Creative Education, 2026, 17(4), 550-571
https://www.scirp.org/journal/ce
ISSN Online: 2151-4771
ISSN Print: 2151-4755

The Effect of Club Goals on Innovative Behavior in Elementary School Mixed-Age Club Classes: The Mediating Role of Knowledge Sharing

Yifan Yang, Shuya Liu, Jianhu Wang*

School of Education Science, Xinjiang Normal University, Urumqi, China
Email: *986629715@qq.com

How to cite this paper: Yang, Y. F., Liu, S. Y., & Wang, J. H. (2026). The Effect of Club Goals on Innovative Behavior in Elementary School Mixed-Age Club Classes: The Mediating Role of Knowledge Sharing. *Creative Education, 17,* 550-571.
https://doi.org/10.4236/ce.2026.174033

Received: February 14, 2026
Accepted: April 6, 2026
Published: April 9, 2026

Abstract

Against the backdrop of deepening basic education reform and a core competencies-oriented education model, effectively stimulating and fostering innovative behavior among elementary school students has become a key issue in classroom instruction transformation. Mixed-age club classes, as an educational organizational model, provide a unique context for exploring this topic. However, existing research lacks empirical validation regarding the specific guiding role of club goals and the underlying pathways through which knowledge sharing influences innovative behavior. To address this gap, this study employed a questionnaire survey with 177 elementary students participating in mixed-age information technology clubs. Structural equation modeling (SEM) combined with the Bootstrap method was used to test mediating effects. Results revealed: 1) Club goals positively correlated with innovative behavior; 2) Knowledge collecting showed a significant positive correlation with innovative behavior, whereas the correlation involving knowledge donating was not statistically significant. 3) Knowledge sharing mediated the relationship between club goals and innovative behavior.

Keywords

Mixed-Age Grouping, Club Goals, Knowledge Sharing, Innovative Behavior, Mediating Effect

1. Introduction

Multi-age groupings in club classes represent a long-standing educational organizational model. Through structured cross-age interactions, they provide a unique setting for students' social development and knowledge construction. As educational reforms deepen, multi-age teaching has garnered increasing at-

tention from educators and researchers, particularly in early childhood education and after-school programs. Cronin (2019) evaluated diverse forms of mixed-age curricula in basic education, emphasizing their importance in fostering student social interaction and cooperative learning. Owen (2012) noted that mixed-age grouping creates a heterogeneous learning community. Within this community, students are no longer products of the same knowledge cohort but individuals possessing diverse experiences, knowledge, and cognitive levels. This diversity is crucial for innovation, as it ensures a broader range of hypotheses, more critical feedback, and more creative solutions when exploring complex, open-ended problems, significantly fostering the emergence of innovative behaviors.

Innovative behavior, as a vital component of 21st-century core competencies, refers to the actions individuals take by generating or adopting new ideas and putting them into practice (Lukes & Stephan, 2017). Therefore, exploring the factors that motivate or facilitate individual innovative behavior is crucial (Scott & Bruce, 1994: p. 580). Early research predominantly focused on individual and organizational management domains, examining factors such as employee goal orientation, leadership styles, and personal traits influencing innovation behavior. For instance, Wu et al. (2022) investigated how goal orientation promotes innovation behavior among hotel employees; She (2020) explored mitigating the negative impact of abusive supervision on innovation behavior through employee proactivity and leadership goal orientation; while Leary et al. (2025) developed a classification system for nurses' innovative behaviors, offering new perspectives on understanding different types of innovators. In recent years, research on innovative behavior has increasingly emphasized the interaction between individual and organizational levels. On one hand, there is growing attention on the role of goal orientation in innovative behavior. For instance, Wu et al. (2022) and Ruan & Chen (2021) proposed how learning goal orientation promotes employee innovation behavior. On the other hand, more scholars have explored the relationship between knowledge sharing and employee innovation behavior, offering diverse perspectives and theoretical frameworks. For instance, knowledge sharing plays a crucial role in fostering both individual and organizational innovation (Akhavan et al., 2015).

Although the relationships between club goals, knowledge sharing, and innovation behaviors have been partially explored, studies integrating all three within a unified framework remain scarce. Moreover, relevant empirical studies have predominantly focused on corporate settings or specific professional fields such as healthcare and hospitality management, with limited attention directed toward educational settings (Leary et al., 2025; Kim & Lee, 2013). Particularly within the teaching context of mixed-age elementary school clubs, the mechanism through which club goals influence elementary students' innovative behaviors via knowledge sharing remains under-examined. Building upon Locke and Bryan's goal-setting theory and social cognitive theory, this study proposes that clear and explicit club

goals provide effective behavioral guidance and motivational support for elementary students. This support encourages more active knowledge sharing during group activities, thereby enhancing innovative behavior performance. Therefore, this study aims to empirically investigate the impact of club goals on innovative behavior in mixed-age elementary school group classes using structural equation modeling. It specifically examines the mediating role of knowledge sharing in this relationship.

1.1. Club Goals and Innovative Behavior

"Club goals" is an integrative operational concept. It is not a singular declaration but rather refers to the specific, measurable outcomes established through strategic planning to guide internal decision-making and resource allocation (Bryson, 1996). These outcomes are grounded in the organization's core mission and social legitimacy (Suchman, 1995; Drucker, 2012) through strategic planning. These objectives serve as a foundation for guiding internal decision-making and resource allocation, comprising a series of concrete, measurable outcomes (Bryson, 1996; Locke & Latham, 2002). They also form the basis for evaluating organizational effectiveness and facilitating strategic learning (Herman & Renz, 2008; Ebrahim, 2019). The positive impact of goal setting on individual behavior has gained broad consensus in organizational behavior studies. Locke and Latham's (2015) goal-setting theory posits that clear and challenging goals effectively guide individual behavior, enhance motivation, and improve task performance. This theory suggests that goals promote the allocation of cognitive and behavioral resources by providing clear direction and feedback mechanisms, thereby optimizing work performance. UNESCO's (2017) research on sustainable development education reveals that achieving educational goals is not instantaneous but influenced by multiple factors such as cultural context and educational models. However, with advancements in management and organizational behavior studies, the positive impact of goal setting on organizations and employees has gained increasing attention. In corporate management contexts, extensive research confirms the significant influence of goal orientation on employee innovation behavior. For instance, individuals demonstrate more pronounced performance improvements when equipped with clear objectives or performance benchmarks (Locke & Bryan, 1966). Learning goal orientation motivates employees to pursue personal growth and enhance existing capabilities, thereby driving innovation (Cai & Wen, 2018). She (2020) further indicates that explicit goal setting mitigates the negative impact of excessive supervision on employee innovation behaviors.

In recent years, discussions on goal setting have increasingly entered the educational domain, with researchers focusing on its role in learning environments. Various studies highlight the advantages of mixed-age settings for student development, including enhanced social skills and self-confidence (Parrott & Cohen, 2021). Within this educational context, goals extend beyond task completion to

closely relate to students' motivational orientation, psychological needs fulfillment, and deep cognitive engagement. Thus, clear club goals provide students with shared direction and meaning, helping them understand the connection between individual effort and collective outcomes, thereby enhancing willingness to cooperate and engage in exploratory behavior (Gurley et al., 2014). Locke and Latham (2015) further note that in complex task environments, individuals rely more heavily on clear goals, which motivate them to mobilize cognitive and social resources to tackle challenges. Conversely, students lacking clear goals are more prone to drop out, underscoring the importance of goal setting in education (McKenna et al., 2018). Ambiguous or absent goals leave students directionless and demotivated, increasing uncertainty and cognitive resource depletion, which in turn inhibits innovative behavior (Shalley & Gilson, 2004).

