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A structural model of work engagement among gen z teachers as predicted by transformational leadership, innovative work behavior and work environment

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Abstract

This study aimed to determine the best-fit structural model of work engagement among Generation Z teachers in private basic education institutions in Region XI, Philippines. To attain its objectives, a descriptive correlational research design was used. Data were collected using validated questionnaires on transformational leadership, innovative work behavior, work environment, and work engagement. The instruments were reviewed by experts, pilot-tested, and confirmed reliable through Cronbach's alpha. Mean and standard deviation were used to measure the descriptive level of all variables while Pearson r was utilized to test the relationships among variables. Meanwhile, multiple regression and Structural Equation Modeling (SEM) were applied to examine predictive effects and generate the best-fit model. Descriptive statistics revealed that transformational leadership and innovative work behavior were rated very high, while work environment and work engagement were rated high. Results also showed that transformational leadership, innovative work behavior, and work environment were all positively correlated with work engagement. Adding on, multiple regression revealed their significant predictive effects, while SEM confirmed both direct and indirect pathways contributing to engagement, resulting in a well-fitting model. The best-fit structural equation model demonstrated acceptable fit, as indicated by the goodness-of-fit indices. The findings emphasized the importance of supportive leadership, favorable workplace conditions, and innovation in sustaining teacher engagement. This study presented a validated model tailored to the Philippine context that may guide school leaders and policymakers in supporting Gen Z teachers.

Keywords: Educational leadership, transformational leadership, innovative work behavior, work environment, work engagement, Gen Z teachers, quantitative, descriptive correlational, structural equation model, Philippines

Introduction

Work engagement is a positive and fulfilling mental state toward one's job, characterized by vigor, dedication, and absorption, and is essential for employee well-being and institutional success^[1]. Maintaining high engagement among teachers sustains productive and healthy learning environments, yet challenges persist as new generations enter the workforce^[2]. Generation Z teachers, born between 1995 and 2012, enter the profession with distinct expectations emphasizing collaboration, mentorship, and meaningful leadership^[3,4]. As educational institutions adapt to a diversifying workforce, recognizing these evolving needs becomes critical^[5].

Declining teacher engagement is a global issue. Engagement among K–12 teachers drop from 35 percent in the first year to 28 percent after five years^[6]. In the UK, 61 percent of Generation Z respondents were interested in teaching, yet nearly half expected short-term careers^[7]. In Tokyo, 4.9 percent of new teachers showed early disengagement in 2023, signaling global concerns about Gen Z teachers' sustained motivation^[8].

In the Philippines, workload pressure, weak leadership, and limited institutional support continue to affect engagement. In Claveria Northeast, 26 percent of teachers had lower professional engagement based on 2022–2023 IPCRF ratings^[9]. Generation Z teachers demonstrate the lowest engagement levels among cohorts, raising concerns about retention and professional growth^[10]. Region XI faces similar issues, with workload, low satisfaction, and attrition posing persistent quim challenges^[11].

Transformational leadership (TL) cultivates work engagement by inspiring shared vision, building trust, and providing individualized consideration and support^[1,12]. Likewise, innovative work behavior (IWB) contributes to greater engagement and job satisfaction by encouraging creativity, problem-solving, and the implementation of new ideas^[13]. Moreover, a positive work environment (WEnV) characterized by autonomy, collegiality, and ethical management practices reinforces employees' sense of purpose and commitment, thereby further enhancing engagement^[14].

Despite the Department of Education's initiatives on workload and leadership development, few studies have explored how transformational leadership, IWB, and work environment collectively influence Gen Z teachers' engagement^[4,12,15]. Philippine research remains limited and largely qualitative^[16]. Using Structural Equation Modeling (SEM), this study examines these predictors to develop a best-fit model explaining Gen Z teacher engagement^[17]. The findings aim to guide leadership strategies, foster innovation-driven environments, and strengthen teacher motivation and retention within Philippine basic education.

