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Abstract

Action research can connect theoretical concepts and practice while promoting professional growth. Nonetheless, a comprehensive literature review revealed a deficiency of qualitative research examining student-teachers' perceptions of AR. Investigating future teachers' constructs on action research and gathering in-depth data could be significant in building on these constructs from a constructivist perspective. This study aims to examine 45 student-teachers' perceptions of action research. Qualitative data was gathered via a preliminary knowledge questionnaire to reveal if they had any background knowledge before the course started and reflective reports written after each unit was covered. The course was designed in units that considered Kemmis and McTaggart's action research cycles. The findings suggested that student-teachers perceived AR as a tool for problem-solving with practical application and contextual relevance. Most participants appreciated the dual role of teacher-researcher and its advantages in pedagogy. They emphasized potential challenges, including balancing teaching and research, ethical dilemmas, and institutional support. Challenges during the act phase might arise from the intricacies of planning and data collecting, whereas in the observe phase, challenges stem from preserving data quality and controlling classroom dynamics. During the final 'reflect' phase, challenges may arise from the need for 21st-century skills, collaboration among colleagues, and institutional support. The research can potentially contribute to the field by revealing student-teachers' constructs on action research. The findings could be significant for teacher educators to highlight issues to be addressed in training student-teachers to be teacher-researchers.

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Research Article

Student-teachers' Journey through Action Research: Reflections on 4 Phases Model*

Berk İLHAN [1]

Abstract

Action research can connect theoretical concepts and practice while promoting professional growth. Nonetheless, a comprehensive literature review revealed a deficiency of qualitative research examining student-teachers' perceptions of AR. Investigating future teachers' constructs on action research and gathering in-depth data could be significant in building on these constructs from a constructivist perspective. This study aims to examine 45 student-teachers' perceptions of action research. Qualitative data was gathered via a preliminary knowledge questionnaire to reveal if they had any background knowledge before the course started and reflective reports written after each unit was covered. The course was designed in units that considered Kemmis and McTaggart's action research cycles. The findings suggested that student-teachers perceived AR as a tool for problem-solving with practical application and contextual relevance. Most participants appreciated the dual role of teacher-researcher and its advantages in pedagogy. They emphasized potential challenges, including balancing teaching and research, ethical dilemmas, and institutional support. Challenges during the act phase might arise from the intricacies of planning and data collecting, whereas in the observe phase, challenges stem from preserving data quality and controlling classroom dynamics. During the final 'reflect' phase, challenges may arise from the need for 21st-century skills, collaboration among colleagues, and institutional support. The research can potentially contribute to the field by revealing student-teachers' constructs on action research. The findings could be significant for teacher educators to highlight issues to be addressed in training student-teachers to be teacher-researchers.

Keywords: Action research, teacher education, student-teacher perceptions, English teaching

1. INTRODUCTION

Action Research (AR) is defined as "self-reflective inquiry undertaken by participants in social situations to improve the rationality and justice of their practices, their understandings of these practices, and the situations in which the practices are carried out'' (Carr & Kemmis, 1986; p.162). The concept has its roots in Dewey's ideas about reflective practice, and it aims to enhance teachers' pedagogical methods through the critical analysis, evaluation, and introspection of their instruction (Carr & Kemmis, 1986; McNiff & Whitehead, 2006; Schon, 1983). The other names provided for the concept of AR, which could empower teachers as agents of change, are "teacher inquiry," "classroom research," or "practitioner inquiry." (Fichtman & Yendol-Hoppey, 2014; p. 8).

Most of the research about AR has been mainly conducted with novice or practicing teachers (Aga, 2017; Salto & Lowen, 2018; Tran et al., 2022; Vaughan, 2020; Wulandari et al., 2019). However, the struggles to integrate AR into education could be in vain without an adequate education on the concept in teacher education programs. The theoretical background of AR must be presented to student-teachers in their bachelor's degree. Some of the recent studies on AR were conducted with

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student-teachers (Ceylan & Comoglu, 2024; Claros et al., 2024; Ugaligan et al., 2022). The studies mainly focused on student-teachers' perceptions by collecting quantitative data after they practiced AR. There appears to be a lack of qualitative studies investigating student-teachers' perceptions after they receive theoretical knowledge on AR.

In the country where the study was conducted, English Language Teaching (ELT) programs had "Research Methods in Education" courses in the second year of bachelor's degree. This qualitative study aims to contribute to the field by presenting student-teachers' perceptions of AR before they took the course and after the theoretical courses through collecting in-depth qualitative data. The forty-five student-teachers were in their second year in the ELT program of a Turkish state university. The researcher gave the "Research Methods in Education" course when the study was conducted, enabling rigorous qualitative data collection. The study is significant for teacher educators as it presents student-teachers' perceptions, worries, and personal feelings about AR. Without revealing and building on people's ideas, a lecture might not cause significant changes according to constructive alternativism (Kelly, 1955). Williams and Burden (1997) suggest that 'people will make their sense of the ideas and theories with which they are presented in ways that are personal to them … (and that) … each individual constructs his or her own reality' (p.2). An effective lecture on theories could be done by building on the constructs people have by addressing negative perceptions and changing them by providing examples, discussions for solutions, and opportunities to try them out in practical situations (Pope, 1993). For these factors, the study aims to reveal student-teachers' constructs for AR as a base for theoretical lectures on the issue.

The study seeks to answer the following two research questions.

- What were student-teachers' perceptions regarding action research and teacher-researchers before the class?

- What were their beliefs regarding each of the four phases in action research?

1.1. Literature Review

Educational AR is derived from Dewey's concepts of reflective practice (Dewey, 1910). Various researchers provided different definitions for AR. Kemmis and Mctaggart (2005) suggest AR is a method of self-reflective inquiry by practitioners in social contexts aimed at enhancing the rationality and equity of their social or educational practices and their comprehension of these practices and the environments in which they occur. Hopkins (1993) calls AR 'classroom research' and defines it as 'an act undertaken by teachers to enhance their own or a colleague's teaching to test the assumptions of educational theory in practice, or as a means of evaluating and implementing whole school priorities' (Hopkins, 1993; p.1). McLean (1995) defines AR as a 'process of systematically evaluating the consequences of educational decisions and adjusting practice to maximize effectiveness' (p.3). AR can be located within the broader framework of teacher inquiry, described as a research tradition 'highlighting the role classroom teachers play as knowledge generators.

