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The Perception of Teacher Professional Development in Azerbaijan

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Abstract This study examines how teachers in Azerbaijan perceive current professional development programs (PD) in a rapidly changing educational environment, where they must adapt to increasingly complex educational, technological, and administrative demands. As schools strive to improve teaching quality and respond to nationwide educational reforms, the ongoing PDP is once again becoming important. The purpose of this study is to understand teachers' perceptions of PDP, their preferred teaching formats, and the main barriers to their effective participation. The quantitative study design included an online survey of teachers from 12 regional education departments and the Baku City Department of Education. A total of 1,574 valid responses were analyzed using SPSS 22, yielding descriptive and inferential statistical results. The results indicate that teachers generally have positive attitudes toward professional development and, particularly with regard to information technology and curriculum implementation, prefer practical, interactive, and subject-oriented teaching methods. However, the study also identified existing challenges, such as scheduling conflicts, inadequate school infrastructure, and a lack of personalization of professional development to meet teachers' needs. These demographic indicators, such as age, education level, and participation in certification exams, were observed consistently. To improve relevance, engagement, and long-term effectiveness, the study concluded that PD curriculum should be more aligned with teachers' contextual realities and demographic diversity. With evidence-based findings, the results contribute to a broader conversation about teacher development in evolving education systems, helping to create inclusive, needs-based PD initiatives. Social implications relate to improved teacher satisfaction, instructional quality, and, ultimately, student learning outcomes. Conversely, practical implications provide guidance to policymakers and school leaders when planning targeted PD interventions. The study is limited by its reliance solely on self-reported survey data and its focus on specific regions. This opens the door for future research using mixed methods or national surveys.

Keywords Teacher Professional Development, Lifelong Learning, In-Service Training, Post-Service Training

1. Introduction

In today's rapidly changing educational landscape, teaching is no longer limited to simply imparting knowledge. Instead, it aims to develop students' skills and knowledge to navigate an increasingly complex and uncertain world. Today, successful teaching requires not only a deep understanding of the subject matter, but also the ability to respond flexibly to the diverse needs of students and to create inclusive, attractive learning environments, as highlighted by the OECD's Teaching and Learning International Study (TALIS) [1]. Teachers are

expected to be adaptive professionals and subject matter experts, able to manage the realities of the modern classroom through continuous learning and development. In order to uphold professional standards that meet the evolving needs of learners, in-service teachers are expected to engage in PD activities [2]. Although these activities constitute an important component of teachers' professional careers, there is no clear consensus on what defines effective teacher professional development [3].

1.1. Azerbaijan

Teacher professional development in Azerbaijan is largely influenced by government-led reforms, international partnerships, and institutional efforts designed to enhance teaching quality and align the education system with contemporary standards. At the national level, the government and related institutions implement large-scale training initiatives, frequently employing cascade approaches and certification mechanisms to strengthen teachers' pedagogical competencies and evaluate their performance, thereby promoting ongoing professional development [4].

2. Literature Review

There is a well-established body of research addressing the professional development of teachers. For example, the study by Bayar [5] notes that while professional development is intended to remedy teacher unpreparedness in Turkey, educators often view traditional workshops as a waste of time unless they are long-term and needs-based. For programs to be truly effective, they must incorporate teacher involvement in design, active participation opportunities, high-quality instructors, and a direct match to existing school and teacher needs. Another study [6] emphasizes that the effectiveness of teacher development programs is significantly enhanced through active participation and experiential learning methods like microteaching, which foster a stronger intention among teachers to implement new classroom strategies. Moreover, for teacher development programs to be truly effective, they must move beyond traditional one-off sessions toward sustained, school-based models that incorporate individualized external support and internal departmental collaboration [7, 8]. This comprehensive approach enables teachers to adapt their practices in ways that directly advance students' social and physical learning outcomes.

This body of research points to a set of core features that determine the effectiveness of professional development programs. These features align closely with the framework proposed by Desimone [9], which is used to guide the analysis in this study. Grounded in this framework, the current study conceptualizes effective teacher professional development as comprising five core features: content focus, active learning, coherence, duration, and collective participation. Desimone's model further proposes a causal sequence in which high-quality PD influences teachers' knowledge and beliefs, leading to changes in instructional practices and ultimately, improved student outcomes. This framework directly informs the present study by providing a lens to interpret teachers' perceptions of PD programs in Azerbaijan. By applying Desimone's framework, this study not only evaluates teachers' attitudes toward PD but also assesses the extent to which existing programs incorporate the key features associated with effective professional development, thereby offering insights for designing more relevant, inclusive, and impactful PD initiatives.

Although there is a substantial body of research on PD programs in general, evidence regarding the effectiveness of such programs for teachers remains limited, particularly within the Azerbaijani context. This gap in the literature highlights the need for context-specific research that examines how PD initiatives are experienced and perceived by teachers. Accordingly, this study aims to address this gap by exploring teachers' perceptions of the effectiveness of the state-organized professional development programs in Azerbaijan.

The main purpose of this study is to investigate teachers' experiences of professional development, with a particular focus on their perceptions of the content, delivery, relevance, and perceived learning outcomes of the training. In doing so, the study seeks to generate empirical evidence that can inform the design of more effective, responsive, and contextually appropriate professional development programs that better meet teachers' needs.

The following research questions are addressed in this paper:

1. What are teachers' perceptions of PD programs in Azerbaijan?
2. What factors influence teachers' engagement with and application of PD?

3. Methodology

3.1. Study Sample

A survey-based quantitative design was adopted as it allows for the efficient collection of standardized data from a large sample of teachers, enabling the analysis of patterns in their perceptions of professional development. Surveys are particularly suitable for examining attitudes and opinions across populations and support statistical generalization of findings [10]. Thus, this study employed a survey as a tool to collect necessary data among teachers.

The survey was conducted with a sample of 1,721 teachers who were actively engaged in state-organized professional development programs. To ensure the representativeness and generalizability of the findings at

the national level, teachers were selected from geographically diverse schools affiliated with the Baku City Education Department and 12 Regional Education Departments. The convenience sampling method was employed for participant selection. In this context, the schools with assigned mentors were included in the sample as they facilitated easier access to teachers and more effective monitoring of the coordination of data collection. Mentors are experienced educators who observe lessons, identify teachers' professional development needs, and facilitate collaboration through regular meetings, peer observations, and professional discussions played an important role in supporting the data collection process. Although online data collection may introduce self-selection bias, the structured distribution through mentors and the inclusion of diverse regional schools likely minimized its impact on representativeness.

Ethical approval for this study was obtained from the ethical review board at the Institute of Education of the Republic of Azerbaijan prior to data collection. Informed consent was received from all participants. All participating teachers possessed formal pedagogical qualifications of various types (see Table 1) and were certified to teach.

3.2. Data Collection

The survey consisted of 21 questions. The survey form was prepared in an online format and sent to 1721 teachers. Then, the collected raw data was imported into the "Excel" program, and after the data cleansing process, 1574 participants' data were transferred to the SPSS 22 program for further analysis.

3.3. Data Analysis

First, descriptive statistics were calculated to examine the level of teachers' perceptions across the different subject areas and elements of the research instrument. One-way analysis of variance (ANOVA) was used to examine differences in teachers' perceptions based on demographic variables such as age, educational level, educational institution affiliation, and certification exam participation status. When significant differences were found, Tukey's HSD post hoc tests were used to determine the groups in which these differences were found. The significance level of $p = 0.05$ was used to identify statistically significant results. Explanatory Factor Analysis and Cronbach's Alpha tests were also conducted during the data analysis process.

