

**An Integrative Model for Predicting Faculty Properties
and Student Achievement in Israeli Elementary Schools:
Exploring the Role of Principals' Characteristics and
Organizational Learning Mechanisms**

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Abstract

Background: Research in the last few decades has consistently shown that school principals are powerful players who can affect school improvement and bring about change. Given the challenges posed by policy accountability mandates, school principals are required to lead through continuous learning, as this enables them to thrive in an uncertain educational environment. School leadership must focus on teaching and learning issues via the generation of collective learning opportunities for all faculty members and students.

Purpose: In this study, a new instrument was developed to measure school principals' information-processing mechanisms (PIPMs) in elementary schools. We used the information-processing and organizational learning mechanisms (OLMs) perspective, which focuses on gathering and assimilating information from internal (organizational) experiences and external (environmental) changes, and examined principals' structural and procedural methods for collecting, analyzing, storing, disseminating, retrieving, and using school-related information. The purpose of our study was fourfold: (a) to identify a working definition of PIPMs based on a review of the literature; (b) to develop and field test an instrument designed to measure PIPMs; (c) to determine the PIPM instrument's validity and reliability; (d) to test the best fit of the proposed theoretical model that links (directly and indirectly) principals' characteristics—PIPMs and instructional leadership (IL)—with OLMs, OLMs with teachers' characteristics—teachers' affective commitment, collective

teacher efficacy (CTE), teachers' satisfaction—and finally, these teacher characteristics with student achievements.

Design: Phase 1 of this research consisted of a pilot study of our instrument to measure PIPMs using principals from elementary schools. Consequently, both exploratory and confirmatory factor analyses were conducted to examine factorial validity. To test criterion-related validity, the developed instrument was correlated with other established constructs, such as principals' IL, and teachers' affective commitment. In Phase 2 of this research, the proposed theoretical and empirical model was tested with a random sample of 130 principals from urban, suburban, and rural elementary schools, representing the country's full socioeconomic range, and 1700 teachers, for a minimum of 13 faculty members in each school. After aggregating research instruments to the school level, we tested the fit of the proposed theoretical model and the possible relationships between the research variables, using the AMOS 20.0 software program.

Findings: In Phase 1, a four-factor model of PIPMs in elementary schools gave the best fit between the empirical results and the conceptual formulation. The four-factor model included: (a) storing and retrieving information, (b) receiving information (from students, parents, community, and superiors), (c) disseminating information to teachers, and (d) analyzing external and internal information.

In Phase 2, the confirmatory factor analysis confirmed the research hypothesis model, showing that best fit for the data: $\chi^2(55) = 124.04$; $p < 0.001$; CFI = 0.95; NFI = 0.92; TLI = 0.93; RMSEA = 0.07; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. A significant and positive relationship between PIPMs and principals' IL, and a strong and significant positive relationship between IL and OLMs were

found. OLMs were found to be significantly and positively correlated to three teacher characteristics: teachers' affective commitment, CTE, and teachers' satisfaction. Teachers' affective commitment and CTE were significantly related to students' math and science achievement, whereas no significant relationship was found between teachers' satisfaction and student achievements in either math or science. Regarding indirect correlations, IL was found to serve as a prominent mediator between PIPMs and OLMs. Furthermore, OLMs were found to serve as a prominent mediator between IL and the three teacher characteristics.

Implications: Using the PIPM instrument, principals will be able to assess their information-processing cycle, and may discover which information-processing mechanisms (e.g., analyzing information, storing information, receiving information, disseminating information) need to be improved. Second, the relation of both principal characteristics (PIPMs and IL) with OLMs in schools indicates that these characteristics can play an important role in deliberations on ways of promoting collective learning within and among schools through utilization of OLMs. A third implication is the importance of OLMs for learning institutions and for predicting critical teacher characteristics. A fourth implication is the importance of CTE and teachers' affective commitment in predicting school effectiveness measures (i.e., student achievements).

The Final Research Model