Materials and Methods

This study employed a quantitative, descriptive–correlational design to determine the predictive relationships among transformational leadership, innovative work behavior, work environment, and work engagement^[18]. The design was chosen to describe the existing levels of the variables and examine the extent to which leadership, behavioral, and environmental factors influence the engagement of Generation Z teachers. In addition, the study utilized structural equation modeling (SEM) to validate the hypothesized and best-fit models that explain the causal structure of the observed relationships^[17].

Locale and Participants

The study was conducted in Region XI (Davao Region), Philippines, which comprises several private basic education institutions serving learners from diverse socio-economic and cultural backgrounds. These schools were chosen because of their substantial population of Generation Z teachers and their accessibility to the researcher. Focusing on this region allowed for the examination of varied leadership practices and organizational climates within a consistent educational framework governed by national standards for basic education.

A total of 432 Generation Z teachers from selected private basic education institutions participated in the study. Generation Z teachers were operationally defined as individuals born between 1995 and 2012, representing those in the early stages of their teaching careers. Purposive sampling was employed to ensure equitable representation across school levels (elementary and secondary) and geographic clusters within the region. Participants met the following inclusion criteria: (a) born between 1995 and 2012; (b) aged 22 to 30 years; (c) currently teaching within the K–12 program in a private basic education institution in Region XI; and (d) voluntarily consented to participate. Teachers aged 31 and above, those employed outside the region, or those teaching in non-basic education institutions were excluded. Prior to data collection, the study purpose was clearly explained, and informed consent was secured to ensure ethical compliance and participant confidentiality.

Research Instruments

Four standardized survey instruments were utilized to measure the study variables. Each instrument was adapted with permission and subjected to content validation by a panel of experts^[19]. A pilot test involving 30 Generation Z teachers confirmed clarity and reliability of the items. Cronbach's alpha coefficients ranged from 0.84 to 0.92, indicating high internal consistency across all constructs^[20]. A summary of the instruments, their sources, and reliability indices is presented in Table 1 below.

Table 1: Summary of Research Instruments and Reliability Indices

Variable	Instrument Source	Dimensions / Example Indicators	No. of Items	Cronbach's α
Transformational Leadership	Rafferty & Griffin ^[21]	Vision, Inspirational Communication, Intellectual Stimulation, Supportive Leadership, Personal Recognition	15	0.80
Innovative Work Behavior	Janssen ^[22]	Idea Generation, Idea Promotion, Idea Realization	9	0.96
Work Environment	Patrick & Kareem – Work Environment Scale for Schools (WESS) ^[23]	Ethical Dimension, Autonomy, Stress and Work Pressure, Work Practices, Managerial Support, Commitment, Role Clarity, Social Responsibility, Peer Cohesiveness	32	0.70-0.87
Work Engagement	Schaufeli & Bakker – Utrecht Work Engagement Scale UWES ^[24]	Vigor, Dedication, Absorption	17	0.70-0.95

As shown in Table 1, all instruments demonstrated strong reliability, supporting their suitability for use in the Philippine educational context. The subscales collectively captured the multidimensional nature of transformational leadership, innovative work behavior, work environment, and work engagement within private basic education institutions.

Data Collection Procedure

Prior to data gathering, formal approval to conduct the study was obtained from the Dean of the Graduate School of the University of the Immaculate Conception (UIC), and ethical clearance was secured from the UIC Research Ethics Committee (UIC-REC) before administering the validated instruments. Subsequently, formal permissions were sought from the heads of participating schools. Once approval was granted, teachers who met the inclusion criteria were invited to participate. Each participant received an information

sheet outlining the study objectives, confidentiality measures, and the voluntary nature of participation^[25]. Questionnaires were distributed in printed form to facilitate accessibility and ease of completion during faculty meetings or designated breaks. Completed forms were collected on the same day to ensure a high retrieval rate and data integrity.

All responses were encoded and screened for completeness, accuracy, and consistency. Data preparation involved the reverse scoring of negatively worded items and the computation of composite scores for each construct^[25]. Only fully accomplished questionnaires were retained for statistical analysis, yielding a final dataset of 432 valid responses.