In summary, existing research generally supports a positive association between club goals and innovative behavior. Clear group goals provide essential environmental support and motivation for innovation by fulfilling students' basic psychological needs and stimulating intrinsic motivation. Therefore, this study proposes the following hypothesis:

Hypothesis 1 (H1): Club goals are positively correlated with innovative behavior among elementary school students.

1.2. Knowledge Sharing and Innovation Behavior

Early research on the relationship between knowledge sharing and innovation primarily focused on the organizational level, examining the macro-level impact of knowledge sharing on corporate or team innovation performance. Studies during this phase generally regarded knowledge sharing as a key driver of organizational innovation, yet most remained confined to analyzing aggregate effects, lacking in-depth exploration of individual-level mechanisms. For instance, Hansen (1999) examined the network effects of knowledge sharing across organizational subunits, treating teams or organizational units as the core analytical subjects to explore the overall impact of knowledge sharing on project performance or innovation outputs. Kamaşak and Bulutlar (2010) empirically validated knowledge sharing's influence on innovation, while Wang and Wang (2012) revealed its indirect impact on corporate performance through large-scale survey data.

Over the past decade, research focus has shifted markedly toward the individual level, aiming to uncover how knowledge sharing specifically shapes personal innovation behaviors, skill development, and cognitive processes. For instance, knowledge sharing plays a crucial role in fostering employee innovation (Islam & Asad, 2021). This shift has positioned Social Cognitive Theory (SCT) as a central framework for understanding this process, emphasizing the dynamic, reciprocal relationship among individuals, behaviors, and environments (Locke, 1986). Within knowledge-sharing contexts, individuals transform their own knowledge structures and cognitive patterns through contributing and absorbing knowledge, while simultaneously shaping the surrounding learning environment. This envi-

ronment, in turn, influences their subsequent knowledge behaviors and innovation performance.

The individual value of knowledge sharing is particularly evident in the context of mixed-age group classes in elementary schools. Mixed-age education inherently possesses high cognitive heterogeneity, where students encounter peers with varying cognitive levels, social experiences, and knowledge structures (Barnard, 2021; Kallery & Loupidou, 2016). This heterogeneity forms a "cognitive resource pool" containing both the more systematized knowledge of older students and the unconventional, divergent perspectives of younger students (Fusi et al., 2020). This heterogeneity and complexity significantly heighten the demand for diverse knowledge resources, making it challenging for any single student to tackle complex group tasks solely with their own knowledge reserves. Consequently, students must engage in active knowledge-sharing behaviors to acquire, integrate, and create new knowledge resources. This process compensates for individual cognitive limitations and fulfills the demands of complex tasks.

Against this backdrop, the two core dimensions of knowledge sharing—knowledge donating and knowledge collecting—jointly form the "dual engine" driving individual innovation behavior (van den Hooff & de Ridder, 2004).

Knowledge donating, as the "externalization and combination engine", refers to the process where individuals proactively externalize and share their existing knowledge, experiences, and ideas for reuse by others (Watson & Hewett, 2006). This process is not merely simple information transfer but involves deep cognitive reprocessing. When students explain, demonstrate, or teach knowledge to peers to achieve club goals, they must organize, clarify, and systematize their own knowledge—an exercise in "social metacognition". Empirical research supports this: Wu et al. (2021) found that in project-based learning environments, students' knowledge donating behaviors significantly predict the quality and quantity of subsequent innovative solutions they propose.

Knowledge collecting, serving as the "bridge between socialization and internalization", refers to seeking others' intellectual capital to understand what they know (van den Hooff & de Ridder, 2004). In mixed-age clubs, younger students absorb skills and ways of thinking beyond their current cognitive level by observing, imitating, and questioning older peers or mentor teachers. Through effective knowledge collecting, students rapidly expand their knowledge boundaries, introduce diverse problem-solving perspectives, and accumulate rich "cognitive raw materials" for generating novel, unique ideas. Kmieciak (2020) demonstrates that an individual's knowledge-collecting capacity is a critical prerequisite for transforming external knowledge into personal innovation, particularly in dynamic, complex learning tasks where robust absorption underpins sustained innovation.

In summary, within mixed-age club settings, knowledge sharing—through the "externalization engine" of knowledge donating and the "internalization bridge" of knowledge collecting—jointly influences elementary students' cognitive pro-

cesses, providing indispensable cognitive resources and social support for their innovative behaviors. Therefore, this study proposes the following hypothesis:

Hypothesis 2 (H2): Knowledge sharing (knowledge donating and knowledge collecting) is positively correlated with elementary students' innovative behaviors.

1.3. Club Goals, Knowledge Sharing, and Innovation Behavior

Social cognitive theory emphasizes the dynamic, reciprocal relationship between individuals, behavior, and environment (Locke, 1986). In the context of this study, this framework manifests as follows: explicit club goals, as a key environmental factor, influence students' knowledge-sharing behavior, thereby promoting their innovative behavior, forming a continuous mechanism of action.

Research indicates that knowledge sharing can directly promote innovation (Akhavan et al., 2015) or indirectly enhance individual innovative capacity (Pian et al., 2019). In mixed-age club classes, clear club goals provide students with explicit behavioral guidance and motivational support, thereby encouraging more active participation in knowledge donation. When students explain, demonstrate, and share their knowledge with peers to achieve shared club goals, this process not only supplies "raw materials" for the team but also constitutes deep cognitive reprocessing (Prompreing & Hu, 2021). Knowledge donation requires students to sort, organize, and reconstruct their knowledge, and this explanatory reasoning process itself serves as a direct driver of innovative behavior. Research also indicates that shared goals effectively reduce knowledge hiding, thereby promoting knowledge sharing (Nadeem et al., 2020) and positively influencing it (Goswami & Agrawal, 2019).

Simultaneously, challenging club goals make students aware of their own knowledge limitations, enhancing their motivation to learn from and seek advice from peers, thus promoting knowledge collection. Knowledge collection lays a solid cognitive foundation for innovation by providing students with diverse perspectives and advanced cognitive tools. Research indicates that in collaborative learning environments, an individual's knowledge collection capacity serves as a key mediating variable in transforming external knowledge into innovative outputs (Aliasghar et al., 2020).

Furthermore, recent empirical research provides additional support for this mediating mechanism. For instance, Lee & Song (2020) found that clear goal setting in team-based collaborative learning significantly improved the quality of innovative outcomes by facilitating knowledge exchange among members. Nadeem et al. (2020) also demonstrated that a shared sense of purpose within heterogeneous learning groups serves as a critical contextual factor for stimulating knowledge flow and transformation, thereby driving innovation. Based on the aforementioned theoretical reasoning and empirical support, this study proposes the following hypothesis:

Hypothesis 3 (H3): Club goals may influence elementary students' innovation behaviors by affecting their knowledge sharing, implying that knowledge sharing

mediates the relationship between club goals and innovation behaviors.

In summary, this study aims to explore the influence mechanism of club goals on elementary students' innovation behaviors within mixed-age club classes. The corresponding research hypothesis model is illustrated in Figure 1.

