

Strengthening School Sustainability Education Through a 3R-Based Community Service Programme: A Case Study at SK Permas Jaya 4, Johor

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ABSTRACT

This revised article discusses the implementation of a school sustainability-oriented community service programme at SK Permas Jaya 4, Johor, carried out through collaboration between the school community and the Electrical Student Technology Club (ESTECH), Universiti Teknologi MARA Johor Branch, Pasir Gudang Campus. The programme focused on sustainability education based on the 3R concept, namely Reduce, Reuse and Recycle, through gotong-royong, educational mural painting, tyre painting, wall enhancement and the improvement of environmental information corners around the school. This paper adopts a descriptive case study approach based on programme documents, activity schedules, evaluation notes, financial records and photographic evidence. In response to the need for stronger methodological and analytical clarity, the article distinguishes between documented programme outputs and unmeasured learning or behavioural outcomes. It also proposes a mixed-method impact evaluation framework comprising pre- and post-programme surveys, observation checklists, reflective journals and short interviews with pupils, teachers, university students and community representatives. The discussion suggests that action-based and experiential learning activities have potential to strengthen environmental awareness, cooperation, social responsibility, student leadership and university-school-community relationships. However, future implementation should include direct participant feedback and systematic outcome measurement to provide stronger evidence of programme effectiveness and alignment with the Sustainable Development Goals.

Keywords: sustainability education; community service; 3R; gotong-royong; sustainable school; service-learning; Sustainable Development Goals.

INTRODUCTION

Sustainability education is an important approach in shaping school communities that understand the relationship between daily behaviour, environmental quality and social responsibility towards the wider community. UNESCO emphasises that Education for Sustainable Development (ESD) should mobilise knowledge, skills, values and action so that education can contribute to a more just, inclusive and sustainable society [1].

In the primary school context, sustainability learning becomes more meaningful when pupils, teachers, parents, university students and the local community are directly involved in activities whose effects can be seen, touched and evaluated. This approach is consistent with SDG 4 on quality education, SDG 11 on sustainable

communities, SDG 12 on responsible consumption and production, and SDG 17 on partnerships for the goals [2].

The Community Service Programme at SK Permas Jaya 4 was implemented as a school sustainability initiative that combined volunteer work, experiential learning and improvements to the school's physical environment. The programme was driven by the 3R concept, which encourages waste reduction, the reuse of suitable materials and the cultivation of recycling practices within the school community [3].

The need for such programmes is also linked to Malaysia's sustainable school agenda, which emphasises environmental education, awareness and practice in learning environments. The Sustainable School - Environmental Award Programme, for example, highlights education and awareness as green strategies that support sustainable development and the SDGs [4].

Based on the programme report, the main activities included station-based gotong-royong, school beautification work, mural painting, tyre painting, wall painting, briefing sessions, appreciation activities and group photography. These activities not only improved the learning environment but also provided university students with opportunities to practise leadership, communication, teamwork and sensitivity towards community needs.

Therefore, this article has three objectives: to describe the implementation of the 3R-based community service programme, to analyse its potential contribution to sustainability education and service-learning, and to propose an evaluation framework that can be used to measure participant learning outcomes, behavioural intentions and programme effectiveness in future implementation.

LITERATURE REVIEW

Sustainability Education and Schools

Sustainability education in schools should move beyond information delivery towards the formation of behaviour and daily practices. The Malaysia Education Blueprint 2013-2025 emphasises holistic student development across intellectual, spiritual, emotional and physical dimensions; therefore, co-curricular and community activities can support character formation and social skills among pupils [5].

In environmental education, schools serve as early spaces for developing ecological literacy, sensitivity towards environmental cleanliness and more responsible waste management practices. Studies on 3R practices in early childhood and primary education show that early exposure helps pupils understand waste reduction, material reuse and recycling in a more practical manner [8], [10].

The 3R approach is particularly suitable for physical activities such as material sorting, the reuse of old tyres as landscape elements and the rehabilitation of learning spaces. SWCorp Malaysia also implements 3R cultivation programmes to increase awareness and emphasise the importance of recycling among primary and secondary school pupils [3].

Community Service, Service-Learning and the Community

Community service in higher education can function as service-learning when community activities are integrated with learning objectives, reflection and student competency development. Aramburuzabala and Cerrillo explain that service-learning is an appropriate approach for education for sustainable development because it connects academic learning with real community needs [6].

