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Title:

EXPLORING FACTORS CONTRIBUTING TO MATH TEACHERS' EXPERIENCES IN CERTIFICATION EXAMINATIONS

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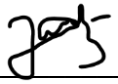
Signed: 

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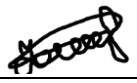
Signed: 

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Abstract

Enhancing teaching effectiveness is vital to national educational policies in most countries, including Azerbaijan. For this reason, teachers' professional development through

the certification process is fundamental in Azerbaijan. Thus, understanding teachers' experiences in the certification examinations is key to developing policies that can further support teachers' professional growth and, in turn, the overall quality of education. Since math teachers recently took the exam in Azerbaijan, we decided to explore the factors that contribute to their experiences in certification examinations and their preparation strategies for the exam. In this study, semi-structured interviews were conducted with 17 math teachers in both online and in-person formats: seven teachers from rural areas (three failed, four passed) and ten teachers from urban areas (four failed, six passed). The results indicate that individual and structured preparation, time constraints, family obligations, exam format and question complexity, regular practice and tutoring experience, digital literacy and technical issues, as well as psychological factors, are primary contributors to math teachers' experiences in certification examinations in Azerbaijan. Regarding preparation strategies, consistent and disciplined preparation, use of digital platforms, test-centered practice, collective preparation, and peer collaboration are found to be the most utilized approaches to prepare for the exam; however, several teachers also reported a lack of preparation or strategy during the interviews. Moreover, the teachers were asked to suggest strategies that could be useful for future certification candidates, which include self-study and continuous practice, emphasis on test-based preparation, development of subject knowledge, and psychological readiness. At the end, as a final product, we suggest a guideline kit to math teachers that addresses effective planning using the SMART goals method and individualized study planners, clearly understanding the exam format to avoid any confusion, managing psychological stress and building self-confidence through stress management techniques, acquiring essential digital skills needed for the computer-based test, and fostering a supportive learning environment among peers to collaboratively prepare for the certification exam.

Key words: certification exams, math teachers' experiences.

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Chapter 1: Introduction

Overview of Teacher Certification

Improving the quality of teaching remains one of the most important strategic goals for national education systems, as it directly contributes to the professional growth of teachers and, ultimately, student academic achievement. Certification examinations have become a key mechanism in many countries to verify that educators possess the necessary knowledge and competencies to deliver effective instruction (OECD, 2019). Countries such as the United States, Finland, and Singapore rely heavily on certification and recertification processes as indicators of teaching quality, classroom management, and pedagogical skills (Darling-Hammond, 2017).

Teachers' experiences with certification processes are shaped by various factors, including the structure of the assessment, available support systems, exam design, and mentoring opportunities (Boyd et al., 2007). In well-established education systems like Finland's, peer learning, professional development programs, and continuous access to resources play a vital role in teacher success (Niemi, 2015). Research by the National Board for Professional Teaching Standards also highlights that while many teachers acknowledge the benefits of certification in real classroom settings, others experience it as a stressful and time-consuming process (Harris & Sass, 2014).

Teacher Certification in Azerbaijan

In July 2018, the Cabinet of Ministers of the Republic of Azerbaijan introduced mandatory certification exams for public school educators. The initiative was designed to promote a new generation of teachers who are skilled in applying modern educational technologies (E-QANUN, 2024). The program aims to raise professional standards, ensure consistent instructional quality, build public trust in the education system, and increase the sector's overall competitiveness (Latifova, 2024).

The certification process involves a professional assessment conducted every five years and consists of two stages: a computer-based test and an interview (Azerbaijan Republic Education Institute, 2024). Table 1 outlines the structure of these stages.

Stage	Details	Passing Criteria	Outcome
Computer- based Test	40 questions on subject knowledge and 20 on teaching methodology	Minimum 30 points	Eligible for interview if passed; otherwise, ineligible
Interview	Questions on pedagogy, presentation, and communication skills	Minimum 20 out of 40 points	Eligible to teach for five years if passed; may retake after a year-long training if failed

Table 1:Structure of Certification Examination in Azerbaijan

Teachers who score above 50 points in the test are eligible for a 35% salary increase, while those scoring 30–49 points receive a 10% increase based on instructional hours (Ministry of Science and Education of the Republic of Azerbaijan, n.d.).

The certification exam was first implemented in 2022 for primary school teachers. Of the 11,133 participants, 8,766 passed the test stage. During the interview stage, 8,707 educators participated, and 8,676 were successful (Ministry of Science and Education of the Republic of Azerbaijan, 2024).

Between 2022 and 2024, more than 64,000 teachers in Azerbaijan completed the certification process. For the 2024–2025 academic year, approximately 35% of educators are expected to earn 1,000 manats or more in monthly salary. Around 55,000 teachers will receive additional pay raises, with about 17,500 eligible for the 35% salary increase (AZERTAC, 2024).

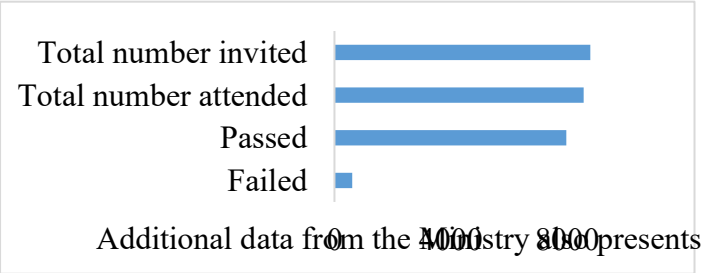
1.1 Problem Statement

Despite growing global and national emphasis on certification as a tool for teacher quality assurance, there is limited research in Azerbaijan on the factors influencing teachers' experiences, especially in the context of high-stakes exams. This gap is particularly significant for math teachers, whose roles are central to developing students' analytical and STEM-related skills.

This study focuses on math teachers who recently completed the certification process, offering a timely and relevant opportunity to explore their experiences. While certification is intended to assess pedagogical knowledge and readiness (Santosa & Rahmawati, 2022), its impact on teacher perception, stress levels, and preparation strategies remains underexplored locally.

In the 2024 certification round, 8,580 of the 8,807 invited math teachers took part, and 7,967 passed. However, 613 did not meet the minimum requirements, indicating the need to better understand the challenges behind these results (Ministry of Science and Education of the Republic of Azerbaijan, 2024). Figure 1 clearly shows the distribution of teachers who attended the certification exams.

Figure 1



Additional data from the Ministry presents breakdowns score range and age groups, offering useful insights for further analysis (see Figures 2 and 3).

Figure 2

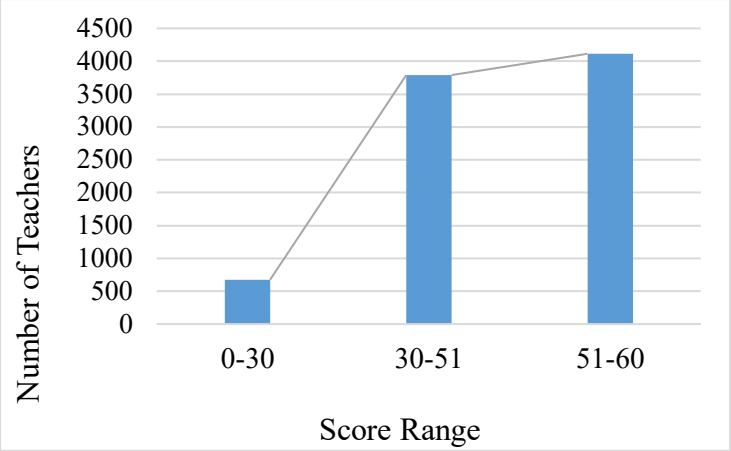
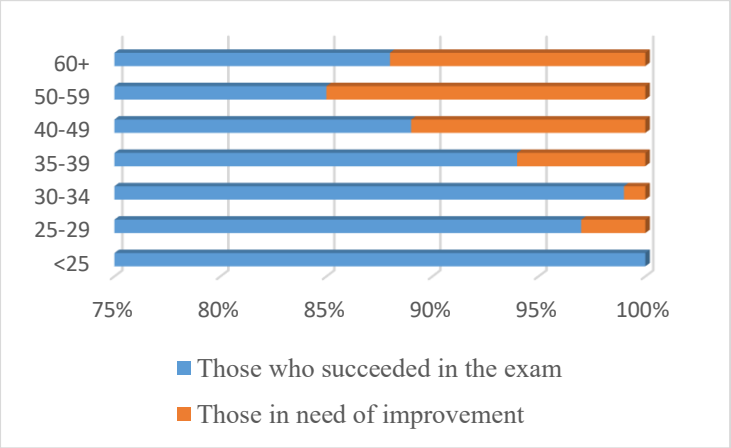


Figure 3



1.2 Purpose of the Study

The purpose of this study was to explore the key factors influencing math teachers' experiences with the certification process in Azerbaijan. Specifically, it examines how these factors shape teachers' views on professional development and readiness. The study also investigates the preparation strategies employed by math teachers and how they perceive the impact of these strategies on their exam performance.

1.3 Research Questions

1. What are the key factors contributing to math teachers' experiences during the certification examination process?
    a. How do these factors shape their perceptions of professional development?

2. What preparation strategies do math teachers employ for certification exams?
    a. How do they describe the role these strategies play in their performance and readiness?

1.4 Significance of the Study

Contributions to Educational Policy and Practice

This study aims to fill the research gap by documenting math teachers' perspectives on their certification experiences in Azerbaijan. It explores both successful and unsuccessful cases, providing a balanced and insightful picture of challenges and best practices. These findings can inform support mechanisms for teachers preparing for future certification rounds.

