Enhancing Teachers' Understanding of Classroom Action Research Through A School University Partnership: A One-Group Pretest–Posttest Study at SMP Islam At-Taubah, East Jakarta

R. Madhakomala[1]*, Eliana Sari[2], Satri Dwi Kurnia Nasution[3], Fawzul Arifin[4], Sisca Cletus Lamatokan[5], S. Nudia Mastur[6], Uu Abdullah[7]

[1,2,4,6,7]Department of Educational Management, Faculty of Education, Universitas Negeri Jakarta, Indonesia
[3]Department of Educational Management, Faculty of Education, Business, and Social Sciences, Universitas Sunan Gresik, East Java, Indonesia
[5]Early Childhood Education (PAUD), Graduate Studies, Universitas Panca Sakti Bekasi, Wes Java, Indonesia
*e-mail: madhakomala@unj.ac.id[1], Eliana.sari@unj.ac.id[2], satri.dwi.kurnia.nasution@lecturer.usg.ac.id[3], fawzul.arifin@unj.ac.id[4], siscatigor2401@gmail.com[5], s.nudiamastur@unj.ac.id[6], abdullah_1119925006@mhs.unj.ac.id[7]

Abstrak

Penelitian pengabdian kepada masyarakat ini bertujuan meningkatkan pemahaman guru dan kemampuan awal dalam menyusun proposal Penelitian Tindakan Kelas (PTK) melalui pelatihan dan pendampingan satu hari oleh tim universitas di SMP Islam At-Taubah, Jakarta Timur. Evaluasi menggunakan desain satu kelompok pretest–posttest. Sebanyak 32 guru jenjang dasar dan menengah pertama mengikuti kegiatan, sedangkan 27 peserta dengan data pretest dan posttest yang lengkap serta dapat dipadankan dianalisis. Pemahaman PTK diukur dengan tes pilihan ganda 16 butir melalui formulir daring. Data dianalisis menggunakan uji t berpasangan, uji Wilcoxon sebagai pemeriksaan ketahanan, Cohen's dz, dan normalized gain. Nilai rata-rata meningkat secara signifikan dari 88,66 menjadi 96,05 pada skala 0–100 ($t(26) = 4,878$; $p < 0,001$), dengan efek besar ($dz = 0,94$) dan normalized gain kategori sedang ($g = 0,65$). Peningkatan terbesar terjadi pada pemahaman urutan siklus PTK, yaitu dari 53,3% menjadi 89,7% jawaban benar. Selain peningkatan pemahaman, kegiatan ini menghasilkan draf awal proposal PTK yang disusun secara berkelompok berdasarkan permasalahan nyata di kelas masing-masing. Pelatihan partisipatif yang dipadukan dengan pendampingan penyusunan proposal memberikan dampak awal kepada mitra berupa meningkatnya pemahaman guru tentang prosedur PTK dan kemampuan mereka dalam merumuskan masalah serta menyusun rancangan awal proposal PTK. Pendampingan lanjutan tetap diperlukan agar pemahaman dan draf proposal tersebut dapat dikembangkan menjadi pelaksanaan PTK yang berkelanjutan.

Kata Kunci: *Gain Ternormalisasi, Kemitraan Sekolah–Universitas, Pengabdian Kepada Masyarakat, Pengembangan Profesional Guru, Penelitian Tindakan Kelas*

