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Modeling Elementary Teachers' Work Engagement Based on Job Crafting and Emotional Creativity: The Mediating Role of Critical Thinking

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A B S T R A C T

Teacher work engagement is a key psychological and occupational factor in educational quality. The present study examined a structural model in which job crafting and emotional creativity were associated with elementary teachers' work engagement, both directly and indirectly through critical thinking. This applied, descriptive-correlational survey used structural equation modeling. The population consisted of all elementary school teachers in Barkhar, Iran. Because the population was limited, census sampling was used, and 270 teachers were included. Data were collected using standardized self-report instruments measuring emotional creativity, job crafting, critical thinking, and work engagement. Data were analyzed using SPSS and SmartPLS 3. Descriptive statistics showed mean scores of 63.62 for emotional creativity, 55.38 for critical thinking, 42.87 for job crafting, and 22.79 for work engagement. All direct structural paths were positive and statistically significant. Job crafting was positively associated with work engagement (beta = 0.138, t = 2.762, p = .006) and critical thinking (beta = 0.478, t = 8.566, p < .001). Emotional creativity was positively associated with work engagement (beta = 0.191, t = 3.944, p < .001) and critical thinking (beta = 0.384, t = 6.601, p < .001). Critical thinking was the strongest direct predictor of work engagement (beta = 0.623, t = 14.366, p < .001). The indirect effects through critical thinking were also supported: emotional creativity -> critical thinking -> work engagement (indirect beta = 0.239) and job crafting -> critical thinking -> work engagement (indirect beta = 0.298). The findings suggest that job crafting and emotional creativity are relevant correlates of elementary teachers' work engagement and that critical thinking may partly explain these associations.

Keywords: *Work engagement; job crafting; emotional creativity; critical thinking; elementary teachers; structural equation modeling*

1. Introduction

Teachers' work engagement has become an increasingly important construct in educational psychology and school management because it represents the extent to which teachers invest physical energy, emotional commitment, and cognitive attention in their professional roles. In elementary education, engagement is especially critical because teachers are not only responsible for delivering curriculum content but also for shaping students' early learning habits, emotional security, classroom participation, and attitudes toward schooling. Elementary teachers work in complex environments characterized by diverse student needs, administrative expectations, parent communication, emotional labor, and continuous instructional decision-making. Under such conditions, work engagement cannot be understood only as a general positive attitude toward work; rather, it should be conceptualized as a dynamic psychological state influenced by how teachers interpret, modify, and emotionally respond to their work environment. Recent organizational and educational studies increasingly suggest that engagement is strengthened when employees experience agency in shaping their job, when they are able to respond creatively to emotional and professional challenges, and when they possess cognitive capacities that help them evaluate situations effectively (1-3).

One of the most relevant constructs for explaining work engagement is job crafting. Job crafting refers to employees' proactive efforts to redesign aspects of their work in order to improve person–job fit, increase meaning, manage demands, and enhance available resources. In educational settings, job crafting may appear in several forms: teachers may redesign classroom activities, seek more constructive relationships with colleagues and students, reinterpret routine tasks as meaningful developmental work, or adjust instructional strategies according to students' learning needs. Such proactive behavior is particularly important in schools because teachers often work within formal curricula and institutional regulations, yet still retain considerable discretion in how they organize classroom relationships, explain content, manage emotional tensions, and construct professional meaning. Evidence from organizational contexts shows that job crafting is closely related to positive occupational outcomes, including job embeddedness, enthusiasm, and engagement, suggesting that employees who actively reshape their work are more likely to feel psychologically connected to their roles (3-5).

The relevance of job crafting for teachers can be understood through the idea that professional engagement is not merely produced by external job conditions but also by teachers' active responses to those conditions. When teachers perceive that their work is demanding, emotionally intense, or administratively constrained, they may either experience disengagement or attempt to craft their work in ways that restore meaning and control. For example, a teacher may enrich classroom tasks by using more participatory methods, reduce emotional strain by improving communication with students, or strengthen professional resources by collaborating with other teachers. Research on crisis-resilient school leadership has emphasized that job crafting can support adaptive functioning in school environments, especially when principals and educational staff face uncertainty, changing expectations, and complex institutional pressures (1). Similarly, findings in sport and organizational settings indicate that managerial coaching skills can enhance employee engagement through job crafting, implying that supportive leadership may create conditions in which employees feel permitted and motivated to redesign their work constructively (2). These findings are relevant to elementary teachers because school leaders can either restrict teachers to rigid task performance or encourage reflective autonomy and professional initiative.

