

Research Article

Human resource development in schools: Organisational conditions, teaching self-efficacy, and teachers' perceived development needs

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Understanding employees' perceived development needs is important for human resource development, yet how these assessments relate to confidence in professional capability remains insufficiently understood. Drawing on Social Cognitive Theory, this study examines the relationships among supportive school leadership, school organisational climate, teaching self-efficacy and teachers' perceived professional development needs. Cross-sectional survey data from 619 secondary school teachers in Kazakhstan were analysed using partial least squares structural equation modelling. Perceived organisational climate was positively associated with teaching self-efficacy, which was positively associated with perceived development needs. A positive indirect association between organisational climate and perceived needs through self-efficacy was also identified. The hypothesised leadership associations were not statistically supported in the jointly estimated model. Although the model's explanatory power was limited and the design does not establish causal relationships, the findings indicate that confidence in teaching can coexist with a perceived requirement for further development. The study contributes to human resource development research by examining perceived needs alongside capability beliefs and organisational experiences, challenging their interpretation as a straightforward indicator of low professional confidence. For schools, the findings highlight the value of interpreting needs assessments alongside teachers' professional responsibilities, learning goals and evidence about practice.

Keywords: Human resource development; Kazakhstan; Perceived development needs; School organisational climate; Supportive school leadership; Teaching self-efficacy

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1. Introduction

Human resource development [HRD] involves decisions about whose development to support, which capabilities require attention and how learning opportunities should relate to employees' work. The literature on workplace learning situates these decisions within formal development activities, informal learning and knowledge sharing (Noe et al., 2014). Employees' assessments of their development needs provide relevant information, but interpreting these assessments requires care. The research on training needs assessment highlights persistent difficulties in defining and

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measuring needs and accounting for their organisational context (Ferreira & Abbad, 2013). A reported need may concern a current difficulty, a changing responsibility or an aspiration to extend existing capabilities. For HRD research and practice, an important question therefore concerns how perceived development needs relate to employees' confidence in their professional capabilities and their experiences of the working environment.

Schools provide a useful setting for examining this question. Teachers engage in continuing professional learning while responding to changing instructional demands and the needs of their students (Avalos, 2011). Their development is shaped by interactions among individual teachers, school environments, and professional learning activities (Opfer & Pedder, 2011). An HRD perspective places this learning within the organisational arrangements through which schools identify development priorities, provide support, and create opportunities for professional growth. Research connecting HRM with education similarly emphasises both the management practices adopted by schools and how these practices are implemented and experienced by teachers (Runhaar, 2017). Recent evidence further highlights the importance of HRM practices in supporting teachers' professional capabilities and innovative work behaviour (Kozhakhmet & Moldashev, 2026), while insufficient organisational support and limited resources can constrain participation in professional development and the application of newly acquired knowledge (Parry & Kumi, 2026; Tadesse & Derza, 2020). The broader relationship between leadership and organisational learning also underscores the importance of organisational conditions for professional development (Tosuntaş & Danişman, 2015). Understanding teachers' perceived development needs consequently matters for how schools interpret requests for support and organise opportunities for further learning (Badri et al., 2016).

We define perceived professional development needs as teachers' self-reported assessments of the extent to which further development is required in specified areas of their teaching. This definition distinguishes perceived needs from participation in professional learning activities and independently assessed competence. Research on professional development participation examines teachers' uptake of formal and informal learning opportunities (Richter et al., 2011), whereas needs-focused studies investigate teachers' assessments of their developmental requirements alongside experiences of provision and barriers to participation (Badri et al., 2016; Mekie & Gezahegn, 2023). Importantly, perceived competence and professional development needs are not necessarily mutually exclusive. Gallego and Caingcoy (2021), for example, found that kindergarten teachers reported generally high levels of competence alongside substantial needs for further professional development. Nevertheless, higher reported needs do not, by themselves, establish professional deficiency, accurate self-evaluation, or proactive developmental awareness (Sarzhanova et al., 2026). These distinctions raise the central question underlying this study: Why might teachers who express confidence in their teaching also report substantial needs for further development?

The literature provides a foundation for addressing this question. The research connects leadership and organisational conditions with teachers' professional learning and identify self-efficacy as a relevant intervening belief (Lin et al., 2022; Liu & Hallinger, 2018; Liu et al., 2016). The research also examines organisational culture alongside efficacy in relationships between leadership and professional development (Long & Xia, 2025), while studies of school environments connect contextual conditions with teachers' efficacy beliefs and professional experiences (Collie et al., 2012; Fackler & Malmberg, 2016; Nurgabdeshev et al., 2026). However, evidence concerning professional learning does not establish whether greater teaching confidence accompanies higher or lower perceived needs. Perera et al. (2019) already connect development needs with membership in teacher self-efficacy profiles, demonstrating that this relationship warrants examination while also illustrating an alternative ordering of the constructs.

Teaching self-efficacy concerns teachers' judgments of their capability to accomplish teaching tasks (Tschannen-Moran & Hoy, 2001). Such confidence could accompany lower perceived needs when teachers judge their capabilities sufficient for current requirements. It could also coexist with

higher needs when they consider unfamiliar responsibilities or more demanding professional goals. These possibilities must be distinguished from confidence in learning itself. Maurer (2001) and Maurer et al. (2003) examine self-efficacy for development as a belief relevant to acquiring capabilities and participating in developmental activities. Confidence in teaching and confidence in developing new skills have different referents. Their distinction makes the relationship between teaching efficacy and perceived needs a substantive empirical question.

Social Cognitive Theory provides an explanatory framework for examining this relationship within organisational environments. Wood and Bandura (1989) describe reciprocal relationships among personal factors, behaviour and environmental conditions, with efficacy beliefs contributing to how individuals approach tasks and regulate their actions. The research on teaching self-efficacy likewise emphasises teachers' interpretations of information arising from professional experience and their working environments (Morris et al., 2017). This perspective supports investigating an efficacy-related pathway between organisational conditions and perceived development needs, while allowing for direct associations and reciprocal relationships. It does not imply that efficacy is the only relevant process or that a reported need necessarily precedes subsequent learning.

The present study examines supportive school leadership and school organisational climate as related but conceptually distinct aspects of teachers' perceived working environments. Supportive leadership concerns teachers' perceptions of support provided by school leaders, while organisational climate encompasses their assessments of the broader conditions in which they undertake their professional responsibilities. Their joint examination allows the association of each organisational condition with teaching self-efficacy and perceived development needs to be estimated while accounting for the other. Within this framework, teaching self-efficacy is examined as a proposed pathway linking perceived organisational conditions to teachers' assessments of their development requirements. Accordingly, the study addresses the following research question:

RQ) How are teachers' perceptions of supportive school leadership and school organisational climate associated with their perceived professional development needs, and to what extent are these associations statistically mediated by teaching self-efficacy?

The study uses cross-sectional survey responses from 619 secondary school teachers in Kazakhstan, analysed through Partial Least Squares Structural Equation Modelling (PLS-SEM). All constructs are examined at the individual level. Organisational climate is positively associated with teaching self-efficacy, whereas the leadership coefficient is not statistically significant in the jointly estimated model. Teaching self-efficacy is positively associated with perceived development needs, and the estimated indirect association between climate and needs through efficacy is also positive. These relationships are modest, and the design does not establish temporal ordering or causality.