Furthermore, the strategies shared by teachers who passed the exam can serve as a resource for others who are preparing, including those who may retake the exam.

Professional Development and Policy Design

While math teachers are the primary stakeholders, policymakers are also a key audience. As the organizers of certification exams, they can benefit from understanding the on-the-ground realities and concerns raised by teachers. As Hinchey (2010) notes, high-quality teaching—marked by content expertise, pedagogical alignment, and learner-centered approaches—is a priority for educational systems. Insights from this study can help shape tailored professional development programs and make the certification process more effective and supportive.

Timeliness and Relevance

Given that math teachers have recently completed certification, and some are preparing to retake the exams, this research provides timely guidance. It also lays the groundwork for future studies that can explore other subject areas or larger sample groups for a broader understanding.

1.5 Definition of Terms

- **Certification Exams:** Standardized assessments aimed at evaluating the qualifications and teaching skills of in-service teachers to ensure high-quality instruction (Goe & Stickler, 2008).
- **Math Teachers' Experience:** The collection of perceptions, feelings, and challenges encountered by math educators during the certification process, including preparation, anxiety, training, and performance.

Chapter 2: Literature Review

Introduction

Teachers' certification processes are fundamental to maintaining educational standards, especially in systems where student outcomes are closely linked to the effectiveness of teachers (Darling-Hammond, 2000). Certification serves as a structured process to assess teachers' content knowledge and methodological skills (Kasprzyk, 1999). As Guskey (2002) notes, certification examinations often require teachers to engage in

professional development activities, ensuring that they are equipped with complex skills for diverse educational settings (Cochran-Smith & Zeichner, 2005).

Research shows that certified teachers tend to provide higher-quality instruction compared to their non-certified peers (Goldhaber & Brewer, 2000). However, teachers' experiences with certification exams are shaped by various factors, including prior teaching experience, institutional support, preparation programs, and psychological pressures (Kumpikaitė-Valiūnienė et al., 2021; Sutcher et al., 2016).

In the context of Azerbaijan, there remains a significant gap in the literature regarding math teachers' experiences with national certification examinations. Therefore, this review not only synthesizes international findings but also highlights the need for local research. This chapter is divided into two main sections:

- The first section examines key factors contributing to math teachers' experiences in certification examinations.
- The second section discusses formal and informal preparation strategies used globally to support teacher success in certification processes.

2.1 Key Factors Contributing to Teachers' Experiences in Certification Exams

2.1.1 Content and Pedagogical Knowledge

Content and pedagogical knowledge are central to teachers' certification performance. Shulman (1986) classifies teacher knowledge into two major domains: content knowledge—the understanding of the subject matter (Schwab, 1978)—and pedagogical content knowledge, which involves strategies for effectively teaching the subject (Ball et al., 2008). Effective certification examinations integrate both dimensions, requiring teachers not only to master the subject matter but also to demonstrate effective instructional strategies (Shulman,

1986). Thus, teachers' ability to balance content expertise with pedagogical skills becomes crucial to certification success.

2.1.2 Educational Background and Teaching Experience

Teachers' academic qualifications and teaching experience also play a pivotal role. Darling-Hammond (2017) emphasizes the significance of formal degrees and certificates, while Fenstermacher and Richardson (2005) highlight that specialized pedagogical training strengthens both theoretical and practical competencies.

Moreover, years of teaching experience correlate with certification performance (Berliner, 2001). However, Blömeke and Delaney (2012) argue that newer teachers, when trained under modern programs, sometimes outperform more experienced peers. In this regard, Hattie's (2009) meta-analysis underlines the importance of deliberate practice over mere years of service. Similarly, Rivkin et al. (2005) emphasize that quality of experience is more critical than its duration.

2.1.3 Preparation Resources

The availability and quality of preparation resources considerably impact teachers' experiences. Garet et al. (2001) stress that coherent professional development programs enhance both instructional practices and exam performance. Desimone (2009) similarly asserts that preparation programs connecting theory to practical teaching experiences improve teachers' readiness.

Professional learning communities offer collaborative environments where teachers share resources, solve problems, and support each other's growth (Vescio et al., 2008; Stoll et al., 2006). Yet, Guskey (2002) and Darling-Hammond et al. (2002) caution that misaligned resources—those that do not match exam expectations—can increase teachers' frustration and anxiety.

2.1.4 Test Content

The alignment of certification exam content with curriculum standards and real classroom practices is critical (Copur-Gencturk et al., 2022). Tools like the Mathematics Knowledge for Teaching framework (Ball et al., 2008) stress evaluating both subject expertise and pedagogical applications.

However, Siegel et al. (2020) raise concerns that certification exams often test advanced mathematical knowledge not emphasized during teacher preparation, causing unnecessary stress and attrition among teaching candidates. Harris and Brown (2009) further warn that exams containing culturally biased or unclear questions may unfairly disadvantage candidates.

Thus, well-structured, relevant assessments are essential to ensuring fairness and supporting informed educational reforms.

2.1.5 Psychological Factors

Teachers preparing for certification exams often face psychological challenges, including stress, test anxiety, and emotional isolation. Testing anxiety is particularly detrimental to teachers from diverse backgrounds or those facing language barriers (Hardacre et al., 2021).

Jones and Ali (2021) and Bardach et al. (2021) note that emotional strain increases when professional support is lacking, particularly for early-career teachers. Managing psychological well-being is therefore an integral part of supporting teachers through certification processes.

2.1.6 Time Constraints and Workloads

Heavy workloads, referred to as “time poverty” and “work intensification” (Creagh, 2023), severely limit teachers’ opportunities for exam preparation. Teachers must juggle lesson planning, administrative tasks, and professional obligations, often leaving certification preparation to after-hours, impacting mental health and learning efficiency (Peterson, 1989).

Moreover, the lack of institutional support, such as limited access to exam-focused professional development resources, exacerbates these challenges (Creagh, 2023).

2.2 Formal Preparation Strategies

Formal preparation strategies refer to structured programs led by government bodies, schools, or other educational institutions (Tight, 2014; Tudor, 2013).

2.2.1 Formal Preparation in Post-Soviet Countries

In Georgia, the Ministry of Education and Science finances training programs focused on subject knowledge and pedagogical skills. However, Kobakhidze (2013) notes that many teachers criticize these programs for poor alignment with certification exams, leading them to seek costly private tutoring.

Similarly, Russia offers government-organized professional development programs, available both online and face-to-face. These programs are aligned with certification standards, preparing teachers for exam structure, regulations, and modular learning approaches (Glukhova, 2019).

2.2.2 Formal Preparation in the USA

In the United States, teachers often participate in mock exams and practice tests organized by governmental bodies (Boyd et al., 2007; Roth & Swail, 2000). Programs like Teach for America provide structured preparation, offering guidelines that cover exam topics and effective study strategies.

2.2.3 Formal Preparation in East Asia

In Taiwan, government-supported workshops and courses are positively perceived for helping teachers develop subject knowledge, classroom management, and teaching skills (Keita & Lee, 2024). In Vietnam, teachers prefer offline courses but also utilize hybrid and

online programs depending on accessibility and technological infrastructure (Nguyen et al., 2024).

2.3 Informal Preparation Strategies

Informal preparation strategies are teacher-initiated and flexible, often evolving without direct institutional involvement (Bennett, 2012; Cirocki & Farrell, 2019; Coombs, 1985).

2.3.1 Informal Preparation in Post-Soviet Countries

In Georgia and Russia, teachers often engage in self-study, working independently to master methodological tasks (Glukhova, 2019; Kobakhidze, 2013). Kazakhstan also promotes self-study, along with mentorship and group collaboration as informal strategies (Sagitova et al., 2024).

2.3.2 Informal Preparation in the USA and East Asia

In the United States, teachers collaborate through online communities, sharing resources and strategies (Boyd et al., 2007; Roth & Swail, 2000).

Similarly, in Vietnam and Taiwan, teachers rely on self-study, peer discussions, internet resources, and reflection to prepare for certification exams (Keita & Lee, 2024; Nguyen et al., 2024). These strategies are often perceived as equally effective to formal preparation pathways.

2.4 Gaps in the Literature

2.4.1 Several critical gaps exist:

- **Lack of localized research:** There is no comprehensive study addressing math teachers' certification experiences in Azerbaijan.
- **Limited focus on preparation strategies:** Specific preparation approaches used by math teachers are underexplored, especially in the post-Soviet region.

- **Limited exploration of challenges:** Most studies emphasize positive outcomes, whereas teachers' struggles and negative experiences during certification processes are less frequently discussed.

Addressing these gaps is crucial for developing effective policies and professional development programs tailored to Azerbaijani educators.

Chapter 3: Research Methodology

3.1 Research Design

The primary aim of this study was to identify the key factors and preparation strategies shaping math teachers' experiences and perceptions of certification exams in Azerbaijan. It sought to provide a deeper understanding of the strategies and challenges associated with national certification, addressing existing research gaps and offering insights to inform educational policy.

A qualitative research approach was employed, as it enables an in-depth exploration of complex individual experiences and contextual factors (Creswell, 2014). Qualitative

research was well-suited to our purpose because it captures subjective insights and generates rich thematic findings that directly address research questions (Creswell & Poth, 2018). As Cresswell and Cresswell (2017) emphasize, qualitative methods are particularly effective when the focus is on individuals' lived experiences.