Job crafting is also important because contemporary work increasingly requires employees to adapt to technological, social, and emotional changes. In hospitality and digital work contexts, studies have shown that employees' reliance on artificial intelligence, perceptions of digital usefulness, and exposure to digital transformation can influence job crafting, creativity, and performance (6-8). Although elementary teaching differs from hotel work or digital marketing, the underlying implication is transferable: when work environments change, employees need to reinterpret tasks, develop new competencies, and redesign work practices to maintain engagement and effectiveness. Teachers are also increasingly exposed to digital platforms, artificial intelligence tools, online communication, administrative technologies, and changing expectations regarding instructional innovation. Therefore, job crafting may help teachers integrate new tools and expectations into

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their professional identity rather than experiencing them only as external pressures. However, effective job crafting requires more than motivation; it requires judgment, evaluation, and the ability to determine which changes are pedagogically appropriate, feasible, and ethically sound.

A second important construct in the present study is emotional creativity. Emotional creativity refers to the ability to experience, express, and use emotions in original, authentic, and effective ways. Teaching is an emotionally saturated profession. Elementary teachers must manage their own emotions while responding to students' fear, frustration, excitement, conflict, dependency, and behavioral difficulties. They must also communicate with parents, interact with colleagues, and maintain classroom order without damaging students' sense of dignity and belonging. In such a context, emotional creativity may support work engagement by enabling teachers to respond flexibly to emotionally complex situations rather than relying on repetitive, rigid, or defensive reactions. A teacher with higher emotional creativity may be better able to transform classroom tension into dialogue, respond to student mistakes with constructive encouragement, and use emotional expression as a pedagogical resource. Thus, emotional creativity can be regarded as a professional capability that supports both relational quality and personal investment in teaching.

Although emotional creativity is conceptually distinct from emotional intelligence, the literature on emotional intelligence provides important support for the connection between emotional capacities and teachers' professional thinking. Studies on teacher education have shown that emotional intelligence is closely associated with critical thinking and is a relevant factor in preparing future teachers for complex educational work (9). Similarly, research among pre-service teachers indicates that emotional intelligence, resilience, and critical thinking disposition are interconnected, suggesting that emotional and cognitive capacities may operate together in teacher development (10). These findings are meaningful for the present study because emotional creativity may not directly translate into engagement unless teachers can evaluate emotional situations carefully and choose responses that are suitable for the educational context. In other words, emotional creativity provides flexibility and originality, while critical thinking helps regulate and direct that flexibility toward effective professional action.

Creativity has also been widely studied in organizational research as a driver of adaptation, innovation, and performance. In contemporary workplaces, creativity is influenced by leadership, psychological climate, technology, employee attitudes, and work design. Studies have shown that digital leadership can promote employee creativity through motivational and cognitive mechanisms, while green servant leadership can strengthen green creativity and pro-environmental behavior within supportive psychological climates (11, 12). Research in hospitality has similarly shown that generative artificial intelligence can affect employee creativity and performance, indicating that creativity is increasingly embedded in changing technological and organizational systems (8). These findings suggest that creativity should not be treated as an isolated individual trait but as a capacity shaped by work conditions, leadership practices, psychological resources, and employees' interpretation of their work. In schools, teachers' emotional creativity may function similarly: it may become more professionally useful when supported by reflective thinking, autonomy, and a constructive school climate.

The relationship between emotional experience and creativity is also complicated by the fact that not all workplace conditions that stimulate creativity are necessarily positive. For instance, job boredom has been examined as a possible antecedent of creativity through leisure crafting, showing that employees may transform negative or passive states into creative outcomes when they engage in meaningful self-initiated activities beyond the immediate work domain (13). Similarly, research on job crafting and leisure crafting in hospitality has indicated that both forms of crafting may enhance job embeddedness under certain psychological and contextual conditions (4). These findings are relevant to teachers because emotional creativity may emerge not only from positive affect but also from the need to manage repetitive tasks, emotional fatigue, classroom stress, or institutional limitations. Teachers who can reinterpret emotional challenges and generate constructive emotional responses may be more likely to preserve engagement even when their work includes routine, pressure, or ambiguity.

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The third central construct in the proposed model is critical thinking. Critical thinking refers to purposeful, reflective, and evaluative judgment involving analysis, inference, interpretation, explanation, and decision-making. In teaching, critical thinking is not merely an academic skill; it is a daily professional competence. Teachers use critical thinking when identifying the causes of student misunderstanding, evaluating the effectiveness of instructional strategies, distinguishing between behavioral symptoms and underlying needs, interpreting assessment results, and deciding how to respond to classroom conflict. Critical thinking may therefore act as a proximal predictor of work engagement because teachers who think critically are better able to understand professional challenges as manageable problems rather than uncontrollable burdens. This sense of cognitive control may strengthen engagement by increasing teachers' confidence, agency, and meaningful involvement in their work.