As suggested by the definitions, AR has the potential to bridge the gap between theory and approach in real contexts by encouraging teachers to engage in systematic inquiry and reflections on practice (Burns, 2019). It provides professional development opportunities, enabling teachers to learn from their practice (Sowa, 2009). Aga (2017) suggests the following rationale for integrating AR into language classes:

> Teachers are expected to do the right things right – to be alive in changing EFL classroom practices for better quality, continually reexamine assumptions against evidence and interpretations related to teaching rather than taking one approach as an attainable ideal, deabsolutize accustomed traditions and rituals, and take a fallibilist view of truth. This calls for creating enabling environment in terms of policies, guidelines, support, recognitions, and understanding and empowering EFL teachers to do action research (p.204).

Numerous studies have emphasized the essential importance of real-world problem-solving in AR, illustrating its influence on enhancing research competency among educators. They indicated that the execution of AR fosters beneficial transformations, enhances teacher competency, promotes self-reflection, and improves learning outcomes, refining the processes and consequences of classroom instructional practices (Hine, 2013). Most of these studies were conducted with practicing teachers and a smaller number with student-teachers. The studies mainly focused on the perceptions of AR and the challenges of implementing AR. Sowa (2009) studied perceptions of student-teachers of AR, and results indicated that they acknowledged the valuable contribution to it and suggested that they would integrate the research-related skills into their future career as teachers. Ceylan and Comoglu (2024) conducted a collaborative AR project with seven student-teachers in their practicum courses, and the findings indicated that the project helped student-teachers gain perspectives on research and their teacher selves and provided teacher professional development. Sato and Loewen (2018) conducted a case study with 12 EFL teachers in Chile, and the results indicated that teachers were willing to use research because it gave them emotional support and helped them deal with novel pedagogical issues. Similarly, in Vaughan's study (2020) with five language teachers who used AR for their master's dissertations, it could be possible for the critical participatory AR to address issues around the perceived de-professionalization of teachers and challenge the exploitative nature of education in English state schools.

Despite positive perceptions of AR, there might be some challenges that teachers could face. Some critics state that it could be a burden for teachers and that the over-involvement of the action researcher can lead to personal bias (Burns, 2005). In a case study with one student-teacher, Mukrim (2012) identified that student-teachers' inadequate understanding of classroom AR concepts, absence of mentorship, lack of collaboration, and time limitations could hinder their ability to do AR. The finding could suggest that revealing which AR concepts student-teachers could have difficulties could be crucial. This research aims to reveal this point. The other finding in the study indicated that proper mentorship and collaboration must be achieved for successful AR projects. In Indonesia, where it is mandatory for teachers to conduct AR, Wulandari et al. (2019) conducted an exploratory study with practicing teachers and revealed their difficulties in AR in identifying the problem, proposing a literature review, and analyzing data.

Similarly, in another study with teachers, Yalçin and Yalçin (2017) identified the data collection process as the primary challenging process in AR. In a study with teachers and administrators, Tran et al. (2022) revealed that although educators may exhibit proficient research abilities, numerous individuals encounter difficulties in problem identification, literature evaluation, and data analysis, especially concerning statistical methodologies. In the study conducted with seven student-teachers, Ceylan and Comoglu (2024) discovered that they would not expect to use AR in their future careers as they found it frustrating and exhausting. In their study with practicing teachers, Sato and Loewen (2018) revealed that teachers lacked physical access to research such as time, resources, and institutional support, emphasizing the findings by Burns (2019). The findings about the challenges of AR could suggest that 'a key issue, in examining the problems or limitations of AR, is not whether it can work, but whether it is workable' (James & Augustin, 2018; p.343).

The evidence repeatedly highlights AR's diverse contributions to teacher development, classroom enhancement, and educational transformation. Successful implementation, however, relies on surmounting several hurdles, including institutional support, enhancing research skills, and establishing collaborative cultures that promote ongoing teacher engagement in AR. Ugaligan et al. (2022) suggest that '…it is helpful to determine how teachers view action research as early as the preservice stage, so that positive beliefs, skills, and knowledge may be practiced and developed among them early on' (p.268). Therefore, there is a need for further studies with student-teachers to reveal

their conceptions of AR and build on them with a constructivist perspective, and the study addresses the need.

2. METHOD

The study is a qualitative study conducted through a hermeneutical phenomenological approach, which is oriented toward lived experience (phenomenology) and interpreting the "texts" of life (hermeneutics) (Van Manen, 1990; p. 4). The study is based on the social constructivist paradigm, and its goal "is to rely as much as possible on the participants' views of the situation" (Creswell, 2013; p.20). The researcher participated actively in all data collection processes without making any interventions. The "COREQ" checklist was utilized to report the study findings (Tong et al., 2007).

2.1. Researcher

The researcher is male, with 12 years of teaching experience and six years of research experience. He holds PhD degree and was working as a teacher trainer in the ELT department of the university where the study was conducted. When the study was conducted, he had given 'Research Method' courses for the last three academic terms. The participants were informed about the aims of the study; however, they were told that they were to share their views frankly in the reflection reports and that their answers would never affect any grades or course performance. They were given random numbers for the reflection reports and for each report, they had to write the number instead of revealing their names. The researcher held a neutral stance towards the subject by encouraging reflexive journaling and peer debriefing to identify and mitigate personal biases. The peer debriefing was done with another researcher at the same institution, sharing the office with the researcher and he had expert knowledge on qualitative method.

2.2. Participants

The participants were selected through purposive and convenience sampling. The study was implemented in the researcher's "Research Methods in Education" class, and the participants wrote reflection reports on the subjects covered in the class. The class participants were 19-21 years old and were in their second year in the department. Twenty-nine participants were female, and thirteen were male. In all phases of the data collection, there was no one else besides the participants and the researcher. The data for AR knowledge before the course was collected from 45 participants. All the data was collected on paper in the class; therefore, the number of participants differed due to absenteeism in separate weeks. Thirty-seven participants wrote reflection reports for the 'planning' phase of AR, twenty-four for the 'act' phase, thirty-two for the 'observe' phase, and twenty-two for the last 'reflect' phase. The participant count fluctuated as the study was conducted across ten weeks of a single academic term, with class attendance mandatory for composing a reflection report. The students were given random numbers before the data was collected and they used the number assigned for identification instead of revealing their names.

