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Validating an Instrument Measuring School Renewal Principles and Practices Via Teachers

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ABSTRACT: *Using data from 1097 teachers, we aimed to validate an instrument, developed based on a systematic review of the literature, to measure school principals' school renewal principles and practices. The instrument was examined for construct validity via factorial (structural) validity and convergent validity within the analytical framework of structural equation modeling. Four factorial structures of the instrument were examined by seven model-data-fit indices. A four-factor structure, as a result of the systematic review of the literature, was identified as the best fitting structure to the data with the best estimate within the acceptable range across all model-data-fit indices. The convergent validity was examined by a correlation approach with a psychometrically established instrument measuring a very similar construct. The results showed sound convergent validity of the instrument. Reliability analysis using McDonald's Omega indicated strong internal consistency of the instrument.*

Key words*: Instrument validation, Principles and practices for school renewal, School renewal.*

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1. Validating an Instrument Measuring School Renewal Principles and Practices via Teachers

One of the hallmarks of effective leadership for a school principal is the principal's ability to renew school management and operation as well as teaching and learning programs (Silcox et al., 2003). An effective principal in general holds five key principles and practices: shape a vision of academic success for all students; create a climate hospitable to education; cultivate leadership in others; improve instruction; and manage people, data, and processes to foster school improvement (Wallace Foundation, 2013). In the present study, we engaged in the discovery of the measurement properties of principals' school renewal principles and practices. We reported the development and validation of an instrument that could be used to gauge the extent of principals implementing school renewal with sound principles and practices. Before we introduce the instrument, we would present some brief review of the literature on school renewal and its implementation principles and practices.

2. School Renewal

School renewal is a direct outcome of the reform pursuit on educational change that emphasizes the circular rather than the linear relationship between better schools and better teachers as the way to keep advancing education and improving its quality (Goodlad, 1994). There are two classic theoretical approaches to bring about educational change. The RDDE approach has a focus on research, development, dissemination, and evaluation (Goodlad, 2010). This top-down approach uses research evidence to initiate clearly goal-oriented educational reforms. These reforms are then imposed in a discrete and linear manner to schools to promote educational change. In such an effort, schools (principals) become passive receivers of prescriptions for educational change. A different approach, the DDAE approach, has a focus on dialogue, decision, action, and evaluation (Goodlad, 2010). This bottom-up approach uses educational interactions to initiate vaguely goal-oriented educational reforms. These reforms are then shared in a continuous and non-linear manner with schools to promote educational change. In such an effort, schools (principals) become proactive designers of partnerships for educational change. Many scholars argue for the advantages of the DDAE approach when pursuing school renewal (e.g., Shen & Burt, 2015; Shen & Cooley, 2012). They believe that the interactive combination of internal responsiveness and external stimulation is circular and continuous, ideal for promoting productive and creative tensions between internal and external influences, which is an effective and accountable way powerful for educational change.

Another common way to promote educational change, subsequently school renewal, is the focus on the two conceptual models of instructional leadership and transformational leadership (e.g., Hallinger, 2003). Instructional leadership highlights principals' strong attention to the definition of a school's mission, the management of instructional programs, and the creation of school climate conducive to learning (Hallinger, 2000). Transformational leadership highlights principals' strong attention to individual support, shared goals, vision, intellectual stimulation, culture building, rewards, high expectations, and modeling (Leithwood et al., 1998). Scholars and researchers are eager to find out which leadership is more critical in promoting educational change. For example, Fullan (2004) stated that

To change organizations and systems will require leaders to get experience in linking to other parts of the system. These leaders in turn must help other leaders with similar characteristics. (p. 9)

This position appears to offer support for transformational leadership. Shatzer et al. (2014) compared the effects of instructional and transformational leadership on student achievement, claiming that instructional leadership explained more variance in student achievement than transformational leadership. Nonetheless, the common ground of promoting educational change is well established in the literature (Earl & Katz, 2006). Interestingly, Hallinger's (2003) notion that the effectiveness of any model, either instructional leadership or transformational leadership, is linked to both external (global) and contextual (local) factors of a school does bring certain overlap with Goodlad's (2010) notion about the characteristics between RDDE and DDAE.