The main data collection method involved semi-structured interviews, conducted both face-to-face and online. Semi-structured interviews allowed flexibility for participants to share their perspectives while keeping the discussion aligned with the study's objectives (Creswell, 2014). Open-ended questions encouraged participants to elaborate on their basichttps://experiences and emotions, uncovering deeper insights (Creswell & Poth, 2018; Patton, 2015).

The study adopted an exploratory design, appropriate for investigating under-researched areas. Exploratory qualitative research not only examines basic themes but also identifies context-specific factors, making it suitable for making meaningful recommendations (Creswell, 2014; Creswell & Poth, 2018).

3.2 Research Site and Target Population

The research involved both urban and rural math teachers across Azerbaijan. Data were collected from 17 math teachers who had recently completed the national certification examination:

- Ten teachers from urban areas (six passed, four failed)
- Seven teachers from rural areas (four passed, six failed)

Participants were drawn from various regions including Baku, Sumgayit, Zardab, Qusar, and Agjabadi, ensuring a diversity of experiences. The target population included both successful and unsuccessful candidates to gain a comprehensive understanding of different perspectives.

Fifteen teachers are experienced, each with more than ten years of experience, while two teachers have no more than five years of teaching experience. The age range of participants was as follows:

- One teacher is 25 years old
- Seven teachers were between 30 and 40 years old
- Five teachers were between 40 and 50 years old
- Two teachers were between 50 and 60 years old
- Two teachers were over 60 years old.

3.3 Sampling Size and Sampling Method

A total of 17 teachers participated in the study. This sample size was sufficient to reach data saturation, where no new significant themes emerged during interviews (Creswell, 2012).

Convenience sampling was employed, a purposeful sampling technique where participants are selected based on accessibility and willingness to participate (Etikan et al., 2016). Although convenience sampling may introduce some bias, it allowed timely recruitment and practical access to participants who met the study's criteria (Creswell, 2012).

3.4 Sources of Data

The primary data source consisted of the individual interviews with 17 math teachers. Semi-structured interviews enabled flexible yet focused exploration of participants' experiences, preparation strategies, and perceptions regarding certification exams (Creswell & Poth, 2018).

Additionally, secondary data were gathered from relevant literature examining certification processes and teacher preparation strategies globally, filling contextual gaps given the limited research available in Azerbaijan.

3.5 Data Collection

Data collection was conducted through semi-structured, one-on-one interviews using platforms such as Zoom, WhatsApp, and Microsoft Teams, alongside face-to-face meetings when possible. Interviews were conducted in Azerbaijani to ensure participant comfort and authenticity of responses.

Before each interview, participants were provided a consent form (Appendix A) outlining the study's purpose, confidentiality measures, and voluntary nature of participation. Verbal reassurances of these principles were also given at the start of each session.

The interviews employed a flexible guide of open-ended questions, with additional probing questions used based on participant responses. After each interview, recordings were transcribed for detailed analysis.

For secondary sources, relevant articles were selected after careful review of abstracts and conclusions, ensuring alignment with the study's focus.

3.6 Data Analysis

Interview data were transcribed and systematically coded to identify emerging themes (Merriam & Tisdell, 2015). Codes were grouped into categories reflecting similarities and differences in teacher experiences and preparation strategies.

This coding process facilitated comparison across participants and synthesis of findings. Document analysis was similarly approached through thematic coding, supporting triangulation of insights from different data sources.

3.7 Trustworthiness

Ensuring the trustworthiness of the research was a priority, addressed through triangulation and peer review.

- Triangulation: Multiple data sources were used, including interviews and literature review, to cross-verify findings and strengthen the study's credibility (Denzin, 1978; Merriam & Tisdell, 2015).
- Peer Review: As part of the capstone process, findings were reviewed by a supervisor. Peer feedback helped validate the research approach, analysis, and interpretations (Merriam & Tisdell, 2015).

3.8 Ethical Considerations

All participants provided informed consent prior to interviews. Confidentiality and anonymity were strictly maintained. Participants were informed of their right to withdraw at any stage without consequences.

Addressing ethical considerations carefully was essential to maintaining the integrity and trustworthiness of the findings (Patton, 2015).

3.9 Study Limitations

Several limitations were identified:

- **Convenience Sampling Bias:** Non-random participant selection may limit the generalizability of findings (Wholey et al., 2010).
- **Limited Local Research:** The scarcity of existing literature on certification experiences in Azerbaijan narrowed the background analysis.
- **Researcher Positionality and Bias:** As researchers, our own experiences with certification may have subtly influenced data interpretation.
- **Sample Size from Rural Areas:** Intended recruitment of 20 teachers was reduced to 17 due to limited consent from rural participants.
- **Participant Honesty:** Some participants may have been hesitant to share negative experiences openly, potentially influencing findings.

- **Lack of Multiple Perspectives:** Including perspectives from school administrators or policymakers could have enriched the analysis but was not feasible due to time constraints.

Chapter 4: Findings

This chapter presents the findings of the study aimed at identifying the factors contributing to math teachers' experiences in certification examinations in Azerbaijan. The research addressed the following questions:

1. What are the key factors contributing to math teachers' experiences during the certification examination process? How do these factors shape their perceptions of professional development?
2. What preparation strategies do math teachers employ for certification exams? How do they describe the role these strategies play in their performance and sense of readiness for the examination?

Data were gathered through semi-structured, one-on-one interviews. A total of 17 math teachers from various public schools (i.e., urban and rural areas) participated in the study. The interview protocol included 14 core questions (see Appendix B), complemented by follow-up prompts to explore participants' professional journeys, subject interest, and views on professional growth. The participants included:

- ten teachers who successfully passed the certification exams.
- seven teachers who did not pass.
- seven teachers from rural areas (three failed, four passed).
- ten teachers from urban areas (four failed, six passed).

To ensure diversity, the sample involved teachers from different regions of Azerbaijan, including Zardab, Qusar, Agjabadi, Baku, and Sumgayit. Identities were anonymized to maintain confidentiality.

Overview of Themes

Thematic analysis yielded three major themes:

1. Key Factors Contributing to Math Teachers' Experiences
2. Preparation Strategies Employed by Teachers
3. Suggestions for Future Certification Candidates

Theme 1: Key Factors Contributing to Math Teachers' Experiences

The participants described their experiences before, during, and after the certification exams. Several recurring sub-themes were identified:

Subtheme 1.1: Individual and Structured Preparation

Participants across both successful and unsuccessful groups emphasized the importance of individual planning and discipline. Teachers noted that self-directed efforts, such as dedicating daily time slots and maintaining consistency, contributed positively to their readiness. Some, despite not passing, acknowledged a lack of structured preparation as a

limitation. Respondents agreed that personal commitment was crucial, even when formal support or external resources were limited.

Subtheme	Quotes
1.1 Individual and Structured Preparation	**Respondent 1:** Mən düşünürəm ki, insanın özünün şəxsi fəaliyyəti olaraq bu işdə rolu öndədir. [I think that an individual's role in this process is at the forefront.]
	Respondent 9: Şəxsi hazırlıq mütləq vacibdir, özüm bir neçə dəfə imtahanda iştirak etmişəm və hər zaman 50 dən yuxarı bal toplamışam. [Individual preparation is a must, I myself have participated in a couple of exams and always collected more than 50 points.]
	Respondent 7: Sonra, şəxsi hazırlıq – yəni, hər gün müəyyən saat ayırmaq, planlı işləmək. [Then, individual preparation, I mean setting aside a few hours every day, planned work.]
	Respondent 15: Sadəcə mən hazırlaşmalı idim. Mənim ailəmdə keçən il çox problem oldu. Mən fikrimi toplayıb hazırlaşa

	bilmədim. [I just had to get prepared. My family had a lot of problems last year. I couldn't get prepared by focusing on it.]
	Respondent 17: Həm təlim, həm də gərək öz üzərində işləyəsən… [You need to work on both training and yourself…]
	Respondent 16: Ancaq hazırlaşmaq. Ancaq bu hər şeyi bir yana qoyub hazırlaşmaq. İndi təbii ki, mümkün olan qədərdir. Biz həm də işləyirik axı. [Only preparation. But to put all this aside and prepare. Now, of course, it's as much as possible. We're also working.]

Table 2: Participate Quotes on Individual and Structured Preparation

Subtheme 1.2: Time Constraints and Family Obligations

Many respondents identified time management as a significant barrier. Balancing work, family responsibilities, and personal issues limited their ability to prepare effectively. Several teachers expressed that additional time following the academic year would have improved their outcomes. Teachers managing professional and personal obligations simultaneously often found it difficult to allocate consistent time for study.

Sub-theme	Quotes

1.2 Time Constraints and Family Obligations	**Respondent 13:** Vaxt baxımdan müəllimlərin çoxu hazırlaşa bilmirdilər. [Due to time constraints, most teachers were unable to prepare.]
	Respondent 1: Yəni, mənim, bilirsiniz, evdə də mənim qayğılarım çox idi, məktəbdə də mənim qayğılarım çoxdur və ancaq həftədə üç dəfə, bir saat vaxt ayırırdım… [So, you know, I had a lot of problems at home, I had a lot of problems at school and I could only find time for one hour three times a week…]
	Respondent 16: Sadəcə mənim ailəmdə keçən il çox problem oldu. Genetik xəstəlikli nəvəm dünyaya gəldi… [Just last year we had a lot of problems with my family. My grandson was born with a genetic disease…]
	Respondent 17: Xəstəmiz var idi. Son 2 ildir ancaq xəstə ilə məşğul idim. [We had a patient. For the last 2 years I have only been taking care of patients.]
	Respondent 5: Bundan əlavə, dərs və işi balanslaşdırmaq mənim üçün çox çətin idi.

