

Action Research for Developing Teachers' Pedagogical Skills in the 'Out of School Children Education Program'

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ABSTRACT

This study aimed to investigate the potential influences of action research on the professional development of teachers involved in the 'Out of School Children (OSC) Education Program' in Bangladesh. The qualitative approach was used with an action research component. Seventeen teachers from seventeen non-formal schools (learning Centers) from eight divisions were selected purposively. Semi-structured interviews, class observations, reflective diaries, and field notes were used to gather data. The thematic technique of qualitative data analysis was utilized. The results show that although every teacher from the seventeen learning centers engaged in very impromptu activities, their teaching-learning strategies were restricted to a few common exercises like group work, peer work, storytelling, reading aloud to each other while adhering to the teacher's instructions, and Club Day activities. The usual pedagogies of the learning centers were reciting the Quran together, singing the national anthem, and taking oaths. The results also show that teachers could reflect on their current pedagogical practices and create professional development strategies through a well-run collaborative action research project. The action research also revealed some noteworthy modifications of pedagogical practices. Numerous obstacles have been discovered and discussed. The results have implications for non-formal education research, practice, and policy. Even if the results of this qualitative research cannot be broadly applied because of its nature, there are instances where the process of implementing changes via an adaptable and tailored kind of action research could serve as a powerful model in a non-formal education setting. The results will also add to the body of knowledge in the fields of non-formal education, teacher preparation, and, more especially, the development of pedagogical skills in non-formal school teachers

Key Words: Action Research, Pedagogical Skills, Teachers' Research, Out of School Children Program, Non-Formal Education, Bangladesh

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Introduction and background

Access to primary education for all children has gained significant attention worldwide, including in Bangladesh. It has come to the forefront mainly because the United Nations (UN) (UN, 2015) Sustainable Development Goals mandate free primary and secondary education. The Government of Bangladesh has paid maximum attention to ensuring quality primary education. Vision 2010-2021, the Education Sector Plan (2020), the 8th five-year plan (2020-2025), and Vision 2021-2041 of the Bangladesh Government are some examples of policy initiatives. It is evident that the Government of Bangladesh is focusing not only on the formal education sector but also on other subsectors of education. For example, the Education Sector Plan (2020) is governed by a broad vision for overall socioeconomic development goals, which is backed up by holistic education planning that encompasses all sub-sectors, including lifelong learning and non-formal education. The Perspective Plan of Bangladesh 2021-2041 addresses the significance of NFE in the following way:

Strengthen delivery of non-formal education: PP2041 will give the highest priority to implementing the Government's policy of education for all, including the elimination of adult illiteracy by strengthening the delivery of non-formal education. Specific steps that will be taken include: establishing a community-based network of learning centers in order to create scope for ICT-based continuing and lifelong learning; continuing with "second chance" schooling; extending opportunities for effective skill training; strengthening of delivering all aspects of the non-formal education strategy; and establish non-formal Education Board. (Ministry of Planning, 2020, p. 59).

It is evident that the government is implementing different policy initiatives effectively, such as strengthening and implementing the Out of School Children Program as a part of NFE to ensure primary education for all. To implement out-of-school children's education activities under sub-component 2.5 of the 4th Primary Education Development Program (PEDP-4), providing second chance for the out of school children aged 8-14 years and bringing them back into mainstream formal education is the main goal of this program. The Bureau of Nonformal Education (BNFE) of the Ministry of Primary and Mass Education has contracted the Institute of Education and Research (IER), University of Dhaka, as a Specialized Agency to provide technical support for the efficient and high-quality implementation of the Out of School Children Program as Second Chance Education (SCE) for one million out-of-school children in the 8–14 age group. The program's objectives were to bring them into the formal school system and give them with a primary education through a flexible nonformal education system. In this program education is implanted through the learning center rather than schools. The main features of the learning center are: 20-30 students and 8-14 year-old students; single/multiple class schools; textbooks of NCTB are taught; accelerated model syllabus; one teacher; one classroom; Center Management Committee(CMC) consisting 7-11 members; 3 hours of classes and 6 days/week (BNFE, N.D.)

