



Hiring Teachers in Kazakhstan: Wage Structures, Competency Expectations and Social Inequalities

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ABSTRACT

The teacher labor market reflects not only the need of educational organizations for teaching staff but also the differences in wages, requirements for professional experience and competencies, which can create social inequality within the profession. The aim of the study is to identify the specific features of hiring teachers in Kazakhstan based on an analysis of wages, requirements for work experience, subject specialization, and professional competencies. The empirical basis of the study consisted of 17 997 vacancies selected from the initial set of 30 460 listings posted on the HeadHunter and Enbek platforms in January-February 2025. The work used methods of descriptive statistics and analysis of average and median salary values. The results showed that out of 17 997 vacancies, 13 510 were aimed at candidates without work experience; the median offered salary for them was 110 760 tenge, while for vacancies requiring up to three years of experience, it was 155 000 tenge. The highest median salary was recorded for English teachers — 250 000 tenge, whereas for primary school teachers, with 3 997 vacancies, it was 117 960 tenge. The results show that support at the beginning of a career, structured onboarding, and closer monitoring of subject-specific pay differences are important for improving recruitment, professional advancement, and reducing inequality among teachers in Kazakhstan.

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Қазақстандағы мұғалімдерді жұмысқа қабылдау: жалақы құрылымы, құзыреттілікке қойылатын талаптар және әлеуметтік теңсіздік

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ТҮЙІН

Мұғалімдердің еңбек нарығы білім беру ұйымдарының педагог кадрларға деген қажеттілігін ғана емес, сонымен қатар еңбекақы төлеудегі, кәсіби тәжірибеге және құзыреттерге қойылатын талаптардағы айырмашылықтарды да көрсетеді, олар мамандық ішіндегі әлеуметтік теңсіздікті қалыптастыруы мүмкін. Зерттеудің мақсаты жалақыны, жұмыс тәжірибесіне қойылатын талаптарды, пәндік мамандануды және кәсіби құзыреттерді талдау негізінде Қазақстандағы мұғалімдерді жұмысқа қабылдаудың ерекшеліктерін анықтау болып табылады. Зерттеудің эмпирикалық базасын 2025 жылғы қаңтар–ақпан айларында HeadHunter және Enbek платформаларында орналастырылған бастапқы 30 460 хабарландыру массивінен іріктелген 17 997 бос жұмыс орны құрады. Жұмыста сипаттамалық статистика әдістері, жалақының орташа және медианалық мәндерін талдау әдістері пайдаланылды. Нәтижелер 17 997 бос жұмыс орнының 13 510-ы жұмыс тәжірибесі жоқ үміткерлерге бағытталғанын көрсетті; олар үшін ұсынылатын жалақының медианалық мөлшері 110 760 теңгені құраса, үш жылға дейінгі тәжірибені талап ететін бос жұмыс орындары үшін 155 000 теңгені құрады. Ең жоғары медианалық жалақы ағылшын тілі мұғалімдері үшін тіркелді — 250 000 теңге, ал бастауыш сынып мұғалімдері үшін 3 997 бос жұмыс орны болған кезде ол 117 960 теңгені құрады. Нәтижелер мансаптың бастапқы кезеңіндегі қолдау, құрылымдалған бейімделу және пәндер бойынша еңбекақы төлеудегі айырмашылықтарды неғұрлым мұқият қадағалау Қазақстандағы мұғалімдерді жұмысқа қабылдауды, кәсіби ілгерілеуді жақсарту және теңсіздікті қысқарту үшін маңызды екенін көрсетеді.

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Наем учителей в Казахстане: структура оплаты труда, требования к компетенциям и социальное неравенство

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АННОТАЦИЯ

Рынок труда учителей отражает не только потребность образовательных организаций в педагогических кадрах, но и различия в оплате труда, требованиях к профессиональному опыту и компетенциям, которые могут формировать социальное неравенство внутри профессии. Целью исследования является выявление особенностей найма учителей в Казахстане на основе анализа заработной платы, требований к опыту работы, предметной специализации и профессиональным компетенциям. Эмпирической базой исследования стали 17 997 вакансий, отобранных из первоначального массива 30 460 объявлений, размещенных на платформах HeadHunter и Enbek в январе–феврале 2025 года. В работе использованы были методы описательной статистики, анализа средних и медианных значений заработной платы. Результаты показали, что из 17 997 вакансий 13 510 были ориентированы на кандидатов без опыта работы; медианная предлагаемая заработная плата для них составляла 110 760 тенге, тогда как для вакансий с опытом до трех лет 155 000 тенге. Наиболее высокая медианная заработная плата была зафиксирована для учителей английского языка — 250 000 тенге, тогда как для учителей начальных классов при 3 997 вакансиях она составляла 117 960 тенге. Результаты показывают, что поддержка в начале карьеры, структурированная адаптация и более пристальное отслеживание предметных различий в оплате важны для улучшения найма, профессионального продвижения и сокращения неравенства среди учителей в Казахстане.

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1. Introduction

Teacher recruitment and retention are central to education systems' capacity to provide stable and equitable educational opportunities. Difficulties in attracting and retaining teachers are rarely evenly distributed and may concentrate in particular schools, locations, or subject areas, with implications for the distribution of experienced and qualified teachers across the education system. Research shows that disadvantaged schools may have greater difficulty retaining teachers, highlighting broader inequalities in access to teacher quality (Allen et al., 2018). These patterns make the structure of teacher labour demand relevant not only to workforce planning but also to broader questions of professional opportunity, social inequality, and educational equity.