	[It was also very difficult for me to balance school and work.]
	Respondent 10: İmtahana hazırlıq prosesi semester imtahanları ilə üst-üstə düşdüyünə görə vaxt problemi yaşadım. [Since the exam preparation process coincided with the end-of-semester exams, I was pressed for time.]

Table 3: Participant Quotes on Time Constraints and Family Obligations

Subtheme 1.3: Exam Format and Question Complexity

Teachers expressed mixed views regarding the exam format. While some considered the structure manageable, others found the content misaligned with their teaching level, especially those working with students with special needs. A lack of clarity about the scope and difficulty level of questions added to the challenge. Some teachers who had prior experience with similar standardized tests (e.g., MİQ) reported feeling more comfortable with the certification exam.

Subtheme	Quotes
1.3 Exam Format and Question Complexity	**Respondent 5:** …çətinlik imtahanın çətinlik səviyyəsi və mövzuların hüdudları barədə məlumatımızın olmaması… [...the difficulty is our lack of knowledge about the level of difficulty of the exam and the boundaries of the topics…]
	Respondent 14: Bizim məktəb üçün

	sertifikasiya bir başqa cür olmalı idi. [Certification for our school should have been different.]
	Respondent 1: Təbii ki, o fəaliyyətlərin, o sertifikasiyanın keçirilmə formatının normal olması bunların da təsiri var… [Of course, the fact that those activities and the format of that certification are normal also has an impact…]
	Respondent 3: Sertifikasiyada o qədər çətin olmadı suallar amma men Miq-lə hazırlaşdığıma görə asan oldu. Çünki suallar daha qəliz düşə bilir orda. [The questions weren't that difficult in the certification, but since I prepared with MİQ, the questions can be more difficult there.]
	Respondent 7: Məncə bir neçə faktor var idi. Birincisi, imtahanın formatını tam başa düşmək lazımdır. Əks halda, nəyə hazırlaşdığını bilmirsən. [I think there were a few factors. First, you need to fully understand the format of the exam. Otherwise, you don't know what you're preparing for.]

Table 4: Participant Quotes Exam Format and Question Complexity

Subtheme 1.4: Regular Practice and Tutoring Experience

Teachers with tutoring experience reported better familiarity with subject matter and question formats, suggesting that active engagement with teaching outside school hours enhanced their preparedness. Regular exposure to varied problems helped reinforce subject knowledge and pedagogical strategies.

Subtheme	Quotes
1.4 Regular Practice and Tutoring Experience	**Respondent 5:** Repetitorluq kömək etdi, çünki o, məni daim fənn məzmunu üzərində məşq etməyə vadar etdi. [Tutoring helped because it kept me practicing with subject content constantly.]
	Respondent 3: Məncə ən vacib şey çox məşq etmək, çoxlu testlər həll etmək və eyni zamanda repetitorluq etməkdir. Daimi təkrarlama çox önəmlidir. Təkrarlama biliyin anasıdır. [I think the most important thing is to practice a lot, do many tests, and also work as a tutor. Constant repetition is key. Repetition is the mother of knowledge.]
	Respondent 13: Və çox vaxt repetitorluqla məşğul olan müəllimlər daha üstün nəticələr əldə edirlər.Cunki,onlar məktəb

	proqramından əlavə proqramlarla daha çox işləyirlər. [Teachers who tutor often achieve better results because they work more broadly than the standard school curriculum.]
	Respondent 4: Düzünü desəm, mən repetitorluqla məşğul oluram. Düşünürəm ki, fənnim üzrə kifayət qədər biliyim var. [Honestly, I am a tutor. I think I have enough knowledge on the subject.]
	Respondent 12: Demək olar ki, ixtisasım üzrə gündəlik işlədiyimə görə, həm məktəbdəki, həm hazırlıqdaki uşağlarla işlədiyimə görə, ixtisas üzrə hazırlaşmaqa amillər yox idi. [Since I work daily in my field, both with students at school and in tutoring sessions, there were practically no factors that required me to prepare specifically for the subject.]
	Respondent 1: Yəni, mənim məktəbdə istifadə elədiyim metodika və bizim nəzəri metodikamız, yəni bunları bir balaca tutuşdurmağa çalışırdım ki, əslində, bu uzun

	müddətdə artıq vərdiş halına gəlir…Metodikada bunlar mənə çox kömək oldu, mən çox az baxdım, amma müsahibə suallarından da mən normal bal yığdım. [So, the methodology I used at school and our theoretical methodology, I was trying to compare them a little, which actually becomes a habit over time... These helped me a lot in the methodology, I looked at very little, but I also scored normal on the interview questions.]
	Respondent 2: Amma belə bir məllimin, işləyən, çalışan bir məllim çox rahat bir şəkildə o imtihanı yazar. Çox təəssüf ki, mən metodikanı oxumadım. [But a teacher like that-one who is working and actively teaching- can easily pass the exam. Unfortunately, I didn't study the methodology.]

Table 5: Participant Quotes on Regular Practice and Tutoring Experience

Subtheme 1.5: Digital Literacy and Technical Issues

A few teachers, particularly those who did not pass, reported difficulties related to computer skills. Technical problems during the computer-based test (e.g., system errors, unfamiliarity with the interface) affected their performance and created stress.

Subtheme	Quotes
1.5 Digital Literacy and Technical Issues	**Respondent 15:** Kompüter biliklərim aşağı səviyyədə. kompüterdə, məsələn, nəyəsə səhvə yol vermişdim… [My computer skills were low; I made mistakes during the test.]
	Respondent 17: Mende biraz komputerle bagli problem var onu tam yaxsi istifade ede bilmirem. [I have a little problem with my computer skills, I can't use it properly.]

Table 6: Participant Quotes on Digital Literacy and Technical Issues

Subtheme 1.6: Psychological Factors

High levels of anxiety and stress were commonly reported, particularly among teachers who were taking the exam for the first time or lacked prior standardized test experience. The pressure to perform well in front of colleagues and fear of underperforming were significant sources of emotional strain.

Subtheme	Quotes
1.6 Psychological Factors	**Respondent 7:** Əvvəlcə çox stressli idi. Nədən başlayacağımı bilmirdim… [It was a very stressful period; I didn’t know where to start.]

	Respondent 1: İmtahan zamanı çox psixoloji təzyiq yaşadım, bu da mənim nəticəmə təsir etdi. Amma düşünürəm ki, sakit olmaq və psixoloji olaraq hazır olmaq uğur üçün çox vacibdir. [I had a lot of psychological pressure during the exam, which affected my performance. However, I think being calm and mentally prepared is crucial for success..]
	Respondent 11: Mənim özümdə həyəcan olmuşdu, amma mən deyim ki, 2014-cü ildən imtihanlarda iştirak edirəm deyə mənə o qədər də qorxulu gəlmədi. [I was excited, but I have to say that since I have been taking exams since 2014, it didn't seem that scary to me.]
	Respondent 6: Hazırlıq müddətim olduqca stresli keçdi. [My preparation period was very stressful.]
	Respondent 10: Heç MİQ-də bu qədər stress yaşamamışdım. Miq-də bu qədər stresli deyildi.

	[I had never felt so much stress during the MIG exam. MIG didn't feel this stressfull to me.]
	Respondent 9: Biraz stressimiz çox oldu, bu da xarici amillərlə çox bağlıdır. İstər istəməz məktəb kollektivində işləyirik və heç bir müəllimdən aşağı bal toplamaq istəmir. [We've been a little stressed, and this is largely due to external factors. We work in a school team, and no teacher wants to get a lower grade.]
	Respondent 15: Həm özümü bağışlaya bilmirəm. Həm də, elə bilirəm ki, nə isə bir qəbahət iş görmüşəm. [I can't even forgive myself. Also, I think I did something wrong.]
	Respondent 16: Məni silkələdi. O cür yəni ki, mən hazır deyildim bu nəticəyə. [It shocked me. In a way, I wasn't prepared for things to turn out this way.]

Table 7: Participant Quotes on Psychological Factors

Theme 2: Math Teachers' Preparation Strategies

In response to the second research question, participants shared a variety of strategies they employed during the preparation phase. These were categorized into six subthemes:

Subtheme 2.1: Consistent and Disciplined Preparation

Several teachers emphasized the importance of disciplined study routines. They reported setting daily or weekly goals, adhering to planned schedules, and reviewing specific topics regularly. This structured approach was noted as particularly effective by successful candidates.

Subtheme	Quotes
2.1 Consistent and Disciplined Preparation	**Respondent 3:** Mümkün qədər intizamlı olmağa çalışdım. [I tried to be as disciplined as possible.]
	Respondent 11: Bir də mən düşünürəm ki, disiplinli hazırlaşmaq daha yaxşıdır…Disiplinlə üzərində, proqram üzərində hazırlaşmaq daha məqsədə uyğundur. [I also think that it is better to prepare with discipline... It is more appropriate to prepare with discipline, on a program.]
	Respondent 1: Sertifikasiya imtahanına hazırlaşmaq üçün mən bir neçə ay öncə başlamışdım. Mütəmadi olaraq testlər işlədim, hər gün müəyyən saatlarda təkrarladım. Mənim üçün davamlı və nizamlı hazırlaşmaq çox vacibdir. [I started preparing for the certification exam a few months before. I regularly

	worked on tests and repeated them every day at certain hours. For me, consistent and disciplined preparation is very important.]