Critical thinking may also explain how job crafting contributes to work engagement. Job crafting involves decisions about what to modify, how to modify it, and whether the modification is likely to improve the teacher's professional experience or student outcomes. Without critical thinking, job crafting may remain impulsive, superficial, or misaligned with institutional and pedagogical goals. For example, a teacher may wish to reduce demanding tasks, but critical thinking is required to distinguish between harmful overload and necessary instructional responsibility. A teacher may seek stronger relationships with students, but critical thinking is needed to maintain boundaries, fairness, and classroom structure. Therefore, critical thinking can serve as a mechanism through which job crafting becomes purposeful and effective. Empirical studies linking professional self-efficacy, job embeddedness, and job crafting further suggest that job crafting is embedded in broader cognitive and motivational processes, rather than operating as a simple behavioral adjustment (3).

Critical thinking may also mediate the relationship between emotional creativity and work engagement. Emotional creativity gives teachers access to flexible emotional responses, but critical thinking helps them assess which emotional response is appropriate in a given classroom situation. For instance, humor, empathy, firmness, patience, or emotional expressiveness may each be useful in different contexts, but their effectiveness depends on accurate judgment. A teacher who responds creatively but without critical evaluation may misread the emotional needs of students or react in ways that are original but not pedagogically effective. Conversely, a teacher who combines emotional creativity with critical thinking may be more capable of designing emotionally intelligent and instructionally meaningful responses. Research on emotional intelligence and critical thinking in teacher education supports this interpretation by showing that emotional and cognitive competencies are mutually relevant for the preparation of future teachers (9, 10).

The contemporary relevance of this model is strengthened by the increasing role of artificial intelligence and digital transformation in work and education. AI-related research shows that dependence on artificial intelligence can influence employees' job crafting, while AI anxiety may reduce creativity unless employees possess cognitive and psychological resources that help them manage uncertainty (6, 14). In digital work contexts, perceived usefulness has also been identified as an important factor in stimulating employee creativity, suggesting that employees' interpretation of technology affects whether digital tools become resources or stressors (7). For teachers, this means that engagement may depend not only on access to technology but also on their ability to critically evaluate technological tools, emotionally manage uncertainty, and craft their work around new professional demands. Elementary teachers who can think critically about educational technologies, creatively manage emotional reactions to change, and redesign instructional practices may be more likely to remain engaged in evolving school environments.

Leadership and organizational climate further shape the relationship among job crafting, creativity, critical thinking, and engagement. Digital leadership has been shown to influence employee creativity through psychological and motivational pathways, while workplace gossip and psychological states can affect the relationship between job crafting and innovative behavior in service organizations (11, 15). These findings indicate that employee creativity and proactive work behavior are sensitive to the social and organizational environment. In schools, teachers' willingness to craft their jobs, use emotional creativity, and

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apply critical thinking may similarly depend on leadership support, collegial trust, administrative fairness, and psychological safety. If teachers work in climates that discourage initiative or punish experimentation, job crafting and emotional creativity may be suppressed. If schools provide supportive leadership and constructive feedback, teachers may be more likely to evaluate challenges reflectively and invest themselves in their work.

Despite the growing literature on job crafting, creativity, emotional competencies, and critical thinking, relatively few studies have integrated these variables into a single explanatory model of teachers' work engagement. Many existing studies have examined job crafting in hospitality, sport, digital work, or general organizational contexts, while teacher-related studies have more often focused on leadership, emotional intelligence, or professional development separately (1, 2, 4). Similarly, creativity research has frequently addressed employee innovation, green performance, or responses to artificial intelligence, but less attention has been given to emotional creativity as a teacher-related predictor of engagement (8, 12, 14). This creates a conceptual gap in the literature: elementary teachers' work engagement may be better explained when work-design agency, emotional originality, and reflective judgment are examined together rather than separately.

Addressing this gap is important because elementary teachers occupy a foundational position in the educational system. Their engagement affects not only their own professional well-being but also classroom stability, instructional quality, student motivation, and school effectiveness. A model that explains engagement through job crafting, emotional creativity, and critical thinking can provide a more integrated understanding of how teachers sustain professional energy in demanding environments. Such a model also has practical implications for teacher training and school management. If critical thinking mediates the effects of job crafting and emotional creativity on engagement, then professional development should not focus only on motivation or emotional skills; it should also strengthen teachers' reflective judgment, problem analysis, and evidence-informed decision-making. Likewise, school leaders should support teachers' constructive job crafting while cultivating a climate in which emotional creativity and critical inquiry are valued.

Therefore, the aim of the present study was to model elementary teachers' work engagement based on job crafting and emotional creativity, with critical thinking examined as a mediating mechanism.

2. Methods and Materials

2.1. Design

The study used an applied, descriptive-correlational survey design. Structural equation modeling was selected because the research question involved simultaneous testing of several direct and indirect relationships among latent psychological and occupational constructs. The design was cross-sectional; therefore, the reported path coefficients are interpreted as statistical associations consistent with the proposed theoretical model, not as definitive evidence of causal effects.