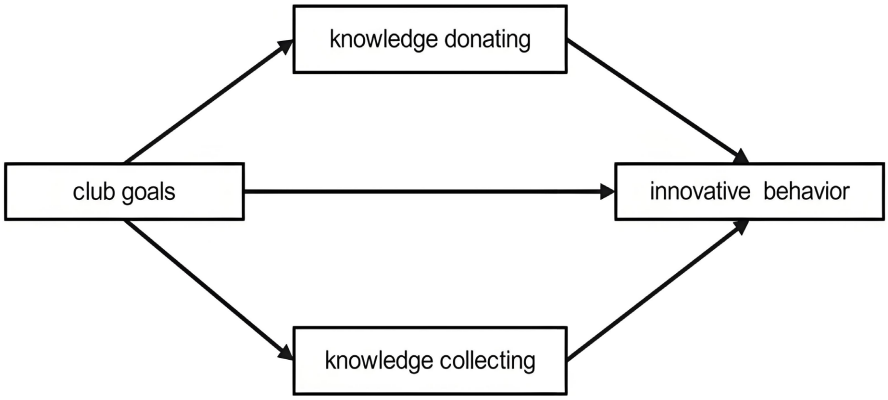

Figure 1. Theoretical hypothetical model.

2. Research Design

2.1. Process and Subjects

This study is a cross-sectional investigation. Participants were elementary school students enrolled in mixed-age information technology club courses at a cluster school in Northwest China. The cluster school's mixed-age club classes employed a "heterogeneous grouping" principle, placing students from grades 3 through 6 within the same club. A total of six club groups participated, each led by one club instructor. Students were assigned to clubs based on their interests and prior course enrollment, resulting in naturally formed groups without random assignment. Given that students were nested within clubs, the potential clustering effect was examined; however, the intraclass correlation coefficients (ICCs) for key variables were below 0.05, and the cluster size was small. Therefore, single-level structural equation modeling was deemed acceptable, though the reader should be aware that standard errors may be slightly underestimated.

Prior to data collection, the study received approval from the university's research ethics committee, and informed consent was obtained from all participants and their guardians. The scales used in the study underwent standardized Chinese adaptation procedures, including direct translation, consolidation, back-translation, focus group discussions, and cultural adaptation. Pilot testing included item analysis and exploratory factor analysis to optimize items and ensure reliability and validity. The formal survey was administered offline in person, organized by club instructors. A total of 177 questionnaires were distributed. After exclusion of invalid responses (e.g., repetitive answers, substantial missing data), 163 valid questionnaires were obtained, yielding a response rate of 95.9%. All data were anonymized. The distribution of demographic background variables is shown in Table 1.

Table 1. Demographic background variables.

Item		Number	Percentage
Grade Level	Grade 3	18	11%
	Grade 4	71	44%
	Grade 5	58	36%
	Grade 6	16	10%
Gender	Male	121	74%
	Female	42	26%

2.2. Measures

2.2.1. Club Goals Scale

This study primarily draws upon the "organizational innovation" dimension from the Workplace Innovation Scale developed by McMurray et al. (2021) to measure club goals. Although club goals may be conceptualized at the group level, this study treats them as an individual-level perceptual variable, capturing each student's subjective understanding and identification with the club's collective objectives. This approach is appropriate given that goals exert their motivational influence through individual interpretation and internalization (Locke & Latham, 2015). This dimension demonstrated sound reliability and validity in the original study, with a Cronbach's α coefficient of 0.872 indicating strong measurement stability. Considering the cognitive development characteristics of elementary school students and the practical context of mixed-age club courses, this study systematically adapted the original items. While preserving the core concepts, the dimension's focus was translated from corporate organizational contexts into specific school club goals. The scale employs a five-point Likert scale (1 = "Strongly Disagree", 5 = "Strongly Agree"). The adapted version comprises three items designed to assess students' understanding and identification with the club's developmental direction and collective tasks. A sample item is: "Our club has a clear goal, and the instructor often emphasizes it."

2.2.2. Knowledge Sharing Scale

This study primarily draws upon the two-dimensional theoretical framework proposed by van den Hooff and de Ridder (2004) to measure knowledge sharing, dividing it into two core constructs: knowledge donation and knowledge collection. The Cronbach's α coefficients for these two dimensions in the original study were 0.85 and 0.78, respectively, indicating good measurement stability. Considering the cognitive development characteristics of elementary school students and the practical context of mixed-age community courses, this study retained the dual-dimensional structure of knowledge donation and knowledge collection while moderately simplifying and contextualizing the item wording. The knowledge donation dimension comprises 6 items assessing students' willingness and behavior in actively sharing knowledge and experiences. A sample item is: "When I learn something new, I share it with my group members so that they can also learn it."

The knowledge collection dimension includes 4 items evaluating students' ability to acquire and absorb knowledge from peers. A sample item is: "When I ask my group members questions, they tell me what they know." All scales employ a five-point Likert scale (1 = "Strongly Disagree", 5 = "Strongly Agree").

2.2.3. Innovation Behavior Scale

This study primarily draws upon the Innovation Behavior Scale developed by Scott and Bruce (1994) to measure individual innovation behavior. The scale demonstrated sound reliability and validity in its original research, with a Cronbach's α coefficient of 0.89 indicating strong measurement stability. Considering the cognitive developmental characteristics of elementary school students and the practical context of mixed-age club courses, this study systematically adapted the original items. The scale employs a five-point Likert scale (1 = "completely disagree", 5 = "completely agree"). The adapted version comprises three items designed to assess elementary students' innovative behavior during club activities. A sample item is: "I seek out new ideas and thoughts during activities."

2.3. Data Analysis

First, this study employed SPSS 24.0 software to conduct descriptive analysis on valid questionnaires and test the reliability and validity of the scales used. Pearson correlation coefficients were applied to analyze correlations among core variables. Second, AMOS 24.0 software was utilized to perform confirmatory factor analysis on the scales, construct structural equation models, and validate model fit. Based on this, an in-depth analysis of the intrinsic relationships among core variables was conducted. Finally, the bias-corrected percentile bootstrap method was employed to analyze the mediation effects, with path coefficients and confidence intervals calculated to test their significance. Typically, 5000 resamples were conducted, with 95% confidence intervals computed. If the confidence interval for a mediation path did not include zero, it indicated a significant mediation effect.

Although grade level and gender were not included as formal control variables in the main model due to the limited sample size, we conducted sensitivity analyses by adding them as covariates in separate models. The results showed that the direction and significance of the core paths remained unchanged, suggesting that the main findings are robust to these demographic factors.

3. Results

3.1. Common Method Bias Test

In terms of statistical control, to enhance academic rigor and promote research standardization, this study employed Harman's single-factor test to further examine common method bias. Results indicate that prior to rotation, four factors with eigenvalues exceeding 1 were identified, collectively explaining 61.008% of the variance. The first factor explained 32.492% of the variance, falling below the 40% critical threshold. This indicates that the sample data in this study did not exhibit severe common method bias.

3.2. Descriptive Statistics and Correlation Analysis

The descriptive statistics and correlation analysis results for each variable are presented in Table 2 below. Club goals (CG) showed significant positive correlations with knowledge donation (KD), knowledge collection (KC), and innovation behavior (IB). Knowledge donation (KD) and knowledge collection (KC) also exhibited significant positive correlations with innovation behavior (IB).

Table 2. Descriptive statistics of each variable and correlation analysis results between variables.

