps improve career prospects | 1.344 | 0.040 | 33.659 | 188 | <0.001 |
| Helps start a business | 1.021 | 0.034 | 29.732 | 188 | <0.001 |
| Helps expand a business | 0.989 | 0.034 | 28.786 | 188 | <0.001 |

Paired-sample analysis revealed that post-course mean scores were significantly higher than pre-course scores in both knowledge and skills. Knowledge increased by a mean difference of 1.413 (60.6%), while skills improved by 1.326 (59.6%). The paired t-test for knowledge produced a significant result ($p = 0.000 < 0.050$), $t(188) = 32.826$, confirming a significant difference between pre- and post-course knowledge levels. Similarly, skills showed a significant improvement ($p = 0.000 < 0.050$), $t(188) = 33.642$, verifying that the program had a substantial impact on skill development.

Overall, these findings demonstrate that the courses had a positive and significant effect on enhancing participants' knowledge and skills. This outcome is consistent with N. Khairunnisa [17], who highlighted the importance of clear and interactive delivery methods in strengthening academic concept mastery. S. Z. M. Alias [18] also affirmed that program effectiveness depends not only on content but also on time allocation, teaching approaches, and student engagement. Moreover, these results support D. L. Kirkpatrick and J. D. Kirkpatrick's [20] training evaluation model, which underscores knowledge and skill improvements as the foundation for behavioral change and long-term learning outcomes.

5. DISCUSSION

The findings of this study provide a clear indication that the School Holiday Program organized by Kolej Komuniti Ledang successfully achieved its primary objectives in enhancing students' knowledge, skills, confidence, and interest in academic fields, particularly mathematics and science. Overall, the participants' satisfaction level was at a

moderately high level, while the comparison of pre- and post-test mean scores showed consistent improvement across all dimensions of course effectiveness. This confirms that a structured and focused approach during school holidays can have a positive impact on students' academic performance, aligning with M. Ali [7], who reported up to a 30% improvement in academic achievement as a result of school holiday intervention programs. From the perspective of Kirkpatrick's Four-Level Model [20], this reflects the Reaction (satisfaction with program delivery) and Learning (knowledge and skills gained) levels.

The implementation of the courses was positively evaluated by participants, particularly in terms of content management, delivery, and suitability of the program location. Participants stated that the objectives of the course were achieved and that the content was well-structured, easy to understand, and relevant to their level of learning. This shows that the teaching strategies used were able to meet the needs of both primary and secondary school students. These findings are consistent with N. Khairunnisa [17], who emphasized that the success of a course depends on clarity of delivery, logical sequencing of content, and the facilitator's ability to engage students. This is also consistent with Active Learning Theory [13], which asserts that student-centered and interactive methods produce stronger learning outcomes than traditional, lecture-based instruction. However, several aspects require attention. Participants indicated that the course duration was insufficient to fully master the entire content. Furthermore, although the delivery was considered engaging, some information was still perceived as difficult to comprehend. This finding aligns with S. Z. M. Alias [18], who stressed that the effectiveness of training is not solely determined by content but also by duration, delivery methods, and the level of interaction between facilitators and participants. Therefore, improvements in time allocation and the adoption of more interactive pedagogical strategies should be considered for future implementations.

The analysis of pre- and post-test mean scores demonstrated significant improvement in knowledge, skills, and confidence dimensions. This confirms the effectiveness of the activity-based and student-friendly learning strategies employed in the courses. The increase in knowledge shows that the courses were able to provide a solid foundation in mathematics and science concepts, consistent with M. Honey [22], who emphasized the importance of integrated STEM approaches in building fundamental conceptual mastery. In addition, participants' confidence also increased significantly, reflecting the positive impact of the program on students' affective development. This can be explained through self-efficacy theory, where short-term courses during school holidays function not only as cognitive reinforcement but also as a platform for building motivation, confidence, and a positive attitude toward learning. The improvement in skills was also evident, particularly in students' ability to apply concepts in problem-solving situations. This aligns with A. Rahman [9], who asserted that hands-on teaching improves students' understanding and skills in real-world applications. Within Kirkpatrick's model, these gains reflect both the Learning and Behavior levels, where acquired knowledge and skills begin to influence confidence and actions.

Beyond academics, the courses also had a positive impact on career prospects and entrepreneurship. Participants reported increased confidence in exploring future career opportunities and demonstrated greater interest in entrepreneurship. This finding is consistent with R. A. Noe [21], who highlighted that structured training can enhance employability, competitiveness, and readiness for the job market. In this context, school holiday programs not only build academic competence but also support the national education agenda in developing balanced human capital capable of competing globally. J. Osborne [23] similarly emphasized that early exposure to science and mathematics can influence students' attitudes, interests, and career aspirations. Thus, this program can be regarded as an important early intervention to foster interest in STEM fields and enhance students' opportunities to pursue related careers. At the Results level of Kirkpatrick's model, this demonstrates long-term impacts that extend to career aspirations and entrepreneurial readiness.