The study contributes to HRD research by examining how confidence in performing professional work relates to the perceived requirement for further development. Its findings show that stronger teaching efficacy can coexist with greater reported needs, questioning an interpretation of needs as a simple inverse indicator of professional confidence. By situating this relationship within perceived organisational conditions, the study connects the interpretation of development needs with the contextual understanding of professional learning. The resulting contribution concerns how reported needs are understood, rather than demonstrating their accuracy or their translation into learning. For schools, it supports interpreting needs assessments alongside information about professional responsibilities, capability beliefs and development goals.

The remaining part of this paper is organised as follows. Section 2 develops the theoretical framework and hypotheses. Section 3 describes the methodology, and Section 4 reports the

findings. Section 5 discusses their theoretical and practical implications, limitations and directions for future research. Section 6 concludes the article.

2. Literature Review and Hypothesis Development

2.1. Human Resource Development in Schools and Perceived Development Needs

HRD concerns how people maintain and extend their capabilities through learning within and beyond their immediate work responsibilities. Workplace learning encompasses formal development programmes, informal learning and knowledge sharing, with opportunities and outcomes shaped by both individual and organisational conditions (Noe et al., 2014). In schools, these processes involve teachers developing professional knowledge, adapting instructional practices and responding to changing demands. The research on teacher learning similarly situates development within the interaction of individual experience, school environments and learning activities (Avalos, 2011; Opfer & Pedder, 2011). An HRD perspective therefore directs attention to how teachers' assessments of their development requirements relate to their professional confidence and working conditions.

This perspective builds on existing connections between HRM and education. Runhaar (2017) distinguishes the content of schools' HRM arrangements from the processes through which those arrangements are implemented and experienced. This distinction helps explain why the existence of organisational provision cannot be treated as equivalent to employees' experiences of support. The research on employee development likewise identifies individual and situational factors associated with participation in developmental activities (Maurer et al., 2003; Noe & Wilk, 1993). For the present study, these perspectives establish the relevance of examining teachers' own assessments while maintaining a distinction between perceived working conditions and a comprehensive assessment of schools' HRD practices.

Perceived development needs constitute a specific form of employee assessment. We define them as teachers' self-reported judgments of the extent to which further development is required in specified areas of their teaching. They differ from independently assessed competence gaps, motivation to learn and participation in development activities. Ferreira and Abbad (2013) identify conceptual and measurement difficulties in training needs assessment and argue for greater attention to contextual requirements. Badri et al. (2016) similarly examine teachers' perceived needs alongside the impact of development and barriers to participation. Together, these studies support distinguishing the reported requirement for learning from the provision, uptake and consequences of learning opportunities.

This distinction has practical and theoretical consequences. Participation describes engagement in an activity; a perceived need describes an assessment of a developmental requirement. Teachers may participate because an activity is compulsory or readily available, while substantial needs may remain unmet because appropriate provision is unavailable. The research on participation across teachers' careers documents variation in the uptake of formal and informal opportunities (Richter et al., 2011), but participation alone does not establish the extent of perceived need. Nor must needs invariably precede learning: professional experience and development activities may reveal unfamiliar aspects of practice. Needs and participation should therefore be examined as related but distinct features of professional development.

The interpretation of a needs assessment also depends on the requirements against which capability is evaluated. A teacher may report a need because existing responsibilities are difficult to fulfil, because responsibilities have changed, or because the teacher wishes to undertake more demanding work. These possibilities imply different developmental circumstances, even when the reported level of need is similar. A high needs score establishes a perceived requirement for development, but does not establish the accuracy of the assessment or whether it reflects professional difficulty or ambitious goals. The present study consequently treats perceived needs as an outcome requiring explanation rather than assigning them an inherently positive or negative meaning.

Previous research already connects these assessments with efficacy beliefs. Perera et al. (2019) examined professional development needs and provisions as predictors of membership in different teacher self-efficacy profiles. Their findings establish that needs and efficacy have been investigated together, while their model illustrates an ordering different from the one examined here. The present study focuses on an efficacy-related pathway linking teachers' perceptions of organisational conditions with their perceived needs. Its contribution lies in examining the relationship between confidence in professional performance and the perceived requirement for further development within a specified organisational model.

This focus complements research connecting self-efficacy and contextual conditions with training motivation and outcomes (Colquitt et al., 2000). It also identifies an unresolved interpretive issue: evidence that confident employees engage in development does not establish whether they perceive greater or smaller development needs. Addressing that issue requires attention to the particular capability being evaluated and to the organisational experiences associated with that evaluation.

2.2. Organisational Conditions and Teaching Self-Efficacy

Social Cognitive Theory explains functioning through reciprocal relationships among environmental conditions, personal factors and behaviour (Wood & Bandura, 1989). Within this framework, individuals interpret their experiences and use those interpretations when judging their capabilities and regulating their actions. Organisational conditions can therefore be associated with efficacy beliefs without operating exclusively through them. The present model examines one theoretically specified pathway within this broader reciprocal system: teachers' perceptions of leadership and organisational climate are proposed to relate to teaching self-efficacy, which is subsequently linked to perceived development needs.

Teaching self-efficacy concerns teachers' judgments of their capability to accomplish teaching tasks (Tschannen-Moran & Hoy, 2001). It is distinct from demonstrated competence and from general confidence across situations. Gist and Mitchell (1992) explain efficacy formation through individuals' interpretations of information about themselves, tasks and situational conditions. Applied to teaching, this suggests that professional confidence reflects both experience of undertaking instructional tasks and judgments about the circumstances in which those tasks can be performed. Organisational support matters because it can affect opportunities to exercise capability and the information available for evaluating performance.

Efficacy beliefs are also open to development. Täschner et al.'s (2025) meta-analysis of 115 intervention studies found that interventions could improve teacher self-efficacy. This supports treating efficacy as responsive to experience, although it does not establish that every form of organisational support has the same effect. Morris et al. (2017) similarly emphasise the importance of how efficacy sources are conceptualised and measured, identifying methodological limitations in the evidence about their origins. These findings support specifying the experiences through which leadership and climate might relate to efficacy rather than assuming that supportive environments invariably produce confident teachers.

Supportive school leadership concerns teachers' perceptions of assistance and backing from school leaders in carrying out their professional responsibilities. Such support may help teachers address obstacles to classroom practice and interpret difficult experiences. When leaders respond constructively to problems and provide relevant guidance, teachers may have greater opportunity to undertake tasks successfully. Support can also communicate that difficulties are manageable within the school's working arrangements. The proposed relationship therefore concerns how leader support may contribute to experiences and evaluations relevant to teaching capability (Nurgabdeshev et al., 2026).

The distinction between support and capability remains important. Receiving assistance does not itself demonstrate that a teacher can perform a task. Its relevance to efficacy depends on whether it enables successful practice or provides credible information about performance. For

example, leadership backing in maintaining classroom expectations may help teachers implement an instructional approach and evaluate its effectiveness. Guidance that is connected to actual teaching demands may also help teachers identify which aspects of a difficult situation are within their control. These are proposed routes through which supportive leadership can relate to teaching confidence, consistent with the information-processing account of efficacy developed by Gist and Mitchell (1992).