2.2. Participants and Sampling

The statistical population consisted of all elementary school teachers in Barkhar, Iran. According to the reported population size, 270 elementary teachers were eligible. Because the population was limited, the study used census sampling and included all available members of the population as the analytic sample. No subgroup analyses are reported because demographic subgroup data were not available in the manuscript records used for this report.

2.3. Measures

Data were collected using standardized self-report questionnaires. Emotional creativity was assessed with the Emotional Creativity Questionnaire attributed to Averill and included preparedness, novelty, effectiveness, and authenticity. Job crafting was assessed with the scale attributed to Slemp and Vella-Brodrick and covered task, cognitive, and relational dimensions. Critical thinking was assessed with the California Critical Thinking framework attributed to Facione and included evaluation, inference, analysis, deductive reasoning, and inductive reasoning. Work engagement was assessed with the engagement scale attributed to Salanova and Schaufeli and included vigor, absorption, and dedication.

The present report is limited by the absence of detailed measurement-model indices such as Cronbach's alpha,

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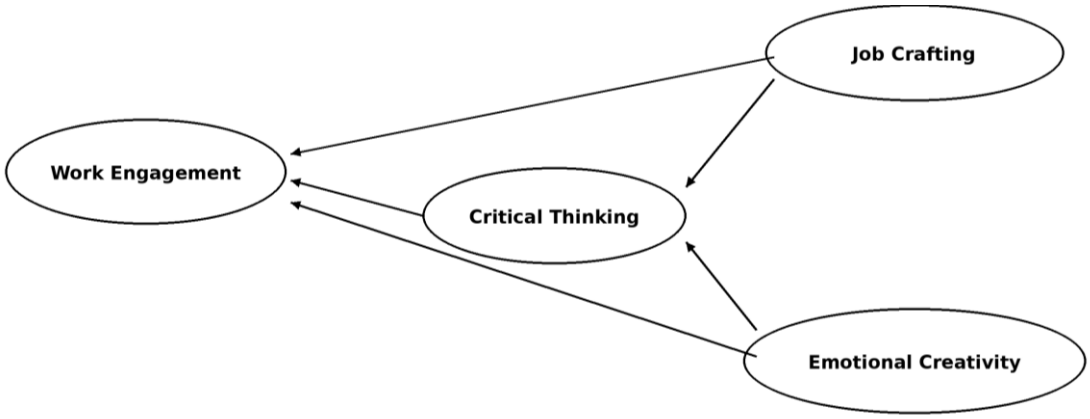
composite reliability, average variance extracted, discriminant validity statistics, and complete item-retention decisions. This limitation is acknowledged explicitly, and no unreported psychometric statistics are added.

2.4. Data Analysis

SPSS was used to calculate descriptive statistics, including means, standard deviations, minimum and maximum scores, score ranges, and sample size. SmartPLS 3 was used to estimate the structural model and test path coefficients. A two-tailed significance threshold of .05 was used, with t values greater than 1.96 interpreted as statistically significant. Values displayed as .000 in the software output were reported in the manuscript as $p < .001$ according to standard statistical-reporting practice.

Figure 1

Conceptual model of the study



3. Findings and Results

3.1. Descriptive Statistics

The study included 270 teachers for all four measured variables. Emotional creativity had a mean score of 63.62 with a standard deviation of 16.59, a minimum of 23, a maximum of 87, and a range of 64. Critical thinking had a mean score of 55.38 with a standard deviation of 12.15, a minimum of 21, a maximum of 82, and a range of 61. Job crafting had a mean score of 42.87 with a standard deviation of 9.35, a minimum of 17, a maximum of 58, and a range of 41. Work engagement had a mean score of 22.79 with a standard deviation of 8.54, a minimum of 10, a maximum of 32, and a range of 22. These descriptive statistics are summarized in Table 1.

Table 1

Descriptive statistics for the study variables

Variable	Mean	SD	Minimum	Maximum	Range	N
Emotional creativity	63.62	16.59	23	87	64	270
Critical thinking	55.38	12.15	21	82	61	270
Job crafting	42.87	9.35	17	58	41	270
Work engagement	22.79	8.54	10	32	22	270

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3.2. *Structural Model and Direct Effects*

As shown in Figures 2-4 and summarized in Table 2, all five direct paths in the structural model were statistically significant and positive. The strongest direct association was observed for critical thinking predicting work engagement (beta = 0.623, SE = 0.043, t = 14.366, p < .001). Job crafting had a positive direct association with work engagement (beta = 0.138, SE = 0.050, t = 2.762, p = .006), and emotional creativity had a positive direct association with work engagement (beta = 0.191, SE = 0.048, t = 3.944, p < .001).

The predictors of critical thinking were also significant. Job crafting was positively associated with critical thinking (beta = 0.478, SE = 0.056, t = 8.566, p < .001), and emotional creativity was positively associated with critical thinking (beta = 0.384, SE = 0.058, t = 6.601, p < .001). Figure 2 presents standardized coefficients, Figure 3 presents significance values, and Figure 4 presents t values for the structural model.