Table 8: Participant Quotes on Consistent and Disciplined Preparation

Subtheme 2.2: Use of Digital Platforms

YouTube was the most frequently cited resource. Many teachers used it to access tutorial videos, methodological explanations, and curriculum-related content. However, some expressed that passive consumption of video materials was not always beneficial, advocating for more active learning methods.

Subtheme	Quotes
2.2 Use of Digital Platforms	**Respondent 2:** YouTube videolarından istifadə müəllimlərin daha effektiv öyrənməsinə kömək etdi. [Using YouTube videos helped teachers study more effectively.]
	Respondent 3: Belə olan halda materialları daha sürətli çatdırmaq üçün YouTube'dan videoların daha sürətli bir şəkildə izlənməsi mənim üçün çox kömək oldu. [In such a case, watching videos on YouTube more quickly was a great help for me to grasp the materials faster.]

	Respondent 1: Bir ara hazır videolara qulaq asmaq da mənə xoş idi… Metodikadan bəzi videolara qulaq asmaq mənə daha rahat idi. [I also enjoyed listening to ready-made videos from time to time... I found it more comfortable to listen to some videos from the methodology.]
	Respondent 11: Burada ancaq müəyyən kurikulum müəllimlərinin, bu strategiya hesab olunur, yoxsa yox bilmirəm, kurikulum müəllimlərinin video izahlarını izlədim YouTube vasitəsi ilə. [Here, I just watched video explanations of certain curriculum teachers, I don't know if this is considered a strategy or not, through YouTube.]
	Respondent 13: Müəllimlərin çoxu hazır video materiallara baxıb hazırlaşırlar.Bu elə də faydalı olmur. Müəllim özu araşdırmalıdır, özü həll etməlidir. Mən də o video materiallara baxmışam.Hansısa bir çətin məsələnin həllini mənə

	göstərirdilərsə də, o mənə çatmırdı. Çünki,çox çətin yolla izah edirdi. [Most teachers prepare by watching ready-made video materials. This is not very useful. The teacher should research and solve it himself. I have also watched those video materials. Even if they showed me the solution to a difficult problem, I didn't understand it. Because they explained it in a very difficult way.]

Table 9: Participant Quotes on Use of Digital Platforms

Subtheme 2.3: Test-Centered Practice

Teachers often relied on solving sample test questions and previous exam papers. This practice helped them become familiar with the exam format and identify areas requiring further study. Those who consistently practiced tests reported greater confidence and speed during the actual exam.

Subtheme	Quotes
2.3 Test-Centered Practice	**Respondent 1:** Sürəti artırmaq üçün iki gündən bir testlər edirdim. [I practiced tests every two days to improve speed.]
	Respondent 3: Xüsusən, mövzuların testləri ilə çalışmaqla bərabər təkrar tipli tapşırıqlara baxırdım.

	[In particular, I was going through repetitive types of tasks along with working with topic-based tests]
	Respondent 2: Məktəbdə o boş saatlarda toplaşırdı müəllimlər müzakirə olunurdu, testlər işlənirdi, yeni test formatları öyrənilirdi… [During those free hours at school, teachers would gather, discuss, work on tests, and learn new test formats…]

Table 10: Participant Quotes on Test-Centered Practice

Subtheme 2.4: Collective Preparation and Peer Collaboration

Collaborative learning through WhatsApp groups and informal study circles emerged as a strong support system. Participants shared questions, discussed solutions, and encouraged each other, fostering a sense of community and reducing exam-related anxiety.

Subtheme	Quotes
2.4 Collective Preparation and Peer Collaboration	**Respondent 2:** Bizdə müəllimlər kollektiv şəkildə çalışırdılar. Bu onların uğurunda əsas amil idi. [The teachers collaborate together in order to prepare for the certification exam. It was the main factor of the success of teachers.]

	Respondent 4: Həmçinin WhatsApp qruplarında sualları müzakirə edirdik…Biz hansısa WhatsApp qruplarına daxil edilmişdik, burada müzakirələr aparılırdı, müəyyən tapşırıqlar və köməkliklər olurdu. [We discussed questions in WhatsApp groups for mutual support. There were several WhatsApp groups where we had discussions, solved the tasks and helped each other.]
	Respondent 5: WhatsApp qruplarında sualları müzakirə edirdik. [We discussed the questions in WhatsApp groups.]
	Respondent 9: Sertifikasiya prosesində mən qrup yoldaşlarım ilə birlikdə hazırlaşmışam. Bizim WhatsApp qrupumuz vardı, bir yerdə sınaqlar işləyirdik, müzakirələr aparırdıq. [I prepared for the certification exam with my groupmates. We had a WhatsApp group where we practiced mock questions and discussed their solutions.]

Table 11: Participant Quotes on Collective Preparation and Peer Collaboration

Subtheme 2.5: Preparation Courses

While some teachers benefited from structured courses, especially younger educators or those less confident in methodology, others felt that self-discipline and independent study were more effective. Opinions varied, indicating that course effectiveness depended on individual learning preferences and needs.

Subtheme	Quotes
2.5 Role of Courses	**Respondent 1:** Mən kurslarda iştirak eləməmişəm, onun təsiri də bəzi olar ki, elə insanlar olar ki, ona faydalı olar. Təbii ki, orada müəyyən qədər istiqamətlənmiş köməkliklər, təkrarlar faydalı ola bilər. [I did not participate in courses, but there are some people who might take advantage of them. Of course, guidance and revision of topics might help in this regard.]
	Respondent 3: İki ay qalmış təkrar qruplarına qoşuldum. Kursla hazırlaşmışam. [I participated in course two months before the exam.]
	Respondent 4: Amma kurslar xüsusilə gənc müəllimlər üçün faydalıdır.

	[The courses are beneficial mostly for the young teachers.]
	Respondent 11: Yəni, hansısa bir kursda hazırlaşan müəllimə əslində pis baxmıram.Çünki müəllim özündə müəyyən çatışmamazlıq hiss edir və vadar olub gedib öz ixtisasını öyrənməyə çalışır və imtihandan keçir. [If such courses help teachers to learn something new and pass the certification exam successfully, they might join the courses.] **Respondent 11:** Ödənişli bir hansı kursa qatılmaq o qədər də effekt verməz. Özünüzdə daha məsulliyətli, disiplinli işləsəniz, bu daha çox effekt verər. [Participating in paid courses is not effective. You should be responsible, and disciplined. It will give more effective results.]
	Respondent 12: Düşünürəm ki, riyaziyyat müəllimləri dərsliklərdə, əlavə mənbələrdən və kurrikulum kurslarına qoşularaq hazırlaşırlar.

	[I think math teachers prepare for the certification exam by participating in courses.]

Table 12: Participant Quotes on Preparation Courses

Subtheme 2.6: Lack of Preparation or Strategy

Some participants, particularly those who did not pass, admitted to inadequate preparation or lack of a strategic approach. Several cited overreliance on experience or insufficient time as key reasons. A few who passed without formal preparation attributed their success to prior tutoring experience and strong subject knowledge.

Subtheme	Quotes
2.6 Lack of Preparation or Strategy	**Respondent 6:** Hazırlıq strategiyamın yetərsiz olduğunu imtahandan sonra anladım. [I realized after the exam that my preparation strategy was insufficient.] **Respondent 6:** Məncə xüsusi və faydalı strategiyam olmadığı üçün imtahanda uğur qazana bilmədim. [I could not be successful in the exam because I did not have a special strategy for the preparation.]
	Respondent 7: Mən xüsusi strategiya istifadə etmədim.

	[I did not use a special strategy for the preparation]
	Respondent 15: Öz təcrübəmə əsaslanaraq. Gərək məndə hamı kimi gedərdim sınaqlara, təcrübə topluyardım, özümə təcrübə topluyardım. Nəyin ki, kəsilib geri qayıtmaq. [I participated in the exam based on my experience. If I prepared for the certification exam, participated in mock exams, gained more experience, I could pass it instead of failing.]
	Respondent 16: İmtihan hazırlıq prosesi olub, bəzi səbəblərinə, atam xəstə olduğuna baxmayaraq. Həm də elə bilin ki, sıfırdan başladım da, başa düşdünüz? Necə deyim sizə, dördüncü sinifdən başladım. Başa düşdünüz? Mən çatdıra bilməzdim. [I did not have a time to develop preparation strategy due to health issues of my father and I started to prepare from zero.]

Table 13: Participant Quotes on Lack of Preparation or Strategy

Theme 3: Suggestions for Future Certification Candidates

Participants offered a variety of recommendations for teachers preparing for upcoming certification exams. These suggestions were categorized into four subthemes:

Subtheme 3.1: Self-Study and Continuous Practice

Respondents emphasized the value of regular practice, topic revision, and teaching experience (e.g., tutoring). They encouraged future candidates to adopt consistent study habits, plan their schedules, and prioritize long-term preparation.

Subtheme	Quotes
3.1 Self-Study and Continuous Practice	**Respondent 1:** Ən vacib şeyin çox təkrar etmək, çoxlu testlər etmək və həmçinin repititor kimi işləmək olduğunu düşünürəm. Davamlı təkrarlama çox önəmlidir. Təkrar, biliyin anasıdır. [I believe the most important thing is to repeat a lot, do a lot of tests, and also work as a tutor. Constant repetition is very important. Repetition is the mother of knowledge.]
	Respondent 2: Yəni, ümumiyyətlə, hər bir məllim imtihana hazırlaşmalıdır. Yəni, həmişə hazırlaşmalıdır. Yenilikçi olmalıdır. Öz fənnini mütəmadi araşdırmalıdır. [Generally, every teacher should prepare for exams. They should always be ready.