Statistical Treatment of Data

Data were analyzed using both descriptive and inferential statistics. Descriptive statistics, including mean and standard deviation, were computed to determine the level of each variable, which was interpreted using established descriptive ranges^[18]. The Pearson product-moment correlation was employed to examine the relationships among transformational leadership, innovative work behavior, work environment, and work engagement.

To determine the extent to which the independent variables predicted work engagement, multiple linear regression analysis was conducted^[26]. The regression model identified the relative contribution of each predictor and determined which variable had the strongest influence on engagement among Generation Z teachers.

Finally, structural equation modeling (SEM) was utilized to test both the hypothesized and best-fit structural models^[17]. The model with the best combination of these indices was identified as the most parsimonious and theoretically sound representation of the relationships among the variables^[17].

Ethical Considerations

The study strictly adhered to institutional and national ethical research standards. Approval was obtained from the University of the Immaculate Conception Research Ethics Committee (UIC-REC) prior to data collection. Participation was voluntary, and informed consent was secured from all respondents. No personally identifiable information was collected, and all data were treated with confidentiality. Participants were informed that their responses would be used solely for academic purposes and reported in aggregate form.

Results

This section presents the major findings of the study in the order of analysis: (a) descriptive levels of the variables of the study, (b) significance of the relationship among the variables, (c) the best-fit model of work engagement of Generation Z teachers and the (d) underlying implications of the significant causal links in the Generation Z teacher work engagement. The results are organized in tables and figures for clarity and conciseness.

Descriptive Levels of the Variables of the Study

Table 2 summarizes the descriptive statistics of the four main variables investigated in the study. The interpretation of the mean scores followed the standardized scale: 1.00–

1.79 (Very Low), 1.80–2.59 (Low), 2.60–3.39 (Moderate), 3.40–4.19 (High), and 4.20–5.00 (Very High)^[26].

The results reveal that transformational leadership obtained a very high overall mean, indicating that Generation Z teachers strongly perceive their administrators as inspirational, supportive, and visionary^[12].

Similarly, innovative work behavior was rated very high, showing that teachers frequently generate, promote, and implement new ideas within their classrooms and institutions. The work environment, meanwhile, yielded a high descriptive rating, suggesting that teachers generally find their organizational climate conducive yet still see room for improvement in managing stress and workload^[14]. Finally, work engagement was also rated high, reflecting that teachers often exhibit vigor, dedication, and absorption in performing their duties.

Table 2: Descriptive Statistics of TL, IWB, WENV, and WENG

Variable	Mean	SD	Descriptive Level	Interpretation
Transformational Leadership	4.31	0.61	Very High	This indicates that transformational leadership is consistently practiced, as Gen Z teachers view their leaders as inspiring, supportive, reflective, and appreciative ^[27] .
Innovative Work Behavior	4.35	0.50	Very High	This indicates that Gen Z teachers consistently demonstrate innovative work behavior, actively integrating innovation into their professional practice ^[13] .
Work Environment	3.75	0.47	High	This indicates that a positive work environment is generally experienced, though certain institutional aspects still require improvement ^[28] .
Work Engagement	4.02	0.55	High	This indicates that work engagement is generally evident, though teachers' energy, dedication, and absorption vary across dimensions ^[1] .

The consistently high and very high levels across variables demonstrate that Generation Z teachers perceive their workplaces positively and are generally motivated to perform well. These descriptive findings establish a favorable baseline for subsequent inferential analyses.

Significance of the Relationship among the Variables

The relationships among the exogenous variables, Transformational Leadership (TL), Innovative Work Behavior (IWB), and Work Environment (WENV), and the endogenous variable Work Engagement (WENG) were examined using Pearson's *r*. As shown in Table 3, all correlations were positive and statistically significant at $p < .05$.