Teachers of these learning centers generally receive training for conducting teaching-learning activities. It was considered that continuous professional development is essential for addressing different contextual challenges and issues of teaching and learning, as well as promoting quality education. Evidence suggests that action research has huge potential for teachers' continuous professional development (Albalawi & Johnson, 2022; Boog, 2003; Connett, 2020; Mertler, 2006; 2012; Miedijensky & Sasson, 2022; Perrett, 2003). However, non-formal school teachers' professional development through action research in the Bangladesh context is not substantially evident. Therefore, this research initiative is taken to investigate how action research can contribute to the professional development (pedagogical skills development) of the teachers of the learning centres.

Research questions

This research was guided by the following research questions:

- (i) How do teachers apply different pedagogies in their existing teaching-learning practices?
- (ii) How can teachers' pedagogical skills be developed through action research?

Literature Review

This section outlines the conceptual structure, which is focused on scientific literature and policy documents in this rapidly evolving field of education. According to Merriam and Simpson (2000), a literature review aids in “developing a conceptual framework or exploring a thematic area for inquiry” (p. 10). In this chapter, we describe key topics in the study and show how they relate to one another (Rocco & Plakhotnik, 2009).

Teachers' pedagogical knowledge and skills for teaching-learning practices

The way that students are taught is referred to as pedagogy, and it all comes down to using teaching techniques and ideas in a remedial way (Pant, 2022). Amusan (2016) notes that when a teacher chooses tactics based on the requirements of their students, this is known as pedagogy. The knowledge required to design and enhance teaching-learning scenarios across subject areas, including declarative and procedural understanding of classroom management, instructional strategies, classroom assessment, and student heterogeneity, is referred to as generic pedagogical knowledge among teachers (Voss, Kunter, & Baumert, 2011). Understanding fundamental concepts like the teaching and learning process, knowledge itself, and how teachers apply their knowledge in the classroom are all necessary to conceptualize teacher knowledge, which is a challenging task (Guerriero, 2013). However, having pedagogical skills is crucial for teachers to implement high-quality teaching-learning activities; knowledge alone is insufficient. Guerriero (2013) notes that although having knowledge is undoubtedly a necessary part of

being a professional teacher, professional competence is more than that. Motivational factors, attitudes, and skills also influence mastery of teaching and learning. Amusan (2016) argues that proficient teachers exhibit an extensive array of competencies and proficiencies that contribute to fostering a positive learning atmosphere. She adds that content knowledge needs to be paired with a strong foundation in efficient teaching techniques.

Pant (2022) provides simplified ideas of teachers' pedagogical skills and its importance in the following way:

Teachers can considerably benefit from learning and acquiring pedagogical abilities. It is essential for effective teaching and helps educators to apply student-centered teaching practices. The foundation for meaningful classroom learning and interaction between students and teachers is laid out by pedagogy. Teachers can benefit from pedagogical skills in the classroom in a variety of ways. Most importantly, they improve instructional quality. Continue reading to learn more about how pedagogy might benefit you in the classroom. (Para 1-2)

She also pointed out ways in which pedagogical skills benefit teachers, for examples, improve teaching quality, encourage collaborative learning, eliminate monotony in teaching, and offer personalized learning to the children.

Considering the importance Pant (2022) concludes in the following way:

Pedagogical skills are a key requirement when it comes to the teaching profession. To be able to deliver lessons effectively, educators must first understand the students and then implement teaching strategies. This is where pedagogical skills come into play. So, before you embark on your teaching journey, make sure you acquire the required pedagogical skills. (Para 5)

In this study, we explored the existing pedagogical practices of the teachers in the learning centers of the "Out of School Children (OSC) Education Program" and their pedagogical skills development through action research.