	M	SD	CG	KD	KC	IB	Min	Max	Skewness	Kurtosis
CG	4.19	0.61	1				2	5	−0.520	−0.802
KD	4.27	0.54	0.326**	1			1	5	−1.467	3.708
KC	4.28	0.54	0.321**	0.509**	1		2	5	−1.123	1.178
IB	3.86	0.66	0.320**	0.327**	0.425**	1	2	5	−0.302	−0.816

**$p < 0.01$; CG: Club goals; KD: Knowledge donation; KC: Knowledge collection; IB: Innovation behavior.

3.3. Structural Equation Modeling Test

3.3.1. Measurement Model Evaluation

Before testing the structural model, the reliability and validity of the measurement model were first evaluated. The results of the confirmatory factor analysis are presented in Table 3 and Table 4.

Table 3 presents the results of the confirmatory factor analysis, indicating that the standardized factor loadings for all observed variables on their respective latent constructs surpass the conventionally accepted threshold of 0.5, with values ranging from 0.503 to 0.814. These loadings are statistically significant at the $p < 0.001$ level, confirming that each item effectively reflects its associated latent variable.

Regarding reliability and validity, composite reliability (CR) was used to assess internal consistency of latent variables. All latent variables in this measurement model exhibited CR values ranging from 0.736 to 0.782, exceeding the critical threshold of 0.7, indicating good reliability of the measurement model. Average Variance Extracted (AVE) was used to examine convergent validity. The AVE values for each latent variable ranged from 0.415 to 0.538, generally meeting the recommended standard of 0.5 or higher proposed by Fornell and Larcker (1981). Although the AVE values for two factors were below 0.5, their CR values exceeded 0.7, rendering their convergent validity acceptable (Lam, 2012).

Discriminant validity was further examined to assess the degree of differentiation among latent variables. As shown in Table 4, the bold diagonal values represent the square roots of each latent variable's AVE. Results indicate that the square root of AVE for all latent variables exceeded the correlation coefficients between that variable and other latent variables, confirming the measurement model possesses strong discriminant validity.

Table 3. Reliability and convergent validity of the measurement model.

Construct	Item	N	Significance of estimated parameter				Item Reliability		Composite Reliability	Convergence Validity
			Unstd.	S.E.	t-value	*p*	std.	SMC	CR	AVE
CG	CG3	163	1	-	-	-	0.759	0.576	0.745	0.503
	CG2	163	0.66	0.116	5.681	***	0.497	0.247		
	CG1	163	1.067	0.13	8.181	***	0.803	0.645		
KC	KC4	163	1	-	-	-	0.591	0.349	0.736	0.415
	KC3	163	1.333	0.213	6.264	***	0.725	0.526		
	KC2	163	1.293	0.213	6.064	***	0.718	0.516		
	KC1	163	0.891	0.177	5.042	***	0.533	0.284		
KD	KD1	163	1	-	-	-	0.563	0.317	0.782	0.420
	KD2	163	1.057	0.181	5.831	***	0.615	0.378		
	KD3	163	1.166	0.205	5.676	***	0.646	0.417		
	KD4	163	1.211	0.205	5.914	***	0.676	0.457		
	KD5	163	1.381	0.224	6.175	***	0.737	0.543		
IB	IB3	163	1	-	-	-	0.643	0.413	0.776	0.538
	IB4	163	1.409	0.199	7.065	***	0.795	0.632		
	IB5	163	1.375	0.2	6.874	***	0.747	0.558		

**$p < 0.01$; CG: Club goals; KD: Knowledge donation; KC: Knowledge collection; IB: Innovation behavior.

Table 4. Test of discrimination validity for the measurement model.

	CG	KC	KD	IB
CG	0.709			
KC	0.475	0.644		
KD	0.408	0.690	0.648	
IB	0.420	0.510	0.438	0.733

3.3.2. Hypothesis Testing for Research Models

After validating the measurement model's high quality, structural equation modeling was employed to test the research hypotheses. The model fit indices were: $\chi^2/df = 1.607$, GFI = 0.908, CFI = 0.926, SRMR = 0.049, NFI = 0.830, RMSEA = 0.061, AGFI = 0.870, TLI = 0.909. All fit indices met acceptable standards, indicating good model-data fit (see **Figure 2**). Path coefficients and significance levels are presented in **Table 5** and **Figure 2**. Specific hypothesis testing results are as follows:

Hypothesis H1: Club goals (CG) exert a positive influence on innovation behavior (IB) ($\beta = 0.169$, $p = 0.086$). The p-value approaches but does not reach the conventional significance threshold of 0.05. Given the small sample size and the inclusion of mediators in the model, this effect is considered marginally significant. Hypothesis H1 is partially supported.

Hypothesis H2: knowledge collection (KC) significantly and positively influences innovative behavior (IB) (β = 0.399, p = 0.012), while knowledge donation (KD) does not reach significance in its effect on IB (β = 0.116, p = 0.387). Thus, H2 is partially supported.

Furthermore, the model results indicate that club goals (CG) exert an extremely significant positive predictive effect on both knowledge collection (KC, β = 0.365, p < 0.001) and knowledge donation (KD, β = 0.367, p < 0.001).

Table 5. Hypothesis testing results for the research model.

endogenous		exogenous	Unstd.	S.E.	C.R.	p	Suppose	std.	R^2
KD	←	CG	0.367	0.087	4.243	***	establish	0.367	0.511
KC	←	CG	0.365	0.088	4.146	***	establish	0.365	0.509
IB	←	KC	0.399	0.158	2.518	0.012	establish	0.399	0.359
IB	←	KD	0.116	0.134	0.864	0.387	Not established	0.116	0.105
IB	←	CG	0.169	0.099	1.717	0.086	establish	0.169	0.212
KD	←	CG	0.367	0.087	4.243	***	establish	0.367	0.511