Attracting and hiring qualified educators remains a major challenge for education systems worldwide. While considerable attention has been devoted to the supply side of the teacher labour market, particularly aggregate teacher shortages, a growing body of research highlights the importance of professional attractiveness and the effectiveness of recruitment and retention mechanisms, including financial incentives and working conditions (See et al., 2020). In Kazakhstan, this issue is particularly relevant. As Baigabylov and Froumin (2024) note, substantial salary reforms were implemented between 2020 and 2023 to improve the teaching profession's attractiveness and status. These reforms were accompanied by improved recruitment and reduced outflow of qualified teachers. However, it remains unclear how such macro-level changes are reflected in the conditions of the open labour market, where schools compete for candidates through specific salary offers, experience requirements, and competency expectations.

Examining these recruitment signals matters because entry into teaching and subsequent career opportunities may differ across teacher groups. Evidence from Kazakhstan indicates that reliable income and the prospect of a sustainable career are important considerations for younger teachers when choosing the profession (Shabdenova et al., 2022). At the same time, labour-market conditions may vary across subject specialisations, career stages, and institutional settings, producing different economic incentives within the same profession. In this study, social inequality is understood as the uneven distribution of economic opportunities, remuneration, and career prospects across different segments of the teacher labour market. Such variation does not in itself demonstrate inequality in educational outcomes, but it can reveal where access to employment opportunities, remuneration, and professional progression is unevenly structured.

From this perspective, online vacancy data provide a useful demand-side complement to studies based on administrative records and teacher surveys because they capture the conditions and competencies that employers communicate directly at the point of recruitment. The literature also indicates that attracting teachers is distinct from simply increasing labour supply. Although financial incentives may facilitate recruitment, they do not necessarily ensure long-term retention when used in isolation; supportive working conditions, professional development, and institutional support are also important (See et al., 2020).

Many existing studies examine teacher labour markets using administrative records, nationally representative surveys, or school-level vacancy and staffing data (Carver-Thomas & Darling-Hammond, 2019; Edwards et al., 2023; Ederer, 2023; Nguyen et al., 2023). These approaches provide important evidence on teacher wages, turnover, staffing patterns, and mobility, but their primary focus is generally on labour-market outcomes rather than on the content of individual job advertisements and the way employers formulate employment offers. Online vacancy data therefore complement this literature by revealing advertised salaries, experience

requirements, subject specialisations, and competencies explicitly communicated to prospective applicants.

This study focuses on the demand side of the teacher labour market by analysing a final dataset of 17 997 teaching vacancies selected from an initial pool of 30 460 job postings collected from HeadHunter and Enbek in Kazakhstan. The study investigates how advertised employment conditions differ across experience levels, forms of school ownership, and subject specialisations, as well as how competency expectations vary between novice and experienced teachers. Specifically, the article addresses the following research questions:

RQ1. How do advertised salaries vary across experience levels?

RQ2. How do wage offers differ between public and private schools?

RQ3. Which subject specialisations are associated with the highest advertised salaries?

RQ4. What are the dominant semantic clusters in teacher job descriptions, and how do competency expectations differ between novice and experienced teachers?

This study contributes to research on teacher labour markets in three ways. First, it provides new demand-side evidence on teacher recruitment in Kazakhstan by analysing advertised salaries, experience requirements, subject specialisations, and competency expectations contained in online vacancies. Second, it complements existing research on teacher remuneration and professional status in Kazakhstan by examining how advertised employment conditions vary within the teaching profession, particularly across career stages, school ownership types, and subject areas. Third, it introduces an equity-oriented perspective by examining how economic incentives and employer expectations are distributed across different segments of the teacher labour market and how these differences may reflect broader patterns of social inequality within the profession.

2. Literature review

The teacher labor market is a complex ecosystem influenced by economic incentives, institutional structures, and working conditions. Understanding the dynamics of recruitment, retention, and teacher quality requires examining how these factors interact to shape the professional landscape. This review synthesizes recent empirical literature to explore the economic drivers of the teaching profession, the efficacy of salary reforms, the role of non-pecuniary factors, and the structural mechanisms of teacher sorting.

A central theme in labor economics is the competitiveness of teaching wages relative to other professions. Research consistently highlights a wage penalty that discourages high-ability candidates from entering or remaining in the profession. Han (2021) provided evidence that public school teachers in the United States face a wage penalty of about 6.5% compared to comparable college graduates, a gap that is even larger for male teachers (9.5%). This disparity is linked to two selection patterns: high-ability teachers may leave for non-teaching sectors that offer higher returns to ability, while lower-earning non-teachers may enter the teaching profession (Han, 2021).

This phenomenon is not unique to the U.S. context. Liu and Xie (2021) documented a dramatic reversal in the teaching profession's attractiveness in urban China. Between 1988 and 2013, teachers went from enjoying a 13% wage premium to suffering an 11% wage penalty compared to private sector workers. Consequently, highly educated younger cohorts became significantly less likely to choose teaching, illustrating how relative wage decline directly erodes labor-supply quality (Liu & Xie, 2021).

The early-career stage is therefore particularly consequential for the long-term sustainability of the teaching workforce. Entering the profession does not necessarily translate into sustained participation, as novice teachers' career intentions are shaped by both financial conditions and the professional support available during their first years of employment. Using TALIS data from 31 countries, Van den Borre et al. (2021) found that higher starting salaries were associated with stronger retention intentions among early-career teachers, and that professional development opportunities also played a positive role. Evidence from Australia similarly emphasizes the importance of induction, mentoring, and institutional support in reducing early-career attrition (Wyatt & O'Neill, 2021). These patterns also have an equity dimension because instability is not distributed uniformly across education systems. In England, Allen et al. (2018) found higher teacher turnover in disadvantaged schools, which also tended to employ younger teachers, illustrating how differences in workforce stability can intersect with inequalities between schools. Similar concerns are evident in Kazakhstan. Drawing on TALIS 2018 data, Courtney et al. (2023) identify novice-teacher attrition as a significant workforce challenge and show that career commitment is associated with teachers' initial career choice, preparation, self-efficacy, and job satisfaction. Makoelle (2025) further highlights persistent inequalities in teacher distribution between urban and rural schools in Kazakhstan and questions whether existing incentives are sufficient to attract and retain highly qualified teachers in less advantaged locations.