Table 3: Correlation Matrix of TL, IWB, WENV, and WENG

Predictor	r with Work Engagement	p value	Significance
Transformational Leadership	.460	.000	Significant
Innovative Work Behavior	.567	.000	Significant
Work Environment	.442	.000	Significant

All three predictors exhibited moderate, positive, and significant relationships with work engagement. The highest correlation was observed between IWB and WEnG ($r = .567$), followed by TL and WEnG ($r = .460$), and WEnV and WEnG ($r = .442$). These results suggest that teachers who perceive stronger transformational leadership, who display more innovative behaviors, and who work in supportive environments tend to report higher levels of engagement.

Best-Fit Model of Work Engagement of Generation Z Teachers

Test of Hypothesized Model

The initial hypothesized model posited that Transformational Leadership directly and indirectly influences Work Engagement through its effects on both Work Environment and Innovative Work Behavior. When first tested, this model produced unsatisfactory fit indices: CMIN/DF = 4.513, NFI = .850, TLI = .859, CFI = .879, GFI = .827, RMSEA = .090, and PCLOSE = .000, which all fell outside the acceptable range^[17]. These results indicated that several parameters required refinement to improve model fit and representation of the underlying data structure.

Final Best-Fit Structural Model

After re-specification, the final structural model achieved an excellent fit with the observed data, as shown in Table 4. Model-fit indices showed that the final model satisfied the generally accepted criteria for good fit^[17].

Table 4: Goodness-of-Fit Indices of the Final (Best-Fit) Model

Fit Index	Acceptable Criterion	Obtained Value	Interpretation
CMIN/DF	≤ 3.00	2.468	Good Fit
NFI	$\geq .90$	.955	Excellent Fit
TLI	$\geq .90$	.964	Excellent Fit
CFI	$\geq .90$	.972	Excellent Fit
GFI	$\geq .90$	.945	Good Fit
RMSEA	$\leq .08$	.058	Good Fit
PCLOSE	$> .05$	.101	Close Fit

The final model demonstrated excellent fit across absolute, incremental, and parsimonious indices, validating its adequacy for representing the data structure. Figure 1 illustrates the final best-fit model, which shows the significant standardized path coefficients among the constructs. All direct paths were statistically significant ($p < .001$).