Action research for teachers' professional development

Action research is a teacher-led inquiry that takes place in the classroom. Corey (1954) defines action research as "research conducted by practitioners to improve their methods" (p. 375). Action research, according to Elliott (1988), is a continuous spiral of thought and action. According to Elliot, each spiral involves:

- Clarifying and diagnosing a practical situation, which needs to be improved, or a practical problem which needs to be resolved.
- Formulating action-strategies to improve the situation or resolve the problem.

- Implementing the action-strategies and evaluating their effectiveness.
- Further clarification of the situation resulting in new definitions of problems or of areas for improvement (and so on the next spiral of reflection and action) (p. 163).

According to Kemmis and McTaggart (1988), there are several types of action research that have similar cyclical properties. According to Tripp (2005), anyone can utilize a customized version based on “specific applications and situations” because “there are many various ways of employing the cycle, and one can conduct each of the cycle’s four actions in many different ways” (p. 3). Tripp (2005) also says that:

...different kinds of action inquiry tend to use different processes in each step, and have outcomes that are likely to be reported in different ways to different audiences. What kind of process one uses, and how one uses it, depend on aims and circumstances, and even with ‘the same’ aims and circumstances, people may have different skills, intentions, timelines, levels of support, ways of collaborating, and so on, all of which will affect the processes and outcomes? (p. 3)

Mertler (2013) supports the customization of action research techniques so that “teachers can study their own practice and find what will and will not work for their pupils in their classrooms” (p. 38). Following the cyclical nature of action research, we introduced various ways for teachers’ pedagogical skills development based on our goals and expected outcomes, context, participants, and current circumstances.

Reflective practice for teachers’ professional development and use of reflective diary

Reflective practice is becoming more widely acknowledged as having a central role in the learning life of the effective teacher and being necessary for effective instruction (Day, 1993). The ability of instructors to engage in a process of problem-solving and discovering workable solutions that can produce positive student learning results in a safe atmosphere is known as reflective practice and it elevates a teacher to the highest level of the class (Naseer, Muhammad & Masood, 2020). Nonetheless, it necessitates experience, critical thinking, and close observation (Kaasila & Lauriala, 2012). Naseer, Muhammad and Masood, (2020) argue that teachers that are reflective are willing to apply what they have learned to the community’s benefit. According to Leitch and Day (2000), in the process of AR, reflection is probably going to be focused on finding solutions to the most urgent issues regarding the effective and efficient delivery of education programs. They add that it is probably going to focus on the development of instructional methods, skills, and strategies. Since reflection is a character of AR, we investigated how the teachers of the learning centers could develop their pedagogical skills using this self-reflection strategy.

Reflective diary which is also known as reflective journal is very important for the teachers for reflective practice. Many professional education programs include writing reflective journals/diaries as one of the learning activities to help participants improve the process of reflection and reflective learning during the training (Tang, 2002). In this study, we explored how teachers could use reflective diaries for their reflective practices toward pedagogical skills development.

Methodology

This article reports on research that was conducted as a part of BNFE's Out of School Children Program as Second Chance Education (SCE), where the Institute of Education and Research (IER), University of Dhaka, was engaged as a Specialized Agency to provide technical support for the efficient and high-quality implementation of this program. Two of the authors were internal members of the technical team of IER, and one of the authors was engaged as an external member to conduct this study.

This research was conducted using a qualitative approach as "a means of examining and understanding the meaning individuals or groups attach to a social or human situation" (Creswell, 2009, p. 4). According to Patton (2002), qualitative research is a naturalistic investigation that entails "studying real-world situations as they occur naturally" (p. 40). We chose this method since it allowed us to have direct touch with the people, situation, and phenomenon under investigation. We were able to leverage our own personal experiences and critical insights as a crucial component of the inquiry to understand the phenomenon as teacher educators and researchers (Patton, 2002).