***p < 0.001; CG: Club goals; KD: Knowledge donation; KC: Knowledge collection; IB: Innovation behavior.

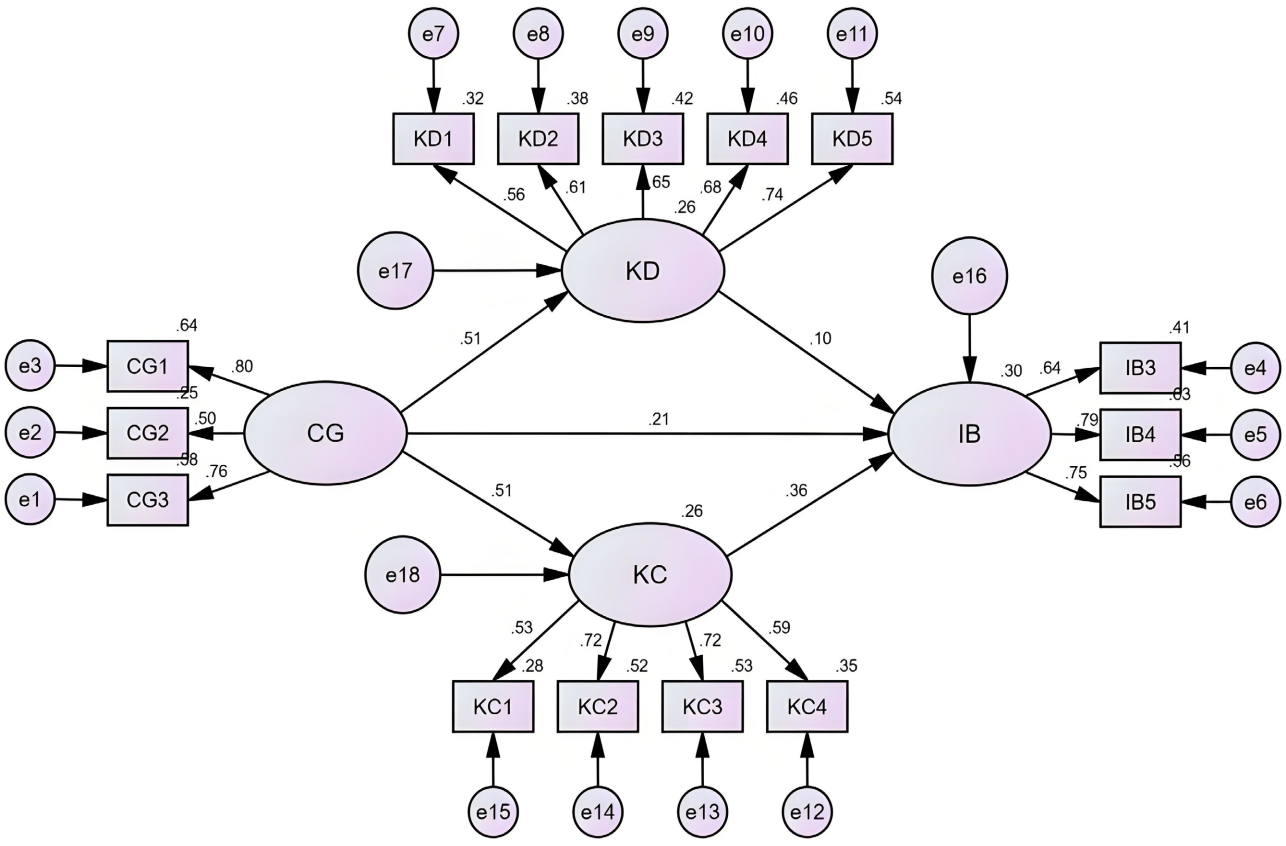

Figure 2. Structural equation model testing.

3.3.3. Testing the Mediating Effect of Knowledge Sharing

To investigate the mediating role of knowledge sharing in the relationship be-

tween club goals and students' innovative behavior, this study specifically employed the Bootstrap mediation effect test for mediation analysis. This involved repeated sampling to estimate the indirect effect and ascertain its statistical significance. The sample size was set at 5000 repetitions. Under a 95% confidence interval, the results of the mediation effect test are presented in Table 6. Separate mediation analyses were conducted for knowledge donating and knowledge collecting.

Table 6. Bootstrap results of mediation effect.

Mediation Paths	Estimate	S.E.	Est./S.E.	*p*-value	95% confidence interval	
					Lower	Upper
Total Effect CG → IB	0.357	0.106	3.368	***	0.201	0.607
Direct Effect CG → IB	0.188	0.102	1.843	**	0.053	0.410
Indirect Effect CG → KS → IB	0.142	27.873	3.958	***	0.068	0.210
Path a (CG → KD → IB)	0.043	0.076	0.566	0.322	−0.068	0.157
Path b (CG → KC → IB)	0.146	0.089	1.640	**	0.024	0.363

**$p < 0.01$, ***$p < 0.001$. Mediation effect analysis was conducted using Amos 24 (with a 95% confidence interval and 2000 bootstrap samples); CG: Club goals; KS: Knowledge sharing; KD: Knowledge donation; KC: Knowledge collection; IB: Innovation behavior.

Using Bootstrap for mediation effect testing, if the 95% confidence interval includes 0, it indicates no mediation; if the interval does not include 0, it indicates mediation. The results of mediation effect testing using bias-corrected Bootstrap (2000 samples) are as follows:

The total effect of CG on IB was significant (Effect = 0.357, 95% CI [0.201, 0.607]). The direct effect of CG on IB remained significant after including the mediators (Effect = 0.188, 95% CI [0.053, 0.410]). Among the three mediation paths, the indirect effect via KS (CG → KS → IB) was significant (Effect = 0.142, 95% CI [0.068, 0.210]), and the indirect effect via KC (CG → KC → IB) was also significant (Effect = 0.146, 95% CI [0.024, 0.363]), whereas the indirect effect via KD (CG → KD → IB) was not significant (Effect = 0.043, 95% CI [−0.068, 0.157], $p = 0.322$). These results indicate that CG influences IB both directly and indirectly through KS and KC, but not through KD. Knowledge sharing mediated 39.78% of the total effect. Thus, Hypothesis 3 was supported.

4. Discussion

This study employed structural equation modeling and Bootstrap mediation analysis to examine the influence mechanism of club goals on innovative behavior in mixed-age elementary school club classes, verifying the mediating role of knowledge sharing. The findings partially supported theoretical hypotheses, offering new insights into the formation mechanisms of innovative behavior among elementary school students.

4.1. Direct and Indirect Pathways from Club Goals to Innovative Behavior

Research findings indicate that club goals exhibit a marginally significant direct predictive effect on innovative behavior among elementary school students (β = 0.169, $p = 0.086$) and exert a significant indirect effect through knowledge sharing. This discovery aligns with Locke and Latham's (2015) goal-setting theory, which emphasizes that explicit and challenging goals themselves exert direct driving effects on task performance. However, it is noteworthy that in the mixed-age classroom community setting of this study, this direct driving effect was relatively limited, while the indirect pathway demonstrated greater explanatory power. This difference in pathway characteristics may stem from the particularity of the research subjects. Primary school students, particularly those in lower grades, possess developing metacognitive and self-regulated learning abilities (Selmeczy & Ghetti, 2020). The primary value of clear, meaningful club goals may not lie in directly stimulating complex, individual-level innovative ideas, but rather in establishing a structured collaborative framework and an interaction environment characterized by psychological safety (Edmondson, 1999). This environment effectively reduces uncertainty in cross-age interactions, thereby systematically promoting knowledge donation and absorption among heterogeneous student groups. Ultimately, it provides the necessary cognitive and social foundations for innovative behavior.

Further analysis reveals that while the direct effect of club goals on innovative behavior is relatively weak, their very existence holds significant theoretical importance. This indicates that even without sufficient knowledge sharing, clear goals can directly stimulate students' desire to explore and willingness to experiment to some extent by providing direction and meaning (Shalley & Gilson, 2004). However, in complex mixed-age learning environments, the limitations of this direct stimulation are evident—innovative attempts lacking support from knowledge flow often struggle to sustain and deepen.

4.2. The Differential Impact of Dual Dimensions of Knowledge Sharing on Innovative Behavior

This study validates the promotional effect of knowledge sharing on elementary students' innovation behavior, though this effect is primarily manifested in the knowledge collection dimension (β = 0.399, $p = 0.012$), while the direct path of knowledge donation fails to reach statistical significance (β = 0.116, $p = 0.387$). This finding partially supports research hypothesis H2 and provides crucial refinement for understanding knowledge sharing's operational mechanisms within specific groups.

The significant positive impact of knowledge collection on innovative behavior aligns strongly with theoretical expectations and prior research. Within the mixed-age classroom, which naturally provides scaffolding through peer interaction, lower-grade students particularly absorb new knowledge, strategies, and diverse perspec-

tives from cognitively advanced peers through observation, imitation, and questioning. This efficient "internalization" process directly enriches students' cognitive toolkits, enabling them to draw upon broader resources when confronting new tasks to generate and implement novel ideas. This finding reinforces Siachou et al.'s (2021) perspective that an individual's knowledge collection capacity serves as a critical prerequisite for transforming external knowledge into personal innovation behavior.