The literature on leadership and professional learning provides relevant evidence, although the constructs and outcomes differ across studies. Liu and Hallinger (2018) identify both direct and indirect relationships between instructional leadership and teacher professional learning, with teacher self-efficacy providing a partial mediating pathway. Lin et al. (2022) likewise examine efficacy alongside direct relationships between transformational leadership and aspects of professional development. Long and Xia (2025), studying educators in Chinese colleges and universities, consider efficacy and organisational culture as pathways between leadership and development. These studies support investigating efficacy-related relationships, but they do not establish that supportive, instructional and transformational leadership are interchangeable constructs.

The present argument is therefore specific to perceived leadership support. Teachers who experience assistance that helps them exercise their instructional capabilities should, on average, report stronger teaching self-efficacy. This expectation does not require leadership to be the only source of efficacy information, nor does it imply that leadership operates independently of the wider school environment.

Hypothesis 1. Teachers' perceptions of supportive school leadership are positively associated with their teaching self-efficacy.

School organisational climate concerns the broader working environment as perceived by individual teachers. In this study, it is examined through teachers' assessments of the organisational conditions captured by the questionnaire, including the availability of materials needed for their work. These individual perceptions are not treated as an aggregated measure of shared school climate. The distinction matters because teachers working in the same school may encounter different demands, draw on different resources and interpret their experiences differently (Schneider et al., 2013). The proposed relationship concerns their perceived working conditions and personal efficacy judgments.

The theoretical relevance of climate lies partly in the opportunities it provides for teachers to enact their capabilities. Appropriate materials and supportive working arrangements can make it easier to put instructional plans into practice and obtain information about their effectiveness. Persistent organisational obstacles may constrain those opportunities and complicate judgments about why a lesson or teaching strategy was unsuccessful. In this reasoning, favourable conditions do not substitute for professional capability; they provide circumstances in which capability can be exercised and evaluated. This connects organisational support with the experiential basis of teaching self-efficacy.

The research beyond education supports the broader proposition that efficacy beliefs are responsive to work arrangements. Parker (1998), for example, found that changes in job enrichment and communication quality predicted changes in role-breadth self-efficacy. Beltrán-Martín et al. (2017) identified role-breadth self-efficacy as a pathway between high-performance work systems and employee proactivity. These studies concern different efficacy referents and organisational measures, so they provide contextual support rather than direct tests of the present relationship. Within education, Fackler and Malmberg (2016) examine teacher, school and leadership correlates of efficacy across fourteen OECD countries, reinforcing the relevance of considering professional confidence within its working context.

Leadership and climate may overlap because leaders contribute to the conditions teachers experience. Nevertheless, perceived support from identifiable leaders and assessments of broader working arrangements can provide different information about the professional environment.

Estimating their associations jointly allows the study to examine each relationship while accounting for the other construct. It does not assume that leadership and climate arise independently or that one must be more important. On the basis of the opportunities for successful practice associated with supportive working conditions, the study proposes:

Hypothesis 2. Teachers' perceptions of a supportive school organisational climate are positively associated with their teaching self-efficacy.

2.3 Teaching Self-efficacy and Perceived Development Needs

The relationship between teaching self-efficacy and perceived development needs is less straightforward than the expectation that supportive conditions accompany greater confidence. If teachers evaluate themselves against fixed requirements for their current work, stronger efficacy could accompany lower perceived needs. Teachers who believe they can perform the required tasks may see less reason to seek additional development in those domains. Conversely, teachers who doubt their capabilities may report greater needs. This interpretation treats the developmental requirement primarily as a perceived discrepancy between present capability and an established standard.

Professional requirements, however, need not remain fixed. Teachers may consider extending their practice, addressing unfamiliar student needs or undertaking responsibilities beyond those with which they are already comfortable. Confidence in established tasks can coexist with a perceived requirement to develop capabilities relevant to these further demands. The contextual account of teacher learning developed by Opfer and Pedder (2011) supports considering professional development within changing relationships among teachers, environments and learning activities. It therefore gives reason to question whether perceived needs can be interpreted solely through the adequacy of capability for an unchanged set of tasks.

Social Cognitive Theory provides a basis for developing the positive expectation. Efficacy beliefs contribute to the goals individuals set and the challenges they are willing to undertake (Wood & Bandura, 1989). When stronger confidence accompanies more demanding professional goals, the standard against which further development is evaluated may also increase. A teacher can feel capable of meeting existing responsibilities while identifying additional learning required to extend that practice. The proposed positive relationship rests on this possibility: confidence can accompany an expanded range of intended professional activity, making further development relevant even when current performance is regarded as manageable. For example, confidence in explaining subject content may coexist with a perceived need to develop approaches for teaching that content to students with different learning requirements. The perceived need does not necessarily contradict the teacher's confidence because the two judgments may concern different levels or applications of professional capability. This example illustrates a theoretical possibility rather than a process observed in the present data. The broader argument is that teachers' development judgments may encompass the extension of practice as well as the resolution of current difficulties.

The proposed relationship requires careful specification of the capability to which self-efficacy refers. Maurer (2001) and Maurer et al. (2003) examine confidence in undertaking development, whereas the present study concerns confidence in performing teaching tasks. Related research on students' career self-efficacy identifies individual resources and contextual support as relevant to beliefs about managing career-related tasks (Nurgabdeshev & Gassanova, 2025). Gassanova (2026) further synthesises the roles of self-understanding, personal agency, and social learning and support in career self-efficacy development. These studies support considering efficacy beliefs within their social and institutional contexts, while their different task referents limit direct transfer to teaching. Confidence in teaching, confidence in acquiring new capabilities and confidence in managing career decisions should therefore remain conceptually distinct. The present hypothesis concerns whether teaching confidence is positively associated with perceived

development requirements; it does not assume that teaching self-efficacy measures confidence in learning or motivation to participate in development.

The research connecting teaching self-efficacy with professional learning makes this positive association plausible without resolving it. Liu and Hallinger (2018) and Lin et al. (2022) identify efficacy-related relationships with learning and professional development outcomes. Their findings suggest that professional confidence is compatible with continued development, but their outcomes are not equivalent to perceived needs. Similarly, Perera et al. (2019) demonstrate relationships between needs and efficacy profiles while specifying needs as predictors. The present study builds on this evidence by examining a positive efficacy-needs association within a model that also incorporates perceived organisational conditions.

The positive hypothesis thus prioritises an interpretation in which confidence can accompany the extension of professional practice. A negative relationship remains plausible when teachers evaluate only their sufficiency for fixed current demands. Because goals and the reasons underlying reported needs are not measured, the proposed association cannot distinguish these explanations directly. It can establish whether, within the specified model, greater teaching confidence accompanies a higher reported requirement for development. We therefore propose:

Hypothesis 3. Teaching self-efficacy is positively associated with teachers' perceived professional development needs.