As a part of this qualitative study, we adopted the collaborative nature of action research since we collaborated with the teachers of the learning centers. "Action research has been a participatory approach since its origin," says Tripp (2005), "although there are many viewpoints and applications of the term participation" (p. 10). Tripp noted that "action research works best with cooperation and collaboration" from a simply practical standpoint (p. 10). According to Capobianco et al. (2006), collaborative action research for teacher development is an approach in which teacher-researchers and teacher-educators collaborate to solve problems and change teaching and learning by achieving shared and similar goals. Collaboration is one of the crucial components in the action research process, according to Mertler (2013), especially for teacher professional development. Our collaboration's ultimate goal is to improve teaching-learning practices in the centers through teachers' professional development. In addition, as researchers and facilitators, we aim to understand how action research may influence the quality of non-formal teaching-learning practices. We used the cyclical model of action research (Mertler, 2006): planning, acting, developing, and reflecting, and completed different cycles during different periods of the project. Though we used the action research component as part of case studies, the cyclical nature and other procedures were customized following the context of targeted non-formal education and the teachers (Tripp, 2005).

We selected 17 non-formal schools (learning Centers) purposively (Patton, 2002) from eight divisions, aiming to ensure representatives from all regions, considering that it would be helpful to mobilize knowledge and scale up the findings of action research. Since Dhaka is a region with a huge number of centers, we selected three centers from Dhaka. During the selection of centers, we also considered centers from metropolitan cities and from rural areas. It is important to note that we did not consider whether the teachers had foundation training since foundation training was not a requirement for this action research. Though we did not consider whether teachers had foundation training or not, after selecting centers, we found that most of the selected teachers did not receive foundation training. The number of male teachers was three (3) and the number of female teachers was fourteen (14). Out of seventeen, fifteen teachers' highest education qualification is Higher Secondary Certificate (HSC), and two of them have Bachelor of Arts (BA) degree. Most of the teachers have teaching experiences in kindergarten and NOG schools. The minimum length of experience is two years, and the maximum is twenty years.

We collected data using semi-structured interviews (Creswell, 2012) with the teachers of the learning centers, classroom observations (Creswell, 2012), of the same teachers, reflective diaries for gaining insights from teachers' reflections (Engin, 2011), and filed notes (Creswell, 2012) as an additional data collection technique, which contained brief remarks taken during data collection. As using a reflective diary was a relatively new experience for all of the seventeen teachers, a prescribed format of the diary with written instruction was given to them. During action research, teachers were told to record their own reflections on their teaching-learning methods in a diary that they carried with them. Teachers were told that the diary would be gathered and data examined after each cycle. Since action research is a continuous activity, we encouraged instructors to submit photographs of their written diaries via WhatsApp throughout the first stage of the study instead of collecting diaries from the teachers.

This study employed the 'thematic' qualitative data analysis technique (Braun & Clarke, 2006).

In this study, we maintained several procedures to establish rigor and trustworthiness. For example, we used the strategy of 'using low-inference descriptors. Silverman (2011, p. 365; 2005, p. 229-230) recommends "the criterion of using low-inference descriptors" to ensure the reliability of data collection, analysis and reporting findings. 'Low-inference descriptors' have also been recognized as effective strategies for increasing the reliability of qualitative research (Sefcik & Bradway, 2017; Zohrabi, 2013). 'Triangulation' is another established mode of "improving the probability that findings and interpretations will be found credible" (Lincoln & Guba, 1985, p. 305). To triangulate the reliability of data, we used more than two data sources (i.e., interviews and observations) aiming to answer the same research question. As a part of ethical procedures, we obtained informed consent from all participants separately. Before giving their consent, the participants were informed about the research's purpose, procedures, and potential benefits and problems. All participants were assured that the name

of the centers and the participants would be replaced with a pseudonym rather than using the original name when the findings were shared publicly. Therefore, we used TOC-1 (Teacher of Learning Center-1) and TOC-2 (Teacher of Learning Center-2) rather than using their name.

Customization of action research and building collaboration

We collaborated with the teachers of 17 learning centers to conduct action research. We have already mentioned that most of the threshers' educational qualifications are at the HSC level, and formal procedures and the meaning of action research were not easy for them to understand. Therefore, considering the contexts of the teachers, we planned very flexible procedures of action research as a way of customization. We did not discuss action research too much. Instead, we discussed what we could do together and how they could work with us. While action research is self-regulated, we guided the teachers to plan, act, and reflect on their teaching-learning process.