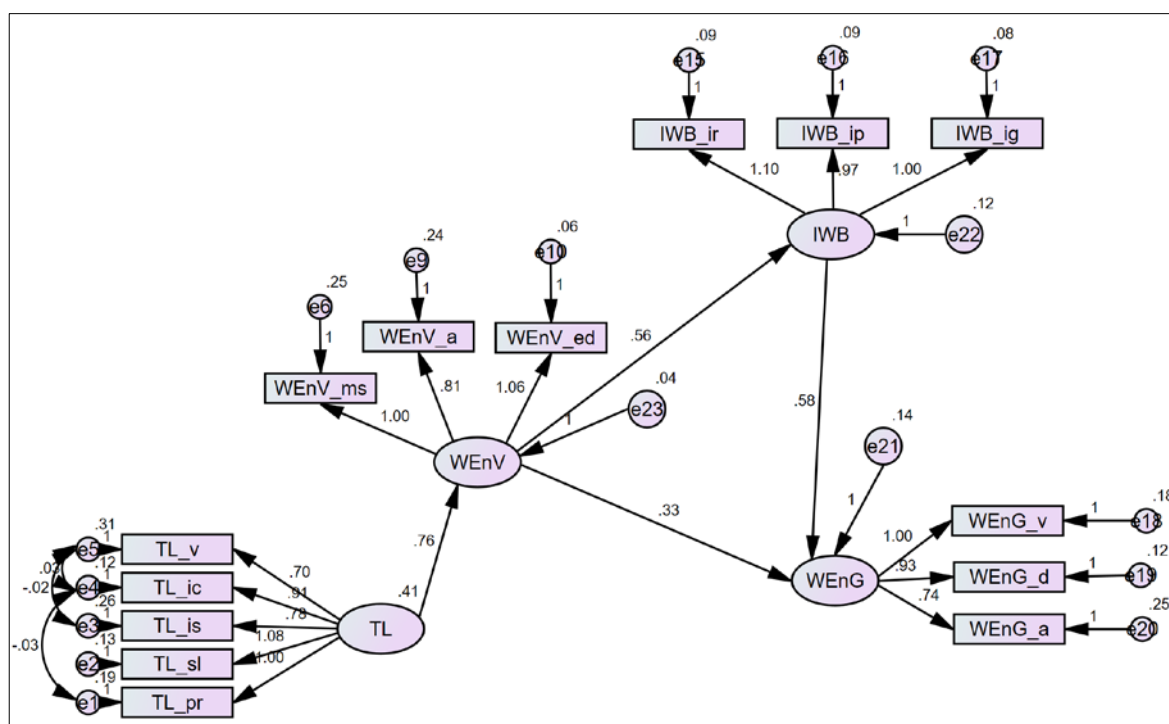


Fig 1: Best-Fit Structural Model of Work Engagement among Generation Z Teachers

The overall results affirm that transformational leadership, innovative work behavior, and work environment each play a significant role in predicting work engagement among Generation Z teachers in private basic education institutions. The strong relationships observed among the variables and the satisfactory model-fit indices confirm the theoretical and empirical adequacy of the proposed structural model^[17].

Underlying Implications of the Significant Causal Links

Underlying Implications of the Significant Causal Links
The final structural model revealed a well-fitting configuration that explains how transformational leadership

(TL), work environment (WEnV), and innovative work behavior (IWB) collectively influence Gen Z teachers' work engagement (WEnG). All factor loadings for the latent

constructs were statistically significant ($p < .001$), indicating strong internal consistency and robust construct validity. Among the TL indicators, supportive leadership and inspirational communication emerged as the most salient dimensions, while intellectual stimulation and vision, though comparatively lower, still demonstrated substantial positive loadings. Within the work environment construct, the ethical dimension and managerial support exhibited the strongest associations, underscoring the importance of trust and fairness in fostering conducive organizational climates. The indicators of IWB, idea generation, promotion, and realization, each showed high loadings, confirming that innovative practices are integral to sustaining engagement. Similarly, vigor, dedication, and absorption were all significantly linked to overall work engagement, reflecting a deeply motivated and committed workforce.

The path analysis further substantiated seven significant causal links. Transformational leadership demonstrated a strong direct effect on the work environment ($\beta = .917$, $p < .001$), which in turn directly predicted both innovative work behavior ($\beta = .645$, $p < .001$) and work engagement ($\beta = .320$, $p < .001$). Innovative work behavior also exerted a substantial direct influence on engagement ($\beta = .480$, $p < .001$). In terms of indirect effects, TL indirectly enhanced IWB through WEnV ($\beta = .592$) and further influenced WEnG indirectly through the sequential mediating paths of WEnV and IWB ($\beta = .578$). Likewise, WEnV indirectly predicted WEnG through IWB ($\beta = .310$).

Discussion

The findings of this study confirm that the work engagement of Generation Z teachers is a multidimensional outcome shaped by leadership, innovation, and organizational climate. The best-fit structural model revealed that transformational leadership indirectly influences engagement through the work environment and innovative work behavior, affirming that supportive and visionary leadership serves as a catalyst for engagement when mediated by positive institutional contexts and innovation-oriented practices.

Interpreting the Constructs

The high levels of transformational leadership, innovative work behavior, and work engagement reflect that Gen Z teachers operate within schools that largely encourage collaboration, creativity, and professional growth. Although intellectual stimulation scored slightly lower than other leadership indicators, it remains an area of potential development. This suggests that leaders can still enhance engagement by providing more opportunities for critical thinking, experimentation, and reflective dialogue. Similarly, while the overall work environment was rated high, aspects related to stress management and workload balance merit continued attention to sustain teachers' energy and enthusiasm.