3.4. Participant Demographics

Relevant analyses were conducted on the basis of 1574 participants' data. Relevant demographic information about participants has been provided in Table 1.

1448 of the teachers participating in the survey were female (92%) and 126 (8%) were male. Among the teachers participating in the study, those aged 36-45 constituted the majority (34.4%), while those aged 18-25 constituted the minority (4.3%). Regarding work experience, teachers with 21 years of experience and above constituted 43.1% of all the participants in the study. The distribution of other groups varied between 11.1-16.3%. Most of the participating teachers (67%) have a bachelor's degree, and a very small percentage (0.6%) have a doctoral degree.

Table 1. Demographic characteristics

Variable	Group	N	%
Gender	Female	1448	92%
	Male	126	8%
Age	18-25	67	4.3%
	26-35	372	23.6%
	36-45	541	34.4%
	46-55	323	20.5%
	56-60	143	9.1%
	61-65	128	8.1%
Pedagogical experience	1-5 years	253	16.1%
	5-10 years	211	13.4%
	11-15 years	174	11.1%
	16-20 years	257	16.3%
	21+ years	679	43.1%
Education level	Sub-bachelor's degree	208	13.2%
	Bachelor's degree	1054	67.0%
	Master's degree	303	19.3%
	Doctoral degree	9	0.6%

This section outlines the results derived from statistical analyses. Table 2 represents the distribution of teachers by school affiliation with education authorities.

The higher proportion of teachers participating in the study was from schools affiliated with the Absheron-Khizi Regional Education Department (16.5%) and the Baku City Education Department (43.9%). The main reason for this is that the number of schools under these education departments is higher than that of others. The participation rates of teachers working in schools under other education departments were in the range of 1.7-5.8%. This is important in terms of the generalizability of the study results.

Table 3 provides information on the subjects taught by the teachers participating in the study.

Table 2. The distribution of teachers by School Affiliation with Education Authorities

Education Department	N	%
Absheron-Khizi Regional Education Department	259	16.5%
Baku City Education Department	691	43.9%
Mountainous Shirvan Regional Education Department	65	4.1%
Ganja-Dashkasan Regional Education Department	67	4.3%
Lankaran-Astara Regional Education Department	40	2.5%
Central Aran Regional Education Department	66	4.2%
Mil-Mugan Regional Education Department	72	4.6%
Karabakh Regional Education Department	92	5.8%
Guba-Khachmaz Regional Education Department	26	1.7%
Shaki-Zagatala Regional Education Department	85	5.4%
Eastern Zangazur Regional Education Department	31	2.0%
Shirvan-Salyan Regional Education Department	80	5.1%
Total	**1574**	**100.0%**

Table 3. Distribution of Subjects Taught

Subjects taught	Number
Primary education (Azerbaijani language and mathematics)	472
Azerbaijani language and literature	150
Azerbaijani language - as an official language	53
A foreign language	241
Mathematics	226
Informatics	128
Life skills	211
Technology	196
Physical education	226
Music	175
Visual arts	174
Azerbaijani history	80
General history	80
Nature	60
Physics	68
Chemistry	45
Biology	76
Geography	69
Pre-military training	13
Russian language and literature	46

Azerbaijani language and mathematics (primary education) (472) are the subjects most frequently taught by the teachers participating in the current study. However, only 13 of the participating teachers teach the subject of pre-military training.

Table 4 presents the results related to the question: "Which professional development services provided by the government have you used?"

According to the findings, 829 teachers reported having previously participated in government-provided "international experience" programs. The lowest response rate for this question was for the option "orientation and adaptation program for teachers to become familiar with the institution and their role," which was selected by 403 teachers.

Table 5 presents the results related to the question: "Which government-organized professional development trainings would you prefer to participate in?"

Among the respondents, 638 teachers expressed a preference for training to be conducted in an online format. This preference can be attributed primarily to time and travel-related factors. In addition, 661 teachers stated that they would like to attend training delivered through practical examples in the training room (e.g., video lessons, instructional videos, experiments, etc.). This result indicates that teachers not only show interest in such formats but also perceive them as effective. The lowest response rate for this question was for the option "It doesn't matter, none of them are productive," which was selected by 79 teachers. This finding suggests that the vast majority of participating teachers hold a positive view toward professional development training.

Table 6 presents the results related to the question: "What are your usual reasons for participating in a training?"

Table 4. The use of professional development services

The professional development services	N
Orientation and adaptation program for teachers to become familiar with their workplace and institution	403
Self-assessment opportunities (access to digital platforms)	512
Teacher associations established for addressing educational matters (in the form of professional communities)	522
International experience (courses, trainings, seminars, exchange programs held abroad, etc.)	829
Provision of opportunities (technical, financial, etc.) for individual and collaborative research and inquiry	646

Table 5. Willingness to participate in professional development training

Training	N
Online training sessions	638
Offline training sessions	172
Trainings focused on delivering theoretical knowledge	224
Practice-oriented training (e.g., group work, etc.)	474
Classroom-based trainings featuring instructional examples such as videos and experiments	661
Practical, on-site training involving real-time teaching with actual students	601
All formats are productive, no particular preference	425
All formats are non-productive, no particular preference	79

Table 6. The reason to attend the training sessions

Reasons	N
It was required by school leadership	198
Subject-specific (disciplinary) trainings are useful	883
Training sessions on methodological and pedagogical topics are beneficial	872
I was encouraged by school leadership (e.g., rewards, incentives, etc.)	102
It contributed to my career advancement	523
It provides an opportunity to learn from my colleagues	512
It allows me to make productive use of my free time	271
I have no other alternative for ensuring my professional development	301

Among the respondents, 883 teachers indicated that they attend training sessions because subject-specific (disciplinary) trainings are useful, and 872 teachers reported that they participate because trainings on methodological and pedagogical topics are beneficial. These findings suggest that teachers view training as important for their professional development. On the other hand, 198 teachers stated that they attend training because they are required by school leadership, while 102 teachers reported that they participated due to encouragement from school leadership. These latter responses represent a smaller proportion compared to other reasons, indicating that most teachers participate in training of their own volition.

Table 7 presents the results related to the question: "What are your usual reasons for not participating in a training?"

Among the respondents, 609 teachers stated that they could not attend the training because the scheduled dates were not convenient. This suggests that the main reason for non-participation is the improper timing of the training sessions. On the other hand, 132 teachers reported that they do not attend because trainings have no impact on career advancement, 144 teachers stated that the trainings are not useful, 154 teachers indicated that their internal school duties are too demanding, and 158 teachers said they are involved in additional extracurricular teaching activities. These reasons were reported less frequently compared to scheduling conflicts, indicating that time-related issues are the primary barrier to participation.

Table 8 presents the results related to the question: "In your opinion, on what basis should your training needs be identified?"