A Malaysian study on recycling literacy through service-learning found that university students' involvement with school pupils can make waste management learning more interactive, enjoyable and easier to understand. The study involved a primary school programme with recycling literacy and upcycling activities, thereby supporting the suitability of the university-school-community model for environmental education [7].

In the context of the programme at SK Permas Jaya 4, the involvement of university students, lecturers, staff, teachers and the school community formed a shared learning ecosystem. This collaborative model is important because sustainability issues cannot be solved by one party alone; instead, they require shared roles, communication and continuous responsibility.

3R Programmes and Changes in Knowledge, Attitudes and Practices

Research on 3R awareness programmes among primary school pupils shows that educational interventions can improve knowledge, attitudes and practices related to 3R when activities are systematically planned and adapted to the pupils' level [8]. This finding suggests that campaigns, demonstrations, educational games and practical tasks should be combined so that behavioural change can occur more effectively.

From a research perspective, 3R and sustainability programmes should not only report completed activities but should also examine whether participants experience measurable changes in knowledge, attitudes, practices and sense of responsibility. Quantitative instruments such as pre- and post-programme questionnaires can provide evidence of change, while qualitative methods such as interviews, reflective journals and open-ended feedback can explain how participants interpret the programme experience.

The programme at SK Permas Jaya 4 was strong in terms of direct learning because participants worked in teams to enhance the school environment. However, to strengthen its value as a journal-based study, future programmes should include pre- and post-programme evaluation instruments to measure changes in knowledge, attitudes, practices, participant satisfaction and communication effectiveness.

METHODOLOGY

This article uses a descriptive case study approach because the main material analysed was the programme report prepared after the activity was implemented. A case study approach is suitable for describing the context, process, challenges and improvement suggestions of a community programme in detail without making generalisations beyond the available documentary evidence.

The data sources consisted of programme background information, the schedule, evaluation notes, activity achievements, implementation issues, improvement suggestions, financial records and photographic appendices. Attendance lists containing individual names and staff or student identification numbers were excluded to protect participant privacy and to make the document more suitable for academic publication.

The analysis was conducted thematically by grouping the report information into four main themes: 3R-based sustainability education, experiential learning through community service, university-school-community collaboration, and programme management. These themes were then aligned with literature related to ESD, service-learning, sustainable schools and 3R practices.

Methodologically, the present article should be understood as a descriptive and reflective case study rather than a full impact evaluation. The available documents did not include systematic pre- and post-programme test scores, behavioural observations over time or direct interview transcripts from pupils, teachers, university students and community members. Therefore, claims about changes in awareness, attitudes or practices are discussed as potential contributions supported by programme evidence, not as statistically verified behavioural outcomes.

To address this limitation, the revised analysis includes a proposed evaluation framework for future programme cycles. The framework combines quantitative and qualitative evidence so that future researchers can measure changes in participant knowledge, attitude, practice intention, satisfaction, teamwork and perceived environmental responsibility more systematically.

TABLE I: Summary of Programme Profile

Item	Programme Information
Programme name	Community Service Programme with a school sustainability focus.
Location	SK Permas Jaya 4, Johor.
Date and time	Saturday, 9 May 2026; the main activities began at approximately 8.00 a.m. and ended with the closing session at 1.00 p.m.
Organiser/collaborator	Electrical Student Technology Club (ESTECH), Universiti Teknologi MARA Johor Branch, Pasir Gudang Campus, together with the school community.
Participants	A total of 34 university students were recorded as directly involved, with support from lecturers, staff and the school community; individual names are not listed.
Main activities	Station-based gotong-royong, mural painting, tyre painting, wall painting, school beautification and appreciation sessions.
Logistical resources	Bus transport, student activity funds for food, catering services and painting equipment provided together with the relevant parties.
Recorded cost	Food: 39 units x RM3.00 = RM117.00.

Programme Implementation

The programme began with registration and breakfast to ensure that participants were present, prepared and familiar with the basic arrangement of activities. This early session was important because it created space for communication among the school, university students, lecturers and staff before the physical tasks began.