Figure 2

Structural equation model with standardized coefficients

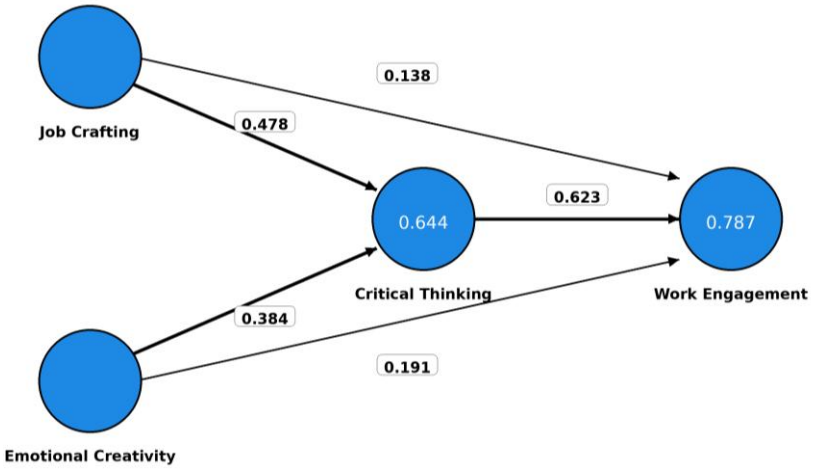

Figure 3

Structural equation model with significance values

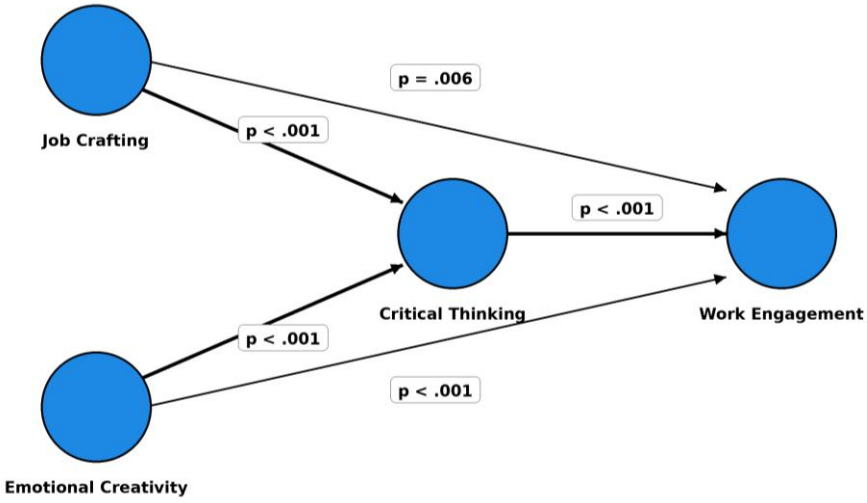

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Figure 4

Structural equation model with t values

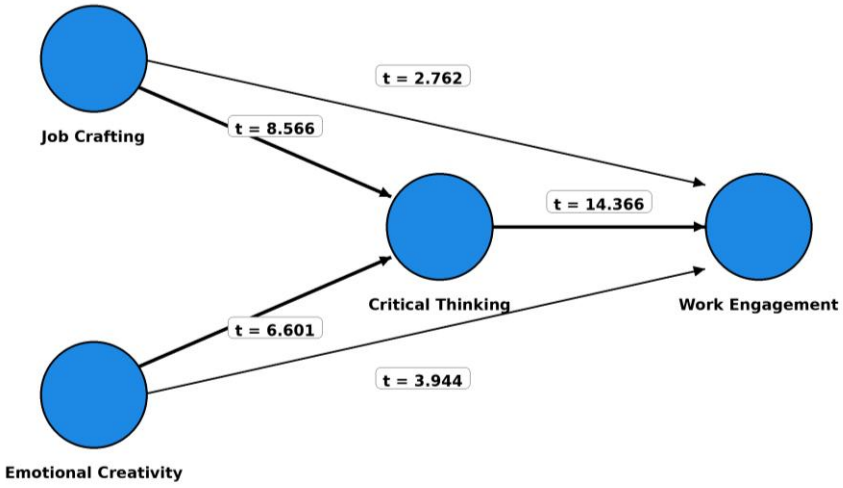

Table 2

Direct structural paths

Path	Beta	SE	t	p	Decision
Job crafting -> Work engagement	0.138	0.050	2.762	.006	Supported
Job crafting -> Critical thinking	0.478	0.056	8.566	< .001	Supported
Critical thinking -> Work engagement	0.623	0.043	14.366	< .001	Supported
Emotional creativity -> Work engagement	0.191	0.048	3.944	< .001	Supported
Emotional creativity -> Critical thinking	0.384	0.058	6.601	< .001	Supported

3.3. Mediation Effects

As summarized in Table 3, the mediation results supported the central role of critical thinking. The indirect effect of emotional creativity on work engagement through critical thinking was beta = 0.239 and was reported as statistically significant at the 95% confidence level. The indirect effect of job crafting on work engagement through critical thinking was beta = 0.298 and was also statistically significant at the 95% confidence level. Because full bootstrapped confidence intervals, total effects, and VAF statistics were not available, the mediation findings are interpreted cautiously as evidence of statistically supported indirect associations.