Abstract

This community service research project aimed to improve teachers' understanding and initial skills in developing Classroom Action Research (PTK) proposals through a one-day training and mentoring session conducted by a university team at At-Taubah Islamic Junior High School in East Jakarta. The evaluation used a single-group pretest–posttest design. A total of 32 elementary and junior high school teachers participated in the activity, while 27 participants with complete and comparable pretest and posttest data were analyzed. Understanding of CAT was measured using a 16-item multiple-choice test administered via an online form. Data were analyzed using a paired t-test, the Wilcoxon test as a robustness check, Cohen's dz, and normalized gain. The mean score increased significantly from 88.66 to 96.05 on a scale of 0–100 ($t(26) = 4.878$; $p < 0.001$), with a large effect size ($dz = 0.94$) and a moderate normalized gain ($g = 0.65$). The greatest improvement occurred in understanding the sequence of the PTK cycle, specifically from 53.3% to 89.7% correct answers. In addition to improved understanding, this activity resulted in initial drafts of PTK proposals developed in groups based on real-world problems in their respective classrooms. Participatory training combined with guidance on proposal drafting had an initial impact on the partners in the form of increased teacher understanding of the PTK procedures and their ability to formulate problems and draft initial PTK proposals. Continued guidance is still needed to ensure that the teachers' understanding and proposal drafts

Keywords: *Classroom Action Research, Community Engagement, Normalised Gain, School–University Partnership, Teacher Professional Development*

1. INTRODUCTION

Improving the quality of school-based teaching increasingly depends on teachers' ability to inquire systematically into their own practice. Among the inquiry approaches proposed for teachers, Classroom Action Research (CAR) (Syaridawati et al., 2025) internationally known as classroom-based action research or teacher research has become a recognised means of connecting reflective practice with evidence-informed instructional (Ghamrawi et al., 2026; Negi, 2026). Through iterative cycles of planning, acting, observing, and reflecting, CAR enables teachers to move beyond experiential improvement toward practice that is documented, testable, and shareable within professional communities.

Teacher research is also recognised as a form of professional development that positions teachers as producers, rather than merely consumers, of pedagogical knowledge (Abidin et al., 2025; Al-Thani & Ahmad, 2025; Nurhaliza et al., 2026). Effective professional development generally combines content focus, active learning, collaboration, modelling, coaching, feedback, and sustained support (Stavermann, 2025). Within this framework, CAR provides teachers with opportunities to examine classroom problems, implement contextually appropriate interventions, and evaluate their effects. However, the benefits of CAR depend not only on teachers' conceptual understanding but also on their ability to translate classroom problems into feasible research proposals and implementable action plans.

Despite this well-developed rationale, the practical uptake of CAR by teachers in Indonesian schools remains uneven. Although CAR is prescribed within teacher career development policies, many teachers report having little sustained experience of designing and completing a CAR cycle independently. The initial needs identification conducted through coordination and preliminary discussions with SMP Islam At-Taubah indicated that teachers had varying levels of prior exposure to CAR. Some teachers were familiar with its general concepts but still experienced difficulties in identifying researchable classroom problems, formulating focused research questions, arranging systematic proposal components, selecting appropriate data-collection techniques, and determining simple procedures for analysing classroom evidence. The school also had limited access to sustained, practice-oriented mentoring that could guide teachers from identifying classroom problems to preparing workable CAR proposals. These conditions demonstrated that the partner's primary need was not merely additional theoretical information, but structured training and direct assistance in developing initial CAR proposals based on authentic classroom problems.

Community engagement programmes carried out by university faculties represent one avenue for narrowing this gap. When designed as school-embedded interventions rather than one-off lectures, such programmes align with the participatory tradition of action research and can operationalise the design features that identify as central to effective PD (Goodman et al., 2025). A school–university partnership is particularly relevant in this context because it allows university facilitators to provide research expertise while teachers contribute practical knowledge of their classrooms. Accordingly, the training at SMP Islam At-Taubah was designed as a participatory programme in which explanations of CAR concepts were directly followed by group-based proposal-drafting activities and mentoring. This approach was intended to strengthen teachers' understanding while simultaneously developing their initial capacity to prepare CAR proposals.