Wiggin et al. (2020) argued that teacher supply is inversely related to economic strength: interest in teaching declines when other employment opportunities are abundant and increases during economic downturns. Given wage disparities, governments often use financial incentives to attract and retain staff. The evidence on the effectiveness of these interventions is mixed. In a systematic review of international research, See et al. (2020) found that while financial incentives are effective for recruitment and increase new hires in targeted areas, they often fail to improve long-term retention once the incentives are removed.

However, specific contexts show more promising results. Bobba et al. (2021) analyzed a large unconditional salary increase for rural teachers in Peru and found that higher wages attracted teachers with higher competency scores and improved retention rates. Notably, this led to improved student achievement in math and language three years later, driven primarily by reallocating more effective contract teachers to these higher-paying roles (Bobba et al., 2021). Nguyen et al. (2023) analyzed School Finance Reforms (SFRs) in the U.S. and found that state-level spending increases raised teacher salaries and reduced turnover, though these effects often took a decade to fully materialize.

Pay structure matters as much as the amount. Biasi (2021) found that flexible-pay districts saw a positive change in teacher quality, as measured by teacher value added, after collective bargaining agreements expired. Flexible pay allowed districts to attract higher-quality teachers and improve efficiency in matching teachers to districts. However, this market-based approach also exacerbated inequality, as wealthier districts could outbid others for the best talent, widening the achievement gap between high- and low-achieving students (Biasi et al., 2021).

Similar issues arise in Kazakhstan and elsewhere in Central Asia, where teacher remuneration reflects both formal salary structures and wider labour-market differences. Longitudinal payroll data from Kazakhstan show substantial variation in educational earnings across time, regions, and gender, while recent salary reforms have significantly altered teachers' economic position within the public sector (Tastanbekova, 2020). Baigabylov and Froumin (2024) show that higher salaries

were accompanied by improved recruitment and reduced outflow of qualified teachers, although centrally regulated salary scales, qualification categories, and supplementary allowances still strongly shaped remuneration. In Kyrgyzstan, Anderson and Esenaliev (2019) found that public-sector wage reforms reduced some earnings differentials affecting teachers and narrowed both gender and rural–urban wage gaps. A recent study using HH.kz vacancy data found that positions requiring digital skills tended to advertise higher salaries, although part of this difference was associated with employer type and other vacancy characteristics (Sauanova et al., 2026).

While salary is a primary driver, non-pecuniary factors play a critical role in teacher satisfaction and turnover. The teacher shortage crisis has been attributed not only to low pay but also to challenging working environments, inadequate professional support, limited teacher influence and autonomy, and weak administrative support (García & Weiss, 2019, 2020). Their analysis shows that high-poverty schools face a double disadvantage, struggling with both lower salaries and more stressful school climates, leading to higher turnover rates (García & Weiss, 2020).

Carver-Thomas and Darling-Hammond (2019) identified administrative support as a potent predictor of retention. Teachers who perceived their administration as unsupportive were more than twice as likely to leave their schools. Similarly, Spiegelman (2018) found that salary satisfaction strongly correlated with broader job satisfaction; teachers dissatisfied with their pay were significantly more likely to report that the job's stress was not worth it and to plan to leave the profession. In the context of private schools in Indonesia, Hasanah and Supardi (2020) found that while salary was a dominant factor, work environment quality also significantly related to job satisfaction, although salary remained the stronger predictor.

The labor market is not monolithic; it is segmented by geography and sector. Edwards et al. (2023) emphasized that teacher shortages are highly localized. In Tennessee, vacancies were concentrated in specific schools and subjects, meaning that aggregate data often masks acute shortages in high-poverty or rural areas. Teacher preferences drive this spatial sorting. Ederer (2023) demonstrates a spatial job ladder in Peru, where teachers exhibit a strong home bias and urban preference. As they gain experience, teachers migrate from rural to urban schools, leaving remote areas with the least experienced and lowest-quality educators (Ederer, 2023).

Structural segmentation also occurs between school types. Jabbar et al. (2019) identified distinct labor markets for traditional public schools (TPS) and charter schools. Teachers often view the TPS sector as the primary market because of its stability and benefits, while charter schools are seen as a secondary market characterized by instability. This segmentation restricts mobility and traps certain teachers in less desirable sectors.

These patterns of labour-market segmentation highlight the need to examine not only where teachers are employed, but also how demand is expressed at the point of recruitment. An analysis of vacancy data can reveal how schools formulate salary offers, experience requirements, and competency expectations for different applicant groups. Vacancy-based research in Kazakhstan remains relatively limited and has so far focused mainly on employer demand for skills in the IT sector, alongside some analysis of language requirements across occupations (Aimoldina & Zharkynbekova, 2024; Bekbolat et al., 2024). Comparing vacancies for novice and experienced teachers' makes it possible to assess how employers value prior experience, which skills are expected at different career stages, and whether differences in pay correspond to differences in professional requirements. This demand-side perspective therefore provides the basis for the methodology adopted in the present study.

3. Research methods

To analyze the current structure of demand in the Kazakhstani labor market for educators, this study employed a quantitative analysis of online job postings. Data were collected from two major employment platforms in Kazakhstan: HeadHunter (hh.kz) and Enbek (enbek.kz). These platforms were selected because they include vacancies from both private and public sector employers.

Data collection was conducted over a two-month period in January and February 2025. Automated web-scraping scripts developed in Python using the Selenium library were used to extract vacancy data. The search criteria included keywords such as “Teacher”, “Lecturer”, and “Educator” on HeadHunter, as well as the “Education and Upbringing” professional category on Enbek. The automated scraper emulated user behavior to navigate pagination and extract available information from vacancy cards, including job title, required experience, offered salary, and detailed textual descriptions of duties and requirements.