Table 3

Indirect effects through critical thinking

Indirect path	Indirect beta	Reported significance	Decision
Emotional creativity -> Critical thinking -> Work engagement	0.239	Significant at 95% confidence level	Supported
Job crafting -> Critical thinking -> Work engagement	0.298	Significant at 95% confidence level	Supported

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4. Discussion and Conclusion

The present study examined a structural model of elementary teachers' work engagement based on job crafting and emotional creativity, with critical thinking as a mediating variable. The findings supported all proposed direct and indirect relationships. More specifically, job crafting had a positive and significant direct effect on work engagement, emotional creativity had a positive and significant direct effect on work engagement, job crafting and emotional creativity both had positive and significant effects on critical thinking, and critical thinking was the strongest direct predictor of work engagement. In addition, the indirect effects of job crafting and emotional creativity on work engagement through critical thinking were supported, indicating that critical thinking plays an explanatory role in the relationship between teachers' proactive work adjustment, emotional capacities, and professional engagement. These findings suggest that elementary teachers' work engagement should not be understood as the result of a single motivational or organizational factor; rather, it appears to emerge from the interaction of work-design agency, emotional flexibility, and reflective cognitive judgment.

The finding that job crafting positively predicted work engagement is consistent with the view that employees are not passive recipients of occupational demands but active agents who can reshape their work to increase meaning, autonomy, and psychological fit. In the context of elementary education, job crafting may include modifying instructional routines, redesigning classroom activities, strengthening relationships with students and colleagues, and cognitively reframing teaching as meaningful developmental work. When teachers actively shape the task, relational, and cognitive aspects of their work, they are more likely to experience teaching as personally significant and professionally manageable. This interpretation is aligned with research showing that job crafting enhances employees' embeddedness and psychological connection to their work, particularly when individuals perceive that their work can be adjusted to better fit their strengths, values, and professional goals (4). It is also supported by evidence that professional self-efficacy and job embeddedness are linked through job crafting, suggesting that proactive work redesign can strengthen employees' attachment to their occupational role (3).

This result is also consistent with studies emphasizing the importance of leadership and organizational support in activating job crafting behaviors. Vahedi et al. showed that managers' coaching skills can improve employee job engagement through the mediating role of job crafting, indicating that employees become more engaged when leadership behaviors encourage them to reinterpret and reshape their roles constructively (2). In schools, such a process is highly relevant because teachers often work under fixed curricula, administrative regulations, and institutional constraints, but they still retain meaningful discretion in classroom practice, communication style, instructional design, and student support. Therefore, teachers who engage in job crafting may be better able to transform external demands into personally meaningful work practices. The present finding is also compatible with research on school leadership during crisis conditions, which highlights job crafting as a mechanism through which educational leaders and school personnel sustain resilience and adaptive functioning in uncertain environments (1). This supports the argument that job crafting may be particularly important in educational settings where teachers must continuously respond to changing student, institutional, and technological demands.

The positive relationship between job crafting and critical thinking was one of the stronger paths in the model, suggesting that job crafting is not merely a behavioral adjustment but also a cognitive process. Teachers who craft their jobs must identify which aspects of their work can be changed, evaluate the consequences of these changes, and determine whether such modifications are pedagogically appropriate. In this sense, job crafting requires analysis, judgment, planning, and reflective comparison of alternatives. This interpretation is supported by studies showing that job crafting is shaped by individual characteristics, job enthusiasm, and personality traits, because proactive job redesign depends on how employees interpret their work conditions and personal capacities (5). Moreover, in contemporary workplaces, job crafting increasingly occurs in response to technological transformation. Zhao et al. found that dependence on artificial intelligence can influence hotel employees' job

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crafting, suggesting that employees adjust their work roles when facing new technological conditions (6). Although the present study was conducted among elementary teachers rather than hotel employees, the underlying mechanism is comparable: when professional environments become more complex, employees must think critically about how to adapt their tasks, relationships, and work meanings.