The implications of this study are significant for policymakers and educational institutions. First, it demonstrates that informal learning approaches during school holidays can serve as effective support mechanisms for improving academic achievement. Second, it proves that interactive and student-friendly strategies not only enhance knowledge but also contribute to motivation and personal development, in line with the Lifelong Learning Framework of UNESCO [1], which promotes continuous education beyond formal schooling. Third, this program supports the Malaysia Education Blueprint 2015–2025 [2], in which community colleges play a role as training hubs to empower local communities. Nevertheless, this study has certain limitations. First, the sample only involved students from the Tangkak and Muar districts; hence, the generalization of findings to a wider population should be made cautiously. Second, the study instruments were limited to student questionnaires without triangulation from parents or teachers, who might have provided a more holistic perspective. Third, the study did not evaluate the long-term effectiveness

after the program, making it difficult to determine whether the positive effects could be sustained over a longer period. Therefore, future research should involve larger samples, mixed methods, and long-term evaluation.

6. CONCLUSION

This study examined the effectiveness of the School Holiday Program organized by Kolej Komuniti Ledang in enhancing the knowledge, skills, and confidence of primary and secondary school students in mathematics and science. Overall, the findings demonstrate that the program successfully achieved its main objective of providing additional academic exposure during school breaks through an engaging, interactive, and student-friendly approach. From the implementation perspective, participants rated the courses at a moderately high level of satisfaction. The highest scores were attributed to the clarity of objectives, well-structured content, and interesting delivery methods, reflecting the effectiveness of the planning and pedagogical strategies employed. Nevertheless, minor weaknesses were identified, particularly time constraints and limited clarity of certain information for some participants. These limitations suggest that the program's effectiveness could be further improved with longer duration and more diversified delivery methods.

The pre- and post-program analyses revealed significant improvements across all dimensions of effectiveness—knowledge, skills, and confidence, as well as career and entrepreneurial prospects. These improvements indicate that the holiday program can serve as an effective educational intervention mechanism in addressing students' fundamental weaknesses. In line with Kirkpatrick's Four-Level Training Evaluation Model, the program addressed Reaction (satisfaction with program delivery), Learning (knowledge and skills gained), and Behavior (confidence and application in problem-solving). At the Results level, the program demonstrated potential to influence students' long-term academic interest, career aspirations, and entrepreneurial readiness. From a theoretical perspective, the findings also align with constructivist learning theory, which emphasizes active engagement and contextual application in building knowledge, as well as Self-Efficacy Theory, which explains how small but meaningful academic achievements can strengthen confidence and motivation. This reinforces the importance of interactive and student-centered learning approaches during holiday interventions.

This study also contributes to the educational policy implications. It confirms that informal learning approaches implemented through school holiday programs can be integrated as part of academic support strategies for school students. Such initiatives support the Lifelong Learning (LLL) agenda and the aspirations of the Malaysia Education Blueprint (Higher Education) 2015–2025, which emphasize the development of competitive and resilient human capital. Community colleges, in particular, play an essential role as community training hubs that not only serve adult learners but also contribute to the academic development of school students in local areas. However, this study has certain limitations. First, it was only conducted in the districts of Tangkak and Muar, limiting the generalizability of findings to a wider population. Second, the data collected were based on self-reported questionnaires, which may involve subjective bias in participants' evaluations. Third, the study did not assess the long-term effects after the program ended, making it unclear whether the improvements in students' knowledge and confidence can be sustained over time. Based on these limitations, future research is recommended to involve larger samples from diverse districts and demographic backgrounds, while adopting mixed-methods approaches (quantitative and qualitative) to obtain more comprehensive data. Longitudinal studies should also be conducted to evaluate the long-term effectiveness of the program on students' academic performance, motivation, and career aspirations. Furthermore, policymakers and practitioners are encouraged to consider extending program duration, integrating more interactive pedagogical methods, and designing follow-up modules to ensure sustained impact.

In conclusion, this study affirms that the Kolej Komuniti Ledang School Holiday Program successfully achieved its objectives in enhancing students' knowledge, skills, confidence, and prospects. Programs of this nature not only provide academic benefits but also contribute to the development of character, motivation, and student employability. Therefore, this initiative should be continued, expanded, and strengthened as a strategic effort to empower students and support the national education agenda towards producing holistic, competitive, and innovation-driven human capital.

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