The preceding arguments also provide a basis for two indirect pathways. Supportive leadership may help teachers exercise their capabilities and interpret professional experience, while favourable organisational conditions may enable the successful enactment of teaching practice. If these experiences are associated with stronger efficacy, and stronger efficacy accompanies greater perceived development requirements, positive indirect associations between each organisational condition and perceived needs are expected. Efficacy is therefore specified as an intervening belief connecting organisational perceptions with developmental judgments. These pathways integrate the arguments underlying H1-H3 without treating reported needs as demonstrated learning behaviour.

Other relationships remain possible. Organisational conditions may relate directly to perceived needs by exposing teachers to new responsibilities or making particular development opportunities salient. Prior learning may also contribute to both efficacy and awareness of further requirements. Indeed, research on training transfer identifies direct relationships between work-environment characteristics and post-training behaviour (Tracey et al., 1995), illustrating why organisational relationships should not be presumed to operate exclusively through efficacy. The model therefore retains direct paths from leadership and climate to perceived needs and specifies the following positive indirect associations:

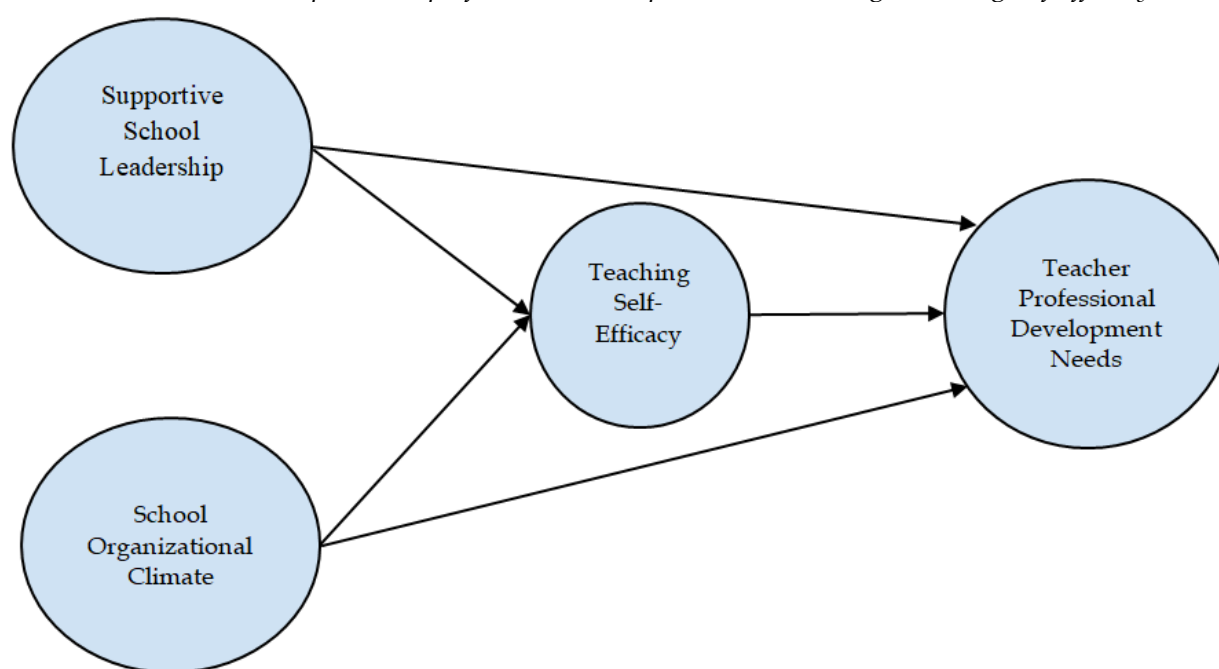
Hypothesis 4. Teachers' perceptions of supportive school leadership have a positive indirect association with their perceived professional development needs through teaching self-efficacy.

Hypothesis 5. Teachers' perceptions of a supportive school organisational climate have a positive indirect association with their perceived professional development needs through teaching self-efficacy.

Figure 1 summarises the proposed relationships. The model examines an efficacy-related account of how perceived working conditions are associated with teachers' reported development requirements. Its directional specification expresses the theoretical argument being investigated; the cross-sectional design does not establish the temporal sequence or exclude reciprocal relationships.

Figure 1

Conceptual model illustrating the proposed psychological mechanism linking school organisational conditions with teachers' perceived professional development needs through teaching self-efficacy



3. Methodology

3.1. Research Context

The study was conducted among secondary school teachers in Kazakhstan, where curriculum reform and changes in assessment have created demands for teachers to adapt their professional practice. The research on these reforms highlights the relationship between teachers' agency, professional learning and the conditions within which new practices are implemented (Yakavets et al., 2023). The research on teacher status also identifies school leadership and professional support as relevant features of teachers' working experiences (Sarmurzin, 2024).

The research on Kazakhstan's wider education system provides additional context for examining organisational conditions. In higher education, Yergaliyev et al. (2026) describe reform as a cumulative process shaped by institutional legacies, state-led modernisation and international influences, with continuing tensions between centralised control and institutional autonomy. Makatova et al. (2026) similarly show how regulation, ownership and managerial practices shape university strategy formulation, with formal planning accompanied by responses to changing circumstances. Although these studies concern universities, they highlight the importance of examining how educational organisations operate within institutional constraints. The present study addresses a different level of this broader organisational problem by examining secondary school teachers' perceptions of their immediate working environments, capability beliefs and development requirements.

This context provides a setting for examining professional development from an HRD perspective. Teachers' assessments of their development requirements arise within professional roles that involve both established responsibilities and changing expectations. The study therefore examines how teachers' perceptions of leadership support and organisational climate are associated with teaching self-efficacy and perceived development needs. These relationships are investigated at the individual teacher level; the study does not evaluate the effectiveness of national reforms or schools' HRD systems.

3.2. Research Design

A quantitative, cross-sectional survey design was used to examine the relationships among supportive school leadership (SSL), school organisational climate (SOC), teaching self-efficacy (TSE) and teachers' perceived professional development needs (TPDN). Individual teachers constituted the unit of analysis, and all four constructs were measured through teacher self-reports (Hulpia et al., 2011). Leadership and climate therefore represent respondents' perceptions of their working environments rather than independently observed leadership practices or aggregated school-level characteristics (Alshuhumi et al., 2025).

The structural model specified SSL and SOC as jointly estimated predictors of TSE, with TSE associated with TPDN. Direct paths from SSL and SOC to TPDN were also included, allowing the proposed indirect associations through TSE to be estimated alongside the direct associations. This specification did not assume that efficacy was the only pathway connecting organisational conditions with perceived needs.

The direction of the paths followed the theoretical arguments developed in Section 2. Because the constructs were measured at one time point, the analysis cannot establish temporal precedence or exclude reciprocal relationships. The indirect estimates are consequently interpreted as statistical associations consistent with the proposed framework rather than evidence of a demonstrated causal mediation process (Maxwell & Cole, 2007).

3.3. Participants and Data Collection

Participants were in-service teachers working in secondary and high schools in Kazakhstan. Schools received an invitation to participate, and school directors facilitated recruitment. Teachers completed a structured questionnaire administered through Google Forms during non-instructional time. Participation was voluntary, informed consent was obtained, and confidentiality was assured. The final analytical sample comprised 619 teachers with complete responses to the measures of SSL, SOC, TSE and TPDN. Women represented 82.23% of the sample. The largest age groups were 30–39 years (33.44%) and 40–49 years (31.02%). Most respondents reported a bachelor's degree as their highest qualification (73.34%). Table 1 presents the participant characteristics.