Among the respondents, 550 teachers stated that training needs should be based on the knowledge and skills required during the implementation of the current curriculum; 563 teachers indicated that training needs should reflect the knowledge and skills demanded by the labor market for the teaching profession; and 554 teachers believed that training needs should be identified based on the results of teacher evaluations (such as Diagnostic or Certification exams). These findings suggest that teachers are interested in developing their competencies in line with current educational demands and that they place importance on the outcomes of formal assessments such as Diagnostic and Certification exams. On the other hand, only 161 teachers stated that training needs should be determined based on the opinions and suggestions of school leadership, making this the least selected option. This indicates that, in most cases, teachers' perceptions of their training needs do not fully align with the views and recommendations of school leadership.

Table 7. The reasons not to attend training

Reasons	N
I am involved in extra teaching activities outside of school (tutoring, courses, etc.)	158
Because my in-school responsibilities (administrative and organizational tasks) are too demanding	154
The training sessions are not useful	144
The training dates are not convenient	609
The training location is too far	370
The training program does not contribute to my career advancement	132
Personal matters take up most of my time	253
I have already participated in a training on the same topic	381
There is no training I have not attended	485

Table 8. Determining training needs

Citation sources	N
The knowledge and skills teachers need during the implementation of the current curriculum	550
International studies conducted in the field of education (e.g., TALIS, PIRLS)	364
Local research in the field of education (e.g., student achievement evaluation reports, State Examination Center [SEC] results)	351
Training needs surveys conducted with teachers	494
The knowledge and skills required by the labor market for the teaching profession	563
Teacher evaluation results (e.g., Diagnostic and Certification exams)	554
Feedback from methodologists	210
Opinions and suggestions of school leadership	161

Table 9 presents the results related to the question: "Which of the following factors prevent you from applying what you have learned in trainings into your teaching practice?"

Among the respondents, 747 teachers stated that the physical conditions of the school (e.g., heating, lighting, lack of resources, etc.) hinder the application of knowledge gained from training. A much smaller portion - 130 teachers - indicated that the lack of necessary support from school leadership prevents them from implementing what they have learned.

Table 10 presents the results related to the question: "How would you prefer the final evaluation of the training to be conducted (by whom, when, in what format, etc.)?"

Most respondents (910 teachers) stated that they would prefer the final evaluation to be conducted at the end of the training. On the other hand, only a small number of teachers expressed a preference for the evaluation to be conducted in an offline format.

Table 11 presents the results related to the question: "Which aspects of the trainings would you like to see changed?"

Among the respondents, 547 teachers stated that they would like the scheduled dates of the training to be changed. On the other hand, only a very small portion of the participating teachers expressed a desire for a change of the training participants (56 teachers) or training organizers (66 teachers).

Table 9. Reasons preventing the use of training outcomes in teaching

Reasons	N
Inadequate physical conditions of the school (e.g., heating, lighting, lack of resources, etc.)	747
Insufficient support from school leadership	130
Lack of a supportive environment among teachers	253
Difficulties related to classroom management	430
Students' existing learning habits (methods, styles) being inadequate for the application of new approaches	678
Lack of support from parents for innovations in the teaching process, and in some cases, even displaying a hostile attitude	580

Table 10. Perceptions regarding the final evaluation of the training

Perceptions regarding the final evaluation of the training	N
Post-training evaluation	910
In-training evaluation (activity, midterm evaluations, etc.)	434
By the trainer	664
By ARTI	290
Through exams conducted online	516
Through exams conducted offline	127
Based on student achievement (exam results, monitoring data, etc.)	224
Based on a comprehensive assessment (theoretical and practical knowledge, sample lessons, situational analysis, creative approach, etc.)	252

Table 11. Preferred changes in training programs

Factors related to training	N
Trainers	160
Training materials	327
Training subjects	368
Training resources (rooms, tools, supplies, etc.)	359
The scheduled date and time of the training	547
Duration of the training programs	413
Training participants	56
Training organizers	66
Methods of teacher evaluation (exams)	255
Everything	121
Nothing	398

Table 12. Professional training needs

Training needs	N
Preparation of the lesson plan	428
Classroom management	619
Content of the subject	292
ICT skills during teaching (internet, computer programs, and technical equipment usage)	867
Managing student discipline and behavior problems	597
Preparation of thought-provoking tasks	427
Development and application of assessment tools	436
Working with the subject curricula	353
Teacher-student-parent relationships	443
Development of language skills (to gain access to international teaching experience)	302
Working with teaching materials (new textbooks, preparation of teaching materials, etc.)	257
Teaching methodology of the subject	293
Teaching students with special needs	289
Soft skills	147
I do not know what knowledge and skills I need	53
Other	135

Table 12 presents the results related to the question: “In your opinion, in which areas do Azerbaijani teachers need professional development trainings?”

Most respondents (867 teachers) indicated a need for training focused on developing ICT skills. Only a small portion (53 teachers) reported that they are not aware of which knowledge and skills they need. This result suggests that most teachers have a certain level of awareness regarding their professional development needs.

The research instrument comprises six sub-dimensions. Detailed information regarding each sub-dimension and the number of items it contains is described in Table 13.

Table 13. Sub-dimensions and the number of items it contains

Sub-dimensions	N
Training content	4
The impact of training on the teaching process	5
Training organization	7
Trainers	8
The evaluation of training participants	7
General impressions of training sessions	4

In the Exploratory Factor Analysis (EFA), the Kaiser-Meyer-Olkin (KMO) measure, Bartlett’s test, and the total explained variance were evaluated. For reliability analysis, Cronbach’s Alpha coefficient was assessed.

The "Training content" sub-dimension is generally related to the content, the importance of the acquired knowledge and skills, the "impact of training on teaching process" sub-dimension is related to the importance and role of these training in teaching activities, teacher-student-parent relationships, the "training organization" sub-dimension is related to topics such as group size, training duration, and ability to participate, the "trainers" sub-dimension is related to the knowledge and skills, attitudes, and approaches of the trainers, the "evaluation of training participants" sub-dimension is related to exam questions, exam process, and exam results, and the "general impressions of training sessions" sub-dimension is related to the participants' final thoughts on the overall training results.

The reliability of the research instrument was tested as a whole and via individual sub-dimensions, and the results are presented in the table given below. Two statements of the “Training Content” subscale were removed from the analyses in order to increase reliability.

Table 14. The reliability of the research instrument and sub-dimensions

The name of dimension	N	Cronbach's Alpha
Training content	8	.902
The impact of training on the teaching process	7	.881
Training organization	5	.937
Trainers	7	.874
The evaluation of training participants	4	.589
General impressions of training sessions	2	.863
Research instrument as a whole	**33**	**.949**

As the table illustrates, the reliability of the research instrument is 0.949, which indicates that the research instrument is highly reliable.

The subscales of the study are coded as follows:

- Training content : ***Content***
- The impact of training on the teaching process : ***Impact***
- Training organization : ***Organization***
- Trainers : ***Trainer***
- The evaluation of training participants : ***Evaluation***
- General impressions of training sessions : ***Impression***

As a result of the Explanatory Factor Analysis, it was determined that the KMO value was 0.945, Bartlett's test result was statistically significant, and the explanatory total variance was 66.8% (Table 15). One question from the "Trainer" subscale, one question from the "Organization" subscale, one question from the "Impression" subscale, and two questions from the "Content" subscale were excluded from the analysis to increase the validity of the study.