In contrast, the non-significant direct effect of knowledge donation on innovation behavior presents a noteworthy finding warranting further exploration. Although bivariate correlation analysis revealed a significant positive correlation between the two ($r = 0.327$, $p < 0.01$), knowledge collection overshadowed its independent predictive role in the multivariate model. This likely relates to the cognitive and social developmental characteristics of elementary students. First, constrained by limited knowledge reserves and expressive abilities, their knowledge donation behaviors often remain at a rudimentary stage. They have not yet developed the capacity for deep "explanatory reasoning" to systematically reconstruct their knowledge systems, thus limiting the direct catalytic effect on their own innovative thinking (Watson & Hewett, 2006). Second, older students often serve as "junior teachers" in clubs, where their knowledge donations primarily involve transmitting and demonstrating existing experiences. This process lacks sufficient cognitive challenge and novelty for the contributor, making it difficult to directly stimulate breakthrough innovation (Fusi et al., 2020).

Notably, while knowledge donation shows no significant effect on the direct pathway, its social function in mixed-age settings remains substantial. Such donations may underpin knowledge flow within mixed-age groups, indirectly fostering an innovation-friendly social atmosphere by establishing norms of reciprocity and social recognition (Pian et al., 2019). Furthermore, the significant positive correlation between knowledge donation and knowledge collection ($r = 0.509$, $p < 0.01$) suggests these behaviors may form a virtuous cycle: students who contribute knowledge tend to absorb it more effectively, and this synergy may ultimately foster innovation.

4.3. The Mediating Role of Knowledge Sharing

The core finding of this study is that knowledge sharing plays a significant mediating role between club goals and innovative behavior, accounting for 41.35% of the total effect. Specifically, a clearly articulated club goal that is endorsed by members provides a meaningful framework and collaborative motivation for mixed-age interactions (Locke & Latham, 2015). It motivates students to be more willing to share their knowledge for collective success while also proactively seeking guidance from peers with differing abilities. This sustained knowledge donation and absorption, stimulated by the goal system, creates a dynamic, resource-rich cognitive ecosystem. Within this system, students continuously engage with, integrate, and transform diverse knowledge, significantly increasing the likeli-

hood of generating novel connections and unique solutions (Akhavan et al., 2015).

By defining challenging tasks, goals create cognitive dissonance, sparking students' intrinsic motivation to seek solutions through knowledge sharing. Senior students must reconstruct their knowledge when explaining complex concepts, while junior students must adjust their cognitive schemas to grasp new ideas—processes that directly foster cognitive development and the emergence of innovative thinking. Conversely, when objectives are ambiguous or absent, student interactions tend to devolve into disorder, resulting in insufficient depth and breadth of knowledge sharing. Even if individuals possess innovative potential, it remains difficult to translate this into explicit innovative behavior without the necessary social-cognitive support. This variation in innovation outcomes can be attributed to whether a clear goal system is in place to systematically stimulate and sustain high-quality knowledge interactions. The critical factor lies in whether a clear objective systematically stimulates and sustains high-quality knowledge interactions.

5. Conclusion and Contributions

5.1. Conclusion

This study examines the mechanism through which club goals influence innovative behavior in mixed-age elementary school club classes, while testing the mediating role of knowledge sharing. Findings indicate that club goals exert a significant direct positive effect on innovative behavior. Knowledge sharing partially mediates this relationship, though with dimensional differences: knowledge collection constitutes a significant mediating pathway, whereas knowledge donation fails to reach statistical significance in directly predicting innovative behavior. Overall, club goals primarily enhance students' innovative behavior indirectly and effectively by stimulating their knowledge collection activities.

5.2. Contributions

First, for educational researchers, this study offers a research direction for exploring the mechanisms influencing elementary students' innovative behaviors from a social interaction perspective. Few studies have integrated the relationships among club goals, knowledge sharing, and innovative behaviors within mixed-age club classes in elementary schools. This study clearly distinguishes between club goals and knowledge sharing within its theoretical framework. Through empirical testing, it separately examines their respective effects on innovative behavior and their mediating pathways, thereby enabling a more profound and nuanced exploration of the influencing mechanisms. This provides feasible research directions and theoretical foundations for scholars dedicated to studying innovative behavior among elementary school students and classroom social interactions, enriching the existing theoretical framework concerning club goals, knowledge sharing, and innovative behavior.

Second, for school administrators, this study offers practical guidance for deep-

ening understanding of the value of club goals and implementing management measures to enhance the quality of club activities. In specific management practices, school leadership should prioritize the top-level design of club curricula, establishing "promoting knowledge sharing and innovation" as a core objective. Schools should organize specialized training for teachers on mixed-age teaching and project-based learning to enhance their curriculum design and goal management capabilities. Regarding evaluation systems, focus should extend beyond final, static product outcomes to include the process-oriented aspects of club activities. Student behaviors in knowledge donation, knowledge collection, and collaborative innovation should be incorporated into assessment frameworks. Through these measures, both teachers and students can perceive organizational support for club activities, thereby strengthening their confidence and capacity to employ proactive knowledge-sharing strategies to achieve innovation goals.

Third, for front-line teachers, this study's findings help understand knowledge sharing's role in innovation behavior. It guides educators to actively improve classroom knowledge flow by setting clear club goals, thereby enhancing students' innovative capabilities. Before club activities commence, teachers should explicitly articulate the club's overall objectives and phased goals, linking them to students' personal growth. When designing activities, a key principle is to create tasks that inherently require cross-age collaboration, thus making knowledge contribution and absorption essential. For instance, teachers might structure activities where older students are responsible for explaining concepts while younger students undertake hands-on application, with explicit encouragement for ongoing dialogue and exchange throughout the process. Simultaneously, teaching students effective communication and collaboration methods can help elementary students reduce potential barriers and negative emotional experiences during knowledge sharing. This enhances their cognitive well-being and engagement in club activities, fostering their enthusiastic participation in innovation-related club initiatives.

Fourth, regarding student development, this research contributes to fostering collaborative abilities and innovative literacy, thereby promoting their comprehensive growth. In mixed-age elementary clubs, students' social behaviors and cognitive development are largely acquired through observation, imitation, and peer interaction. As key social interaction partners within the club setting, peers, especially older students, significantly influence younger members across various developmental dimensions. This influence extends to modeling cooperative and innovative behaviors. Superficially, younger students mimic the problem-solving strategies and communication styles exhibited by older peers during interactions. At a deeper level, however, the development of students' underlying collaborative abilities and innovative awareness requires teachers to integrate task-specific guidance within club activities. This involves explaining and modeling methods for knowledge donation and collection, thereby helping students grasp the value of collaboration and master innovative skills. Therefore, establishing a club envi-

ronment characterized by clear objectives and seamless knowledge flow is highly beneficial for the social and cognitive development of elementary students. This can be achieved by actively encouraging knowledge sharing, instructing students in managing their cognition and behavior during collaboration, and guiding them toward collective learning and creation within teams.

6. Limitations and Future Directions

Although this study employs a rigorous research design to reveal the mechanism through which club goals influence innovation behavior via knowledge sharing, several limitations remain, which also point to directions for future research.