The finding that emotional creativity positively predicted work engagement indicates that teachers' ability to generate original, authentic, and effective emotional responses may contribute to stronger professional involvement. Elementary teaching is emotionally demanding because teachers must respond to student anxiety, misbehavior, motivation problems, parent expectations, classroom conflict, and institutional pressure. A teacher with higher emotional creativity may be better able to transform emotional challenges into constructive interaction, maintain a supportive classroom climate, and preserve enthusiasm despite occupational stress. This finding is theoretically consistent with studies showing that emotional competencies are important in teacher education and professional functioning. Palma et al. demonstrated that emotional intelligence and critical thinking are relevant factors in the training of future teachers, suggesting that emotional and cognitive capacities jointly contribute to professional readiness (9). Similarly, Zhao et al. found relationships among emotional intelligence, resilience, and critical thinking disposition among pre-service teachers, indicating that emotional capacities are connected to broader psychological and cognitive resources that support adaptive functioning (10). The present study extends this line of evidence by showing that emotional creativity is not only relevant to teacher preparation but also associated with the work engagement of practicing elementary teachers.

The significant effect of emotional creativity on critical thinking further suggests that emotional flexibility and reflective judgment are interconnected rather than separate professional capacities. Teachers who can experience and express emotions creatively may also be more capable of considering multiple interpretations of classroom events, evaluating alternative responses, and choosing context-sensitive actions. Emotional creativity may therefore provide the affective flexibility needed for complex problem-solving, while critical thinking provides the evaluative structure needed to guide emotional responses appropriately. This interpretation is consistent with research showing that emotional intelligence, resilience, and critical thinking disposition are interrelated among pre-service teachers (10). It also aligns with findings indicating that emotional intelligence and critical thinking are central factors in preparing future teachers for professional complexity (9). Thus, the present findings support an integrated view of teacher competence in which emotional originality and cognitive evaluation work together to sustain professional engagement.

Critical thinking was the strongest direct predictor of work engagement in the model. This result is particularly important because it suggests that teachers' engagement is strongly associated with their capacity to analyze classroom problems, evaluate alternatives, infer causes, and make reasoned professional decisions. Teachers with stronger critical thinking may be less likely to experience work challenges as overwhelming or uncontrollable because they can cognitively organize problems and identify possible solutions. In this way, critical thinking may enhance teachers' sense of professional agency, which in turn strengthens their energy, dedication, and absorption in work. This result also clarifies why job crafting and emotional creativity may not be sufficient on their own. Teachers may have the desire to redesign their work or the emotional flexibility to respond creatively, but without critical thinking, these capacities may not translate into sustained engagement. Critical thinking appears to function as the professional mechanism that converts proactive and emotional resources into meaningful occupational involvement.

The mediation findings further confirm the central role of critical thinking. The indirect effect of job crafting on work engagement through critical thinking indicates that teachers who actively reshape their work may become more engaged partly because job crafting activates reflective analysis and professional judgment. This finding is consistent with studies showing that job crafting contributes to positive workplace outcomes through psychological and cognitive mechanisms. Soliman found that job crafting can influence innovative behavior through employees' psychological states, indicating that proactive work redesign affects outcomes through internal psychological processes rather

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than through direct behavioral change alone (15). Teng and Chen also showed that job crafting and leisure crafting enhance job embeddedness through moderated mediation mechanisms, which supports the idea that the effects of crafting depend on intervening psychological processes (4). In the present study, critical thinking appears to be one such mechanism in the educational context.

The indirect effect of emotional creativity on work engagement through critical thinking also suggests that emotional creativity becomes more professionally useful when it is accompanied by reflective evaluation. A creative emotional response may support teacher engagement only when the teacher can judge whether the response is suitable for the classroom context, student needs, ethical expectations, and instructional goals. This finding corresponds with broader creativity research showing that creativity in organizations is shaped by cognitive, technological, and social conditions. Yang et al. found that digital leadership influences employee creativity through mediated and moderated psychological mechanisms, implying that creativity operates within a broader system of interpretation and support (11). Zafar et al. similarly showed that green servant leadership affects organizational green performance through green creativity, voluntary pro-environmental behavior, and psychological climate, highlighting that creativity contributes to outcomes when embedded in supportive and meaningful contexts (12). By analogy, teachers' emotional creativity appears to strengthen work engagement most effectively when it is cognitively organized through critical thinking.

The results can also be interpreted in light of recent studies on digital work, artificial intelligence, and employee creativity. Wang and Zhang showed that generative artificial intelligence in international hotel marketing can influence employee creativity and performance, while Wang et al. emphasized the role of perceived usefulness in stimulating creativity in digital work (7, 8). Tong et al. showed that AI anxiety may undermine employee creativity and that this effect can be mitigated from a social cognitive perspective (14). These studies are relevant because teachers are increasingly exposed to digital tools, artificial intelligence, online platforms, and technology-mediated instructional practices. In such environments, teacher engagement may depend on whether teachers can critically evaluate digital tools, creatively manage emotional reactions to change, and craft their work in ways that preserve professional meaning. The present study's findings suggest that critical thinking may be especially important in this process because it helps teachers transform technological and organizational complexity into manageable professional action.