Workshop on action research and reflective practice

We arranged three days of participatory workshop sessions on action research, reflective practices, and using reflective dairies. The workshops aimed to improve the participants' knowledge, comprehension, attitude, and abilities in these domains. In addition, as a part of this customization, we organized a one-on-one interactive session between the teacher and a specific member of the research team of this study. We explained the way their pedagogical skills developed following some planned ways, such as action research. For example, we not only provided an explanation of how to write a diary, but we also provided hand-written instructions for them to make the task easy on the way to customization (Tripp, 2005). Following the workshop, participants engage in AR and reflective teaching practices for two months.

Findings

We arranged three days of participatory workshop sessions on action research, reflective practices, and using reflective dairies. The workshops aimed to improve the participants' knowledge. This section reports the findings of this study based on the analysis of data captured during different phases of the study. Data from interviews with 17 teachers at non-formal schools (learning centers), classroom observations, field notes, and teachers' reflective dairies are analyzed and discussed. The transcripts of the interviews and classroom observations were analyzed using thematic data analysis techniques of qualitative research. We present a thematic analysis that considers teachers' perceptions and practices of different pedagogies before and after the action research. Several themes have been presented here, which have emerged from the analysis of data captured from different sources.

Development of teachers' perceptions and practices of different participatory teaching-learning approaches

Findings from the data analysis indicated that all the teachers who participated in this study perceived some common pedagogical activities for implementing the out of school children education program. For example, the major pedagogies they perceived as participatory are group work, pair work, story-telling, reading together following the teacher, role-playing, and club day activity where the practice is highly dominated by the strategy 'reading together following the teacher'. Findings from the analysis of data from interviews and classroom observations indicate that most of the teachers' perceptions of students' participation in the classroom are dominated by the common activities of the learning center, for example, reciting the Quran together, singing the national anthem, taking the oath, etc.

Though most of the teachers also pointed out that they are concerned for participatory teaching-learning activities, findings from the analysis of data indicate that what the teachers perceived about different aspects of teaching-learning practices in the classroom and what we observed during the teaching-learning practices were not aligned. About all the teachers who participated in this study perceived that they ensured equal participation of the students in the classroom activities. For example, when asked one of the participant teachers (TOC 10) "Do you able to ensure all students' participation in the classroom activities?" she replied, "I always ensure participation of all students in my classroom activities". However, our field notes indicated that teachers were unable to ensure equal participation in the classroom. Few students were found absent from the participation. Since some students participated in the classroom, teachers perceived that they ensured equal participation. Therefore, a clear gap between teachers' perceptions and practices was evident. Moreover, findings indicate that teachers' perception of equal participation was not clear. In terms of using lesson plans, most of the teachers (14 out of 17) said that they use it regularly, but we could not find any full lesson plan when we observed the classes. Even teachers' perceptions of lesson plans were different. For example, one teacher (TOC 7) said "I follow lesson plan regularly, for example I start my class by singing a song". When we asked, "Would you please show a lesson plan?" she replied, "Normally, I do not use any written lesson plan." It also clearly indicates gaps between her perceptions and practices and having a very unclear idea about the lesson plan.

Findings from the action research suggest that a very good beginning of teachers' pedagogical skills development through action research was evident in almost all the centers. The major areas of development are: frequent use of different participatory pedagogies (i.e. Pair-work, group work); increasing students' participation as well as equal participation (i.e. Asking different students to present/ recite/sing rather than asking selective ones); regularity of lesson planning; progress in classroom management using different techniques.