2.3. Setting

The study was executed in the 'Research Methods in Education' course, which met for two hours weekly during the second year of the ELT department, spanning 14 weeks. The course was given by the researcher at a state university. The class referenced the book "Doing Action Research in ELT: A Guide for Practitioners" by Burns (2010). The course was delivered in four units utilizing the Kemmis and McTaggart (1988) cycle of 'plan,' 'act,' 'observe,' and 'reflect.' Each unit spanned two weeks, resulting in a total coverage of eight weeks for all units. The planning phase is the interval during which teacher-researchers develop queries, identify the overarching research domain, and sharpen the focus. It is the phase in which educators and students devise and coordinate their activities. The acting phase is the stage in which activities are executed and data is collected. The research questions are meticulously selected, and the appropriate methodologies are implemented. It may constitute the initial phase of an AR study. The observation phase is focused on data analysis. Upon collection during the

action phase, the data is classified as quantitative or qualitative and subsequently prepared for analysis. At this stage, the teacher-researcher must determine the appropriate data analysis approach to properly utilize and analyze the data. The reflecting step entails the presentation of the findings. At this stage, the teacher-researcher must identify the mechanisms for disseminating the outcomes of their AR initiatives. It may encompass writing an article, delivering a presentation at a conference, or coordinating a workshop, among other possibilities.

2.4. Data Collection

The study is qualitative, with data collected via two methods: the Preliminary Knowledge Questionnaire (PKQ) and reflection reports corresponding to each step of AR, comprising four reflection papers for the planning, acting, observing, and reflecting phases. Written reflections may be a significant data source since they entail a one-way exchange, wherein student instructors articulate their perspectives and thoughts without external influence (Creswell, 2013).

2.4.1. Preliminary knowledge questionnaire (PKQ)

The structured open-ended questionnaire consisted of two questions.

1. What is action research? What could it be if you are not familiar with the concept?
2. What are your opinions about teacher-researchers? Is it possible to be both a researcher and a teacher?

The questions were purposefully constructed to elicit the specific kinds of information necessary for exploring participants' understandings of AR. They were formed by the researcher considering the purpose of the research and two research questions in a semi-structured manner to get focused data. The number of participants was high for a qualitative analysis so as not to lose the focus, semi-structured questions were formed. The formed questions, the purpose of the research and research questions were shared with another colleague with expert knowledge on qualitative method, they were shaped according to the feedback.

The questionnaire was given to 45 participants at the beginning of the academic term before the course began. The purpose was to reveal if the participants had any preliminary knowledge about AR or were unfamiliar with the concept of AR and what kind of connotation the participants had.

2.4.2. Student-teachers' reflection reports

After each of the four units (plan, act, observe, reflect) was taught, the students were required to write a reflection report for their ideas about the AR phase that was covered. The reports were collected every two weeks, and each unit lasted two weeks and they were written at the end of class. Each report was structured with one question.

1. How do you feel about the planning phase? Can it be challenging for teachers or easy? In what ways?
2. How do you feel about the act phase? Can it be challenging for teachers or easy? In what ways?
3. How do you feel about the observe phase? Can it be challenging for teachers or easy? In what ways?
4. How do you feel about the reflect phase? Can it be challenging for teachers or easy? In what ways?

After the units were taught, the participants wrote reflection reports considering the questions above.

The questions for the reflection papers were created by the researcher considering the purpose of the research and research questions. A general question encouraged learners share all their feelings about AR. However, the following two questions were used to make them in a more semi-structured manner because the number of responses were high for a qualitative analysis. The formed questions, the purpose of the research and research questions were shared with another colleague with expert knowledge on qualitative method, they were shaped according to the feedback.

2.5. Data Analysis

Thematic content analysis (Braun & Clarke, 2006) was employed for the qualitative data gathered. The researcher performed an inductive, nVivo analysis. An inductive technique signifies that the identified themes are closely associated with the data (Patton, 2015). Thematic extraction was conducted using a semantic approach to elucidate participants' perspectives and mitigate prejudice. Braun and Clarke (2006) assert that a semantic method identifies themes based solely on the explicit or surface meanings of the data without seeking interpretations beyond the participants' statements or written content (p.13). Theme extraction employed an essentialist/realist paradigm, presuming a straightforward, predominantly unidirectional link among meaning, experience, and language.

Phase 1. Transcription into electronic format: Initially, the researcher converted the PKQ and student reflection reports from each step into electronic format. The technique allowed the researcher to examine all responses thoroughly, and preliminary codes and themes were documented as notes.

Phase 2: Coding and Categorization: Following the preliminary overview, codes were developed. Following a meticulous inspection of each word and sentence, codes were generated by emphasizing and constructing a table in Word. The researcher coded each dataset twice, with a two-week interval between the sessions. The codes from the initial and subsequent instances were analyzed to identify any differences or similarities. Subsequent to the comparison, the definitive codes were generated. Categories were established based on the final codes and enquiries posed to the participants.

Phase 3. Theme Identification: The codes and categories were compared and analyzed to generate themes based on shared characteristics and distinctions. The task was executed manually in a Word document utilizing tables. The standardized codes, categories, and annotations were disseminated to a colleague possessing expertise inside the same institution as the researcher, and the themes developed by both the researcher and the colleague were evaluated for trustworthiness.

Phase 4: Evaluation of Themes: Thematic content analysis was performed on all primary qualitative data transcriptions in the AI program ChatGPT, utilizing the recommendations of Şen et al. (2023). The results of the AI application were juxtaposed with the outcomes of the researcher's analysis.

Phase 5. Defining and Naming Themes: Through the comparative analysis conducted by the researcher, a colleague, and AI, specific theme names were modified, and more themes were incorporated based on the colleague's recommendations during the analytical process.