	They should be innovative. They should study their subject regularly.]
	Respondent 3: Hazırlaşmaq ve öz üzərində çalışmaq… zatən müəllimlərimiz hamısı bilir ki, çalışmaq ümumi bilikləri artırmaq özünü inkişaf etdirmək yetərlidir. [Preparing and working on oneself…after all, our teachers know that working to enhance general knowledge and self-development is sufficient..]
	Respondent 6: Məncə əsas olaraq imtahan formatına fokus olmaq lazımdlr. Çoxlu praktika etmək, əzbərdən qaçmaq lazımdır. [I believe that the exam structure should be the primary focus. Avoiding rote learning and practicing a lot are crucial.]
	Respondent 7: Düzgün plan qursunlar. Özlərini çox yükləməsinlər. Hər gün az-az, amma davamlı işləsinlər… [They ought to create a suitable plan. They must avoid overcommitting. They ought to work steadily but gradually each day.]

	Respondent 11: Hazırlıq, yəni, sadəcə, yəni, öyrənin, kimsə hazırlaşırsa bu barədə, istəyir ödənişli, istəyir öz üzərində. [Preparation, meaning, simple, learn. If someone is preparing for this, whether it's paid or self-directed..]
	Respondent 15: Ancaq hazırlaşmaq. Ancaq hazırlaşmaq. Ancaq bu hər şeyi bir yana qoyub hazırlaşmaq. [Just get ready. Simply get ready. Simply set aside everything else and get ready..]

Table 14: Participant Quotes on Self-Study and Continuous Practice

Subtheme 3.2: Emphasis on Test-Based Preparation

Many teachers recommended focusing on test simulations, practicing under exam conditions, and reviewing a wide range of question types. Familiarity with the test format was seen as critical for both performance and confidence.

Subtheme	Quotes
3.2 Emphasis on Test-Based Preparation	**Respondent 3:** Belə əsas məsələ tapşırığın ve testin işlənməsidir. [The main issue is working on the task and the test]
	Respondent 7: Hər gün az-az, amma davamlı işləsinlər. Həm də real imtahan şəraitinə uyğun testlər etsinlər…Sadəcə

	çoxlu çalışmalıyıq, test eləməliyik, özümüzə inanmalıyıq. [They should work little by little every day, but consistently. Also, they should take tests that simulate the real exam conditions... We just need to work hard, take tests and believe in ourselves]
	Respondent 9: Özünə güvənmək və öz üzərində çalışmaq, çoxlu test işləmək, beyni işlək vəziyyətdə imtahana getmək lazımdır. [Self-confidence and working on yourself, solving many tests and going to the exam with an active mind essential]
	Respondent 13: Çox çalışıb, çoxlu məsələ misallar həll etsinlər. [They should work hard and solve many examples.]

Table 15: Participant Quotes on Emphasis on Test-Based Preparation

Subtheme 3.3: Subject Knowledge Development

Teachers advised regular subject-based research and revision. Exploring multiple resources, consulting experienced peers, and revisiting neglected topics were common strategies for deepening content knowledge.

Subtheme	Quotes

3.3 Subject Knowledge Development	**Respondent 2:** Yəni belə, daimi olaraq bir müəllim bütün vasitələrdən və vəsitətlərdən istifadə edib, nəsə bir yeniliyə can atmalı, nəsə bir fərqlilik yaratmalıdır. [In other words, a teacher should constantly make use of all tools and resources, strive for something new and try to create something different.]
	Respondent 5: Adətən bəzi mövzularla uzun müddət işləmədikdə onlar unudulur və ya diqqətdən yayınır. Lakin şagirdlərə dərs keçərkən daim mövzulara toxunmaq lazım gəlir və bu, mənim üçün faydalı oldu. [Usually, when certain topics are not studied for a long time, they are forgotten or overlooked. However, while teaching students, it becomes necessary to constantly revisit these topics and this has been beneficial for me.]
	Respondent 11: Mən düşünürəm ki, öz üzərində müəllimlər işləməlidir…Mən düşünürəm ki, riyaziyyat ancaq

	araşdırmadır…Məsələn, müxtəlif kitablardan istifadə eləsə, daha çox effekt verər. [I believe that teachers should work on themselves… I think mathematics is all about research… For example, using different books would be more effective.]
	Respondent 15: Biri bir şey bilməyəndə mən o saatə mənim müəllimim yaşayır, mənim 80 yaşı var, mən çağırıb onu soruşuram, mən, məsələn, bu sahədə keçmiş biliklər mənim üçün daha, həqiqətən deyirəm, mənim keçmiş biliyim, müəllimin olduğu şey deyir ki, mən onu çoxdan müəllimdən keçmişdim, o müəllim mənə öyrətmişdi. [When someone doesn't know something, I immediately contact my teacher, who is 80 years old. I call him and ask. For example, in this area, my past knowledge is more valuable to me, and I really mean it. I learned it from my teacher a long time ago. That teacher taught me.]

Table 16: Participant Quotes on Subject Knowledge Development

Subtheme 3.4: Psychological Readiness

Managing anxiety and maintaining a positive mindset were key themes. Teachers advised future candidates to view the exam as a tool for self-assessment rather than a punitive measure. Confidence in one's knowledge and preparation was seen as essential for success.

Subthemes	Quotes
3.4 Psychological Readiness	**Respondent 9:** 1-ci məsləhət görərəm ki, həyəcanlanmasınlar, biz riyaziyyat müəllimləri bilirik ki, öz fənnimizi bilirik. Yəni bu sırf bizim biləcəyimiz bir suallar çərçivəsindədir. [My first piece of advice would be to avoid being anxious. As maths teachers, we are aware of our subject's depth. These enquiries fall within the purview of our knowledge.]
	Respondent 11: Mən düşünürəm ki, sertifikat hazırlaşan digər riyaziyyat müəllimləri, burda həyəcanlı bir şey yoxdur. Əgər ixtisasınızı bilirsə, normal səviyyədə keçəcək. İxtisasınızı bilmirsinizsə, müəyyən qədər ixtisasınız üzrə təkrarlanmaq, sizin xeyrinizə olacaq.Nəinki imtihanı üçün, özünüz üçün.

	[I think that other mathematics teacshers preparing for the certification exam should know that there is nothing to be nervous about. If you know your subject, you will pass at a normal level. If you don't know your subject, reviewing and repeating it will be beneficial for you— not just for the exam, but for yourself.]
	Respondent 13: Məsləhətim odur ki, qorxmasınlar,buna sadə bir imtahan kimi baxsınlar. Qorxmaq lazım deyil,bu bir imtahandır,özlərini yoxlayırlar. [My advice is that they shouldn't be afraid and should see it as just a simple exam. There is no need to be scared, it is an exam where they are just testing themselves..]

Table 17: Participant Quotes on Psychological Readiness

Summary

The findings of this study reveal a complex interplay of personal, institutional, and contextual factors shaping math teachers' certification exam experiences. Success often depended on a combination of disciplined preparation, practical teaching engagement, peer collaboration, and emotional readiness. Conversely, time constraints, lack of digital literacy, and unstructured study approaches emerged as common challenges, particularly among those who did not pass. These insights can inform future support mechanisms, tailored training

programs, and exam design improvements to better serve teachers navigating the certification process.

Chapter 5: Discussion

The factors shaping Azerbaijani math teachers' certification-exam experiences align closely with international research, yet they reveal context-specific nuances that help fill the gaps identified in the literature review. Consistent with Shulman's (1986) dual emphasis on content and pedagogical knowledge, participants stressed that disciplined, self-regulated study routines and continual engagement with subject matter through tutoring were decisive for success. This echoes Berliner's (2001) and Ball et al.'s (2008) observations that deliberate practice and content immersion strengthen performance. Likewise, the acute "time poverty"

caused by heavy teaching loads and family duties mirrors Creagh's (2023) notion of work intensification and reinforces Peterson's (1989) early warning that certification preparation often competes with daily professional demands. Teachers' reports of heightened anxiety and self-doubt parallel Hardacre et al.'s (2021) findings on the destabilising effect of test anxiety, while their frustration over vague topic boundaries supports Siegel et al.'s (2020) claim that misaligned test content erodes both fairness and confidence.

Where the present study extends existing work is in its illumination of digital-literacy disparities and grassroots peer-support mechanisms. While prior scholarship notes the value of coherent professional-development programs (Desimone, 2009; Garet et al., 2001), many Azerbaijani teachers substituted institutional offerings with YouTube tutorials and WhatsApp study circles. These informal professional-learning communities resemble the collaborative cultures advocated by Vescio et al. (2008), yet they emerged here as necessity-driven responses to limited formal support—echoing Kobakhidze's (2013) account of Georgian teachers turning to private tutoring when state programs misalign with exams. At the same time, teachers who lacked basic computer skills experienced the computer-based test itself as an added cognitive load, revealing a digital divide less visible in studies from high-resource contexts. Finally, the mixed verdict on paid preparation courses complicates earlier U.S. findings (Boyd et al., 2007; Roth & Swail, 2000), suggesting that course effectiveness hinges on learners' self-discipline and the tight coupling of course content to exam demands. Taken together, these findings corroborate much of the international literature while supplying locally grounded evidence that certification outcomes are co-determined by individual agency, technological readiness, and the adequacy of context-specific supports. They underscore Darling-Hammond's (2000) contention that certification can drive professional growth only when assessment design, preparation resources, and workplace realities are mutually reinforcing—an insight of immediate relevance for policymakers seeking to refine Azerbaijan's teacher-quality agenda.