First, the cross-sectional design of this study only allows data collection and testing of variable correlations at a single point in time. This design cannot confirm the direction of causality between variables nor capture the dynamic evolution of club goals, knowledge sharing, and innovation behavior throughout the group activity cycle. For instance, reverse causality may exist: successful experiences in innovation behavior might reinforce students' identification with club goals, thereby promoting deeper knowledge sharing. Future research should utilize longitudinal designs or cross-lagged models, with data on core variables collected at multiple strategic time points, including the beginning, middle, and end of an academic semester. This approach would allow for a more precise uncovering of causal order and dynamic interplay. Additionally, action research or quasi-experimental studies that systematically manipulate the clarity and challenge of club goals while observing changes in knowledge sharing and innovation behaviors could provide more robust evidence for causal relationships.

Second, this study's sample comprised 177 elementary students from a single school cluster in Northwest China, presenting limitations in both sample size and representativeness. The smaller sample size may have constrained statistical power, affecting the detection of marginal effects such as knowledge donation pathways. The homogeneity of the sample source also raises questions about the generalizability of findings. China's vast territory encompasses significant regional variations in educational resources, cultural environments, and the emphasis placed on innovative education. Future research should employ larger-scale, multi-stage sampling across the nation, encompassing regions with varying economic development levels and educational policy orientations. This would validate the external validity of this study's model and explore the potential of regional economic and cultural factors as moderating variables.

Third, regarding measurement methods, this study primarily relied on student self-report questionnaires. Although common method bias was tested, social desirability bias and subjective cognitive errors cannot be entirely ruled out. Particularly for complex constructs like innovation behavior, self-assessment may lack precision. Future research should adopt multi-source, multi-method data collection strategies. For instance, innovation behavior could be evaluated by teachers or observers; knowledge-sharing processes could be objectively coded by analyz-

ing recorded dialogues and video footage from club activities, while the clarity of club goals could be comprehensively assessed through teacher interviews combined with curriculum document analysis. This triangulation strategy significantly enhances the objectivity and reliability of research findings.

Finally, while this study focuses on the core pathways linking club goals, knowledge sharing, and innovative behavior, this mechanism may be influenced by other critical variables. Future research could incorporate moderating variables to deepen the theoretical model. For instance, students' proactive personality may moderate the relationship between club goals and knowledge sharing, while class or club innovation climate and teacher leadership styles may moderate the relationship between knowledge sharing and innovative behavior. Furthermore, cross-cultural comparative studies hold significant value. Students from collectivist and individualist cultural backgrounds may exhibit systematic differences in their responses to club goals, willingness to share knowledge, and patterns of knowledge sharing. Comparing the similarities and differences of this model across cultural contexts can profoundly reveal the role of sociocultural factors in the development of adolescent innovation literacy.

In summary, future research should pursue multidimensional expansion and refinement in research design, sample scope, measurement methods, and theoretical models. It should actively embrace interdisciplinary research approaches to construct a more comprehensive, dynamic, and ecologically valid theoretical framework. This framework will guide mixed-age education practices and more effectively cultivate innovation literacy among elementary school students.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

Akhavan, P., Hosseini, S. M., Abbasi, M., & Manteghi, M. (2015). Knowledge-Sharing Determinants, Behaviors, and Innovative Work Behaviors. *Aslib Journal of Information Management, 67,* 562-591. https://doi.org/10.1108/ajim-02-2015-0018

Aliasghar, O., Sadeghi, A., & Rose, E. L. (2020). Process Innovation in Small- and Medium-Sized Enterprises: The Critical Roles of External Knowledge Sourcing and Absorptive Capacity. *Journal of Small Business Management, 61,* 1583-1610. https://doi.org/10.1080/00472778.2020.1844491

Barnard, P. A. (2021). Multi-Age Organisation, Complexity Theory and Secondary School Reform. *International Journal of Educational Management, 35,* 955-968. https://doi.org/10.1108/ijem-06-2020-0303

Bryson, J. (1996). *Strategic Planning for Public and Nonprofit Organizations: A Guide to Strengthening and Sustaining Organizational Achievement.* John Wiley & Sons.

Cai, F., & Wen, N. (2018). The Influence of Individual Goal Orientation on Innovation Behavior from the Perspective of Knowledge Hiding. In *Proceedings of the 2018 2nd International Conference on Education, Economics and Management Research (ICEEMR 2018)* (pp. 671-676). Atlantis Press. https://doi.org/10.2991/iceemr-18.2018.161

Cronin, Z. (2019). To Mix or Not to Mix: A Critical Review of Literature on Mixed-Age

Groups in Primary Schools. *Cambridge Open-Review Educational Research E-Journal, 6,* 166.

Drucker, P. (2012). *Managing the Non-Profit Organization.* Routledge. https://doi.org/10.4324/9780080938493

Ebrahim, A. (2019). *Measuring Social Change: Performance and Accountability in a Complex World.* Stanford University Press.

Edmondson, A. (1999). Psychological Safety and Learning Behavior in Work Teams. *Administrative Science Quarterly, 44,* 350-383. https://doi.org/10.2307/2666999

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research, 18,* 39-50. https://doi.org/10.2307/3151312

Fusi, G., Lavolpe, S., Crepaldi, M., & Rusconi, M. L. (2020). The Controversial Effect of Age on Divergent Thinking Abilities: A Systematic Review. *The Journal of Creative Behavior, 55,* 374-395. https://doi.org/10.1002/jocb.461

Goswami, A. K., & Agrawal, R. K. (2019). Explicating the Influence of Shared Goals and Hope on Knowledge Sharing and Knowledge Creation in an Emerging Economic Context. *Journal of Knowledge Management, 24,* 172-195. https://doi.org/10.1108/jkm-09-2018-0561

Gurley, D. K., Peters, G. B., Collins, L., & Fifolt, M. (2014). Mission, Vision, Values, and Goals: An Exploration of Key Organizational Statements and Daily Practice in Schools. *Journal of Educational Change, 16,* 217-242. https://doi.org/10.1007/s10833-014-9229-x

Hansen, M. T. (1999). The Search-Transfer Problem: The Role of Weak Ties in Sharing Knowledge across Organization Subunits. *Administrative Science Quarterly, 44,* 82-111. https://doi.org/10.2307/2667032

Herman, R. D., & Renz, D. O. (2008). Advancing Nonprofit Organizational Effectiveness Research and Theory: Nine Theses. *Nonprofit Management and Leadership, 18,* 399-415. https://doi.org/10.1002/nml.195

Islam, T., & Asad, M. (2021). Enhancing Employees' Creativity through Entrepreneurial Leadership: Can Knowledge Sharing and Creative Self-Efficacy Matter? *VINE Journal of Information and Knowledge Management Systems, 54,* 59-73. https://doi.org/10.1108/vjikms-07-2021-0121

Kallery, M., & Loupidou, T. (2016). Learning Science in Small Multi-Age Groups: The Role of Age Composition. *International Journal of Science Education, 38,* 1570-1590. https://doi.org/10.1080/09500693.2016.1201871

Kamaşak, R., & Bulutlar, F. (2010). The Influence of Knowledge Sharing on Innovation. *European Business Review, 22,* 306-317. https://doi.org/10.1108/09555341011040994

Kim, T. T., & Lee, G. (2013). Hospitality Employee Knowledge-Sharing Behaviors in the Relationship between Goal Orientations and Service Innovative Behavior. *International Journal of Hospitality Management, 34,* 324-337. https://doi.org/10.1016/j.ijhm.2013.04.009

Kmieciak, R. (2020). Trust, Knowledge Sharing, and Innovative Work Behavior: Empirical Evidence from Poland. *European Journal of Innovation Management, 24,* 1832-1859. https://doi.org/10.1108/ejim-04-2020-0134