Table 1

Demographic characteristics of the participants

<i>Variable and classification</i>	<i>Number of responses</i>	<i>Percentage %</i>
Gender		
Female	509	82.23
Male	110	17.77
Age		
20-29	102	16.48
30-39	207	33.44
40-49	192	31.02
50-59	106	17.12
60-69	12	1.94
Highest Academic Degree		
School Diploma	6	0.97
Diploma Program	72	11.63
Bachelor	454	73.34
Masters	87	14.05
Total	619	100

3.4. Measures

The final measurement model contained 16 indicators across four constructs. SSL and SOC were measured using four-point agreement scales, whereas TSE and TPDN were measured using five-point scales with construct-specific response anchors. Higher scores represented greater perceived leadership support, a more favourable perceived organisational climate, stronger teaching self-efficacy and greater perceived development needs, respectively.

3.4.1. Supportive school leadership

SSL captured teachers' perceptions of support from school leaders in carrying out their professional responsibilities. The final measure comprised three indicators, rated from 1 (strongly disagree) to 4 (strongly agree). One reported item was: "Ensures that students follow the rules of conduct at the school, and supports me when needed". The construct concerns perceived leadership support and is not treated as a comprehensive measure of instructional leadership or schools' HRD practices.

3.4.2. School organisational climate

SOC captured teachers' perceptions of their organisational working environment. The final measure comprised three indicators, rated from 1 (strongly disagree) to 4 (strongly agree). One item was: "Necessary materials (i.e. textbooks, supplies, photocopying equipment) are available to staff when necessary". SOC was analysed at the individual level. Its interpretation is restricted to the dimensions represented by the questionnaire items and does not presume agreement among teachers within the same school.

3.4.3. Teaching self-efficacy

TSE assessed teachers' confidence in the teaching domains covered by the questionnaire. Five indicators were retained, with responses ranging from 1 (low confidence) to 5 (high confidence). One reported domain was "The content of one or more subjects that I teach". Higher scores indicated greater confidence in the specified teaching capabilities. The measure was not interpreted as an objective assessment of competence or as confidence in acquiring new skills.

3.4.4. Teachers' perceived professional development needs

TPDN assessed the extent to which teachers reported needing further professional development in the domains covered by the questionnaire. Five indicators were retained, rated from 1 (no need) to 5 (very high need). One reported domain was "The pedagogy of one or more subjects I teach". Higher scores indicated a greater perceived requirement for development. They were not interpreted as evidence of objectively assessed deficiencies, the accuracy of self-evaluation or motivation to participate in learning.

All four constructs were specified reflectively in the reported analysis. Under this specification, variation in each underlying construct is represented through its indicators. For TPDN, this entails treating responses across the included domains as manifestations of an underlying perceived development requirement.

3.5. Analytical Strategy

The model was estimated using Partial Least Squares Structural Equation Modelling (PLS-SEM) in SmartPLS 4 (Ringle et al., 2024). The analysis examined the specified relationships among the four constructs, the variance explained in the endogenous constructs and the direct and indirect associations involving TPDN.

The analysis followed a two-stage procedure encompassing measurement-model assessment and structural-model assessment (Hair et al., 2019). For the reflective measurement models, indicator loadings were examined alongside Cronbach's alpha, reliability coefficient (rho_A), composite reliability (rho_C) and average variance extracted (AVE). Discriminant validity was assessed using the heterotrait-monotrait ratio of correlations (HTMT), supplemented by the

Fornell-Larcker criterion (Fornell & Larcker, 1981; Henseler et al., 2015). The measurement results are reported in Section 4.

Structural assessment examined the standardised path coefficients, coefficients of determination (R^2) and effect sizes (f^2). Inner-model variance inflation factors were used to assess collinearity among predictors in each structural equation. These diagnostics concern predictor collinearity and were not treated as evidence that common method bias had been eliminated. The standardised root mean square residual (SRMR) and normed fit index (NFI) were reported as supplementary model-fit information.

Statistical inference was based on 5,000 bootstrap resamples. Standardised coefficients, bootstrap t-values, p-values and bias-corrected 95% confidence intervals were used to evaluate the hypothesised relationships. The two specific indirect associations were estimated as the products of the relevant paths: $SSL \rightarrow TSE \rightarrow TPDN$ and $SOC \rightarrow TSE \rightarrow TPDN$. An indirect association was regarded as statistically supported when its bootstrap confidence interval excluded zero. The significance of the direct association was considered separately and was not used as the criterion for establishing an indirect association.

The results were interpreted with reference to their magnitude and uncertainty, alongside statistical significance. Given the cross-sectional design, the estimated paths provide evidence about associations within the specified model rather than the temporal development of teachers' efficacy beliefs or perceived needs.

4. Findings

4.1. Measurement Model

The reflective measurement models were assessed for internal consistency reliability, convergent validity and discriminant validity. Table 2 presents the reliability estimates, average variance extracted (AVE) and indicator loading ranges.

Table 2

Construct reliability and convergent validity

<i>Construct</i>	<i>CA</i>	<i>rho_a</i>	<i>CR (rho_c)</i>	<i>AVE</i>	<i>Loading Range</i>
Supportive School Leadership (SSL)	0.718	0.732	0.841	0.639	0.727–0.834
School Organisational Climate (SOC)	0.682	0.700	0.823	0.608	0.711–0.813
Teaching Self-Efficacy (TSE)	0.837	0.855	0.883	0.603	0.660–0.847
Teacher PD Needs (TPDN)	0.957	0.966	0.967	0.854	0.870–0.957

Note. CA = Cronbach's alpha; rho_a = composite reliability; CR (rho_c) = composite reliability; AVE = average variance extracted.

Composite reliability exceeded .70 for all constructs, ranging from .823 to .967 (Hair et al., 2019). SSL and TSE also exceeded .70 on Cronbach's alpha and rho_A. For SOC, Cronbach's alpha was slightly below this threshold ($\alpha = .682$), although rho_A reached .700 and composite reliability was .823. The reliability evidence for SOC was therefore less consistent across indices than for SSL and TSE. TPDN exhibited particularly high reliability estimates ($\alpha = .957$; rho_A = .966; rho_C = .967). Although these values indicate strong consistency among responses, estimates above .95 can also suggest indicator redundancy (Hair et al., 2019). They should consequently be interpreted alongside the content and breadth of the needs indicators, rather than as unequivocal evidence of superior measurement quality.

All AVE values exceeded .50, ranging from .603 to .854, supporting convergent validity under the specified reflective models. Indicator loadings ranged from .660 to .957. One TSE indicator, CTSE4, had a loading of .660 and was retained in the model. Although below the commonly recommended level of approximately .70, the TSE construct exceeded the recommended AVE and composite reliability thresholds. The retention of a lower-loading indicator also requires consideration of its substantive relevance and contribution to content coverage (Hair et al., 2019).