Summary of the Discussion

The Azerbaijani findings largely confirm international research that teacher-certification outcomes hinge on a blend of self-regulated study habits, contextual supports, and psychological readiness. Disciplined preparation, frequent test practice, and content immersion through tutoring paralleled global evidence on the power of mastery experiences. Conversely, "time poverty," family obligations, vague exam boundaries, and test anxiety reproduced well-documented constraints. Where this study extends the literature is in spotlighting a pronounced digital-literacy divide and the bottom-up use of WhatsApp groups and YouTube tutorials as substitute professional-learning communities—necessity-driven innovations less visible in higher-resource settings. Taken together, the results show that certification functions as both a measure of individual competence and a mirror of structural inequities, pointing to the need for clearer test blueprints, digital-skills support, and formally endorsed peer-learning structures in Azerbaijan. See the below Table 18:

Key Factor	Findings from This Study	What Prior Literature Says	Alignment / Added Insight
Disciplined self-study & test practice	Successful teachers carved out daily study slots, used mock tests, and tutored.	Mastery practice boosts self-efficacy and scores (Berliner 2001; Ball et al. 2008).	Strong convergence—confirms the value of deliberate practice.
Time poverty & workload	Heavy teaching loads and caregiving	"Work intensification"	Convergent; underscores need to

	duties limited preparation.	hampers exam readiness (Peterson 1989; Creagh 2023).	schedule certification away from peak duties.
Exam-content clarity	Uncertainty about topic boundaries raised anxiety.	Misaligned or overly advanced items heighten stress (Siegel et al. 2020).	Matches literature; calls for detailed blueprints in Azerbaijani context.
Peer collaboration (WhatsApp groups)	Teachers formed informal study circles and shared resources online.	PLCs enhance learning and morale (Vescio et al. 2008).	Extends literature by showing grassroots, tech-mediated PLCs filling formal-support gaps.
Digital-literacy gap	Low computer skills turned the CBT interface into an extra hurdle.	Rarely highlighted in high-resource studies; noted indirectly in post-Soviet accounts (Kobakhidze 2013).	Adds new evidence of digital divide's impact on certification fairness.
Psychological readiness & anxiety	First-time takers reported high stress; veterans coped better.	Test anxiety undermines performance (Hardacre et al. 2021).	Convergent; localizes the need for exam-familiarisation workshops.

Table 18: Discussion of the Key Findings

This tabular synthesis shows where Azerbaijani evidence corroborates, nuances, or widens the global discourse, offering clear entry points for policy makers: publish transparent test guides, provide digital-skills training, and institutionalize collaborative study time to transform certification from a stressor into a tool for sustained professional growth.

Chapter 6: Conclusion

This study shows that math-teacher success on Azerbaijan's certification examination hinges less on raw ability than on the surrounding ecology of preparation and support. Teachers who carved out disciplined study schedules, repeatedly solved practice tests, and reinforced content knowledge through tutoring or peer discussion described the exam as a manageable extension of their daily work. Conversely, those balancing heavy teaching loads, family obligations, weak digital skills, or vague knowledge of the exam's scope reported heightened anxiety and poorer outcomes. The findings therefore portray certification not simply as an individual hurdle but as a mirror reflecting time pressures, technological readiness, and the availability of collegial learning cultures across urban and rural schools.

Because the same exam serves teachers in widely differing contexts, a one-size-fits-all approach risks amplifying existing inequities. Clearer communication of test boundaries,

brief computer-interface tutorials, and regionally coordinated study circles could transform the exam from a source of stress into a catalyst for professional growth. At policy level, scheduled study leave or modest digital-literacy workshops would target the very constraints teachers cited as most damaging. While the sample was small and self-reported, these narratives illuminate how structural supports, psychological readiness, and collaborative practice combine to define certification outcomes, suggesting that system-level interventions, rather than intensified individual effort alone, will yield the greatest gains for Azerbaijan's mathematics teaching force.

Chapter 7: Final Product

Our study intended to identify the factors contributing to math teachers' experiences in certification examinations. In this sense, we interviewed math teachers, including those who failed and passed the exam. These interviews helped us determine key factors affecting teachers' experiences before, during, and after the certification exams. Based on our findings, we developed a Certification Preparation Guide for math teachers to benefit in terms of effectively getting prepared for the certification examinations.

The main purpose of Certification Preparation Guide is to provide math teachers preparing for certification examinations with structured support. This guide is not just a resource it is a motivational companion to help educators overcome potential preparation challenges. The guide aims to assist teachers in:

- Planning effectively using SMART goals method and individualized study planners;
- Understanding the exam format clearly, avoiding any confusion;

- Managing psychological stress and building self-confidence with stress management techniques;
- Having essential digital skills needed for the computer-based test exam;
- Building a supportive learning environment among peers to collaboratively get prepared for the certification exam.

7.1 The Components of Certification Preparation Guide

7.1.1 Effective Planning and Setting SMART Goals

One of the significant findings in our research is the cruciality of structured preparation of math teachers for the certification examinations. Lack of structured preparation, time constraints and difficulties in balancing personal and professional life often make it challenging for teachers to dedicate ongoing effort and time toward exam preparation. In this sense, the Certification Preparation Guide introduces an effective planning module relying on SMART goal-setting method. SMART is an acronym standing for Specific, Measurable, Achievable, Relevant, and Time-bound goals. The concept was introduced by George T. Doran (1981) for individuals to set result-oriented objectives. According to Doran (1981), SMART goal-setting framework contains 5 main criteria:

- Specific: Goals should be clear and specific.
- Measurable: Goals and progress should be measurable.
- Achievable: Goals should be reasonably accomplished within a certain time frame.
- Relevant: Goals should be aligned with long-term objectives and values.
- Time-bound: Goals should be set to be realized till a realistic end date to clarify task prioritization.

In this sense, the Certification Preparation Guide includes a customizable template setting SMART goals with leading questions inside.

The guide also features daily and weekly planning templates to help teachers balance teaching responsibilities with their study efforts. These templates channel teachers to set concrete goals, such as “Complete two practice exams per week” or “Practice 50 tests on geometry a day” instead of general intentions like “Study more.” These nuances especially align with measurability and specificity principles of the SMART technique (Doran, 1981).

The guide also presents a useful digital tool, Notion, for teachers who prefer planning and preparing for the exams in an online environment. Notion has gained significant popularity among educators due to its adaptability and user-friendly style. It enables users to create editable and interactive study dashboards aligning with SMART goals (Notion, 2024). Utilization of such a digital tool supporting customizable goal tracking might lead to improving individuals’ ability to create consistent learning routines (Gollwitzer & Sheeran, 2006). Moreover, research shows that teachers highly benefit from digital platforms where they can collaboratively work in planning (Bedford, 2019). In this sense, Notion offers a shared workplace where teachers can collaboratively plan their studies enabling mutual feedback (Notion, 2024). The guide also features a video tutorial that clearly explains all the key functions and practical uses of Notion in Azerbaijani.

7.1.2 Certification Exam Format and Strategy

To support education standards, Azerbaijan introduced the teacher certification process in 2022 focusing on reviewing and strengthening educators’ professional capabilities. Structured in two stages, a computerized test and face to face interview are the main steps of the certification process. Participants demonstrate their knowledge by answering 60 questions covering three core areas- subject knowledge, teaching methods and instructional strategies- receiving one point for each correct response. Only those who score at least 30 points are permitted to participate in the interview stage. In this stage, applicants are evaluated based on the five critical skills: how they deliver subject content, assess students, present themselves, manage the classroom and communicate effectively. Each skill area is assessed using a scale

of 4-points and candidates are required to score at least 20 points out of the available total 40 points to successfully complete the interview phase. Certifications valid for five years are presented to qualified candidates who are also eligible for salary increases ranging from 10% to 35%, depending on their scores (Cabinet of Ministers of the Republic of Azerbaijan, 2022).

Encouraging results were achieved in 2022 with 78% of secondary school teachers passing the certification exam. Despite the progress made following the introduction of this process, challenges like exam fairness and accessibility concerns in rural areas persist. The Ministry of Education offers specialized assistance such as advanced training courses for teachers, scoring between 21 and 29 points to address the concerns raised (Khalilov, 2022).

To succeed in the certification interview, candidates should present subjects clearly with simple language and examples, demonstrate knowledge of formative and summative assessments, confidently introduce their teaching background, organize lessons with clear goals and student-centered methods, and communicate effectively with eye contact and active listening (Boyd et al., 2007).

For the test phase, they should practice sample questions, review subject content—especially weak areas—and manage their time well to answer all questions within the given timeframe (North Carolina Community Colleges, 2022). These strategies help ensure strong performance in both the test and interview stages.

7.1.3 Stress Management and Building Self-Confidence

As one of our findings concerns how teachers struggle to manage stress and suffer from psychological factors that negatively affect their preparation for the exam, during the exam and the period afterwards, we decided to include tips to manage stress and build self-confidence in our Certification Preparation Guide.

The first part is about techniques, such as breathing techniques and positive thinking, that help decrease anxiety. The main breathing technique included here is the 4-7-8

technique, which is effective for regulating anxiety and increasing one's concentration (UC Santa Cruz Institute for the Biology of Stem Cells, n.d). Primarily, this technique involves three steps: inhaling for 4 seconds, then holding the breath for 7 seconds, and exhaling for 8 seconds (Weil, A., 2010). Another exercise is to boost a positive mindset, and this exercise is called positive self-talk, which can support mental health most potently. Particularly, it can be done when one feels trapped in negative thoughts about oneself (Harvard Graduate School of Education, 2024).