The initial dataset consisted of 30 460 job postings. Vacancies that were not directly related to teaching, were primarily administrative in nature, or did not indicate a teaching subject were excluded from the analysis. Following this filtering procedure, the final analytical dataset consisted of 17 997 vacancies.

Prior to analysis, the raw data underwent cleaning, preprocessing, and normalization to improve consistency, reduce noise, and ensure that the variables were suitable for quantitative and textual analysis. This stage was particularly important because information extracted from job advertisements appeared in different formats, with variations in wording, symbols, abbreviations, and numerical representations.

For the salary analysis, particular attention was given to the different ways in which employers reported remuneration in job advertisements. Salary information was not always presented as a single fixed amount; employers frequently specified either a salary range, such as “from 150 000 to 250 000 tenge,” or only a minimum salary threshold, such as “from 150 000 tenge.” To make these observations comparable, salary entries were cleaned by removing non-numerical characters, currency symbols, unnecessary spaces, and accompanying textual expressions. The extracted salary values were then converted into a standardized numerical format.

Where both lower and upper salary boundaries were provided, the midpoint of the stated range was calculated and used as the representative salary value for the vacancy. For example, if an advertisement specified a salary range of 150 000–250 000 tenge, the vacancy was assigned a salary value of 200,000 tenge for subsequent analysis. This approach provided a consistent single-value measure for vacancies containing two salary figures and made it possible to compare them with vacancies reporting only one value.

Where only the lower salary boundary was stated, for example, “from 150,000 tenge,” the reported minimum amount of 150 000 tenge was retained as the salary value. No attempt was made to estimate an unreported upper boundary because such estimation would have required assumptions not supported by the original vacancy data. This distinction is important because a value reported as “from” represents the minimum advertised salary rather than necessarily the final or average remuneration for the position.

The resulting standardized salary variable therefore represented either the midpoint of an explicitly reported salary range or the stated lower-bound value when no upper limit was available. Applying these rules consistently reduced distortions arising from heterogeneous salary-reporting practices and enabled systematic comparison of salary levels across vacancies and subject specializations. At the same time, the interpretation of the results took into account that lower-bound-only observations may underestimate the actual remuneration eventually offered to successful candidates.

For the textual analysis of skills and job requirements, vacancy descriptions were standardized by converting the text into a consistent format and removing punctuation, special characters, digits, and other elements that did not contribute meaningful information to the analysis. Common stop words, including frequently occurring prepositions, conjunctions, and articles, were also removed because they generally carry limited semantic value when identifying relevant skills or occupational requirements. This procedure reduced textual noise and increased the relative importance of meaningful terms within the dataset.

To further improve the consistency of the textual data, stemming and lemmatization techniques were applied using the Natural Language Toolkit (NLTK) library. These natural language processing techniques reduce different grammatical or inflected forms of a word to a common base or root form. For example, terms such as “teaching,” “teaches,” and “teach” can be treated as representations of the same underlying concept rather than being counted as separate terms. This step helped prevent the artificial fragmentation of keyword frequencies and improved the identification of frequently requested competencies across job advertisements.

To classify vacancies according to subject specialization, a set of Regular Expression (Regex) templates was developed. Job titles in the raw dataset frequently used different naming conventions to describe similar teaching positions. For example, the same subject specialization could be expressed using full subject names, abbreviations, or combinations of subject names and position descriptions. The Regex templates were designed to identify these recurring textual patterns and systematically map heterogeneous job titles into standardized subject categories. This classification procedure reduced inconsistencies in occupational naming and grouped vacancies referring to the same or closely related specializations.

As a result, the standardized dataset provided a more consistent basis for comparing salary levels, skill requirements, vacancy frequencies, and other characteristics across subject areas. The analysis proceeded in two phases. First, descriptive statistical analysis was conducted to calculate median and mean salaries, interquartile ranges (IQR), and vacancy volumes across different experience levels, subjects, and forms of ownership.

Second, text mining and network analysis were conducted to examine semantic clusters and differences in competency expectations. Bigram analysis identified recurring two-word combinations, followed by the construction of a semantic network in which nodes represented keywords and edges represented their co-occurrence. A community detection algorithm was applied to identify distinct clusters of skills. Scatter plots were subsequently used to visualize differences in the relative frequency of specific skills between vacancies requiring “no experience” and those requiring prior experience.

4. Results

The analysis of 17 997 job postings reveals distinct patterns in advertised salaries across experience levels, subject specializations, and institutional sectors. The first research question examined how advertised salaries vary across experience levels. As shown in Table 1, vacancies targeting candidates without prior experience accounted for the largest share of the sample and were associated with the lowest median salary.

Table 1. Salary offers by experience level (in KZT).

Experience level	Vacancies (N)	Median Salary	Mean Salary
No Experience	13 510	110 760	126 104
Up to 3 Years	4 066	155 000	177 867
Up to 5 Years	271	150 000	175 073
Up to 10 Years	150	167 500	209 512

Note: compiled by the authors.

Almost half of all vacancies analyzed (13 510) were for candidates without experience, indicating strong demand for new entrants. However, the median salary for this group remains at 110 760 KZT, which serves as the market floor. There is a notable “experience premium” that kicks in after the initial induction period; wages for candidates with “Up to 3 Years” of experience jump significantly to a median of 155 000 KZT. This suggests that the market places a substantial value on the successful completion of the first few years of teaching, effectively treating the first 3 years as a probationary period with significantly lower compensation.

The second research question examined differences in advertised salaries between public and private schools. Table 2 presents the distribution of salary offers by form of ownership.

Table 2. Salary offers by form of ownership (in KZT).

Category	Vacancies (N)	Median salary	Mean salary	1st Quartile	3rd Quartile
Public School	10 439	117 960	137 181	110 760	159 626
Private School	7 558	110 760	142 064	110 760	117 960

Note: compiled by the authors.