2.6. Trustworthiness, Ethical Issues

In alignment with qualitative research standards and the hermeneutic phenomenological approach of the study, multiple strategies were employed to ensure trustworthiness and uphold ethical rigor. Trustworthiness was established through credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). Credibility was enhanced through prolonged engagement, as the researcher was also the course instructor and actively participated in all stages of data collection. Reflexivity was prioritized by maintaining a reflexive journal to identify potential biases and by engaging in peer debriefing with a colleague experienced in qualitative research from the same institution. This collaborative process was instrumental in critically examining emerging codes, categories, and themes. Dependability was addressed by implementing a transparent and replicable data analysis process. Each dataset was coded twice by the researcher with an interval, and coding consistency was checked across sessions. A step-by-step description of the coding and thematic development process was maintained, including peer cross-checking of themes by a colleague researcher with expert knowledge. Confirmability was promoted by clearly documenting all decisions made during analysis and by comparing researcher-derived themes with those generated using AI (ChatGPT), following the recommendations by Şen et al. (2023). Discrepancies were discussed and resolved in consultation with the peer reviewer to reduce personal bias and technology-related errors in interpretation. Transferability was supported through thick descriptions of the setting, participants,

and course structure. The contextual details provided allow readers to determine the relevance and applicability of the findings to similar educational environments.

From an ethical standpoint, the study adhered to the principles of informed consent, confidentiality, and voluntary participation. Prior to data collection, participants were informed about the aim and scope of the study, and they were assured that participation would have no bearing on their course grades or academic standing. Reflection reports and questionnaires were anonymized using randomly assigned numbers, and students were instructed not to write their names on any documents.

3. RESULTS AND DISCUSSION

The themes are presented according to the two research questions conducted before the student-teachers took the course and semi-structured questions in the reflection reports collected after each unit.

3.1. Preliminary Knowledge Questionnaire

3.1.1. What is action research? What do you think it could be if you are unfamiliar with it?

Forty-five participants answered the first question in the questionnaire before the course started. Five themes were derived from 16 codes and five categories. Most participants' comments suggested that they were unfamiliar with AR. Nonetheless, the identified themes were entirely consistent with the notion of AR as indicated in Table 1 below.

Table 1. Themes for the first question in PKQ

Theme	Quote	Explanation
Problem-solving nature	*"I think it is research conducted to solve a problem" (Participant 2)*	It is the kind of research that is implemented to provide a solution to a problem or only to investigate a problem.
Practical application	*"It is practical research and done in the field" (Participant 44)*	It is practice-oriented and focuses on tangible actions rather than theoretical analysis and the outcome must be practical and influence real life.
Contextual relevance	*"…done for the questions teachers ask to get to know their students in the classroom." (Participant 1)*	It is the kind of research conducted to investigate actions of individuals or communities, and it is context specific.
Active participation	*"…it may be related to the fact that the researcher is personally involved in the research and action" (Participant 10)*	Active and direct participation of the researcher is necessary in the action research.
Systematic data collection	*"Action research can be tests and verbal questions the teachers ask to get to know their students" (Participant 5)*	Main data collection methods in action research could be observation, tests and interviews (verbal questions).

Theme1: Problem-solving Nature

In ten responses, the word 'solution' was used. The responses suggested that AR is the kind of research that is implemented to provide a solution to a problem or only to investigate a problem, as Participant 21 suggests: "I do not know what action research is, but I think it is used to solve a problem. The researcher collects data and makes improvements or solves the problem". Similarly, Participant 9 suggests, "It is a research method planned and implemented to solve a specific problem in social sciences." In eight of the other responses, there was an emphasis on investigating or solving a problem in social sciences.

Theme2: Practical Application

In many responses, an emphasis on the practical aspect of AR was done as suggested by the following two responses: "Action research may have a definition that research on a topic is action-based, or it may indicate any research to be done on a particular action"; "it may mean that the research is concerned with practical rather than theoretical issues." The two responses might suggest that the word 'action' in the concept might evoke practical application. The responses suggested that it is practice-oriented and focuses on tangible actions rather than theoretical analysis, and the outcome must be practical and influence real life.

Theme3: Contextual Relevance

Some of the responses indicated that AR is the kind of research conducted to investigate the actions of individuals or communities, and it is context-specific. The theme was extracted from statements such as: "a group of people; certain group; to get to know students better in a classroom." Many participants knew that AR could be limited in terms of contextual variables.

Theme4: Active Participation

The word 'action' in AR might evoke the researcher's actions for many participants. In 11 responses, there was an emphasis on the active and direct participation of the teacher in the research process, as suggested by the following response: "I do not know about action research. However, I think it may be related to the fact that the researcher is personally involved in the research and action". It could suggest that although some participants are unfamiliar with the concept, the word 'action' evokes direct participation.

Theme5: Systematic Data Collection

The following last theme could have been inferred from the word 'action' as many responses suggested that it could be a research type in which people's actions are observed, as in the response: "I do not have any idea. It may be research conducted by observing people's behavior". In four other responses, there was an emphasis on 'observation.' Some other responses suggested that tests and interviews are the main types of data collection in AR.

The themes indicated that although it might have been the first time the student-teachers heard about AR, the ideas that the concept evokes might be appropriate for the definition of AR. The following definition for AR could be suggested considering the themes extracted: "Action research can be done to solve problems in specific contexts for practical outcomes with the active participation of the teachers through a systematic data collection."

3.1.2. What are your opinions about the teacher-researcher? Is it possible to be both a researcher and a teacher?

The second question in the PKQ asks participants' ideas about teacher-researchers, which might have been a concept many have heard for the first time. Forty-five responses were collected.

Table 2. Themes for the second question in PKQ

Theme	Quote	Explanation
Complementary Roles	*"Teachers may be in a more advantageous position in educational research because they are familiar with classroom processes and student behavior" (Participant 17)*	Being a teacher-researcher is possible due to the contextual availability of data from various sources and active involvement in the potential research settings. Teachers do research processes not necessarily systematically every day and research and teaching has complementary roles.
Professional growth and continuous learning	*"We cannot be a full teacher by depending only on the resources we have. However, I think we will fulfill this profession properly by adding new things to what we know every day" (Participant 23)*	Teachers must be a researcher for professional development and continuous learning, to verify theoretical knowledge through practice, to solve problems encountered and to achieve educational aims in the classroom.