A beginning of using content specific teaching aids by the teachers

Findings before AR revealed that most of the teachers used common teaching aids for specific subjects (i.e., chart of fruits, Chart of letters, Chart of flowers) provided by the implementing authority. Topic-based teaching aids were apparently absent in the teachers' classroom activities. Findings from the AR indicate that a beginning of using content-specific teaching aids was evident in most of the (13 out of 17) learning centers. We observed that teachers began to use posters and relevant pages in daily newspapers (for example, pictures of religious festivals and celebrations of Bengali New Year). We found five teachers using blank pages of old calendars as a source of teaching aids. Overall, a good beginning for teachers to use diversified teaching aids was found in the centers.

Effective use of blackboard

Observational data indicate that most of the teachers (15 out of 17) were unable to use the blackboard in a scientific way. We observed that when they went to write on the board, a short disconnection of interaction between the teachers and the students was evident because the teachers concentrated only on the writing board and did not pay attention to the students. It is well established in the literature that while writing on a blackboard, the teacher should stand at a 45-degree angle so that he/she can keep an eye on the students and address any pupils' body language or facial expressions that indicate difficulty with the content. However, the teachers' practice was absent. Though very few (2 out of 17) tried to follow this way, they needed to be more consistent with the angle. However, after the AR, a clear change among the teachers about the effective use of the blackboard was evident. We observed that almost all the teachers were trying to use the blackboard effectively, and nine teachers were found to use the blackboard very effectively.

Development of practicing inclusive classroom assessment procedures

Before the AR, all the teachers were asked questions to the students as part of the classroom assessment. However, most of the students of each center were found to be excluded from the assessment procedures. The reason found based on the analysis of data was asking questions to those students who were capable of answers as known by the teachers. For example, most of the teachers (14 out of 17) were found asking questions to 3-4 students, as we observed. Normally, teachers were found asking for names or indicating a specific student to answer a specific question, and at the end of answering from the specific student, teachers asked another student. This trend was consistent in almost all centers.

However, findings also indicate that very few teachers (3 out of 17) were found asking open questions to all the students, but no feedback was provided by the teachers on the answers of students. As a whole, it can be claimed that the teachers' perceptions, as well as practices

of inclusive assessment procedures, were not aligned with the actual meaning of inclusive classroom activities or assessments. For example, when we asked about their challenges, a few teachers (5 out of 17) perceived that they did not experience challenges during classroom assessment. For example, one teacher (TOC 15) said, “After completing lessons on each subject, like Bangla and English, I ask the students questions for their oral response. I think that this is not a challenging task since I am very much used to using it”. However, during the classroom observation, we found that teachers asked questions to 3-4 specific students who were comparably comfortable answering questions. When we asked the teacher after the class, “Why do you ask questions to 3-4 students?” she replied, “They are good and always spontaneous. Some students do not want to talk. Moreover, it is difficult to ask questions to all 30 students”.

Findings from the AR suggest that changes occurred in terms of teachers’ perceptions and practices about inclusive classroom assessment. Most of the teachers (15 out of 17) were found practicing classroom assessment during their teaching-learning practices, where they ensured the participation of all the students. For example, most of the teachers were found asking questions to different students rather than asking selective students when they conducted lessons.

Development of teachers’ perceptions and practices of using reflective diary

Before starting collaborative action research with the 17 teachers at different non-formal schools (learning centers), it was very important for us to understand the existing perceptions of the teachers, and their Findings from the analysis of data indicate that no one had an idea about using the reflective diary for their own professional development. Considering the context of the teachers, we did not ask directly about reflective diaries. We tried to understand what they used to do to improve their regular classroom activities. Their answer was limited to ‘preparing lesson plan’. Similarly, about all the teachers (16 out of 17) had no experience of writing dairy for the purpose of teaching in the centers, though they shared that they used to write dairy during their school and college life. In addition, their perceptions were far away from the meaning of a reflective diary. When we asked the teachers, “how can the diary be helpful for you?” some examples of their replies were:

“I think writing a diary about my teaching is very significant. Once I am old and if I write dairy, my son and daughter will benefit. They will see what my experience with the underprivileged children was like. It would be helpful for them” (Interviews: TOC 1)

“People write diaries to share their sorrow and happiness. If I write in my diary regularly, I can write my good and bad experiences in the center. I hope other teachers will benefit from my experience when they read my diary” (Interview: TOC 3)