The findings are also compatible with research showing that creativity may arise from nontraditional or even challenging workplace conditions. Chen and Choi found that job boredom may benefit creativity through leisure crafting, suggesting that individuals may convert passive or negative work experiences into creative outcomes when they engage in meaningful crafting activities (13). This insight is relevant to teaching because repetitive administrative tasks, routine classroom pressures, and emotional fatigue may reduce engagement unless teachers find ways to reinterpret and reshape their professional experience. Job crafting and emotional creativity may therefore serve as adaptive resources that help teachers respond constructively to routine, pressure, and ambiguity. However, the present mediation results indicate that such resources are most strongly linked to engagement when accompanied by critical thinking. Teachers do not simply need more creativity or more autonomy; they need the evaluative capacity to use these resources wisely.

Overall, the results provide support for an integrated model of elementary teachers' work engagement. Job crafting represents the proactive work-design dimension of engagement, emotional creativity represents the affective and expressive dimension, and critical thinking represents the reflective cognitive dimension. The significant direct and indirect paths indicate that teachers' engagement is strengthened when they can actively shape their work, respond flexibly to emotional challenges, and evaluate professional situations critically. The strongest path from critical thinking to work engagement suggests that reflective judgment may be the key mechanism through which teachers convert workplace resources and emotional capacities into sustained professional involvement. These findings contribute to the literature by extending evidence from organizational, hospitality, digital work, and teacher education studies into the context of elementary teachers' work engagement (1, 2, 9, 10). They also suggest that interventions designed to enhance teacher engagement

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should not focus only on motivation or emotional support, but should also cultivate teachers' critical thinking as a central professional competence.

The present study has several limitations. First, the cross-sectional design prevents causal interpretation of the relationships among job crafting, emotional creativity, critical thinking, and work engagement. Although the structural model supported the proposed direct and indirect pathways, the temporal order of the variables cannot be definitively established. Second, the study relied on self-report questionnaires, which may increase the risk of common-method bias, social desirability, and subjective response patterns. Third, the study was conducted among elementary teachers in one geographical context, which may limit the generalizability of the findings to teachers in other educational levels, school systems, or cultural settings. Fourth, the model focused on selected psychological and occupational variables, while other potentially important factors, such as leadership style, organizational climate, workload, teacher autonomy, teaching experience, emotional exhaustion, and institutional support, were not included.

Future research should use longitudinal and experimental designs to examine whether job crafting and emotional creativity predict later changes in critical thinking and work engagement over time. It would also be valuable to test intervention programs designed to strengthen teacher job crafting, emotional creativity, and critical thinking, and then evaluate whether these interventions improve engagement. Future studies should include more diverse teacher samples across different regions, school levels, and organizational contexts to assess the stability of the model. Researchers may also examine additional mediators and moderators, such as perceived organizational support, teacher self-efficacy, psychological safety, digital competence, emotional exhaustion, leadership style, and school climate. In addition, combining self-report questionnaires with supervisor ratings, peer evaluations, classroom observations, and qualitative interviews would provide a more comprehensive understanding of how teachers experience and enact engagement in daily school practice.

In practice, the findings suggest that schools should treat teacher engagement as a multidimensional professional outcome that requires support for work redesign, emotional flexibility, and reflective judgment. School leaders can encourage constructive job crafting by giving teachers reasonable autonomy in instructional methods, classroom routines, peer collaboration, and professional development choices. Teacher training programs should also include practical modules on critical thinking, reflective decision-making, classroom problem analysis, and evidence-informed instructional planning. At the same time, emotional creativity should be strengthened through professional development activities that help teachers manage classroom emotions, respond constructively to conflict, and maintain authentic but appropriate emotional communication. By supporting these capacities together, schools can create conditions in which teachers are more capable of sustaining energy, dedication, and meaningful involvement in their professional roles.

Authors' Contributions

H.M.K. contributed to conceptualization, investigation, and manuscript preparation. R.B.B. contributed to literature review, data organization, and methodological support. H.A. contributed to methodological review, interpretation of findings, and manuscript editing. R.R.M. supervised the study, contributed to project administration, and reviewed the final manuscript. All authors read and approved the final manuscript.

Declaration

The authors declare that artificial intelligence tools were used only to assist with language editing, translation, and improvement of the manuscript's readability. All conceptualization, study design, data collection, data analysis, interpretation of findings, and final approval of the manuscript were performed by the authors. The authors take full responsibility for the accuracy, integrity, and originality of the content.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The study placed a high emphasis on ethical considerations. Informed consent obtained from all participants, ensuring they are fully aware of the nature of the study and their role in it. Confidentiality strictly maintained, with data anonymized to protect individual privacy. The study adhered to the ethical guidelines for research with human subjects as outlined in the Declaration of Helsinki.

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