Table 15. The results of the explanatory Factor Analysis

Questions	1	2	3	4	5	6
Trainer_3	.750					
Trainer_4	.748					
Trainer_2	.742					
Trainer_6	.741					
Trainer_1	.733					
Trainer_7	.707					
Trainer_8	.687					
Impact_2		.821				
Impact_3		.808				
Impact_5		.800				
Impact_4		.799				
Impact_1				.775		
Evaluation_3				.751		
Evalution_2				.747		
Evalution_4				.744		
Evalution _6				.741		
Evalution _5				.693		
Evalution _1				.662		
Evalution _7				.514		
Organization_2				.675		
Organization _6				.660		
Organization _7				.650		
Organization _4				.646		
Organization _3				.642		
Organization _5				.636		
Impression_3				.780		
Impression _1				.615		
Impression _4				.608		
Context_3				.851		
Context_4				.843		

KMO measure = 0,945
Bartlett's Test = ,000
Cumulative explained variance = 66.8%

4. Results

This section outlines the results derived from statistical analyses. Table 16 presents the perception levels of teachers from various subject areas concerning the dimensions of the research instrument.

According to the results, the perception levels of teachers in Primary Education (Azerbaijani Language and Mathematics) ranged between $3.0 \leq x \leq 3.6$ across all dimensions, with the lowest mean score observed for the Content dimension. For teachers of Azerbaijani Language and Literature, perception levels ranged between $3.2 \leq x \leq 3.6$, with the highest average score recorded for the Evaluation dimension and the lowest for Content. Teachers of Azerbaijani as the State Language reported perception levels ranging between $3.1 \leq x \leq 3.6$, with the lowest average also corresponding to the Content dimension. Similarly, teachers of Foreign Languages exhibited perception levels ranging between $3.1 \leq x \leq 3.6$, with the Content dimension again receiving the lowest average rating. Teachers of Mathematics demonstrated perception levels within the range of $3.0 \leq x \leq 3.6$, with the Content dimension showing the lowest mean value. Perception levels of teachers in Informatics and Science subjects ranged between $3.1 \leq x \leq 3.6$ across all dimensions, with the lowest averages consistently observed for the Content dimension. Teachers of Visual Arts and History of Azerbaijan demonstrated perception levels ranging between $3.0 \leq x \leq 3.6$ across all dimensions, with the lowest mean scores recorded for the Content dimension. For teachers of General History, perception levels ranged between $3.1 \leq x \leq 3.7$, with the lowest average again observed for the Content dimension. Teachers of Natural Sciences, Physics, and Chemistry reported perception levels within the range of $3.2 \leq x \leq 3.7$, with the Content dimension consistently receiving the lowest mean values. The perception levels of Biology teachers ranged between $3.0 \leq x \leq 3.7$, with the lowest average associated with the Content dimension. For Geography teachers, perception levels were between $2.9 \leq x \leq 3.6$, with the Content dimension again yielding the lowest mean score. Teachers of Pre-Military Training exhibited perception levels within the range of $3.0 \leq x \leq 3.6$, with the lowest average recorded for the Content dimension. Similarly, Russian Language and Literature teachers reported perception levels ranging from $3.0 \leq x \leq 3.6$, with the Content dimension receiving the lowest mean score.

Table 16. The perception levels of teachers across different subject areas regarding the dimensions of the research instrument

Subjects	N	Trainer	Influence	Evaluation	Organization	Impression	Content
Primary Education (Azerbaijani Language and Mathematics)	448	3.6	3.6	3.5	3.5	3.5	3.0
Azerbaijani Language and Literature	142	3.5	3.5	3.6	3.3	3.4	3.2
Azerbaijani as the State Language	49	3.6	3.6	3.4	3.5	3.6	3.1
Foreign language	228	3.5	3.5	3.5	3.5	3.5	3.1
Mathematics	202	3.6	3.6	3.6	3.4	3.6	3.0
Informatics	119	3.6	3.7	3.6	3.5	3.6	3.0
Life Skills	105	3.5	3.7	3.6	3.5	3.4	3.0
Technology	187	3.5	3.6	3.5	3.5	3.5	3.2
Physical Education	211	3.5	3.5	3.5	3.4	3.5	3.1
Music	168	3.6	3.6	3.6	3.5	3.5	3.1
Visual Arts	70	3.4	3.5	3.4	3.3	3.5	3.0
History of Azerbaijan	73	3.4	3.6	3.4	3.6	3.4	3.0
General History	53	3.7	3.7	3.6	3.6	3.7	3.1
Natural Sciences	62	3.7	3.7	3.6	3.4	3.7	3.2
Physics	62	3.7	3.7	3.6	3.4	3.7	3.2
Chemistry	41	3.7	3.7	3.5	3.6	3.6	3.2
Biology	67	3.6	3.7	3.5	3.5	3.7	3.0
Geography	56	3.8	3.6	3.6	3.6	3.6	2.9
Pre-Military Training	13	3.6	3.6	3.4	3.2	3.5	3.0
Russian Language and Literature	37	3.6	3.4	3.5	3.5	3.4	3.2

On the other hand, when considering teachers' perception levels across all subjects regarding the dimensions of the research instrument, the average scores for the Trainer dimension ranged from 3.4 to 3.8, with Geography teachers reporting the highest average score (x = 3.8). The average scores for the Influence dimension ranged between 3.4 and 3.7, with Geography teachers having the lowest score (x = 3.4). For the Evaluation dimension, average scores varied between 3.4 and 3.6. The Organization dimension received average scores ranging from 2.0 to 3.6, with Pre-Military Training teachers reporting the lowest score (x = 2.0). Average scores for the Impression dimension ranged between 3.4 and 3.7. The Content dimension had average scores between 2.9 and 3.2, with Geography teachers recording the lowest score (x = 2.9).

Table 17 presents the results of the ANOVA test conducted to examine whether the participating teachers' perceptions of the training differ according to age groups. Based on the test results, statistically significant differences were identified among the responses related to the Organization, Impression, and Content dimensions. To determine between which groups these differences occurred, a post-hoc test was employed.

According to the results of the Tukey HSD post-hoc test, in terms of the Organization dimension, the perception levels of teachers aged 18–25 (x = 3.72) were significantly higher than those of teachers aged 45–55 (x = 3.39) and 56–60 (x = 3.32) ($p < 0.05$). Additionally, teachers aged 61–65 (x = 3.59) demonstrated significantly higher perception levels in this dimension compared to teachers aged 56–60 (x = 3.32) ($p < 0.05$).

In terms of the Impression dimension, the perception levels of teachers aged 18–25 (x = 3.99) were significantly higher than those of teachers aged 45–55 (x = 3.64) and 56–60 (x = 3.59) ($p < 0.05$).

Regarding the Content dimension, teachers aged 61–65 (x = 3.20) demonstrated significantly higher perception levels compared to teachers aged 18–25 (x = 2.78) ($p < 0.05$).

Table 18 presents the results of the ANOVA test conducted to examine whether the perceptions of participating teachers regarding the training differed according to their educational levels. Based on the test results, statistically significant differences were found in the responses related to the Trainer, Influence, Organization, and Impression dimensions. To determine between which groups these differences occurred, a post-hoc test was applied.