As shown in Table 2, public schools offered a slightly higher median salary than private schools (117 960 KZT versus 110 760 KZT). However, the mean salary was slightly higher in private schools (142 064 KZT) than in public schools (137 181 KZT). The third quartile was 159 626 KZT for public schools and 117 960 KZT for private schools. Overall, the descriptive statistics do not indicate a consistent salary advantage for private schools. These findings suggest that the private sector does not systematically use base salary as a primary lever to outcompete the public sector for the average teacher.

The third research question examined differences in advertised salaries across subject specializations. Table 3 compares vacancy volumes and salary levels for selected teaching fields.

Table 3. Vacancy volume and salary offers by subject (selected categories)

Category	Vacancies (N)	Median salary (KZT)	Mean salary (KZT)	3rd Quartile (KZT)
Primary teacher	3 997	117 960	136 224	150 000

English teacher	366	250 000	245 747	300 000
Math teacher	1,642	125 000	156 644	175 000
Preschool/Educator	2,051	117 960	133 556	150 000

Note: compiled by the authors.

The highest volume of vacancies is found in Primary Education and Preschool Education, yet the median wages for these roles remain anchored to the market baseline. A significant wage premium is observed only in specific hard-to-staff subjects. English Language teachers command the highest median salary at 250 000 KZT, more than double the baseline, with the upper quartile reaching 300 000 KZT.

The fourth research question examined the dominant semantic clusters in job descriptions and differences in competency expectations between novice and experienced teachers. The text-mining analysis identified distinct patterns in the language used to describe required competencies. The bigram network analysis identified several interconnected communities of skills (see Figure 1).

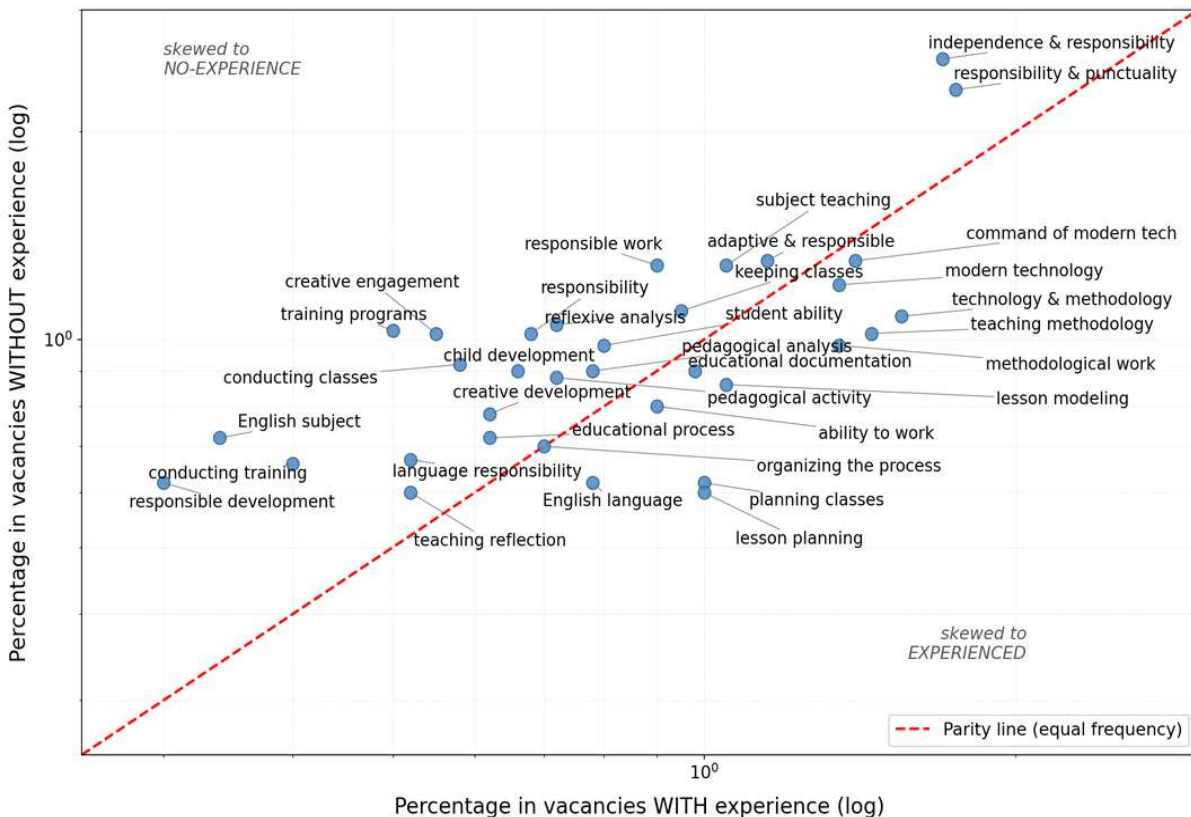


Figure 1. Bigram relative-frequency ratios of skills.

A prominent General/Personal domain included terms related to responsibility, training, conducting classes, and general professional behavior, whereas the Methodological/Technological domain included terms associated with planning, modern technologies, educational

documentation, methodology, and lesson organization. These patterns indicate that competency requirements differ according to the type and level of professional expectations expressed in vacancy descriptions.

As the scatter plot analysis of skill frequency shows, vacancies for candidates without experience feature a prevalence of "soft skills" and general dispositions. Terms such as "responsibility", "creativity", "ability to work", and "reflexive analysis" are strongly skewed toward entry-level positions. This trend suggests that for new entrants, employers prioritize personality traits and potential over specific technical expertise. In contrast, vacancies requiring experience shift focus significantly toward hard, methodological skills. Terms in the "experienced" quadrant include "lesson modeling", "planning", "modern technologies", and "methodological independence".