Lam, L. W. (2012). Impact of Competitiveness on Salespeople's Commitment and Performance. *Journal of Business Research, 65,* 1328-1334. https://doi.org/10.1016/j.jbusres.2011.10.026

Leary, M., Demiris, G., Brooks Carthon, M., Cacchione, P., Aryal, S., & Bauermeister, J. (2025). Creating a Phenotype and Taxonomy of Nurses Engaging in Innovative Behav-

iors. *OJIN: The Online Journal of Issues in Nursing, 30*. https://doi.org/10.3912/ojin.vol30no01man02

Lee, K., & Song, H. (2020). Linkages between Social Goal Orientation and Innovative Behavior: Examining the Mediating Role of Knowledge Sharing and Employee Engagement. *Sustainability, 12,* Article 9886. https://doi.org/10.3390/su12239886

Locke, E. A. (1986). Social Foundations of Thought and Action: A Social-Cognitive View. *Academy of Management Review, 12,* 169-171. https://doi.org/10.5465/amr.1987.4306538

Locke, E. A., & Bryan, J. F. (1966). Cognitive Aspects of Psychomotor Performance: The Effects of Performance Goals on Level of Performance. *Journal of Applied Psychology, 50,* 286-291. https://doi.org/10.1037/h0023550

Locke, E. A., & Latham, G. P. (2002). Building a Practically Useful Theory of Goal Setting and Task Motivation: A 35-Year Odyssey. *American Psychologist, 57,* 705-717. https://doi.org/10.1037//0003-066x.57.9.705

Locke, E., & Latham, G. (2015). Goal-setting Theory. *The Business & Management Collection, 2025,* e1020019. https://doi.org/10.69645/jnrz5899

Lukes, M., & Stephan, U. (2017). Measuring Employee Innovation: A Review of Existing Scales and the Development of the Innovative Behavior and Innovation Support Inventories across Cultures. *International Journal of Entrepreneurial Behavior & Research, 23,* 136-158. https://doi.org/10.1108/ijebr-11-2015-0262

McKenna, B. M., Finamore, D., Hewitt, V., Watson, L., Millam, L. A., & Reinhardt, M. (2018). The Effect of a Multifactor Orientation on Student Performance: Organizational Skills, Goal Setting, Orientation to Classroom, and Academic Support. *Online Learning, 22,* 265-276. https://doi.org/10.24059/olj.v22i4.1207

McMurray, A. J., Muenjohn, N., & Scott, D. (2021). Measuring Workplace Innovation: Scale Development. *Journal of Small Business Management, 61,* 1563-1582. https://doi.org/10.1080/00472778.2020.1844490

Nadeem, M. A., Liu, Z., Ghani, U., Younis, A., & Xu, Y. (2020). Impact of Shared Goals on Knowledge Hiding Behavior: The Moderating Role of Trust. *Management Decision, 59,* 1312-1332. https://doi.org/10.1108/md-09-2019-1197

Owen, S. (2012). *'Fertile Questions', 'Multi-Age Groupings', 'Campfires' and 'Master Classes' for Specialist Skill Building: Innovative Learning Environments and Supporting Professional Learning for 'Teacher Engagers' within South Australian and International Contexts.* https://aare.edu.au/data/publications/2012/Otterstad12.pdf

Parrott, H. M., & Cohen, L. E. (2021). Advantages of Mixed-Age Free Play in Elementary School: Perceptions of Students, Teachers, and Parents. *International Journal of Play, 10,* 75-92. https://doi.org/10.1080/21594937.2021.1878774

Pian, Q. Y., Jin, H., & Li, H. (2019). Linking Knowledge Sharing to Innovative Behavior: The Moderating Role of Collectivism. *Journal of Knowledge Management, 23,* 1652-1672. https://doi.org/10.1108/jkm-12-2018-0753

Prompreing, K., & Hu, C. (2021). The Role of Knowledge-Sharing Behaviour in the Relationship between the Knowledge Creation Process and Employee Goal Orientation. *International Journal of Business Science and Applied Management, 16,* 46-63. https://doi.org/10.69864/ijbsam.16-2.148

Ruan, R., & Chen, W. (2021). Research on the Relationship between Future Work Self-Salience and Employees' Innovative Behaviors. In *2021 5th International Conference on Business and Information Management* (pp. 87-92). ACM. https://doi.org/10.1145/3483794.3483808

Scott, S. G., & Bruce, R. A. (1994). Determinants of Innovative Behavior: A Path Model of

Individual Innovation in the Workplace. *Academy of Management Journal, 37,* 580-607. https://doi.org/10.2307/256701

Selmeczy, D., & Ghetti, S. (2020). Metacognition. In S. Hupp, & J. D. Jewell (Eds.), *The Encyclopedia of Child and Adolescent Development* (pp. 1-10). Wiley-Blackwell.

Shalley, C. E., & Gilson, L. L. (2004). What Leaders Need to Know: A Review of Social and Contextual Factors That Can Foster or Hinder Creativity. *The Leadership Quarterly, 15,* 33-53. https://doi.org/10.1016/j.leaqua.2003.12.004

She, J. (2020). How to Mitigate the Harm of Abusive Supervision to Employee's Innovative Behaviors: The Role of Employee's Proactive Personality and Supervisor's Performance Goal Orientation. *Journal of Service Science and Management, 13,* 45-60. https://doi.org/10.4236/jssm.2020.131004

Siachou, E., Vrontis, D., & Trichina, E. (2021). Can Traditional Organizations Be Digitally Transformed by Themselves? The Moderating Role of Absorptive Capacity and Strategic Interdependence. *Journal of Business Research, 124,* 408-421. https://doi.org/10.1016/j.jbusres.2020.11.011

Suchman, M. C. (1995). Managing Legitimacy: Strategic and Institutional Approaches. *The Academy of Management Review, 20,* 571-610. https://doi.org/10.2307/258788

UNESCO (2017). *Education for Sustainable Development Goals: Learning Objectives.* UNESCO.

van den Hooff, B., & de Ridder, J. A. (2004). Knowledge Sharing in Context: The Influence of Organizational Commitment, Communication Climate and CMC Use on Knowledge Sharing. *Journal of Knowledge Management, 8,* 117-130. https://doi.org/10.1108/13673270410567675

Wang, Z., & Wang, N. (2012). Knowledge Sharing, Innovation and Firm Performance. *Expert Systems with Applications, 39,* 8899-8908. https://doi.org/10.1016/j.eswa.2012.02.017

Watson, S., & Hewett, K. (2006). A Multi-theoretical Model of Knowledge Transfer in Organizations: Determinants of Knowledge Contribution and Knowledge Reuse. *Journal of Management Studies, 43,* 141-173. https://doi.org/10.1111/j.1467-6486.2006.00586.x

Wu, L., Li, J., Liu, Q., He, L., Yang, W., Zhang, Y. et al. (2021). Information Measures of Knowledge Contribution: A New Method to Measure Knowledge Contribution in Collaborative Knowledge Building: An Information Theory Perspective. *Journal of Educational Computing Research, 59,* 1319-1342. https://doi.org/10.1177/0735633121994939

Wu, T., Zhang, R., & Li, J. (2022). How Does Goal Orientation Fuel Hotel Employees' Innovative Behaviors? A Cross-Level Investigation. *Current Psychology, 42,* 23385-23399. https://doi.org/10.1007/s12144-022-03489-x