Discriminant validity was assessed using the heterotrait–monotrait ratio of correlations (HTMT; Henseler et al., 2015). Table 3 reports the pairwise values.

Table 3

Discriminant Validity – Heterotrait-monotrait ratio (HTMT)

<i>Construct</i>	<i>SSL</i>	<i>SOC</i>	<i>TSE</i>	<i>TPDN</i>
SSL	—			
SOC	0.870	—		
TSE	0.241	0.300	—	
TPDN	0.076	0.078	0.257	—

All HTMT values were below .90. However, the SSL–SOC value of .870 exceeded the stricter .85 threshold, indicating that evidence of their empirical distinctiveness depends on the criterion applied. The remaining values ranged from .076 to .300 and were below both thresholds. Thus, the HTMT results provide clearer evidence of discriminant validity for the other construct pairs than for leadership and climate (Henseler et al., 2015).

The Fornell–Larcker assessment provided supplementary evidence. The reported square roots of AVE were .800 for SSL, .780 for SOC, .776 for TSE and .924 for TPDN. Each exceeded the corresponding inter-construct correlations; the largest correlation was .611 between SSL and SOC. These results met the Fornell–Larcker criterion, although they do not remove the qualification identified by the SSL–SOC HTMT value (Fornell & Larcker, 1981; Henseler et al., 2015).

At the indicator level, CIDN2 in the TPDN measure had an outer VIF of 8.98. Because the measure was specified reflectively, this value is considered alongside the high reliability estimates as a potential indication of overlapping indicator content. It does not, by itself, establish that the indicator should be removed. However, structural-model VIFs cannot resolve this measurement concern, and the reported diagnostics do not establish whether retaining CIDN2 affected the structural estimates.

4.2. Structural Model Results

Collinearity among predictors was assessed separately for each structural equation. Table 4 reports the inner-model VIF values.

Table 4

Collinearity diagnostics for the structural model

<i>Outcome</i>	<i>Predictor</i>	<i>VIF</i>	<i>Assessment</i>
TSE	SSL	1.595	Acceptable
TSE	SOC	1.595	Acceptable
TPDN	SSL	1.602	Acceptable
TPDN	SOC	1.633	Acceptable
TPDN	TSE	1.065	Acceptable

The inner-model VIF values ranged from 1.065 to 1.633, providing no indication of problematic predictor collinearity under commonly used guidelines (Hair et al., 2014). These values concern collinearity within the specified structural equations. They are not equivalent to the full-collinearity assessment discussed by Kock (2015) and do not establish the absence of common method bias.

The model explained 6.1% of the variance in teaching self-efficacy ($R^2 = .061$) and 6.1% of the variance in perceived professional development needs ($R^2 = .061$). The organisational predictors and efficacy pathway therefore accounted for a limited proportion of variation in the two endogenous constructs.

Direct and specific indirect associations were evaluated using 5,000 bootstrap resamples. Table 5 presents all five direct paths, including the two organisational paths to TPDN retained alongside the hypothesised indirect pathways.

Table 5

Direct structural associations and hypothesis tests

<i>Path</i>	β	<i>t</i>	<i>p</i>	95% BC CI	f^2	<i>Hypothesis decision</i>
SSL → TSE (H1)	0.080	1.535	.125	[-.023, .179]	.004	Not supported
SOC → TSE (H2)	0.189	3.909	< .001	[.089, .278]	.024	Supported
TSE → TPDN (H3)	0.246	6.178	< .001	[.162, .317]	.060	Supported
SSL → TPDN	-.012	NR	.858	NR	< .001	Not separately hypothesised
SOC → TPDN	.013	NR	.805	NR	< .001	Not separately hypothesised

Note. β = standardised path coefficient; BC CI = bias-corrected bootstrap confidence interval; f^2 = effect size.

Supportive school leadership was not significantly associated with teaching self-efficacy in the jointly estimated model ($\beta = .080$, $p = .125$, 95% BC CI [-.023, .179]); H1 was therefore not supported. School organisational climate had a positive association with teaching self-efficacy ($\beta = .189$, $p < .001$, 95% BC CI [.089, .278]), supporting H2.

Teaching self-efficacy was positively associated with perceived professional development needs ($\beta = .246$, $p < .001$, 95% BC CI [.162, .317]), supporting H3. Neither leadership nor climate had a statistically significant direct association with perceived needs when TSE was included in the equation (SSL: $\beta = -.012$, $p = .858$; SOC: $\beta = .013$, $p = .805$).

Effect sizes were small for SOC → TSE ($f^2 = .024$) and TSE → TPDN ($f^2 = .060$), using Cohen's (1988) conventions. The SSL → TSE effect was below the small-effect threshold ($f^2 = .004$), as were both direct organisational associations with TPDN ($f^2 < .001$). Statistical support for H2 and H3 should therefore be distinguished from the magnitude of their contributions to explained variance.

Table 6 presents the specific indirect associations through teaching self-efficacy. The indirect association between supportive school leadership and perceived development needs through teaching self-efficacy was not statistically significant ($\beta = .020$, $p = .150$), and its confidence interval included zero. H4 was therefore not supported.

Table 6

Specific indirect associations through teaching self-efficacy

<i>Path</i>	β	<i>t</i>	<i>p</i>	95% BC CI	<i>Hypothesis decision</i>
SSL → TSE → TPDN (H4)	0.020	1.439	.150	[-.005, .047]	Not supported
SOC → TSE → TPDN (H5)	0.046	3.435	< .001	[.023, .074]	Supported

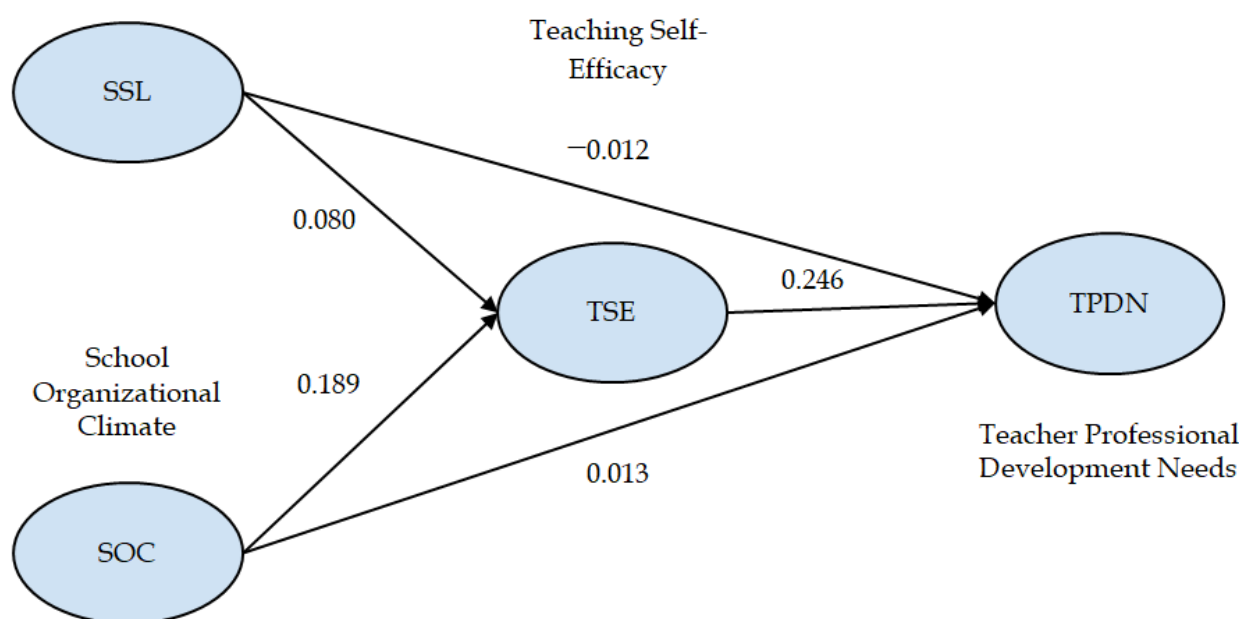
Note. β = standardised specific indirect estimate; BC CI = bias-corrected bootstrap confidence interval.