Challenges and considerations	*"Things will get harder again because we won't have much time left outside of school, because experimenting requires some peace of mind and a lot of free time" (Participant 13)*	While the majority supported the dual role, some participants acknowledged potential challenges in balancing the demands of teaching and research. Time management and institutional support were cited as crucial factors in successfully integrating both roles. It might be difficult for teachers to conduct research in their own contexts as ethical considerations may harm reliability.

The three themes in Table 2 were extracted from 16 codes in five categories. Most responses, except five, supported the idea of being a teacher-researcher.

Theme1: Complementary Roles

Being a teacher-researcher is possible due to the contextual availability of data from various sources and active involvement in the potential research settings. Teachers do research processes that are not necessarily systematically conducted daily, and research and teaching have complementary roles. One response: "The teachers should be able to analyze their students well even without conducting any research," suggests that it could be natural for teachers to collect data about their students. Another response suggests that the classroom could be a more suitable context for research than other branches, and teachers always have access to the site: "It is easier to conduct research by applying different methods in the classroom context than other branches of research." Most participants endorsed the dual roles of teacher and researcher, citing their complementary nature. Classrooms are recognized as optimal environments for research involving diverse variables.

Theme2: Professional Growth-Continuous Learning

Nearly half of the participants suggested that teachers must be researchers for professional development and continuous learning, verify theoretical knowledge through practice, solve problems encountered, and achieve educational aims in the classroom, corroborating the primary conclusion of other studies (Dajani, 2015; James & Augustin, 2018; Yarullin et al., 2015). The professional development is both for teachers themselves and their field, as suggested by the following two responses: "The teachers can learn many things related or unrelated to their fields and can integrate the useful moments into their field and produce something successfully," "teacher-researchers have a significant role in the field of education. They both try to improve students' learning processes and conduct research to improve educational practices, which contributes to the continuous development and renewal of the education system". AR could have a more learning-centered orientation by examining learners' situations as one response states: "The teachers can research the positive or negative factors affecting their students' situations."

Theme3: Challenges and Considerations

Five responses coded as 'workload,' 'division of work,' and 'interfering ethical considerations' emphasized teacher-researcher challenges. The codes 'workload' and 'division of work' indicate that while student-teachers highlighted the complementary roles of teaching and research, they may have uncertainties regarding the time allocated to each responsibility, as Wulandari et al. (2019) noted for practicing teachers.

> Even though research is believed to play a central role in the development of learning practices, most teachers looking at research as an activity outside their regular work. The majority of teachers only focus on teaching activities and assume that even the idea of participating in research into the teacher's professional assignments is unrealistic (p.314).

The following two responses emphasized the different duties of teachers and researchers: "While the researcher works with research methods, the teacher does not do this, so in my opinion, the teacher should remain a teacher, and the researcher should remain a researcher," "Researchers have a more active way and at the same time they are still students to learn, whereas the teacher is obliged to teach while still being a student. Teachers' workplace is more pressured". Teachers' heavy schedules and workload were emphasized by one response: "Things will get harder because we will not have much time outside the school because research requires some peace of mind and much free time." It could be inferred that the duties of teachers might hinder conducting AR. The necessity of allocating sufficient time for teachers to engage in research has been highlighted by multiple scholars (Borg, 2006; Dikilitaş, 2014; Smith et al., 2014), and the study's themes reinforce this requirement.

This study revealed a different emphasis on ethical considerations alongside institutional support, as suggested by the following response: "If we are going to research our students at school, we must give our students some preliminary information so that it is not unethical. This could spuriously continue the research process". Bureaucratic requirements and institutional and family support for AR projects can pose challenges for teacher-researchers, necessitating the planning of specific regulations to facilitate the process. In a study involving English teachers, Aga (2017) identified similar findings as demotivating factors for AR. Smith et al. (2014) provide recommendations that may be beneficial in fostering a supportive environment for AR in light of the identified negative themes. The researchers propose that challenges may be diminished in programs aimed at supporting schoolteachers' research, where there is a greater emphasis on providing opportunities for teachers to explore effective practices rather than on publishing their findings in academic journals. In these contexts, it is crucial to identify methods for disseminating findings that minimize the burden on teachers and ensure accessibility for their colleagues.

3.2. Reflection Reports

The reflection reports were collected after each unit was covered. In each reflection report, there was one semi-structured question: how do you feel about planning/act/observe/reflect phases, and can they be challenging or easy for teachers? In what ways?

3.2.1. Reflections on planning phase

Most participants emphasized the significance of the planning phase and considered the part 'challenging.'

The following themes were extracted from the student-teachers' reflection reports for four phases of AR (plan-act-observe-reflect). Two themes in the Table 3 below were extracted: 'research-related challenges' and 'contextual and 'teacher-related challenges.' The two themes were extracted from 23 codes, and three main categories were obtained from 37 participants' reflection reports.

Table 3. Themes of the reflections on the planning phase

Theme	Quote	Explanation
Research-related challenges	*"There are many more categories and sub-categories because here we are working in a social science. It makes our job harder" (Participant 32)*	Teacher-researchers might have difficulties in the planning phase of action research in problem detection, finding the focus and narrowing it down, methodological challenges, objective clarification, and conducting a feasible study. Social sciences require a comprehensive thinking with many aspects and considering ethical issues as well, which might be challenging for some students.
Contextual or teacher-related challenges	*"Selecting the participants can be challenging; for example, students and their parents or administers can be challenging" (Participant 30)*	Contextual facilities such as access to the sources, time constraints, teacher opportunities, class size and possibility of collaboration might affect the challenge experienced. Teacher related

	factors such as experience of research processes, teaching style, and his feeling the ownership of the research and subjective thoughts about the topic might determine the challenges. Teacher-researchers might feel excitement and anxiety in the planning phase.