Evidence concerning the immediate effects of short CAR training programmes in the Indonesian context remains limited, particularly regarding effect sizes and item-level learning patterns. However, the present programme was not intended solely to evaluate changes in test scores. Its principal orientation was to empower teachers by strengthening their understanding of CAR procedures and supporting them in producing initial group-based CAR proposals that could be developed and implemented in their respective classrooms. Therefore, the programme aimed to (a) strengthen teachers' understanding of the principles and stages of CAR; (b) assist teachers in identifying authentic classroom problems and translating them into researchable questions; (c) facilitate the collaborative preparation of initial CAR proposals; and (d) evaluate

changes in teachers' understanding as preliminary evidence of programme effectiveness and as a basis for designing sustained school–university mentoring

2. METHOD

2.1. Research design

A one-group pretest–posttest design was employed to evaluate the immediate effect of the training on teachers' understanding of CAR. This design was selected because the primary purpose of the activity was to strengthen participants' knowledge as a precondition for later school-embedded implementation, not to compare between arms. In addition to measuring changes in teachers' understanding, the programme adopted a participatory empowerment approach that placed teachers as active participants in identifying classroom problems, discussing possible interventions, and collaboratively preparing initial CAR proposals.

2.2. Setting and participants

The training was conducted at SMP Islam At-Taubah, an Islamic private school located on Jalan Pulo Mas No. II, Kayu Putih Sub-district, Pulogadung District, East Jakarta, Indonesia. The school hosts elementary (SD/MI) and junior-secondary (SMP/MTs) levels within a single campus. Participants were invited via an official letter (No. 2524/UN39.5.FIP/TU/2026) to 34 teachers of the two levels; 32 teachers attended the on-site session (21 SD/MI teachers and 11 SMP/MTs teachers). Participants varied in academic degree (27 Bachelor, 3 Master) and years of teaching experience (11 with more than 10 years, 11 with 5–9 years, 8 with less than 5 years), producing a heterogeneous group in terms of prior exposure to research methods. No incentives were offered for participation, and all participants were informed of the evaluation purpose.

2.3. Empowerment stages

The programme was implemented through five interrelated stages: needs identification, delivery of learning materials, collaborative proposal drafting, facilitator feedback, and programme evaluation. First, needs identification was conducted through initial coordination and preliminary discussions with the school. This stage identified teachers' varied experience with CAR and their difficulties in transforming classroom problems into research questions, organising proposal components, selecting data-collection techniques, and planning simple data analysis. The results of this identification were used to determine the content and practical activities included in the programme.

Second, the material-delivery stage introduced the basic concepts, purposes, and characteristics of CAR; the plan–act–observe–reflect cycle; procedures for identifying classroom problems; formulation of research questions; selection of interventions; data-collection techniques; simple data analysis; and preparation of CAR reports. Third, participants were divided into groups according to their educational levels and teaching contexts. Each group identified an authentic classroom problem and collaboratively prepared an initial CAR proposal. The proposal-drafting activity included formulating the problem background, research questions, objectives, proposed classroom intervention, action-cycle procedures, data-collection techniques, and a preliminary data-analysis plan.

Fourth, the facilitators reviewed each group's draft and provided direct oral and written feedback. The feedback focused on the clarity of the classroom problem, consistency among the problem, objectives, and proposed action, feasibility of implementation, suitability of data-collection techniques, and alignment with the CAR cycle. Participants were then given an opportunity to revise their proposals based on the feedback received. Fifth, programme evaluation was conducted through pretest and posttest assessments, observation of participants' engagement, and formative review of the group-based CAR proposal drafts. The test results were used to assess changes in conceptual and procedural understanding, whereas the proposal drafts

were used to examine participants' initial ability to translate the training materials into a practical research plan.

2.4. Intervention

The intervention was delivered on Saturday, 1 August 2026, from 08.00 to 16.00 local time in a single face-to-face session with two mentoring rotations. The training combined structured content delivery with guided small-group work, in line with the participatory learning principle emphasised by Darling-Hammond et al. (2017). Four content blocks were addressed: (a) foundational concepts of CAR and the plan–act–observe–reflect cycle; (b) transforming classroom problems into research questions; (c) proposal drafting including data-collection techniques and simple analysis; and (d) reporting a CAR cycle. Each content block was immediately followed by group-based drafting activities, in which teachers worked in level-based clusters to produce components of a CAR proposal grounded in problems from their own classrooms. The facilitators a professor and a supporting team from FIP UNJ provided individualised feedback during the drafting phase, embodying the coaching-and-feedback feature identified in the PD literature. The mentoring process did not end with the delivery of theoretical material; it was directed toward helping each group produce an initial proposal draft that could serve as the basis for subsequent CAR implementation.