Table 17. Comparative Analysis of Teachers' Perceptions Regarding Trainings by Age Groups (ANOVA Results)

Measurement	Group 1	x̄	Group 2	x̄	Variance	p
Organization	18-25	3.72	45-55	3.39	.32984*	0.006
	18-25	3.72	56-60	3.32	.39723*	0.002
	61-65	3.59	56-60	3.32	.27077*	0.019
Impression	18-25	3.99	46-55	3.64	.34008*	0.021
	18-25	3.99	56-60	3.59	.39766*	0.011
Content	61-65	3.2	18-25	2.78	.42701*	0.042

Table 18. Comparative Analysis of Teachers' Perceptions of Trainings by Educational Levels (ANOVA Results)

Measurement	Group 1	x̄	Group 2	x̄	Variance	p
Trainer	Sub-bachelor	3.78	Bachelor	3.58	.20165*	0.004
	Sub-bachelor	3.78	Master	3.37	.40694*	0.000
	Bachelor	3.58	Master	3.37	.20529*	0.000
Influence	Sub-bachelor	3.76	Master	3.37	.38819*	0.000
	Bachelor	3.6	Master	3.37	.22889*	0.000
Organization	Bachelor	3.48	Master	3.35	.12957*	0.025
Impression	Sub-bachelor	3.89	Bachelor	3.69	.20228*	0.005
	Sub-bachelor	3.89	Master	3.6	.29297*	0.000

Based on the results of the Tukey HSD post-hoc test, in terms of the Organization dimension, teachers with a sub-bachelor's degree ($\bar{x}$ = 3.78) demonstrated significantly higher perception levels compared to those with a bachelor's degree ($\bar{x}$ = 3.58) and a master's degree ($\bar{x}$ = 3.37) ($p < 0.05$). Additionally, teachers with a bachelor's degree ($\bar{x}$ = 3.58) reported significantly higher perception levels than those with a master's degree ($\bar{x}$ = 3.37) in this dimension ($p < 0.05$).

In terms of the Influence dimension, teachers with a sub-bachelor's degree ($\bar{x}$ = 3.76) demonstrated significantly higher perception levels than those with a master's degree ($\bar{x}$ = 3.37) ($p < 0.05$). Similarly, teachers with a bachelor's degree ($\bar{x}$ = 3.60) reported significantly higher perception levels compared to those with a master's degree ($\bar{x}$ = 3.37), and this difference was also statistically significant ($p < 0.05$).

In terms of the Organization dimension, teachers with a bachelor's degree ($\bar{x}$ = 3.48) demonstrated significantly higher perception levels than those with a master's degree ($\bar{x}$ = 3.35), and this difference was statistically significant ($p < 0.05$).

Regarding the Impression dimension, teachers with a sub-bachelor's degree ($\bar{x}$ = 3.89) reported significantly higher perception levels compared to those with a bachelor's degree ($\bar{x}$ = 3.69) and a master's degree ($\bar{x}$ = 3.60) ($p < 0.05$).

Table 19 presents the results of the ANOVA test conducted to examine whether the perceptions of participating teachers regarding the training differed according to their affiliated educational authorities. Based on the test results, statistically significant differences were identified across all dimensions. To determine between which groups these differences occurred, a post-hoc test was applied.

According to the results of the Tukey HSD post-hoc test, in terms of the Trainer dimension, teachers working in schools under the Mil-Mughan Regional Education Authority ($\bar{x}$ = 4.03) demonstrated significantly higher perception levels compared to those working in schools affiliated with the Baku City Education Department ($\bar{x}$ = 3.57), Absheron-Khizi Regional Education Authority ($\bar{x}$ = 3.44), Mountainous Shirvan Regional Education Authority ($\bar{x}$ = 3.53), Ganja-Dashkasan Regional Education Authority ($\bar{x}$ = 3.50), Lankaran-Astara Regional Education Authority ($\bar{x}$ = 3.47), Karabakh Regional Education Authority ($\bar{x}$ = 3.57), Sheki-Zagatala Regional Education Authority ($\bar{x}$ = 3.78), and Shirvan-Salyan Regional Education Authority ($\bar{x}$ = 3.60), and these differences were statistically significant ($p < 0.05$).

In terms of the Influence dimension, teachers working in schools under the Mil-Mughan Regional Education Authority ($\bar{x}$ = 4.07) demonstrated significantly higher perception levels compared to those working in schools affiliated with the Baku City Education Department ($\bar{x}$ = 3.60), Absheron-Khizi Regional Education Authority ($\bar{x}$ = 3.41), Mountainous Shirvan Regional Education Authority ($\bar{x}$ = 3.44), Ganja-Dashkasan Regional Education Authority ($\bar{x}$ = 3.50), Sheki-Zagatala Regional Education Authority ($\bar{x}$ = 3.40), and Shirvan-Salyan Regional Education Authority ($\bar{x}$ = 3.44), and these differences were statistically significant ($p < 0.05$).

In terms of the Evaluation dimension, teachers working in schools under the Mil-Mughan Regional Education Authority ($\bar{x}$ = 3.83) reported significantly higher perception levels compared to those working in schools affiliated with the Baku City Education Department ($\bar{x}$ = 3.51), Absheron-Khizi Regional Education Authority ($\bar{x}$ = 3.42), and Ganja-Dashkasan Regional Education Authority ($\bar{x}$ = 3.32) ($p < 0.05$). Additionally, teachers working in schools under the Eastern Zangezur Regional Education Authority ($\bar{x}$ = 3.84) demonstrated significantly higher perception levels than those working in schools under the Ganja-Dashkasan Regional Education Authority ($\bar{x}$ = 3.32) ($p < 0.05$).

In terms of the Organization dimension, teachers working in schools under the Eastern Zangezur Regional Education Authority ($\bar{x}$ = 3.90) demonstrated significantly higher perception levels compared to those affiliated with the Absheron-Khizi Regional Education Authority ($\bar{x}$ = 3.42), Mountainous Shirvan Regional Education Authority ($\bar{x}$ = 3.28), Lankaran-Astara Regional Education Authority ($\bar{x}$ = 3.32), Sheki-Zagatala Regional Education Authority ($\bar{x}$ = 3.29), and Shirvan-Salyan Regional Education Authority ($\bar{x}$ = 3.39) ($p < 0.05$). Teachers working in schools under the Mil-Mughan Regional Education Authority ($\bar{x}$ = 3.67) reported significantly higher perception levels than those working in schools under the Sheki-Zagatala Regional Education Authority ($\bar{x}$ = 3.29) ($p < 0.05$).

In terms of the Impression dimension, teachers working in schools under the Quba-Khachmaz Regional Education Authority ($\bar{x}$ = 4.14) demonstrated significantly higher perception levels compared to those working in schools affiliated with the Absheron-Khizi Regional Education Authority ($\bar{x}$ = 3.55), the Mountainous Shirvan Regional Education Authority ($\bar{x}$ = 3.53), the Ganja-Dashkasan Regional Education Authority ($\bar{x}$ = 3.49), and the Sheki-Zagatala Regional Education Authority ($\bar{x}$ = 4.04) ($p < 0.05$). Additionally, teachers in schools under the Mil-Mughan Regional Education Authority ($\bar{x}$ = 3.97) reported significantly higher perception levels than those under the Ganja-Dashkasan Regional Education Authority ($\bar{x}$ = 3.49) and the Sheki-Zagatala Regional Education Authority ($\bar{x}$ = 3.49) ($p < 0.05$).