Figure 2 presents the bigram community network of skills and shows several interconnected semantic communities related to general/personal qualities, methodological and technological competencies, subject-specific requirements, teamwork, and pedagogical activity

Bigram Community Network Graph (Skills)

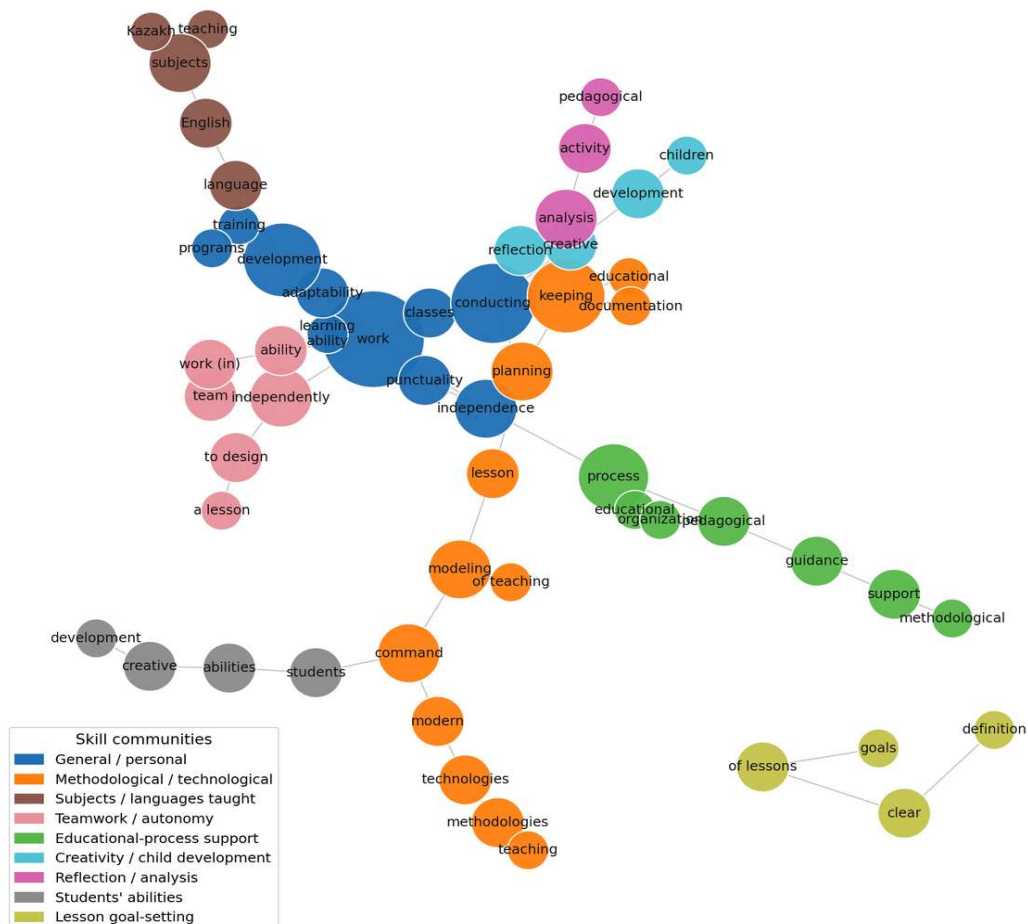


Figure 2. Bigram community network of skills.

5. Discussion

This study analyzed the structure of demand in the Kazakhstani teacher labour market using online job vacancies. The findings provide demand-side evidence on differences in advertised salaries, experience requirements, subject specializations, and competency expectations. Four main patterns emerge in relation to the research questions.

The results indicate a marked difference in advertised salaries across experience levels. Approximately 75.1% of all vacancies targeted candidates without prior experience, with a median advertised salary of 110 760 KZT, compared with 155 000 KZT for vacancies requiring up to three years of experience. This pattern suggests that entry-level teachers face comparatively lower financial incentives at recruitment. Such differences may matter most during the early-career stage, when salary levels and employment conditions can influence decisions to enter and remain in the profession. This interpretation is consistent with Han (2021), who highlights the role of relative earnings in teacher entry and exit decisions.

The analysis of competency expectations also reveals differences between entry-level and experienced positions. Vacancies targeting candidates without prior experience place greater emphasis on general and personal qualities, including responsibility and creativity, whereas positions requiring experience are more strongly associated with methodological, planning, documentation, and technology-related competencies. This pattern suggests that employers expect a broader set of professional and methodological skills as teachers progress through their careers. The findings therefore reinforce the importance of induction, mentoring, and professional development during the transition from entry into teaching to more established professional practice. García and Weiss (2020) similarly emphasize the importance of professional and institutional support for teacher retention.

Differences between public and private schools were less pronounced than might be expected. Public schools reported a median advertised salary of 117 960 KZT, compared with 110 760 KZT in private schools, while private schools had a slightly higher mean salary. These descriptive results therefore do not indicate a consistent salary advantage for the private sector. This pattern may be considered in the context of the 2020–2023 salary reforms discussed by Baigabylov and Froumin (2024), which increased public-sector teacher remuneration. However, the vacancy data do not establish whether these reforms directly caused the observed similarity in salary offers. The findings instead suggest that non-salary employment conditions, such as professional support, workload, autonomy, and career development, may also shape competition for teachers between school sectors.

The strongest salary differences were observed across subject specializations. Primary education accounted for the most vacancies (3 997), but the median advertised salary remained 117 960 KZT. Preschool education showed a similar median salary of 117 960 KZT across 2 051 vacancies. In contrast, English-language teaching had only 366 vacancies but the highest median advertised salary of 250 000 KZT. These findings demonstrate that vacancy volume does not necessarily correspond to higher advertised remuneration. Rather, different subject specializations appear to be associated with substantially different economic incentives within the teaching profession.