2.5. Instrument

Understanding of CAR was measured using a 16-item multiple-choice test aligned to the four content blocks. The items covered definitions and purposes of CAR, the sequence of CAR cycle stages, formulation of research questions and hypotheses, selection of data-collection techniques, and interpretation of results. During post-hoc review, one item was identified as lacking an unambiguous scoring key, which effectively capped the maximum obtainable raw score at 15 out of 16. To ensure comparability, both the pretest and the posttest raw scores were converted to a 0–100 scale using the shared maximum of 15, so that the two administrations were placed on a common metric. The test was delivered through an online form both before and immediately after the training on the same day.

Although the instrument underwent an initial content review, a post-administration examination identified one item whose scoring key could not be interpreted unambiguously. To maintain comparability and avoid assigning potentially inaccurate scores, the item was excluded consistently from both the pretest and posttest calculations. Consequently, participants' raw scores were calculated using 15 valid items and converted to a scale of 0–100. This limitation is reported transparently, and the ambiguous item must be revised and re-examined before the instrument is used in subsequent programmes.

2.6. Data screening and analysis

Thirty-three pretest submissions and 29 posttest submissions were received. After removing duplicated entries and matching participants across the two administrations by full name and email, 27 participants with complete paired responses were retained for analysis. Descriptive statistics were computed for pretest and posttest scores. A paired-samples t-test was used as the primary inferential test to compare pretest and posttest means. Because the sample was moderate in size and score distributions could depart from normality, a Wilcoxon signed-rank test was also computed as a robustness check. Cohen's dz was used to quantify the standardised within-subject effect, following the guidance for within-subject designs provided by (Brydges, 2019). The magnitude of learning gain was further summarised using the normalised gain ⟨g⟩ = (posttest − pretest) / (100 − pretest), interpreted with the conventional thresholds of low (< 0.30), medium (0.30–0.70), and high (> 0.70) proposed. Item-level analysis, expressed as the proportion of correct responses at pretest and posttest for each item, was conducted to identify the CAR sub-topics most and least responsive to the intervention. All computations were performed in standard statistical software; the threshold for statistical significance was set at $\alpha = 0.05$ (two-tailed). The proposal drafts were analysed descriptively based on the formative criteria

presented above. The analysis focused on whether the groups had produced the essential components of a CAR proposal and identified the aspects requiring further mentoring. Because no numerical proposal scores or inter-rater assessment procedures were applied, the proposal review was reported as a programme output and evidence of participants' initial drafting ability, rather than as a statistically tested outcome.

2.7. Ethical considerations

The activity was implemented under a formal community engagement scheme of FIP UNJ, and participants were informed at the outset that the pretest and posttest would be used for programme evaluation and reporting purposes. Participation was voluntary, and analyses were conducted on de-identified aggregated data. No identifying information is reported in this article.

3. RESULTS AND DISCUSSION

3.1. Participant profile

Of the 32 teachers who attended the training, 27 completed both the pretest and the posttest and were included in the paired analysis. The paired sample retained the diversity of the original participant group across levels and years of experience. This heterogeneity is relevant when interpreting the magnitude of gains, because participants entered the training from different baseline levels of research literacy.

During the programme, participants actively engaged in identifying classroom problems, discussing possible interventions, and preparing initial CAR proposals in groups. Their participation indicated that the programme functioned not only as a knowledge assessment activity but also as an initial empowerment process through which teachers practised translating classroom problems into structured research plans.