Table 19. Comparative Analysis of Teachers' Perceptions of Trainings by Affiliated Educational Institutions (ANOVA Results)

Measurement	Group 1	x̄	Group 2	x̄	Variance	p
Trainer	Mil-Mugan RED	4.03	Baku City Education Department	3.57	.45949*	0.000
	Mil-Mugan RED	4.03	Absheron-Khizi RED	3.44	.58718*	0.000
	Mil-Mugan RED	4.03	Mountainous Shirvan RED	3.53	.49768*	0.012
	Mil-Mugan RED	4.03	Ganja-Dashkasan RED	3.5	.52855*	0.004
	Mil-Mugan RED	4.03	Lankaran-Astara RED	3.47	.55317*	0.019
	Mil-Mugan RED	4.03	Karabakh RED	3.57	.45876*	0.012
	Mil-Mugan RED	4.03	Shaki-Zagatala RED	3.78	.64519*	0.000
	Mil-Mugan RED	4.03	Shirvan-Salyan RED	3.6	.42282*	0.044
Influence	Mil-Mugan RED	4.07	Baku City Education Department	3.6	.46979*	0.001
	Mil-Mugan RED	4.07	Absheron-Khizi RED	3.41	.65956*	0.000
	Mil-Mugan RED	4.07	Mountainous Shirvan RED	3.44	.63500*	0.001
	Mil-Mugan RED	4.07	Ganja-Dashkasan RED	3.50	.57052*	0.006
	Mil-Mugan RED	4.07	Shaki-Zagatala RED	3.40	.66794*	0.000
	Mil-Mugan RED	4.07	Shirvan-Salyan RED	3.44	.63250*	0.000
Evaluation	Eastern Zangazur	3.84	Ganja-Dashkasan RED	3.32	.52170*	0.038
	Mil-Mugan RED	3.83	Baku City Education Department	3.51	.31578*	0.019
	Mil-Mugan RED	3.83	Absheron-Khizi RED	3.42	.40785*	0.001
	Mil-Mugan RED	3.83	Ganja-Dashkasan RED	3.32	.50909*	0.002
Organization	Eastern Zangazur	3.90	Absheron-Khizi RED	3.42	.47465*	0.020
	Eastern Zangazur	3.90	Mountainous Shirvan RED	3.28	.61348*	0.004
	Eastern Zangazur	3.90	Lankaran-Astara RED	3.32	.57823*	0.029
	Eastern Zangazur	3.90	Shaki-Zagatala RED	3.29	.60715*	0.002
	Eastern Zangazur	3.90	Shirvan-Salyan RED	3.39	.50531*	0.033
	Mil-Mugan RED	3.67	Shaki-Zagatala RED	3.90	.37753*	0.038
Impression	Guba-Khachmaz RED	4.14	Absheron-Khizi RED	3.55	.58633*	0.019
	Guba-Khachmaz RED	4.14	Mountainous Shirvan RED	3.53	.60769*	0.05
	Guba-Khachmaz RED	4.14	Ganja-Dashkasan RED	3.49	.64849*	0.023
	Guba-Khachmaz RED	4.14	Shaki-Zagatala RED	4.04	.64691*	0.017
	Mil-Mugan RED	3.97	Absheron-Khizi RED	3.55	.41752*	0.005
	Mil-Mugan RED	3.97	Ganja-Dashkasan RED	3.49	.47968*	0.022
	Mil-Mugan RED	3.97	Shaki-Zagatala RED	4.04	.47810*	0.011
Content	Baku City Education Department	3.07	Mil-Mugan RED	2.59	.47948*	0.004
	Absheron-Khizi RED	3.09	Mil-Mugan RED	2.59	.49737*	0.006
	Mountainous Shirvan RED	3.40	Mil-Mugan RED	2.59	.80278*	0.000
	Ganja-Dashkasan RED	3.17	Mil-Mugan RED	2.59	.57442*	0.023
	Lankaran-Astara RED	3.28	Mil-Mugan RED	2.59	.69028*	0.015
	Eastern Zangazur	3.54	Guba-Khachmaz RED	2.69	.85608*	0.041
	Eastern Zangazur	3.54	Mil-Mugan RED	2.59	.95116*	0.000
	Shirvan-Salyan RED	3.19	Mil-Mugan RED	2.59	.59653*	0.008
	Central Aran RED	3.26	Mil-Mugan RED	2.59	.66793*	0.003

In terms of the Content dimension, teachers working in schools under the Mil-Mughan Regional Education Authority ($\bar{x}$ = 2.59) demonstrated significantly lower perception levels compared to those working in schools affiliated with the Baku City Education Department ($\bar{x}$ = 3.07), Absheron-Khizi Regional Education Authority ($\bar{x}$ = 3.09), Mountainous Shirvan Regional Education Authority ($\bar{x}$ = 3.40), Ganja-Dashkasan Regional Education Authority ($\bar{x}$ = 3.17), Lankaran-Astara Regional Education Authority ($\bar{x}$ = 3.28), Eastern Zangezur Regional Education Authority ($\bar{x}$ = 3.54), Shirvan-Salyan Regional Education Authority ($\bar{x}$ = 3.19), and Central Aran Regional Education Authority ($\bar{x}$ = 3.26) ($p < 0.05$). Additionally, teachers working in schools under the Eastern Zangezur Regional Education Authority ($\bar{x}$ = 3.54) reported significantly higher perception levels than those working under the Quba-Khachmaz Regional Education Authority ($\bar{x}$ = 2.69) ($p < 0.05$).

Table 20 presents the results of the ANOVA test conducted to examine whether the perceptions of participating teachers regarding the training differed based on their status of participation in the certification exam. According to the test results, statistically significant differences were found in the responses related to the Trainer, Influence, and Evaluation dimensions. To determine between which groups these differences occurred, a post-hoc test was employed.

According to the results of the Tukey HSD post-hoc test regarding the Trainer dimension, teachers who responded that they "have participated in the certification exam" ($\bar{x}$ = 3.64) demonstrated significantly higher perception levels compared to those who indicated that "the exam for their subject has not yet been conducted" ($\bar{x}$ = 3.51) ($p < 0.05$). On the other hand, perception levels related to this dimension among teachers who reported that "the exam for their subject has not yet been conducted" ($\bar{x}$ = 3.51) were significantly lower than those of teachers who stated that "the exam was held for their subject, but they were unable to participate" ($\bar{x}$ = 3.71) ($p < 0.05$).

Perception levels regarding the Influence dimension were higher among teachers who reported having "participated in the certification exam" ($\bar{x}$ = 3.68) compared to those who indicated that "the exam for their subject has not yet been conducted" ($\bar{x}$ = 3.51), and this difference was statistically significant ($p < 0.05$). Similarly, perception levels related to the Evaluation dimension were higher among teachers who stated that they had "participated in the certification exam" ($\bar{x}$ = 3.60) than those who reported that "the exam for their subject has not yet been conducted" ($\bar{x}$ = 3.46), with this difference also reaching statistical significance ($p < 0.05$).

Table 21 presents the results of the ANOVA test conducted to examine whether the perceptions of participating teachers regarding the trainings differed based on their participation status in the certification exam for primary education. According to the test results, statistically significant differences were found in the responses related to the Trainer, Influence, Evaluation, and Impression dimensions. To identify between which groups these differences occurred, a post-hoc test was applied.