These subject-level differences also have a broader social dimension. When teaching fields with relatively large numbers of vacancies are associated with lower advertised salaries, while other specializations offer substantially higher remuneration, teachers face different economic

opportunities within the same profession. Such differences may influence the attractiveness of particular career pathways, especially for early-career teachers for whom income security and prospects for professional progression are important considerations (Shabdenova et al., 2022; Van den Borre et al., 2021). Persistent differences in remuneration across teaching fields may also contribute to uneven recruitment conditions if some specializations are better positioned to attract candidates. International research has similarly shown that teacher remuneration and labour-market sorting may intersect with wider inequalities in the distribution of teachers and educational opportunities (Allen et al., 2018; Biasi et al., 2021).

In Kazakhstan, concerns regarding the unequal distribution of teachers between urban and rural schools further suggest that remuneration should be considered alongside broader patterns of access to qualified teaching staff (Makoelle, 2025). However, the present vacancy data cannot establish whether differences in advertised salaries across subject specializations lead to differences in teacher retention, teacher quality, or student outcomes. The results demonstrate only that economic incentives at the point of recruitment are unevenly distributed across experience levels and subject specializations. Further research linking vacancy data with actual hiring, retention, and career outcomes is needed to determine the longer-term consequences of these differences.

6. Conclusion

This study provides a demand-side perspective on Kazakhstan's teacher labour market by examining how schools communicate salary offers, experience requirements, subject specialization, and competency expectations through online vacancies. The findings show that teacher recruitment is structured by substantial differences within the profession. They are important not only for understanding recruitment but also for understanding the social organization of Kazakhstan's teacher labor market. Teaching does not appear as a uniform occupational category in which entrants face similar economic opportunities. Instead, remuneration varies according to specialization, creating different economic conditions for teachers.

The substantial salary differences between specializations reveal an important dimension of labor-market inequality. High vacancy volumes do not necessarily correspond to stronger economic incentives: primary and preschool education account for large numbers of vacancies but remain close to the general salary baseline, while English-language teaching commands a considerably higher premium. The findings therefore suggest that discussions of teacher shortages in Kazakhstan should move beyond aggregate numbers and consider how demand, remuneration, and professional opportunities are distributed within the profession.

The competency analysis further shows that labour-market differentiation extends beyond pay. Vacancies aimed at inexperienced teachers emphasize general qualities such as responsibility, creativity, and the ability to work with others, whereas positions requiring experience place greater emphasis on lesson planning, methodology, educational documentation, technological competencies, and professional independence. This distinction points to a progression in employer expectations across career stages. It also highlights the importance of the transition from entry into teaching to established professional practice. If methodological and organizational competencies become increasingly important with experience, access to induction, mentoring, and professional

development may play an important role in enabling novice teachers to progress within the profession.

More broadly, the study contributes to research on teacher labour markets in Kazakhstan and elsewhere by shifting attention from national indicators of teacher supply and average remuneration to the recruitment conditions encountered by individual applicants. Online vacancy data make visible the salary signals and competency expectations through which schools compete for teachers, providing a complementary perspective to administrative and survey-based research. From this perspective, workforce sustainability is not simply a matter of increasing the overall number of teachers or grants for teaching majors. It also concerns the distribution of economic incentives, opportunities for professional progression, and the capacity of different parts of the education system to attract and develop teaching staff.

Future research should follow these patterns beyond the point of advertisement. Longitudinal vacancy data could establish whether salary and competency differences persist across recruitment cycles and regions, while linking vacancies to hiring and employment records would allow examination of whether advertised conditions are associated with successful recruitment, mobility, and retention. Greater attention should also be given to regional and urban-rural variation, particularly where labour-market differences may intersect with unequal access to qualified teachers. Interviews with teachers and school leaders could clarify why particular specializations receive salary premiums and how non-salary conditions, including workload, professional autonomy, career development, and institutional support, influence employment decisions. Combining vacancy analysis with administrative data, teacher surveys, and qualitative research would therefore provide a fuller account of how labour-market structures shape professional opportunities for teachers and the long-term sustainability and equity of Kazakhstan's education system.

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References

- Aimoldina, A. A., & Zharkynbekova, S. K. (2024). Content analysis of recruitment discourse in Kazakhstan: Language requirements for job seekers on the example of job advertisements. *Language and Literature: Theory and Practice*, 3(3), 18–31. <https://doi.org/10.52301/2957-5567-2024-3-3-18-31>
- Allen, R., Burgess, S., & Mayo, J. (2018). The teacher labour market, teacher turnover and disadvantaged schools: New evidence for England. *Education Economics*, 26(1), 4–23. <https://doi.org/10.1080/09645292.2017.1366425>
- Anderson, K. H., & Esenaliev, D. (2019). Gender earnings inequality and wage policy: Teachers, health care, and social workers in Central Asia. *Comparative Economic Studies*, 61, 551–575. <https://doi.org/10.1057/s41294-019-00103-1>
- Baigabylov, N. O., & Froumin, I. D. (2024). A missed opportunity? The transformation of the teacher salary system in Kazakhstan amidst rising wages. *Voprosy Obrazovaniya / Educational Studies Moscow*, 2(3), 8–34. <https://doi.org/10.17323/vo-2024-19836>