Findings from the AR suggest that when we built collaboration with the teachers and organized one-on-one interactions (workshops) for the teachers aiming to engage them in using reflective diaries as a part of action research, teachers' perception of using reflective diaries was changed. After the completion of the first cycle of action research, the teachers' very good start in writing reflective diaries was evident. Teachers not only used to write diaries during action research, but they also used to share their writings through WhatsApp. Most of the teachers (13) perceived that writing reflective diaries on a regular basis helped them to improve their teaching-learning activities in the centers. Some examples are given using data extracts:

The diary is very helpful since I can write about different problems and solutions to problems. There are many problems that I cannot solve at the time, but a diary can help me to solve the problem in the future. I can write about the different issues at the center and share different problems with the field supervisor, Sir. (TOC-1)

If I write a diary, it is also one kind of note about a problem. I can write about real experiences I face during my teaching in the center. I can write about a problem in my diary and share this with my supervisors as well as other people. Writing a diary increased my motivation, and now I am more confident in my ability to solve my problems (TOC-17).

Factors contributing to the pedagogical skills development of the teachers through AR

The significant factors identified that contributed to the professional development of the teachers through AR are writing a diary in a regular manner, one-on-one interaction with collaborators (who are university teachers), teachers' own reflections, appreciation and motivation from the collaborators, flexibility of writing diary, and collaborative meeting. Fifteen teachers pointed out that writing diary in a regular manner helped them to think about their everyday activities in the centers and how they could improve their activities. For example, TOC-9 said, "Before teaching in the centers, I could not find my weakness, but when I write in my diary after school hours, many things come to my mind about my weakness. Then I plan to improve my weakness". Another teacher (TOC-11) pointed out, "Writing a diary helped me a lot to improve my confidence as a teacher. It helped me to think about my center and my role". All of the teachers acknowledged that 'one-on-one interaction with collaborators' highly influenced them to improve their pedagogical skills and conduct AR with collaborators. For example, TOC-3 said:

This was the first time I had scope to interact with a university teacher who discussed different issues of the centers and teaching learning activities and gave me instructions to improve my activities. I learned many things from him. I could easily communicate

with him via WhatsApp though I never thought about this kind of scope. This factor influenced me.

Another Teacher (TOC-7) said:

I can easily remember the first day I met with a university teacher and discussed it for a long time (about two hours) after school. He instructed me on how I could use a diary for my teaching quality improvement. He gave me hand-written instructions for the effective use of a diary and explained clearly about the use of a diary for my teaching skills development. Though at the beginning, I was not very interested in working with a university teacher due to my lack of confidence, now I think that it should continue for a long time.

Similarly, most of the teachers acknowledged that their own reflections, appreciation, and motivation from the collaborators, the flexibility of writing diaries, and collaborative meetings meaningfully influenced them to get involved actively in AR for their professional development.

Challenges of conducting collaborative action research in non-formal setting

Though action research is strongly evident as having potential for teachers' professional development, several contextual challenges were identified in this research. One of the significant challenges is teachers' having no minimum understanding about AR. Out of seventeen teachers, only three were able to acknowledge that they had heard about AR and its uses. For example, one teacher said, "I heard that AR is good for a teacher to be a good teacher". Another teacher pointed out, "I heard about AR from training when I was a teacher at a kindergarten school.

The trainer said AR is useful for teachers to improve their skills, but I had never used AR". Therefore, we struggled to convince the teachers about the meaning and benefits of AR. This impacted the progress of collaboration and achievement of AR throughout the process. 'Teachers' academic load' was another challenge that was experienced by most of the teachers. The finding suggests that most of the teachers conduct their teaching in two shifts (morning and afternoon) and six days a week, and therefore, they struggle to manage time for AR. Managing students and their parents to ensure students' attendance in the learning centers identified other significant challenges that influence teachers' engagement in AR. Findings from the analysis of data from interviews and observations indicate that all of the teachers experienced this challenge. For example, one teacher of LC-5 said, "I have to visit home to convince parents and students to ensure the regularity of attendance. Normally, I visit home after the school hour. It takes time, and it is challenging for me". Findings suggest that this challenge created obstacles for the teachers to get the maximum benefit of AR.