According to the results of the Tukey HSD post-hoc test, the perception levels regarding the Trainer dimension were higher among teachers who selected the score range "30–50" ($\bar{x}$ = 3.74) compared to those who selected "no result" ($\bar{x}$ = 3.53), and this difference was statistically significant ($p < 0.05$).

Similarly, perception levels related to the Influence dimension were higher among teachers who selected the score range "30–50" ($\bar{x}$ = 3.75) compared to those who selected "no result" ($\bar{x}$ = 3.54), and this difference was statistically significant ($p < 0.05$).

Perception levels regarding the Evaluation dimension were higher among teachers who selected the score range "30–50" ($\bar{x}$ = 3.64) compared to those who selected "no result" ($\bar{x}$ = 3.49), and this difference was statistically significant ($p < 0.05$). Additionally, perception levels among teachers who selected the score range "0–29" ($\bar{x}$ = 2.98) were significantly lower than those who selected "51–60" ($\bar{x}$ = 3.61) and "no result" ($\bar{x}$ = 3.49) ($p < 0.05$).

On the other hand, perception levels related to the Impression dimension were lower among teachers who selected the score range "0–29" ($\bar{x}$ = 3.25) compared to those who selected "30–50" ($\bar{x}$ = 3.82), "51–60" ($\bar{x}$ = 3.76), and "no result" ($\bar{x}$ = 3.68), and these differences were statistically significant ($p < 0.05$).

Table 22 presents the results of the ANOVA test conducted to examine whether the perceptions of participating teachers regarding the trainings differed based on their participation status in the certification exam for Azerbaijani Language and Literature. According to the test results, statistically significant differences were found only in the responses related to the Impression dimension. To determine between which groups these differences occurred, a post-hoc test was applied.

According to the results of the Tukey HSD post-hoc test, perception levels regarding the Impression dimension among teachers who selected the score range "0–29" ($\bar{x}$ = 3.22) were significantly lower than those who selected "no result" ($\bar{x}$ = 3.72) ($p < 0.05$).

Table 20. Comparative Analysis of Teachers' Perceptions of Trainings Based on Their Participation Status in the Certification Exam (ANOVA Results)

Measurement	Group 1	x̄	Group 2	x̄	Variance	p
Trainer	I have taken the exam	3.64	The exam has not yet been held for my subject	3.51	0.13238*	0.006
	The exam has not yet been held for my subject	3.51	Although the exam was held for my subject, I was not able to take it	3.71	-.20408*	0.037
Influence	I have taken the exam	3.68	The exam has not yet been held for my subject	3.51	.16836*	0.001
Evaluation	I have taken the exam	3.6	The exam has not yet been held for my subject	3.46	.14090*	0.001

Table 21. Comparative Analysis of Teachers' Perceptions of Trainings Based on Their Status in the Primary Education Certification Exam (ANOVA Results)

Measurement	Group 1	x̄	Group 2	x̄	Variance	p
Trainer	30-50	3.74	No result	3.53	.20547*	0.005
Influence	30-50	3.75	No result	3.54	.20555*	0.014
Evaluation	30-50	3.64	0-29	2.98	.66284*	0.000
	30-50	3.64	No result	3.49	.15500*	0.001
	51-60	3.61	0-29	2.98	.63392*	0.000
	No result	3.49	0-29	2.98	.50784*	0.028
Impression	30-50	3.82	0-29	3.25	.57060*	0.012
	51-60	3.76	0-29	3.25	.50741*	0.037
	No result	3.68	0-29	3.25	.42171*	0.012

Table 22. Comparative Analysis of Teachers' Perceptions of Trainings Based on Their Status in the Certification Exam for Azerbaijani Language and Literature (ANOVA Results)

Measurement	Group 1	x̄	Group 2	x̄	Variance	p
Impression	0-29	3.22	No result	3.72	-.50297*	0.002

5. Discussion

This study examined teachers' perceptions and experiences of effective professional development (PD) in Azerbaijan. Teachers expressed positive attitudes toward PD initiatives, particularly those supported by the government, but consistently emphasized a preference for practical, interactive, and subject-specific training that is directly applicable to classroom practice. In particular, teachers valued ICT-related and curriculum-focused training, while short, theoretical, or one-off workshops were widely viewed as insufficient for meaningful professional growth.

These findings are strongly aligned with international research highlighting that effective PD is sustained, content-focused, collaborative, and grounded in active learning (Desimone et al. [11]; Fischer et al. [12]; Dunst et al. [13]; Guskey [14]). Across these studies, PD is most effective when teachers are given opportunities to apply learning in practice, reflect on implementation, and engage in continuous cycles of improvement. Similarly, teachers in this study emphasized the importance of repeated, work-integrated learning rather than isolated training events.

Younger teachers appear to demonstrate greater willingness and more positive attitudes toward professional development programs, as educators aged 18–25 reported higher scores in the Organization and Impression dimensions of the survey. This difference suggests that early-career teachers may be more receptive to professional development opportunities because they are still developing their pedagogical knowledge and skills. In contrast, more experienced teachers, having already established their professional practices, may show comparatively lower levels of engagement with such programs.

This paper also suggests that teachers who achieve higher scores on teacher certification examinations tend to demonstrate more positive perceptions of professional development. A possible explanation is that these teachers possess stronger subject knowledge and pedagogical competence, which may enable them to better understand, value, and engage with the content of such a kind of professional development of programs.

Teachers in the Mil-Mugan region value and perceive training more effectively compared to other regions, which can be tied to different reasons such as their motivation and openness to professional growth, school leadership,

physical conditions of the school, etc. Also, more highly qualified trainers might be provided to the schools in this region, as student achievement levels in standardized monitoring examinations are comparatively low.

One of the main findings of this study is the critical role of school leadership and institutional support in shaping PD effectiveness. Teachers reported that emotional support, constructive feedback, and follow-up from school leaders significantly influenced their motivation and willingness to implement new practices, which directly supports Guskey's [14] argument that sustained leadership engagement is essential for successful professional learning. At the same time, lack of support was associated with reduced motivation and uncertainty in applying new knowledge, reinforcing the importance of leadership as a crucial condition for effective PD implementation.

Structural and organizational barriers were also consistently identified, including limited time, rigid school schedules, and insufficient infrastructure. These constraints align with findings from Kedzior and Fifield [15] and Dunst et al. [13], who note that even well-designed PD is difficult to implement when systemic conditions do not support teacher participation. In the Azerbaijani context, these barriers significantly limit opportunities for sustained collaboration and long-term professional learning.

Importantly, the findings also challenge the assumption that commonly cited "best practice" PD characteristics are universally effective. While literature often emphasizes duration, collaboration, and active learning as key elements of effective PD, teachers in this study argued that these features are only meaningful when aligned with classroom realities and institutional feasibility. This perspective is consistent with Asterkhan and Lefstein [16], who question the strength of empirical evidence behind widely accepted PD design principles and argue for more context-sensitive approaches. Similarly, Sims and Fletcher-Wood [17] highlight that some widely accepted PD features lack robust evidence and may not generalize across contexts.

The need for contextual adaptation is further supported by findings from Heller et al. [18], who show that PD is most effective when subject knowledge development is combined with structured analysis of student thinking and classroom practice, rather than content delivery alone. In this study, low perception levels in training content across all subjects may indicate that teachers expressed dissatisfaction with theoretical training that is not connected to classroom application, emphasizing the need for practical, subject-based learning opportunities.