The corresponding indirect association for school organisational climate was positive and statistically significant ($\beta = .046$, $p < .001$, 95% BC CI [.023, .074]), supporting H5. This conclusion rests on the bootstrap evidence for the indirect estimate. The nonsignificant direct climate-needs coefficient does not establish that efficacy is the exclusive pathway connecting these constructs. Moreover, the cross-sectional design permits interpretation of this result as an indirect statistical association, without establishing a causal sequence.

The SRMR was .061 for both the saturated and estimated models, below the conventional .08 reference value discussed by Henseler et al. (2016). The NFI was .871, below the commonly cited .90 benchmark. These indices provide mixed supplementary evidence concerning model fit and should be considered alongside the measurement qualifications and limited explained variance.

Overall, H2, H3 and H5 were supported, whereas H1 and H4 were not. The results indicate positive associations linking perceived organisational climate, teaching self-efficacy and perceived development needs, with small structural effect sizes. The difference in statistical significance between the leadership and climate coefficients does not itself establish a statistically significant difference between their associations.

Figure 2
Estimated structural model
Supportive School
Leadership



Note. Path labels represent standardised coefficients. $R^2 = .061$ for both TSE and TPDN.

5. Discussion

Understanding employees' development needs requires attention to how they evaluate both their professional capabilities and the demands of their work. The present study contributes to this issue by showing that greater teaching self-efficacy was associated with higher perceived professional development needs among secondary school teachers in Kazakhstan. Confidence in teaching and the perceived requirement for further learning therefore coexisted within the sample. The organisational findings situated this relationship within teachers' working experiences: perceived school organisational climate was positively associated with teaching self-efficacy and had a positive indirect association with perceived needs through efficacy. The corresponding leadership relationships were not statistically supported in the jointly estimated model.

The positive efficacy-needs association is significant for the interpretation of development assessments. The research on training needs assessment emphasises the importance of defining developmental requirements and considering the contexts in which they arise (Ferreira & Abbad, 2013). The studies of teacher development similarly distinguish perceived needs from participation, provision and barriers to learning (Badri et al., 2016; Richter et al., 2011). The present findings add a further distinction: teachers' assessments of their capability to perform professional tasks do not necessarily indicate how much further development they believe they require. Higher reported needs cannot therefore be interpreted straightforwardly as evidence of lower teaching confidence.

Social Cognitive Theory offers one explanation for this relationship. Efficacy beliefs contribute to the goals individuals pursue and the challenges they undertake (Wood & Bandura, 1989). Teachers who regard established responsibilities as manageable may consider extending their practice, with the resulting aspirations creating additional learning requirements. Confidence in existing teaching capabilities could consequently accompany substantial perceived needs when the intended scope of practice expands. This interpretation is consistent with accounts of professional learning that recognise the interaction between teachers' experiences, changing demands and organisational environments (Avalos, 2011; Çengel & Acar, 2026; Opfer & Pedder, 2011).

The findings are compatible with this explanation but do not establish it. Professional goals were not measured, and reported needs were not differentiated according to current difficulties, changing responsibilities or aspirations. Previous learning experiences could also contribute to both stronger confidence and recognition of further requirements. Moreover, teachers may express confidence in some aspects of their work while identifying needs in others. Perera et al. (2019), who examine development needs as predictors of teacher self-efficacy profiles, illustrate the relevance of alternative relationships between these constructs. The present result therefore establishes an association between confidence and perceived needs while leaving its underlying processes open to further investigation.

The climate–efficacy association provides a contextual dimension to this interpretation. It is consistent with research linking teachers' efficacy beliefs to their perceptions of school climate and characteristics of their working environments (Collie et al., 2012; Fackler & Malmberg, 2016). Cross-national evidence further indicates that organisational conditions supporting collaboration and professional learning are positively associated with teachers' self-efficacy (Gouëdard et al., 2023). Access to appropriate instructional materials and supportive working arrangements may enable teachers to apply their capabilities and evaluate the outcomes of their practice. Such experiences may inform efficacy judgments, consistent with Gist and Mitchell's (1992) account of efficacy formation and Morris et al.'s (2017) review of the sources of teaching self-efficacy. In this study, however, climate represents teachers' individual perceptions of the measured working conditions. The results do not identify which professional experiences account for the association, establish its causal direction, or demonstrate a shared school-level climate effect.

The positive indirect association between climate and perceived needs through efficacy complements research connecting organisational conditions with professional learning. Liu and Hallinger (2018) identify both direct and indirect relationships between instructional leadership and teacher learning, while Lin et al. (2022) examine efficacy-related pathways alongside direct relationships with professional development outcomes. Long and Xia (2025) similarly consider efficacy and organisational culture in their study of educators in higher education. The present study examines perceived development requirements as the outcome, extending this conversation to how teachers assess the learning they need. Nevertheless, the small effects and the 6.1% of variance explained in each endogenous construct indicate that the model captures only a limited part of these assessments.

The unsupported leadership hypotheses require a more specific interpretation than a conclusion that leadership is unimportant. The estimated association concerns perceived supportive leadership within a model that also includes organisational climate. Previous studies examine different leadership constructs, including instructional and transformational leadership, and different developmental outcomes (Lin et al., 2022; Liu & Hallinger, 2018; Long & Xia, 2025). These differences limit direct comparisons. Furthermore, the statistical significance of the climate coefficient and the non-significance of the leadership coefficient do not establish that the two associations differ significantly.

Leadership and climate may also represent overlapping aspects of teachers' organisational experiences. Their HTMT value of .870 warrants caution when interpreting their empirical distinctiveness. Leaders may contribute to the broader working arrangements through which support is experienced, but the present model does not test a leadership–climate–efficacy sequence. Examining that possibility would require an explicitly specified model and evidence suited to its temporal claims. The current findings support a narrower conclusion: an efficacy-related indirect association was identified for perceived climate, while the proposed leadership-related associations were not supported.

5.1. Theoretical Implications

The study contributes to HRD research by directing attention to the relationship between perceived development requirements and confidence in professional performance. Workplace-

learning research encompasses participation, informal learning, knowledge sharing and capability development (Noe et al., 2014). Perceived needs provide a distinct perspective on these processes because they concern employees' judgments about the further development their work requires. The positive association with teaching efficacy demonstrates why these judgments should not be treated as a simple proxy for low professional confidence. Their theoretical interpretation depends on the demands and expectations against which employees evaluate their capabilities.