Figure 1. Participant Profile

3.2. Overall change in understanding

Table 1 summarises pretest and posttest scores and the associated statistical tests. The mean score increased from 88.66 (SD = 7.55) at pretest to 96.05 (SD = 5.71) at posttest on the 0–100 scale, a rise of approximately 7.4 percentage points. The paired-samples t-test indicated that this increase was statistically significant, $t(26) = 4.878$, $p < 0.001$. The Wilcoxon signed-rank test conducted as a distribution-free robustness check yielded the same conclusion. The standardised within-subject effect was large, with Cohen's $dz = 0.94$, and the normalised gain $\langle g \rangle = 0.65$ fell within the medium band. Taken together, these indicators indicate that the training produced a substantial and consistent improvement in participants' declarative understanding of CAR.

Nevertheless, the relatively high pretest mean of 88.66 indicates a ceiling effect. Most participants entered the programme with a strong general understanding of CAR, leaving limited room for improvement on several test items. Consequently, the 7.39-point increase should be interpreted in relation to the high initial score and should not be treated as evidence of mastery of CAR implementation. The findings demonstrate an immediate improvement in teachers'

conceptual and procedural understanding, but they do not establish that teachers were able to implement CAR independently in their classrooms.

Table 1. Descriptive and inferential statistics for the paired pretest and posttest (n = 27).

Statistic	Pretest	Posttest	Change / Effect
Mean (0–100)	88.66	96.05	+7.39
SD	7.55	5.71	—
Paired t (df = 26)	—	—	4.878, p < 0.001
Cohen's dz	—	—	0.94 (large)
Normalised gain ⟨g⟩	—	—	0.65 (medium)

Figure 2. Participants are taking the pre-test

3.3. Item-level pattern

Item-level analysis revealed that the improvement was not uniform across the 16 items. Items with the highest proportions of correct responses at pretest showed limited room for growth (ceiling effect), while items on which participants performed poorly at pretest showed the largest gains after training. The most substantial improvement was observed on the item concerning the correct sequencing of the CAR cycle (planning → acting → observing → reflecting), where the proportion of correct responses rose from 53.3% at pretest to 89.7% at posttest an absolute gain of 36.4 percentage points. This pattern indicates that procedural aspects of CAR, in particular the ordered logic of the cycle, were the primary locus of learning during the training, consistent with the emphasis of the intervention on the plan–act–observe–reflect framework (Zhou et al., 2023).

This finding is important because it identifies a specific procedural area in which the programme provided substantial benefit. Before the training, nearly half of the participants had not correctly identified the sequence of the CAR cycle. Following the explanation, group discussion, and proposal-drafting activities, most participants were able to recognise the correct sequence. The result suggests that combining conceptual explanation with direct drafting practice helped teachers understand the procedural logic of CAR more clearly. However, this improvement remains an indicator of teachers' understanding of the CAR cycle. The programme did not evaluate whether participants subsequently applied all four stages correctly in their classrooms. Therefore, the finding should not be interpreted as evidence of successful classroom implementation.

3.4. Outputs of the teacher empowerment activities

These topics demonstrate that participants were beginning to connect CAR concepts with authentic instructional problems encountered in their classrooms. The proposal-drafting process showed that participants had begun to develop three initial abilities. First, teachers were able to identify classroom conditions that required improvement. Second, they began to formulate these conditions as more focused and researchable problems. Third, they were able to propose preliminary classroom actions and organise them within the planning, action, observation, and reflection cycle.

The quality of the drafts varied among groups. Some groups were able to establish clear links among the problem background, research questions, objectives, and proposed action. Other groups still required assistance in narrowing broad classroom problems, selecting measurable indicators of success, determining appropriate data-collection instruments, and distinguishing ordinary teaching activities from systematic CAR interventions. These findings became the basis for the facilitators' feedback and recommendations for follow-up mentoring. The proposal outputs should be understood as evidence of participants' initial ability to prepare CAR plans rather than evidence of complete research competence. The programme did not assess proposal implementation, the quality of classroom data, the reflection process, or changes in student learning outcomes.