Overall, the findings suggest that effective PD in Azerbaijan should move beyond standardized models toward more context-responsive approaches that integrate subject specificity, repeated practice, and classroom relevance. As also supported by Desimone et al. [11] and Fischer et al. [12], alignment with curriculum goals and teachers' daily instructional realities is essential for meaningful impact. At the same time, Dunst et al. [13] and Gareth et al. [19] emphasize that sustained, high-quality PD requires adequate duration and institutional support, which remains a key challenge in the local context.

6. Conclusions

When analyzing the survey results, it was observed that teachers expressed diverse opinions regarding professional development training. It was noted that internationally provided opportunities supported by the government (such as courses, training programs, seminars abroad, etc.) were the most utilized form of professional development. Online training and practice-based sessions were identified as the most desired types of training by teachers. On the other hand, a trivial number of participants claimed that the training sessions were unproductive. The results show that teachers are more likely to be satisfied with the training sessions conducted by the government. In addition, it reveals that teachers prefer professional development training, which is organized through video lessons, video clips, experiments, and similar formats. The reasons for participation in professional development sessions are more likely to be the benefits of subject-focused training and the positive impact of training on methodological and pedagogical topics. A very small number of teachers noted that they participated in the training courses due to the request and encouragement of the management. These results undermine the idea that the teachers are personally interested in participating in the training. It was determined that teachers mostly do not participate in the training sessions because of the time issue. However, the least number of teachers perceive professional development training in a way that is not useful and does not play a vital role in their career development. Based on these results, it can be determined that teachers generally hold a positive attitude toward professional development training. Teachers are in favor of determining training needs based on "the knowledge and skills that teachers need when implementing the current curriculum" and "the knowledge and skills needed in the labor market for the teaching profession". There is only a minor number of teachers thinking that it is vital to consider the opinions and suggestions of school leadership when identifying training needs. These teachers are interested in constantly learning and developing new skills which are required in the current teaching process and in the labor market. The main hindrance to applying the knowledge acquired from the training sessions in the teaching process is considered to be the physical conditions of schools (such as heating, lighting, availability of resources, etc.). The development of existing infrastructure facilities is one of the main important points to enhance the effectiveness of the educational process. Based on the survey results, teachers consider that conducting an evaluation at the end of the training program is appropriate. Regarding evaluation methods, teachers believe that it would have a greater

positive impact on the professional development of teachers if fairer and more objective evaluation methods were adopted. Overall, the results of the study yield that it will be better to put an emphasis on the opinions and needs of teachers when designing training programs for their professional development. One of the major concerns that teachers want to amend in the organization of the training sessions is the date (day, time). In addition, the majority of teachers across the country believe they need training to enhance their IT skills.

On the other hand, teachers who could not identify their weaker sides and gaps are only a few, which indicates that the vast majority of teachers had some level of awareness of their professional needs. The perception levels of teachers on the measurement variables for all subjects taught ranged from 2.9 to 3.8. The perception level refers to what teachers think about the statements presented in the measurement tool, and to what extent they understand and accept these statements. The result given above also indicates that there is no gap between the perception levels of teachers teaching different subjects and that they have the same level to some extent. According to the age differences, there are significant differences among the perception levels of teachers. Younger teachers (aged 18-25) are more likely to have higher levels of perception related to organization and impression dimensions compared to older teachers. In the content sub-dimension, the perception levels of teachers in the 61–65 age group were higher than those in the 18–25 age group. It shows that younger teachers have higher perception levels regarding organization and impression dimensions. However, the perception levels of younger teachers regarding the content sub-dimension are lower than those of older teachers. This also underscores the importance of differentiating training based on the age and experience levels of teachers. For this reason, it would be better to offer different alternatives in terms of content and organization dimensions when organizing training for teachers. It was determined that there were statistically significant differences in the responses of the teachers participating in the study to the questions related to the dimensions of Instructor, Influence, Organization and Impression in terms of their educational levels. It was underpinned that the perception levels of teachers with a sub-baccalaureate education level were generally higher on the sub-dimensions than the perception levels of teachers with a bachelor's and master's education levels. Similarly, it was determined that the perception levels of teachers with a bachelor's degree were generally higher in the sub-dimensions than the perception levels of teachers with a master's degree. In this regard, it is possible to state that as the level of education decreases, teachers' attitudes towards training become more positive. This comparison may indicate that teachers with lower levels of education feel a greater need for training. Teachers who participated in the certification exam reported higher perception levels in the dimensions of trainer, impact, and value compared to those whose certification exams have not yet been conducted, as well as those who were unable to participate despite the exam being conducted.

These results may be related to the higher level of awareness of the training among teachers who participated in the certification exam. Based on the mutual comparison of the scores collected from the certification exam for primary school and for Azerbaijani language and literature, it can be said that the perception levels of teachers with higher exam results regarding the trainings are higher than those with lower exam results and no results. The above-mentioned comment regarding the status of participation in the certification exam is also related to these results. The findings of this study show that the current situation of teachers regarding their professional development varies in various aspects. Teachers hold different opinions regarding the content, organization of training, professionalism of trainers, and assessment methods. Teachers believe it is important to make sure that the content of training aligns with modern teaching methods and is primarily focused on meeting the needs of teachers.

This study has some limitations. It is limited by its exclusive reliance on quantitative design, which does not allow for in-depth exploration of teachers' experiences and perspectives. Furthermore, the findings are context-specific and therefore may not be generalized to other educational systems or international settings. In addition, the sample includes only teachers working in schools where a mentorship program is in place, which may provide only a partial view of the broader professional development practices. Further research could elaborate teachers' perceptions by utilizing a qualitative or mixed-methods design so that a more comprehensive analysis of professional development implementation would be provided. Also, further studies could examine whether subject differences have an influence on the effectiveness of PD programs.

6.1. Implications and Recommendations

The findings of this study have important implications for professional development policy in Azerbaijan. Professional development provision is organized through centrally designed and standardized training programs, which sometimes might not address teachers' specific needs and contextual challenges. To enhance the relevance and effectiveness of professional development initiatives, schools can play a more active role in identifying and responding to teachers' actual needs. Moreover, teachers emphasized a strong preference for practical, classroom-embedded, and subject-specific learning. This highlights the need for a policy shift toward sustained, school-based professional development models that allow for iterative practice and reflection.

Based on the findings of this study, several key recommendations are proposed to improve the effectiveness of PD for teachers in Azerbaijan.

First, PD programs should be redesigned to prioritize practice-based and classroom-embedded learning. Teachers in this study consistently reported that short, theoretical workshops are less effective than training that includes practical activities such as lesson demonstrations, peer observation, collaborative lesson planning, and guided reflection. Therefore, PD should move beyond one-off seminars and instead adopt iterative models that allow teachers to apply new knowledge directly in their classrooms and refine their practice over time.

Second, greater teacher involvement in the design and delivery of trainings would contribute to greater overall effectiveness. Teachers should be actively engaged in identifying training needs and shaping PD content to ensure relevance to their subject areas and classroom challenges. Such participatory approaches can improve ownership, increase engagement, and enhance the practical relevance of PD programs, particularly in contexts where structural constraints limit flexibility in implementation.

Usage of AI

AI tools were employed to assist translation from Azerbaijani to English and writing process.

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