The interpretation of these findings requires a distinction between teaching self-efficacy and self-efficacy for development. The research by Maurer (2001) and Maurer et al. (2003) concerns confidence in learning and acquiring capabilities. The present study examines confidence in teaching. Although both beliefs may be relevant to HRD, they answer different questions and may relate differently to perceived needs and subsequent participation. Maintaining this distinction enables a more precise account of how confidence in current work might coexist with the perceived requirement for further learning.

Finally, the study connects these developmental judgments with perceived organisational conditions through a specific application of Social Cognitive Theory. The climate-related indirect association is consistent with an efficacy-related pathway, but it does not verify an exclusive mechanism or the theory's wider reciprocal processes. The contribution is therefore a bounded account of the relationships among working conditions, capability beliefs and perceived needs.

5.2. Practical Implications

The findings suggest that development-needs questionnaires should inform a broader process of professional dialogue. A high score may concern difficulties with existing tasks, preparation for new responsibilities or an intention to extend practice. Distinguishing these circumstances would help school leaders and those responsible for staff development identify appropriate support. Discussions of reported needs should therefore consider teachers' responsibilities, capability beliefs and evidence about their practice, alongside the questionnaire responses.

Teaching confidence alone should not determine access to professional development. Confident teachers may still identify substantial learning requirements, and low reported need does not necessarily establish that further development is unnecessary. Equally, a high needs score should not be interpreted as evidence of superior self-awareness or greater commitment to learning. The relevant decision concerns what development is required, for which professional purpose, and under what working conditions.

An HRD response should consider whether reported development requirements call for learning opportunities, changes in working arrangements or both. Runhaar's (2017) distinction between the content and implementation of HRM in schools directs attention to how organisational support is experienced in practice. Evidence from a different educational setting reinforces the relevance of examining concrete forms of support: Moldashev (2026) reports associations between salary and equipment or software support and international publication output among doctoral students and graduates in Kazakhstan. Although these findings concern research productivity, they illustrate why organisational provision should be assessed in terms of the resources it makes available. For schools, a practical implication is to investigate whether teachers' reported difficulties involve learning requirements, limited access to resources, insufficient time or some combination of these conditions. The present study does not establish which response would be most effective.

For school leaders and policymakers, reported needs should consequently be interpreted alongside subsequent participation, changes in practice and other relevant developmental outcomes. A decline in needs may indicate that requirements have been met, but learning can also reveal further requirements. Changes in needs scores alone are therefore an ambiguous basis for evaluating an HRD initiative. Evaluation should examine whether the support provided addresses the identified professional requirements and enables teachers to apply what they have learned.

5.3. Limitations and Directions for Future Research

The cross-sectional design limits conclusions about temporal ordering. Organisational perceptions, teaching efficacy and perceived needs were assessed at the same time, so the estimated indirect association cannot establish a causal mediation process. Cross-sectional estimates may differ substantially from relationships unfolding over time (Maxwell & Cole, 2007). Longitudinal research should examine changes in all three elements, including whether prior learning contributes to both efficacy and perceived needs. Such designs would also allow the proposed ordering to be compared with reciprocal explanations.

The use of a single self-report questionnaire introduces a further limitation. Although self-reports are appropriate for assessing perceptions, shared response tendencies may contribute to relationships among the constructs. The structural collinearity diagnostics do not establish the absence of common method bias. Future studies could supplement teacher reports with independently documented working conditions, development provision and evidence about teaching practice. Combining these sources would help distinguish organisational arrangements from individual experiences of those arrangements.

Measurement also constrains the interpretation. The needs scale does not distinguish current difficulties from future responsibilities or aspirations, and the teaching efficacy measure does not assess confidence in acquiring new skills. Future research should measure these dimensions separately and examine relationships within specific teaching domains. The high reliability estimates for perceived needs and the elevated indicator VIF warrant closer examination of content redundancy. The overlap between leadership and climate likewise calls for measures that more clearly distinguish support from identifiable leaders from broader organisational conditions.

The individual level of analysis also limits claims about schools as organisations. Teachers may share working environments, and any dependence among responses from the same school needs to be considered when assessing estimate precision. Multilevel designs could distinguish differences among teachers from differences among schools. They could also examine whether leadership is associated with shared working conditions that subsequently relate to individual efficacy and perceived development requirements.

Future research could also examine institutional conditions beyond teachers' immediate working environments. Pinar (2026) identifies variation in educational data governance and platform dependence across 29 education jurisdictions, drawing attention to the infrastructure within which digital educational practices operate. This raises a further question for HRD research: whether teachers' perceived digital development requirements vary with the platforms they are expected to use, their discretion over these systems and the support available to them. Such relationships were not examined in the present study. Investigating them would help distinguish perceived requirements for individual learning from difficulties associated with technological and organisational arrangements.

Finally, the limited explained variance indicates that other influences remain important to investigate. Professional responsibilities, previous development experiences, workload and career stage are plausible candidates, but their inclusion should follow explicit theoretical arguments. Research in other educational systems and professional settings would help establish the boundaries of the findings. The present evidence supports an association between teaching confidence and perceived development needs in the sampled context; its applicability across occupations and institutional environments remains an empirical question.

6. Conclusion

This study examined how teachers' perceptions of organisational conditions and their confidence in teaching relate to perceived professional development needs. Drawing on Social Cognitive Theory and survey data from 619 secondary school teachers in Kazakhstan, the analysis identified a positive association between teaching self-efficacy and perceived development needs. Perceived organisational climate was positively associated with teaching efficacy and had a positive indirect

association with perceived needs through efficacy. The corresponding leadership hypotheses were not supported in the jointly estimated model. These findings indicate that confidence in professional performance can coexist with a perceived requirement for further development.

The study contributes to HRD research by clarifying the interpretation of employees' reported development needs within their perceived working environments. A higher needs score cannot be treated as a simple indication of lower professional confidence. Equally, the positive association does not establish that confident teachers assess their needs more accurately or pursue more ambitious learning goals. For schools, needs assessments are therefore best interpreted alongside teachers' professional responsibilities, capability beliefs and evidence about their practice. This information can inform decisions about the purpose and form of development support.

The model explained 6.1% of the variance in each endogenous construct, and the cross-sectional design does not establish temporal ordering or causal mediation. The findings offer a limited account of the relationships among organisational perceptions, efficacy beliefs and reported needs. Further research should examine these relationships over time, distinguish the reasons underlying reported needs and investigate whether changes in those needs are associated with subsequent learning and practice. Understanding perceived development requirements requires attention to both what professionals believe they can do and what they judge they still need to learn.

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Data availability: The dataset is not publicly available because it contains student survey responses. De-identified data may be made available upon reasonable request and subject to institutional ethical requirements.

Declaration of generative AI and AI-assisted technologies: AI-assisted tools, including ChatGPT (OpenAI), were used only to support English language refinement, grammar checking, readability, and formatting consistency. The authors reviewed and verified the manuscript and remain responsible for the accuracy of the data analysis, citations, interpretation, and conclusions.

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