The programme continued with a welcoming speech by the Head Teacher and a brief explanation of the gotong-royong activities. The initial briefing functioned as a coordination mechanism for safety, task allocation and understanding of objectives so that painting, mural work and school upgrading tasks could be carried out in a more organised manner.

The gotong-royong activities were implemented by station so that participants could focus on specific tasks such as painting tyres, painting walls, drawing murals and beautifying school environment corners. Station-based task allocation helped accelerate fieldwork, reduce task overlap and build small-group leadership among participants.

After the main activities, the programme continued with lunch, appreciation-gift presentation, photography and dismissal. Appreciation elements are important in community programmes because they recognise the contributions of the school, participants and organisers while strengthening long-term relationships for future collaboration.

TABLE II: Programme Implementation Schedule

Time	Activity
7.30-8.00 a.m.	Participant registration and breakfast.
8.30 a.m.	Welcoming speech by the Head Teacher and brief activity briefing.
8.45 a.m.	Station-based gotong-royong activities.
12.00 noon	Lunch.
1.00 p.m.	Appreciation-gift presentation, photography session and dismissal.

FINDINGS AND DISCUSSION

Strengthening 3R Literacy Through Physical Activities

Documentary evidence indicates that the programme translated the 3R concept from an abstract idea into visual and physical practices within the school compound. The reuse of tyres as beautification elements, school area painting and educational murals helped bring sustainability messages closer to pupils' lived experiences.

Physical activities such as painting and beautifying school areas also enabled pupils to see that less attractive materials or spaces can be given new value through creativity, teamwork and care. From an educational perspective, this process supports experiential learning because participants did not merely receive information but carried out actions with visible effects on the environment.

Although the report did not provide pre- and post-programme data, the documented activities suggest the potential for increased awareness through direct participation. This potential should be interpreted carefully because participant learning outcomes and behavioural changes were not empirically measured in the available documents. Studies of 3R programmes among primary school pupils emphasise that awareness programmes should include knowledge, attitude and practice elements so that behavioural change can be built and evaluated more consistently [8], [9].

Experiential Learning and Volunteer Values

The programme provided university students with opportunities to apply volunteer values in real situations, particularly when they had to manage time, collaborate with the school community and complete field tasks. Within a service-learning framework, such experiences can enhance civic responsibility, interpersonal skills, leadership and understanding of community issues [6], [11].

The values of cooperation, responsibility, leadership and caring attitudes recorded in the report represent important social outcomes, particularly for a student club that aims to build a service-based leadership culture. These values are also consistent with the need for higher education to produce graduates who are not only academically competent but also sensitive to community development.

For school pupils, the presence of university students as volunteers can serve as a positive example of youth involvement in environmental and community issues. This cross-institutional relationship helps build educational aspiration because pupils can see the role of universities in supporting local community life.

University, School and Community Collaboration

The collaboration between ESTECH, Universiti Teknologi MARA Johor Branch, Pasir Gudang Campus and SK Permas Jaya 4 demonstrates the importance of resource sharing in implementing school sustainability programmes. The school provided the space, context and activity needs, while the university contributed volunteer energy, programme coordination, logistical support and documentation.

This collaboration can be mapped to SDG 17 because sustainability requires partnerships among educational institutions, communities and stakeholders. At the same time, school beautification activities support SDG 11 through a cleaner, safer and more inclusive community environment, while 3R education supports SDG 12 through more responsible resource-use practices [2].

TABLE III: Mapping of the Programme to the Sustainable Development Goals

SDG	Relationship with the Programme
SDG 4: Quality Education	The programme supports sustainability learning through experiential activities and school community involvement.
SDG 11: Sustainable Cities and Communities	Beautification and gotong-royong activities helped make the school environment more conducive, clean and community-friendly.
SDG 12: Responsible Consumption and Production	The 3R concept was translated through recycling messages, material reuse and waste reduction.
SDG 17: Partnerships for the Goals	University, school and community collaboration showed the importance of multi-stakeholder cooperation in sustainability programmes.

Evidence Boundary and Participant Perspectives

The documentary evidence supports an analysis of programme process, activity outputs and collaboration patterns, such as the completion of painting activities, reuse-oriented beautification work, appreciation sessions and university-school participation. However, this evidence does not by itself confirm the degree to which pupils, teachers, volunteers or community members changed their knowledge, attitudes or daily 3R practices after the programme.