Theme1: Research-related Challenges

The findings indicated that the research and scientific thinking-related factors could cause difficulty for many teacher-researchers, and they may require an excellent theoretical background knowledge about research processes. Participant 12 states, "It can be challenging that teachers may face difficulties identifying the research problem." One participant suggested that research in social sciences requires comprehensive thinking about various aspects, especially problem detection, asking the right questions, methodological challenges, finding the proper focus, and objective clarification might be challenging for teacher-researchers, and the challenge could only be overcome through good theoretical background about research processes and practice. The extract from Participant 13 summarizes all mentioned factors; "there are many factors to say whether it is easy or challenging, but depending on the focus, data, research type and opportunities of the teacher, the planning stage might be easy or challenging." Research-related challenges were primarily identified from four key areas: problem detection and formulation of appropriate questions, methodological issues, focus identification, and objective clarification. The finding highlights the importance of a solid theoretical foundation in formulating appropriate questions, refining the inquiry for enhanced focus, and elucidating objectives and methodological considerations. Wulandari et al. (2019) reported a comparable finding regarding teachers' challenges in problem identification. The planning phase is a critical step where teachers require sufficient support and scaffolding (Ulvik, 2014; Bendtsen et al., 2021). Johnson and Golombek (2016) advocate for the establishment of 'structured mediational spaces' that facilitate collaborative reflection and inquiry among teachers regarding their everyday concepts. These activities may enhance teachers' questioning and problem-identification skills, which could also be incorporated into teacher education programs. Moreover, student-teachers could be trained to use bottom-up and top-down sources to identify problems (Claros et al., 2024).

Theme2: Contextual or Teacher-related Challenges

The second theme for the planning phase is the teacher-related or contextual challenges. From the highest frequency to the least, the codes could be listed as time constraints, access to sources, teachers' opportunities, experience, class size, teaching style, and collaboration. Sato and Lowen (2018) identified comparable challenges faced by 12 EFL teachers in Chile, including limited physical access to research, time constraints, resource shortages, and insufficient institutional support. The most common teacher-related challenge in the planning phase was teachers' time constraints, as some student-teachers used phrases such as 'time limitation,' 'limited time,' and 'careful time management.' Most student-teachers might feel that teachers have many teaching responsibilities, and careful research and teaching time division could be challenging. Researchers at the academy have access to many databases; however, teachers might have difficulty accessing different sources, as suggested by Participant 10, "…the lack of easy access to the other studies in the topic of the research may cause problems for the teacher". Contextual facilities and teacher opportunities are the other factors mentioned with high frequency, as indicated in the words of Participant 21 below.

> "In Turkey, I do not think that our education system will support teachers in doing action research. We cannot get help and permissions that we are obliged to, and maybe some students or families would not want to participate in the research; they can think it is a waste of time."

Teacher-researchers should plan their research considering the moral and material support they can get from others and their institution. Institutions could implement regulations to support teacher-researchers, and families could be informed about research projects. They play a crucial role by incentivizing teacher-researchers to engage in AR projects rather than imposing mandatory participation, as the latter did not demonstrate effectiveness (Wulandari et al., 2019).

Collaboration between schools and universities could be improved to facilitate access to resources, including scientific databases, which was noted as a challenge by Burns (2019). Participant 30 states, "There are some opportunities with careful planning like collaboration with others, and teachers can develop their research skills." Teachers' experience of teaching and research could affect the difficulty of the planning phase, as suggested by Participant 22; "I think it can be challenging or easy for teachers depending on their experience." The experience is for teaching and research skills; therefore, it can be suggested that experienced teachers who can divide research and teaching could have fewer difficulties in AR. The challenge could be overcome with collaboration and research methods classes in teacher education programs. An AR project in a crowded class can be challenging as there would be many things to consider and enough time to spare for research and teaching. The response of one participant suggested that teachers' teaching styles could affect the planning phase: "Depending on the teacher, the experience may vary; but if the teacher is not used to any other way of teaching except for the traditional way, it might be too confusing and maybe even time-consuming." The response emphasizes that teachers' being open to changes and their willingness to try new things could affect the success of the research studies right from the beginning. Teachers' feelings, such as excitement, anxiety, ownership of the research, and subjective thoughts, could influence the difficulty in the planning phase, as Participant 18 suggests below.

> "Teachers have autonomy and control over the research process, allowing them to tailor the study to their interests, needs, and priorities. This sense of ownership can make the planning stage more enjoyable and fulfilling. So, it can be easy for teachers."

The findings suggest the importance of assessing the feasibility of planned AR projects concerning available time and resources, echoing the conclusions of James and Augustin (2018) regarding the practicality of AR implementations.

3.2.2. Reflections on act phase

The two themes in Table 4 below were derived from 23 codes across eight categories. Most participants viewed the phase as challenging for teacher-researchers; nonetheless, the proportion of participants indicating that the phase was not challenging was significant. Participants who perceived the phase easy generally believed that the advantages and benefits of the process surpassed the challenges.

Table 4. Themes of the reflections on the act phase

Theme	Quote	Explanation
Planning and Execution	*"This step can be difficult for teachers. Because collecting the data can take a lot of time and be quite laborious" (Participant 14)*	Using social research methods can challenge teachers. The process can be messy and may vary depending on the method used, collecting data could be time consuming and laborious. Classroom size and students' collaboration could affect the execution of the research.
Positive Contributions	*"…feedback is received from the students. Then, self-criticism can be made, and the efficiency of the lesson can be increased. It's a bit of a tiring step, but it could work" (Participant 6)*	It provides insights into student progress, classroom dynamics and it facilitates self-criticism and reflection, improving teacher quality.

Theme1: Planning and Execution

In the act phase, the plan is put into action. According to the responses, balancing teaching, trying new things, and collecting data could be challenging for teachers. The responses suggesting that the phase is challenging assert that variability in methods and data collection complexity could cause a challenge for teacher researchers. The finding asserts that the data to be collected and the methodology used in the AR could directly influence the difficulty of the act phase. Participant 18 asserts, "I can use different methods to get to know the student better and approach him accordingly. I think its ease may vary depending on the method I use". Another participant highlighted the messiness of the research in social science by suggesting that "collecting data can be difficult for language teachers because our field is a social field, and we may not get definitive answers as in numerical fields." These responses direct attention to methodological orientation decision, data collection complexity and planning and execution of the action when the aim is also to teach something. Planning the time for action and data collection could be challenging as the time spared for classes could not be enough. Furthermore, ethical concerns could be another challenge, as collecting data through videos or photos requires permission. Participant 14's response summarizes all these points.