In addition, we decided to include messages from math teachers who successfully passed the exam since they experienced the whole preparation process and the later phase after the exam firsthand, their messages can carry more value to potential teachers who can benefit from this Guide.

Last but not least, there are some tips that help teachers cope with failure and be psychologically powerful. This part can be especially crucial for teachers who failed the exam and suffered from it psychologically. Here, the core idea is to emphasize that failure does not measure one's worth, and it is only a process to be accepted and learned from, also to inform and wake up the person (Dwelck, 2006). Essentially, intelligence can always be improved by working hard (Combette et al, 2024). It is important to note that there is a connection between this thinking style and higher academic performance, which has also been cited in academic sources (Bettinger et al., 2018; Blackwell et al., 2007; Claro et al., 2016; Paunesku et al., 2015). Hence, it can be critical information to be considered while preparing for the certification exam. Furthermore, the Guide indicates the importance of having a journal where one writes their progress, which can help build up self-confidence (Permanente, 2025). One more tip is to celebrate small wins, which can positively contribute skills, such as forming habits, setting goals, and the ability to prioritize (Russel, 2024). According to the author, it can also prove that one can overcome problems, which can increase self-confidence further.

7.1.4 Basic Digital Skills Tutorial for Exam Day

The section of basic digital skills tutorial for exam day plays a crucial role in preparing teachers for a successful certification experience. This part of the guide is designed to help candidates understand the digital environment they will use during the exam. Since the test is conducted on a computer, it is essential for participants to be familiar with the exam platform and the digital steps involved. The tutorial explains everything from logging in with a national ID and FIN code, to using tools such as the on-screen calculator and navigating through the exam interface. It also covers how to answer questions, use the color-coded system to track progress, reset answers if needed, and finally submit the test.

By practising these steps ahead of time, teachers can reduce stress, avoid technical errors, and focus more on the exam content rather than the system. This not only boosts their confidence but also ensures a fair and smooth testing process for all candidates. Moreover, including the digital tutorial supports the development of basic digital literature, which is an increasingly important skill for educators in today's technology-driven world. Overall, this section of the guide promotes efficiency, equity, and readiness—key elements for success on exam day.

7.1.5 Creating Study Groups

According to our findings, the teachers who passed the certification exam successfully with high points mentioned that study groups helped them during this process to a great extent. Therefore, we included tips about the strategies of creating study groups to guide all other math teachers as well. In addition, we shared the links of social media groups, and claims of math teachers about the effectiveness of collaboration among them.

To persuade teachers, we emphasized the benefits of study groups in our Certification Preparation Guide. First of all, it leads to professional development and satisfied results during the exam (Burke, 2011). Secondly, due to regular meetings, math teachers feel responsible to be prepared for the discussions. Thirdly, teachers might introduce their own

perspectives, ask and solve difficult questions together. It increases the critical - thinking, problem - solving, communication and creativity skills of teachers (Burke, 2011). Fourthly, group members motivate each other, so it decreases exam anxiety.

When it comes to the steps of creating groups, there are five important steps (Bradley University, n.d). Firstly, there is a need to find math teachers who prepare for the same certification exam. Teachers might reach others through social media platforms such as Telegram, Facebook, or WhatsApp groups. Likewise, it is possible to find teachers from webinars, preparation courses, or school. Starting the creation process of the group is the second step. In order to have a productive discussion, there should be 4 - 5 members in each group (Bradley University, n.d). They should set a clear goal to pass the certification exam successfully and discuss the mode of meeting whether it will be online or face - to - face.The third step is dividing the duties and responsibilities among the group members. Someone should follow the progress of the team, another one should research questions and share with others. The fourth step is to agree on the schedule of weekly meetings and deadlines for the tasks (Bradley University, n.d). For example, teachers should meet on Sunday for at least one hour. They should solve some tasks till the meeting for the discussion. The last step is to define the concept of each meeting, in one meeting they could look at the topics which will be in the exam, in the next meeting, they could organize a QA session or mock exam.

Moreover, we shared the links of the groups in the social media platforms where math teachers could get the information about the certification exam. We found Telegram and Facebook groups. To save time, we attached the link to a website where teachers could get access to the mock questions during the preparation stage as well. In addition, to motivate teachers to create the study groups, we put the quotes of math teachers who used this strategy and successfully passed the exam.

Our final product, Certification Preparation Guide can be accessed here: https://drive.google.com/file/d/1XEqdqBAXD5VizeKxumBYdzHiFwYl_s5F/view?usp=sharing

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Appendices

Appendix A. Interview Consent Form

Consent Form

Dear participant,

We invite you to participate in an interview for our capstone project. The aim of this project is to identify factors contributing to the experience of math teachers during the certification exam and their preparation strategies. The interviews will be conducted by second – year students of ADA University, Sevinj Aghayeva, Nargiz Babayeva, Arzu Farzandli, Ravana Amrahova, and Gultakin Guliyeva. The interview will last about 25 - 30 minutes. For the accuracy of data, we will record your voice. Depending on your location, interviews will be conducted online and offline.

You have the right to choose whether you would like to participate in this project or not. Likewise, you might answer the questions that you want. We ensure that your privacy and confidentiality will be preserved. You can withdraw from the study at any time. If you have any questions, please do not hesitate to contact this email: afarzandli5060@ada.edu.az

In addition, by signing this consent form, you will prove your agreement to participate in this interview

Thank you!

Sign: Date:

Appendix A. Interview Consent Form (Translation)

Müsahibəyə Razılıq Forması

Hörmətli iştirakçı,

Sizi layihəmiz çərçivəsində keçiriləcək müsahibədə iştirak etməyə dəvət edirik. Bu layihənin məqsədi riyaziyyat müəllimlərinin sertifikasiya imtahanı zamanı yaşadıqları təcrübələrə və hazırlıq strategiyalarına təsir edən amilləri müəyyən etməkdir. Müsahibələr ADA Universitetinin ikinci kurs tələbələri - Sevinc Ağayeva, Nərgiz Babayeva, Arzu Fərzəndli, Rəvanə Əmrahova və Gültəkin Quliyeva tərəfindən aparılacaq. Müsahibə təxminən 25-30 dəqiqə davam edəcək. Məlumatların dəqiqliyi üçün səsiniz qeydə alınacaq. Sizin yerləşdiyiniz məkandan asılı olaraq, müsahibələr həm onlayn, həm də oflayn formada təşkil ediləcək.

Layihədə iştirak edib-etməmək sizin ixtiyarınızdadır. Eləcə də, yalnız istəyinizə uyğun olan suallara cavab verə bilərsiniz. Biz sizin məxfiliyinizin və şəxsi məlumatlarınızın qorunacağını təmin edirik. İstənilən vaxt tədqiqatdan imtina etmək hüququnuz var. Əgər hər hansı sualınız yaranarsa, lütfən, bu elektron poçt ünvanı ilə əlaqə saxlayın: emrahovarevane03@gmail.com

Bundan əlavə, bu razılıq formasını imzalamaqla, müsahibədə iştirak etməyə razılığınızı təsdiq etmiş olursunuz.

Təşəkkür edirik!

İmza: _____ Tarix: _____

Appendix B. Interview Questions

1. Riyaziyyat müəllimi olaraq öz yolunuzdan bir az bəhs edə bilərsinizmi və ilk olaraq sizi bu sahəyə nə çəkdi?

2. Nə qədər müddətdir dərs deyirsiniz və bu günə qədər müəllimlik karyeranızda ən yadda qalan təcrübəniz nə olub?

3. Riyaziyyatı öyrədərkən ən çox nədən zövq alırsınız və sinif otağında bu fənnə olan həvəsinizi necə qoruyub saxlayırsınız?

4. Sertifikasiya imtahanı prosesinə keçməzdən öncə, peşəkar inkişaf sizin üçün nə deməkdir?

5. Sertifikatlaşdırma imtahanına hazırlıq öncəsi ilə bağlı ümumi təcrübənizi təsvir edə bilərsinizmi? Bu prosesdə sizin üçün ən çox nə yadda qalan oldu?

6. Sertifikatlaşdırma imtahanına hazırlıq prosesinizə ən çox hansı amillərin təsir etdiyini düşünürsünüz? (Məsələn, imtahan formatı, şəxsi hazırlıq, kənar təzyiqlər və s.)

7. İmtahan öncəsi və ya imtahan zamanı bu amillərlə bağlı hər hansı konkret hadisə və ya məqamları bölüşə bilərsinizmi?

8. Sizcə, sertifikatlaşdırma prosesi sizin müəllim olaraq tədrisinizə, davamlı öyrənmənizə, və peşəkar inkişafınıza necə təsir edib?

9. Sertifikatlaşdırma imtahanına hazırlaşmaq üçün hansı xüsusi strategiyalardan istifadə etmisiniz?

10. Sizcə, bu hazırlıq strategiyaları imtahandakı performansınıza necə təsir edib?

11. Geriyə nəzər saldıqda, hansı strategiyaların daha effektiv olduğunu düşünürsünüz və nə üçün?

12. Sınadığınız strategiyalardan hansının daha az faydalı olduğunu düşünürsünüz? Növbəti dəfə fərqli nə edə bilərsiniz?

13. Təcrübənizə əsaslanaraq, sertifikat imtahanlarına hazırlaşan digər riyaziyyat müəllimlərinə nə məsləhət görərdiniz?

14. Hazırlığınız, imtahan təcrübəniz və ya peşəkar inkişafınızla bağlı bizimlə daha nə bölüşmək istərdiniz?