Discussions and conclusion

Participatory teaching-learning practices and inclusive classroom environments have been paid tremendous attention all over the world for promoting education for children at any level and any form. These have gained further attention when the United Nations' Sustainable Development Goals (SDGs) pay special attention to quality education as well as inclusive education (UN, 2015). Teachers play a central role in implementing any kind of education, and teachers' professional learning and development are essential for promoting quality education (Crosswell & Beutel, 2013; Mallillin & Laurel, 2022; Nguyen & Tran, 2022; Taufan, 2022). For example, Crosswell and Beutel (2013) point out that "the teaching profession has long recognized that ongoing learning needs to occur throughout a teacher's career" (p. 153).

Evidence suggests that action research has enormous potential for teachers' professional development (Albalawi & Johnson, 2022; Boog, 2003; Connett, 2020; Mertler, 2006; 2012; Miedijensky & Sasson, 2022; Perrett, 2003). The results of this study complement the findings of earlier studies because it is clear that non-formal school (learning center) teachers in Bangladesh have experienced professional development through action research. Even though the teachers of learning centers had no prior experience of using AR for their professional development, the potentiality of AR is also evident here. While contextualization is important for using AR (Esposito & Evans-Winters, 2007), flexibility of teachers' engagement in collaboration has been proved as essential for non-formal education settings in Bangladesh context where the facilities in the learning centers, teachers' socio-economic and educational background, socio-economic background of the students of the learning centers have been proved to be considered for designing and using AR. Without this kind of flexibility, building collaboration with the teachers of the learning centers and conducting AR would not be possible.

According to Kemmis and McTaggart (1988), there are several types of action research that have similar cyclical properties. According to Tripp (2005), anyone can utilize a customized version based on "specific applications and situations" because "there are many various ways of employing the cycle, and one can conduct each of the cycle's four actions in many different ways" (p. 3). Tripp (2005) also points out that the type of process one uses and how one uses it rely on goals and circumstances; even in cases where goals and circumstances are the same, people may differ in terms of their abilities, motivations, schedules, degrees of support, modes of cooperation, and other factors, all of which will impact the procedures and results. Findings related to the factors that influenced teachers' professional development through AR are clearly aligned with the customization factors mentioned by Tripp (2005).

For the successful implementation of education, UNESCO (2011) emphasizes the need "to link research and policy in a way that enables not only the identification of common problems and challenges but also the design of practical and effective solutions" (p. 15). In a non-formal education setting in the Bangladesh context, this study provides evidence on how action

research can be used to identify educational problems and contribute to solutions.

In conclusion, we can argue that while none of the teachers had ideas about writing reflective teaching and using reflective diaries and participation in collaborative action research, customization of action research, and building collaboration, the flexibility of writing diary strongly motivated the teachers towards a very good beginning of their pedagogical skills development through action research. Increasing students' participation in classroom activities, regularity of lesson planning, effective use of blackboard, progress in classroom management techniques, and increasing self-confidence are some immediate outcomes of action research. This evidence can be used to motivate the continuation of further cycles of action research in the centers participating in this study and other centers in Bangladesh. However, significant challenges identified through this study require meaningful initiatives for the improvement of teachers' lives, children's educational facilities, and learning environments. In addition, this study did not identify any mechanism for the sustainability of the continuation of AR or AR progress during this study. This limitation of the study strongly encourages further study of the sustainability mechanism of AR.

However, the process of bringing about changes through a flexible and personalized form of action research could be a strong example in a non-formal context, even though the findings of this qualitative research cannot be generalized due to its nature. The results will also add to the body of knowledge of non-formal education, professional development for teachers, and, more particularly, the development of pedagogical abilities among non-formal schoolteachers.

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