3.5. Benefits for teachers and the partner school

The programme provided two principal benefits to teachers. First, it strengthened their understanding of the procedural stages of CAR, particularly the sequence of planning, action, observation, and reflection. Second, it provided an initial practical experience in transforming classroom problems into structured CAR proposal drafts. These benefits were supported by the combination of material presentation, collaborative discussion, proposal drafting, and direct facilitator feedback.

For SMP Islam At-Taubah, the activity provided an initial foundation for developing a school-based culture of teacher inquiry. The proposal drafts can serve as starting documents for future mentoring, peer discussion, and CAR implementation. The group-based approach also encouraged collaboration among teachers facing similar instructional problems and enabled them to exchange experiences and possible solutions.

These benefits remain preliminary because the programme was conducted in a single day. Strengthening teachers' understanding and producing initial proposals are important early outcomes, but sustained professional empowerment requires continued assistance during proposal revision, classroom implementation, data collection, analysis, and reflection. The school and university therefore need to develop a follow-up mentoring mechanism to ensure that the initial proposal drafts progress into complete CAR cycles.

3.6. Interpretation and limitations of the programme outcomes

The improvement in test scores and the production of proposal drafts indicate that a short, participatory training programme can strengthen teachers' initial understanding and readiness to engage with CAR. The programme was particularly useful when theoretical explanations were immediately followed by collaborative drafting and facilitator feedback. This finding is consistent with the characteristics of effective professional development, particularly active learning, collaboration, coaching, and feedback (Santagata et al., 2026).

Nevertheless, the outcomes must be interpreted cautiously. First, the high pretest score created a ceiling effect and restricted the possible magnitude of score improvement. Second, the one-group pretest–posttest design does not exclude alternative explanations such as test familiarity. Third, the evaluation measured immediate understanding rather than long-term retention or changes in teaching practice. Fourth, the proposal drafts were reviewed formatively and were not assessed using numerical scores or independent raters. Finally, the programme did not evaluate whether teachers implemented the proposals, completed the CAR cycles, improved the quality of instruction, or produced measurable changes in student learning outcomes. Accordingly, the principal claim of this programme should be limited to an improvement in teachers' immediate understanding of CAR and the development of their initial ability to prepare group-based CAR proposals. Claims concerning changes in classroom practice or student outcomes require further evaluation through sustained mentoring and classroom-based follow-up.

3.7. Consistency of the effect

The convergence between the parametric t-test and the non-parametric Wilcoxon test suggests that the observed effect is not driven by outliers or non-normal distributions. Moreover, the medium normalised gain of 0.65, computed against the ceiling implied by the shared maximum, indicates that participants captured close to two-thirds of the improvement potentially available to them a substantively meaningful outcome for a one-day intervention. The present study evaluated the immediate effect of a one-day CAR training and mentoring programme, delivered under a school–university partnership, on teachers' understanding of classroom action research. Three findings warrant closer discussion.

3.8. A short, structured training can shift declarative understanding meaningfully

The training produced a statistically significant and practically large improvement in teachers' understanding of CAR, with a large within-subject standardised effect (Brydges, 2019) and a medium normalised gain ($\langle g \rangle = 0.65$). These indicators are consistent with the argument that carefully designed PD, even in short formats, can produce measurable gains at the level of teacher knowledge the proximal outcome framework. Two design features of the training likely contributed to this result: the alignment of each content block with an immediate small-group drafting activity, and the inclusion of individualised expert feedback during drafting. Both features are among the seven attributes identified by Darling-Hammond et al. (2017) as characteristic of effective PD, suggesting that principled design choices matter even when duration is constrained.