Participant perspectives are therefore important for strengthening future analysis. Short feedback forms, group interviews, teacher reflections and student volunteer journals would allow future studies to report how participants understood the 3R message, which activities were most meaningful, what challenges were experienced and what improvements were needed. Including these perspectives would make the programme evaluation more balanced, evidence-based and useful for replication in other schools.

RECOMMENDATIONS AND IMPACT EVALUATION FRAMEWORK

Future implementations should strengthen the programme design by combining practical sustainability activities with structured impact evaluation. The main improvement is to introduce pre- and post-programme instruments that can measure changes in participants' 3R knowledge, environmental attitudes, intended practices and satisfaction with the activities.

TABLE IV: Proposed Mixed-Method Evaluation Framework

Evaluation focus	Proposed evidence
Knowledge, attitude and practice	Pre- and post-programme 3R survey for pupils and university students.
Participant perspectives	Short feedback forms or interviews with pupils, teachers, volunteers and community representatives.
Volunteer learning	Reflective journals on leadership, teamwork, communication and civic responsibility.
Implementation quality	Observation checklist on activity completion, cooperation, safety and use of reused materials.
Sustainability follow-up	Later school review of murals, information corners and continuing recycling or reuse practices.

The use of both quantitative and qualitative methods would allow future reports to move beyond descriptive documentation. Survey data can show the direction of change, while interviews, feedback forms and reflective journals can explain participants' experiences in their own words. This would directly address the need for participant perspectives and provide richer evidence of programme effectiveness.

Future programmes should also implement a clearer documentation procedure. Organisers may prepare consent-aware feedback forms, anonymised observation notes, photo logs, activity rubrics and SDG mapping forms. These records would help distinguish between activity outputs, such as painted tyres and murals, and educational outcomes, such as improved understanding of Reduce, Reuse and Recycle practices.

Several operational aspects may also be improved. These include preparing a more detailed activity schedule, explaining work scopes before the programme day, confirming group allocation earlier and communicating a suitable dress code for painting, outdoor movement and physical tasks. Such improvements would support participant readiness, safety and smoother coordination.

By adopting these evaluation and management improvements, future 3R-based community service programmes can become more systematic, measurable and replicable while maintaining the strengths of experiential learning, collaboration and school-community engagement.

VISUAL APPENDIX OF ACTIVITIES



Fig. 1. Programme participants with the school community at SK Permas Jaya 4.



Fig. 2. Breakfast session and early preparation of participants.



Fig. 3. Speech and briefing by representatives of SK Permas Jaya 4.



Fig. 4. Speech by the programme advisor representative before the activities began.



Fig. 5. Tyre painting activity as an element of material reuse.



Fig. 6. Wall painting activity around the school environment.



Fig. 7. Mural activity as a medium for delivering educational messages.



Fig. 8. Beautification work on school walls and outdoor areas.



Fig. 9. Receipt of a certificate of appreciation from the school.



Fig. 10. Presentation of an appreciation gift as a symbol of collaboration.



Fig. 11. Closing group photography session after the community service activity.

CONCLUSION

The Community Service Programme at SK Permas Jaya 4 demonstrates that sustainability education can be strengthened through practical, visual and participatory community activities. The implementation of gotong-royong, mural painting, tyre painting and school area enhancement shows that the 3R concept can be translated into learning experiences that are close to pupils' and the community's daily lives.

From the perspective of higher education, the programme provided a service-learning space that supported student leadership, communication, cooperation and social responsibility. From the school perspective, the programme contributed to a more cheerful learning environment and strengthened relationships with external institutions. These strengths show the value of university-school-community collaboration in sustainability education.

At the same time, the revised analysis recognises that the available evidence is mainly descriptive. The absence of systematic pre- and post-programme assessment and direct participant feedback limits the extent to which the article can claim verified changes in environmental awareness, attitudes or behaviour. Therefore, future studies should include surveys, interviews, reflective journals, observation checklists and follow-up reviews to measure programme outcomes more systematically.

With these improvements, 3R-based community service programmes have the potential to become a stronger good-practice model for school sustainability education and community collaboration in Malaysia. Such programmes should continue to maintain action-based engagement while also strengthening empirical evidence, participant voices and measurable alignment with the Sustainable Development Goals.

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