- Bekbolat, M. S., Berkimbayev, K. M., & Sagimbayeva, A. E. (2024). The critical role of soft skills in Kazakhstan's job market for IT graduates: Job market analysis. *Orleu - Bulletin of Continuing Education*, 4(47). <https://doi.org/10.69927/BPQX3428>
- Biasi, B. (2021). The labor market for teachers under different pay schemes. *American Economic Journal: Economic Policy*, 13(3), 63–102. <https://doi.org/10.1257/pol.20200295>
- Biasi, B., Fu, C., & Stromme, J. (2021). Equilibrium in the market for public school teachers: District wage strategies and teacher comparative advantage (Working Paper No. 28530). National Bureau of Economic Research. <https://doi.org/10.3386/w28530>
- Bobba, M., Leon, G., Neilson, C. A., Nieddu, M., & Alva, C. (2021). Teacher wages, the recruitment of talent, and academic achievement (Research Paper No. 213). Agence Française de Développement.
- Carver-Thomas, D., & Darling-Hammond, L. (2019). The trouble with teacher turnover: How teacher attrition affects students and schools. *Education Policy Analysis Archives*, 27, 36. <http://dx.doi.org/10.14507/epaa.27.3699>
- Courtney, M., Karakus, M., Sharplin, E., Hernández-Torrano, D., Helmer, J., & Jumakulov, Z. (2023). The role of teacher selection criteria and preparation on teacher self-efficacy, satisfaction, and commitment: An analysis of Kazakhstani TALIS data. *Teacher Development*, 27(3), 394–414. <https://doi.org/10.1080/13664530.2023.2176354>
- Ederer, T. (2023). Labor market dynamics and teacher spatial sorting (Job Market Paper). Toulouse School of Economics.
- Edwards, D. S., Kraft, M. A., Christian, A., & Candelaria, C. A. (2023). Teacher shortages: A framework for understanding and predicting vacancies (EdWorking Paper: 22-684). Annenberg Institute at Brown University. <https://doi.org/10.26300/8t5b-2302>
- García, E., & Weiss, E. (2019). U.S. schools struggle to hire and retain teachers: The second report in "The Perfect Storm in the Teacher Labor Market" series. Economic Policy Institute.
- García, E., & Weiss, E. (2020). A policy agenda to address the teacher shortage in U.S. public schools: The sixth and final report in the "Perfect Storm in the Teacher Labor Market" series. Economic Policy Institute.
- Han, S. W. (2018). School-based teacher hiring and achievement inequality: A comparative perspective. *International Journal of Educational Development*, 61, 82–91. <https://doi.org/10.1016/j.ijedudev.2017.12.004>
- Han, E. S. (2021). Teacher Wage Penalty and Decrease in Teacher Quality: Evidence from Career-Changers. *Labor Studies Journal*, 46(3), 251–285. <https://doi.org/10.1177/0160449X20929083>
- Hasanah, E., & Supardi, S. (2020). Effect of work environment and salary on private school teachers in Indonesia. *Utopía y Praxis Latinoamericana*, 25(Esp.6), 365–376. <https://doi.org/10.5281/zenodo.3987643>
- Jabbar, H., Castro, A., & Germain, E. (2019). To switch or not to switch? The influence of school choice and labor market segmentation on teachers' job searches. *Educational Evaluation and Policy Analysis*, 41(3), 375–399. <https://doi.org/10.3102/0162373719857689>
- Liu, J., & Xie, J.-C. (2021). Invisible Shifts in and Out of the Classroom: Dynamics of Teacher Salary and Teacher Supply in Urban China. *Teachers College Record: The Voice of Scholarship in Education*, 123(1), 1–26. <https://doi.org/10.1177/016146812112300104>
- Makoelle, T. M. (2025). Teacher recruitment, preparation, induction, retention, and attrition in Kazakhstan. In T. M. Makoelle & K. Kurakbayev (Eds.), *Teachers and teacher education in the post-Soviet context of Kazakhstan: Scoping teacher education reforms and realities* (pp. 55–66). Brill. https://doi.org/10.1163/9789004726345_003
- Nguyen, T. D., Anglum, J. C., & Crouch, M. (2023). The effects of school finance reforms on teacher salary and turnover: Evidence from national data. *AERA Open*, 9(1), 1–17. <https://doi.org/10.1177/23328584231174447>

- See, B. H., Morris, R., Gorard, S., & El Soufi, N. (2020). What works in attracting and retaining teachers in challenging schools and areas? *Oxford Review of Education*, 46(6), 678–697. <https://doi.org/10.1080/03054985.2020.1775566>
- Sauanova, K., Bydakhmet, Z., Omarova, G., & Sagyndykova, S. (2026). Digital Requirements and Advertised Salaries in the Educational Labor Market of Kazakhstan: An NLP-Based Analysis of Job Vacancy Data. Preprints. <https://doi.org/10.20944/preprints202605.1145.v1>
- Shabdenova, A., Nurymbetov, Y., & Kozhanov, K. (2022). Choosing the teaching profession in Kazakhstan: Vocational patterns. *The Journal of Psychology & Sociology*, 81(2), 250–260. <https://doi.org/10.26577/JPsS.2022.v81.i2.024>
- Spiegelman, M. (2018). Teacher satisfaction with salary and current job (NCES 2018-116). U.S. Department of Education, National Center for Education Statistics. Retrieved May 15, 2026 from <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2018116>
- Tastanbekova, K. (2020). Professional prestige, status, and esteem of educational occupation in Kazakhstan: Temporal, regional and gender analysis of payroll data. *Journal of Eastern European and Central Asian Research*, 7(2), 175–190. <https://doi.org/10.15549/jeecar.v7i2.345>
- Van den Borre, L., Spruyt, B., & Van Droogenbroeck, F. (2021). Early career teacher retention intention: Individual, school and country characteristics. *Teaching and Teacher Education*, 105, 103427. <https://doi.org/10.1016/j.tate.2021.103427>
- Wiggin, G., Smith, D., & Watson-Vandiver, M. J. (2020). The national teacher shortage, urban education and the cognitive sociology of labor. *The Urban Review*, 53, 43–75. <https://doi.org/10.1007/s11256-020-00565-z>
- Wyatt, J. E., & O'Neill, M. (2021). Investigation of early career teacher attrition and the impact of induction programs in Western Australia. *International Journal of Educational Research*, 107, 101754. <https://doi.org/10.1016/j.ijer.2021.101754>

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