Figure 3. Participants Form Classroom Action Research Groups Based on Their Classes

3.9. Procedural knowledge was the main locus of learning

The item-level pattern indicates that the training was particularly effective at strengthening participants' procedural understanding of CAR, most visibly on the sequencing of the CAR cycle. This is meaningful because misordering of the plan–act–observe–reflect stages is a common source of error in teacher-authored CAR proposals, and it directly affects the internal coherence of the resulting research. The finding also underscores the value of anchoring CAR training on integrated framework, which foregrounds the cycle as a communicative and participatory practice rather than a linear checklist (Lynch et al., 2025). Reframing CAR as an iterative practice rather than a one-off procedure may help teachers internalise the cycle as a recurring habit of professional inquiry (Johannesson, 2022).

3.10. Understanding is a necessary but insufficient outcome

Although the improvement in understanding is encouraging, it should not be over-interpreted. (Francisco et al., 2024) model of teacher change reminds us that durable changes in attitudes and beliefs typically follow, rather than precede, evidence of impact on student learning. A single-day training can raise declarative understanding and produce a first draft of a CAR proposal, but sustaining CAR as a routine professional practice requires longer-term structures: opportunities to complete a full cycle in one's own classroom, feedback on data collection and

interpretation, and collegial support for reflection. The present intervention therefore represents an initial input into a longer developmental trajectory rather than a self-contained outcome.

3.11. Implications for school–university partnerships

For faculties of education seeking to design community engagement programmes that go beyond one-off knowledge transfer, this study offers several practical implications. First, aligning content blocks with immediate drafting activities appears to enhance the retention of procedural knowledge. Second, item-level analysis of pretest results can identify concrete gaps to prioritise in the training design; in the present case, the CAR cycle sequence was the correct locus of emphasis, given its low baseline. Third, sustained follow-up mentoring is essential; the completion of the first CAR cycle in participants' own classrooms should be built into the partnership from the outset. These implications align with the broader consensus on effective PD (Cortes et al., 2025) and are transferable to other faculty–school partnerships in similar contexts.

Fugure 4. Impressions and Messages from Participant Representatives

3.12. Limitations

Several limitations should be acknowledged. First, the one-group pretest–posttest design does not permit strong causal claims. Alternative explanations for the observed gains including test–retest familiarity effects and social desirability cannot be ruled out. Second, the outcome measured is declarative understanding at the immediate posttest; changes in teachers' actual practice, in the quality of their CAR proposals, and in student outcomes were not measured. Third, the baseline mean was high (88.66 on the 0–100 scale), producing a compressed ceiling that inevitably attenuates the raw score increase and the normalised gain; the fact that a medium ⟨g⟩ was nevertheless observed strengthens the interpretation but does not remove the ceiling. Fourth, one instrument item lacked an unambiguous scoring key and was excluded from the maximum used in the conversion; this is documented transparently but limits the fine-grained interpretation of that item. Future community engagement programmes would benefit from a longer follow-up window and a wider set of outcomes, including proposal quality and student-level indicators.

4. CONCLUSION

A one-day CAR training and mentoring programme delivered through a school–university partnership improved teachers' immediate understanding of Classroom Action Research, as indicated by the increase in the mean score from 88.66 at pretest to 96.05 at posttest. The most substantial improvement occurred in teachers' understanding of the correct sequence of the CAR cycle, namely planning, acting, observing, and reflecting. Based on the formative review, participants demonstrated an initial ability to identify classroom problems, formulate researchable questions, propose relevant actions, and organise the proposed activities within the CAR cycle. However, several proposal components still required further improvement, particularly the formulation of measurable success indicators, selection of data-collection instruments, and planning of data analysis. The findings indicate that the combination of material presentation, collaborative proposal drafting, and direct facilitator feedback provided initial

benefits for teachers and the partner school. Nevertheless, the programme outcomes should be limited to improvements in teachers' understanding and initial proposal-drafting ability. The implementation of the proposals, completion of the CAR cycles, changes in teaching practices, and effects on student learning were not evaluated. Sustained school–university mentoring is therefore required to support proposal revision, classroom implementation, data analysis, and reflection.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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Halaman Ini Dikosongkan