> "This step can be difficult for teachers. Because collecting the data can take much time and is quite laborious. The use of videos and photographs may cause problems because they are private. Permission must be obtained from the students and families. In addition, the opportunities and time required to do these are limited in the Turkish education system".

Teachers' primary role is to teach the subject effectively. However, if they conduct AR, they need to catch every detail in the data, which could be a challenge in the act phase as well as suggested by Participant 19; "for me, it is kind of confusing, so I would say it is challenging. You must understand every detail and test it correctly. I think it is not just a language teacher, but for everyone, it can be hard". The number of students in the class, their motivation, and the complexity of the action tried might also directly influence the act phase. A recent study by Johannesson (2024) indicated that students predominantly engaged in the data-gathering phase, both as informants (data sources) and consultants (active respondents). The objectives of new interventions should be communicated to students in class, and they should possess sufficient motivation to engage in novel acts. Establishing a positive rapport, mutual trust, and respect may be essential for implementing AR in a classroom setting (James & Augustin, 2018).

Two suggestions to overcome the challenges of planning, execution, data collection complexity, and variability of methods were made by Participants 4 and 22. Participant 4 suggests that teacher-researchers could overcome the challenges in the act phase by using structured data collection methods, saying, "While using methods such as open-ended or observation can be challenging for the teacher, using structured data collection methods is easier because it limits the question." Rather than collecting open-ended, massive amounts of data, teacher-researchers could collect structured data for their aims. Furthermore, participant 22 suggests that utilizing technological aids in the act phase could help teacher researchers in collecting and analyzing the data; "I think sometimes easy because new technology gives us many possibilities about sources, surveys you can analyze a survey in a minute, but sometimes, in terms of observation and teacher, it may be challenging. Every step of the act requires attention". Utilizing electronic surveys, questionnaires and getting help from AI could help teacher-researchers in the messy nature of trying new things and collecting data about research questions.

Theme2: Positive Contributions

Some responses indicated that trying out new things and doing research could contribute to both students and teachers in that it provides valuable feedback and increases lesson efficacy. As Participant 6 states, "… it is useful for teachers. With the help of this step, feedback is received from the students. Then, self-criticism can be made, and the efficiency of the lesson can be increased. It is a bit of a tiring step, but it works". The actions in the act phase could facilitate self-criticism of the teacher and reflection, which could improve the teaching quality, and it might be an efficient way to get feedback for students' learning as Participant 10 suggests; "It can be used in schools to confirm how the student is doing. It is a step that will not be difficult for teachers". Participant 3 emphasized the significance of the act phase in solving problems as follows.

> "I think action research is a good method to solve problems and understand their causes. Solving problems is easier and faster with the active participation of researchers. I think it is not challenging for the teacher. It is a method that will contribute positively to both the student and the teacher."

3.2.3. Reflections on Observe Phase

The examination of 32 participants' replies concerning the difficulties and ease of the "observe" phase yields four themes from 23 codes and five categories. They indicate the conceptual and practical difficulties teachers confront, illuminating the complex nature of observation.

Table 5. Themes of the reflections on the observe phase

Theme	Quote	Explanation
Objectivity	*"Teachers might have a hard time not including their opinions or beliefs" (Participant 27)*	As teachers will collect data from her own students maintaining objectivity and reducing bias could be a challenge.
Data Quality	*"Teachers can struggle to teach and collect data from the students in detail at the same time because we won't remember our observation in detail if we don't take notes and doing these things at the same time could be challenging" (Participant 14)*	Ensuring the quality of the data and ethical integrity could be challenging in teachers' own class.
Time-resource Management	*"If working with a large group, lack of time or excessive use of time may be a problem…" (Participant 31)*	Teacher-researchers must ensure that they use time and resources effectively.
Classroom Management	*"While some students are motivated, others may be reluctant. It can be difficult to achieve harmony in the classroom" (Participant 2)*	Managing class dynamics and ensuring student engagement into the research process while teaching according to some objectives could be challenging.

Theme1: Objectivity

Many responses indicated that maintaining objectivity in studies with teacher-researchers' students and reducing bias can be challenging. Participant 27 suggested, "It can be challenging not to be biased when evaluating the facts we find. Because we have a certain tendency when determining the problem". Many participants expressed concerns about personal biases affecting their ability to observe students impartially, as claimed by one response: "Teacher biases might get in the way of observing objectively." Participants noted that biases could cloud their judgment, leading to skewed data and potentially invalid conclusions.

Theme2: Data Quality

The need for constant and reliable data was emphasized, with participants stressing the importance of minimizing biases to ensure the validity of the research. This challenge is further compounded by the variability in student behavior, which can fluctuate daily, making it difficult to draw consistent conclusions from observations, as suggested by Participant 3: "While observing, students' moods may change daily, and one day's observation may not be valid for the next." The collection and interpretation of data during the observation phase were cited as challenging aspects of the process, and they could affect the data quality. Participants expressed concerns about the difficulty of collecting both qualitative and quantitative data accurately, particularly in environments where student behaviors and emotions are not easily quantifiable, as suggested by Participant 19: "I think the biggest problem is observing qualitative, quantitative, abstract and concrete concepts and putting them into data." Misinterpretation of data was also a common concern, with some participants highlighting the risk of drawing incorrect conclusions if small but significant details are missed during observation. The need for careful and thoughtful analysis was emphasized, especially in social research where subjective interpretations can heavily influence outcomes.

Theme3: Time-resource Management

Many participants highlighted the logistical challenges associated with the observation phase, particularly regarding time management and resource availability. Participants frequently mentioned the difficulty of balancing observation with their other teaching responsibilities, especially in large or crowded classrooms, as suggested by Participant 14: "Teachers can struggle to teach and collect data from the students in detail at the same time because we will not remember our observation in detail if we do not take notes and doing these things at the same time could be challenging." The limited time available for teaching and observing was cited as a significant constraint, often leading to teacher fatigue and incomplete data collection.