The Dynamics Among Leadership, Environment, and Innovation

The model underscores the pivotal role of the work environment as both a direct and mediating factor between leadership and engagement. Transformational leadership exhibited the strongest predictive relationship with work environment, confirming that visionary, ethical, and supportive leadership cultivates climates where trust and

collegiality thrive. In turn, these environments promote innovative work behavior, which emerged as the most immediate driver of engagement. This aligns with prior research suggesting that when teachers are encouraged to generate and apply creative ideas, they experience higher levels of vigor, dedication, and absorption. Hence, innovation serves as the behavioral expression of engagement, translating supportive environments and leadership inspiration into active professional contribution^[23].

Theoretical Integration

The results extend both Self-Determination Theory (SDT) and Social Exchange Theory (SET) in the context of Gen Z educators. From the SDT perspective, the model illustrates that engagement flourishes when teachers' needs for autonomy, competence, and relatedness are met through empowering leadership and supportive institutional climates. Transformational leaders who inspire purpose, recognize contributions, and foster collaboration effectively nurture these psychological needs. From the SET lens, the findings highlight reciprocity: when teachers perceive fairness, trust, and organizational support, they reciprocate through greater innovation and engagement. This mutual exchange strengthens organizational commitment and long-term retention, especially among younger teachers seeking meaningful professional relationships.

Implications for Educational Practice

The practical implications are clear. School administrators should prioritize leadership development programs that cultivate empathy, empowerment, and innovation-centered practices. Encouraging open communication, ethical decision-making, and shared leadership can reinforce the conditions that sustain engagement. Establishing mechanisms for idea generation and recognition can further strengthen innovative work behavior, transforming schools into learning organizations where creativity is valued and rewarded. Finally, improving workload management, peer collaboration, and stress mitigation systems can enhance well-being and reduce turnover among Gen Z teachers—an increasingly critical concern in private basic education institutions.

Contributions to Theory and Research

This study provides an empirically validated structural model that integrates leadership, innovation, and environment as determinants of teacher engagement within a developing-country setting. It contributes to theory by demonstrating how external leadership and organizational conditions operationalize intrinsic motivational processes proposed by SDT and relational reciprocity mechanisms outlined in SET. Moreover, it advances generational research by contextualizing engagement within the lived experiences of Gen Z teachers—educators who value purpose, collaboration, and innovation as much as traditional security and recognition.

Conclusion

The descriptive results revealed that Generation Z teachers in Region XI generally experience positive and enabling school conditions. The very high level of transformational leadership indicates that school leaders effectively inspire, motivate, and recognize their teachers, fostering a

supportive and purposeful climate. Likewise, the very high level of innovative work behavior reflects Gen Z teachers' strong capacity to generate, promote, and realize new ideas, signifying an adaptive and improvement-oriented professional culture. Meanwhile, the high level of work environment points to an ethical and collegial atmosphere but also highlights persistent challenges in stress management and resource adequacy. Finally, the high level of work engagement confirms that Gen Z teachers remain highly committed, enthusiastic, and resilient despite work demands, emphasizing their potential as key drivers of innovation and educational quality when provided with sustained institutional and psychological support.

The significant relationships among transformational leadership, innovative work behavior, work environment, and work engagement confirm the interconnected relationships among these variables. Leaders who articulate clear visions, foster innovation, and provide supportive environments reinforce teacher engagement, thereby validating both Self-Determination Theory and Social Exchange Theory in the Gen Z teaching context.

The best-fit structural model generated in the study is both statistically valid and theoretically sound. By meeting the required fit indices, the model provides a reliable framework that explains how leadership, innovation, and environment interact to shape work engagement. Hence, transformational leadership, innovative work behavior and work environment are crucial in promoting work engagement among Generation Z teachers in Region XI.

The causal links revealed by the final model highlight the central role of innovative work behavior as a strong direct predictor of engagement, while transformational leadership enhances engagement indirectly through the work environment and innovative work behavior. These findings underscore that Gen Z teachers demonstrate higher engagement when visionary leadership, innovation, and supportive conditions function as interconnected determinants that collectively strengthen engagement.

In conclusion, the integration of transformational leadership, innovation, and supportive work environments provides a sustainable pathway for engaging the new generation of teachers who will define the future of education.

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