Theme4: Classroom Management

Classroom management emerged as another critical theme, with participants discussing the complexities of student behavior and peer interactions. The diversity in student motivation and learning styles was identified as a challenge for teachers, who must navigate these differences while attempting to observe objectively, as suggested by Participant 2: "Each student may have different behaviors and attitudes, and it could create difficulties for the teacher. While some students are motivated, others may be reluctant. It can be difficult to achieve harmony in the classroom". Participants noted that the varying attitudes and behaviors of students could make it difficult to achieve harmony in the classroom, which in turn affects the observation process, as stated by Participant 23: "Maybe the whole class can do different things in learning so the teacher could have difficulty in making a general plan that fits everyone." Moreover, the influence of peer relationships on student behavior was mentioned as a factor that could complicate the interpretation of observational data.

3.2.4. Reflections on reflect phase

Most of the responses from 22 participants indicated that the reflection phase could be challenging for teacher-researchers; however, it is necessary for the profession. The two themes in Table 6 below were extracted from four categories and 17 codes.

Table 6. Themes of the reflections on the reflect phase

Theme	Quote	Explanation
Twenty-first century Skills	*"The reflection phase can be challenging because it involves self-awareness, critical thinking and openness to change" (Participant 2)*	Reflection is necessary for profession, and it is done consciously or sub-consciously by most teachers; however, it can be challenging for teachers as it entails 21st century thinking skills to master.
Collaboration	*"I think the phase could be challenging for new teachers so their more experienced peers should give them assistance in this journey" (Participant 4)*	Reflection can be conducted better in a collaborative and supportive environment.

Theme1: Twenty-first Century Skills

Reflection is necessary for the profession, and it is done consciously or sub-consciously by most teachers; however, it can be challenging for teachers as it entails 21st-century thinking skills to master as suggested by one response: "The reflection phase can be challenging because it involves self-awareness, critical thinking and openness to change." The findings highlighted the significance of the reflect phase for professional development, as Participant 18 suggests; "reflect is very useful for us to improve our thoughts, knowledge and progress more professionally in our work." The phase serves as feedback for teachers for their students' learning, as stated by Participant 5; "The teacher sees which activities work, how students learn, and in which activities students are more effective and efficient." Through reflection, teachers can solve the problems encountered; therefore, it has a problem-solving purpose. Three responses suggested that reflection is a routine of the teacher, and every teacher does it consciously or subconsciously, as stated by Participant 18; "reflection is an inevitable action we do in every aspect of our lives. I think it is not challenging for teachers because the teacher inevitably makes a reflection in his mind". Most participants emphasized that for accurate, beneficial reflection, teacher-researchers should master maintaining objectivity, critical thinking, self-criticism, self-awareness, open-mindedness, and rhetoric in preparing reports on AR projects. Therefore, it could be suggested that teacher-researchers must have the necessary 21st-century skills, as suggested by Participant 16; "It can be challenging because teachers need to evaluate results and practices critically and receive constructive feedback."

Theme2: Collaboration

The second theme was collaboration, with student-teachers indicating that reflection can be enhanced in a cooperative and supportive setting. Many responses indicated that reflection could be conducted better in a collaborative and supportive environment, as suggested in the following response: "A safe environment where teachers freely share their results is necessary; health threats, threats to safety, threats to unprofessionalism should all be eliminated, and peers should be able to discuss and give feedback to each other." The response by Participant 4 signifies the importance of collaboration among teachers and getting support from the institutions where the AR projects are conducted. Some responses stated that AR could be done more efficiently and professionally by gaining experience and seeking assistance from more experienced teachers could be necessary. It may indicate that it is unrealistic to anticipate AR projects from educators without enough mentoring, scaffolding, and support. Support may derive from institutional resources, experienced colleagues, or collaboration with faculty members. The research by Ceylan and Comoglu (2024) revealed that pre-service teachers encountered difficulties in AR primarily due to insufficient collaboration and support. They proposed strategies for effective AR, including providing adequate support and scaffolding, establishing a shared purpose and ownership of the research, fostering collective thinking and reflection, and ensuring symmetrical power relations and equality. Collaboration among teacher study

groups, peer coaching, and academy-school partnerships should be strengthened. Institutions should promote teacher reflection and inquiry (James & Augustin, 2018) by streamlining bureaucratic processes for approving research funding requests (Aga, 2017). Ugaligan et al. (2022) demonstrated that teachers' self-efficacy beliefs on AR significantly correlate with their collaborators' judgments. Dajani (2015) demonstrated in a study involving forty language educators that "cooperation and collaboration are the healthiest components for establishing a nurturing learning environment through respectful, supportive, and productive dialogue" (p.130). Mitchell et al. (2009) assert that a collaborative AR model represents the most effective method for professional development, especially for novice educators facing several challenges. Teacher-researchers should prioritize collaboration to investigate effective practices instead of focusing on writing academic articles, which may impose an undue load on educators (Smith et al., 2014). Teacher researchers could share findings within their specific communities of practice for further professional development.

4. CONCLUSION

This study identifies the challenges and opportunities encountered by student-teachers in their engagement with AR for professional development. A notable deficiency in familiarity with AR was observed, highlighting the necessity for focused teacher education strategies that employ a constructivist framework. Participants acknowledged the complementary functions of teachers and researchers; however, concerns regarding workload, time management, and ethical issues surfaced as obstacles, highlighting the need for solid support systems and institutional support.

The findings emphasize the significance of structured planning phases, during which teacher-researchers address methodological challenges and contextual factors. Collaboration among peers and educational institutions is essential for promoting reflection and inquiry, allowing teacher-researchers to address challenges and enhance effective AR practices. Participants recognized the advantages of AR, including improved lesson effectiveness and a greater understanding of classroom dynamics, despite the challenges faced. This optimistic perspective underscores that, with appropriate support, teacher-researchers can utilize AR to enhance teaching quality and promote continuous professional development. The study ultimately supports integrating research into daily teaching practices rather than treating it as a separate entity. Institutions must enable resource accessibility and allocate adequate time for research endeavors. Prioritizing collaboration and fostering a culture of reflective practice enables teacher-researchers to make significant contributions to their professional communities and enhance student learning experiences.

The study is not without limitations. Due to the contextual nature of qualitative method, the research collected data from 45 student-teachers in Turkish teacher education context. Contextual differences could change student-teachers' constructs on AR; therefore, more studies should be done in other educational contexts. Further studies could collect similar data from practicing teachers who have experienced AR and comparisons could be made between the data in this study and the one with practicing teachers.

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