3. School Renewal Principals and Practices

Even though there has not been any systematic discourse on school renewal principles and practices in the literature, good theories and good experiences are present. In general, Silcox et al. (2003) proposed that the attributes of sound school renewal, the attributes of effective school leadership, and the attributes of strong leadership on educational change do match up with one another. This indicates that good educational principles and practices do transfer from one educational effort to another. Hudak (2021) argued that there are commonalities, based on the success of eight school principals who have turned their schools around, in programs and initiatives, systems and resources, and characteristics (both positive and negative) of treatments and interventions (that help schools turn around).

Specifically, good school renewal principles and practices remove confusions. Silcox et al. (2003) encouraged principals to make clear to teachers and administrators the differences between school renewal and school reform (similar to the notion about RDDE versus DDAE as we discussed earlier). Good school renewal principles and practices take into account the organizational structure of a school. Hallinger (2003) found that management practices with a focus on supervision of classroom practices have weaker effects on school improvement than leadership practices with a focus on school organization. Sutton and Knuth (2020) complained about the lack of research examining how (high school) academic departments influence the success of school-wide policies and initiatives aimed at school improvement, arguing that the perceptions of leaders and high-status teachers within academic departments on those policies and initiatives are critical to

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how much improvement can be achieved. This calls for principals to pursue school renewal in partnership with academic departments.

Good school renewal principles and practices combine often dichotomized principles and practices. Day et al. (2016) stated that principals can both directly and indirectly achieve and sustain school improvement via combining both transformational and instructional leadership strategies.

> [Specifically,] schools' abilities to improve and sustain effectiveness over the long term are not primarily the result of the principals' leadership style but of their understanding and diagnosis of the school's needs and their application of clearly articulated, organizationally shared educational values through multiple combinations and accumulations of time and context sensitive strategies that are "layered" and progressively embedded in the school's work, culture, and achievements. (p. 222)

In addition, good school renewal principles and practices care about the wellbeing of educators in a school. Klocko and Wells (2015) warned that the significant increase in the instructional demand of a principal (e.g., the expectation for instructional supervision) and the disproportional professional task management (i.e., in the reporting to school district and state authority) undermine principal leadership in all fronts. This implies that school renewal cannot possibly become successful if principals and teachers are constantly under pressure and stress.

In a more synthetic way, Hallinger (2003) presented four sets of principles and practices: staff a school program or initiative with teachers well matched to the priorities of the school, provide instructional support, monitor school activity, and buffer staff from distractions to their work (i.e., Hallinger's notion of protecting instructional time). Similarly with overlapping, Leithwood and Day (2007) also summarized four broad categories of basic leadership practices as "successful principal leadership practices" (p. 5). The first three, borrowed from Hallinger and Heck (1999), speak to the purposes, the people, and the structures and social systems. The fourth broad category is labeled as "managing the instructional program" (p. 6). Both classifications are intended to safeguard school improvement efforts such as school renewal for maximum success.

Figure 1. A literature-based framework of high impact leadership principles for school renewal

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Finally, a fuller synthesis of the literature on school renewal principles and practices came from a federally funded program that aimed to improve elementary school principals' leadership for educational policy and practice (see HIL Project, 2023). The program guided schools to pursue school renewal, the key effort of the program, based on four powerful high impact leadership principles (see Figure 1). The first principle, positive core, speaks to mission and vision focused (focus attention on the "why" and link it to school mission and vision), growth mindset (adopt a growth perspective), appreciative lens (imagine what can be), and strengths-based thinking (profile current strengths to build upon for achieving desired state). The second principle, collective ownership, speaks to distributed leadership (distribute leadership across key stakeholders), shared responsibility (share responsibility among key players who know their roles and responsibilities as well as the vital behaviors to carry them out), social trust (create social trust where people can safely explore, grow, and adapt), and interdependence (foster interdependence through regular activities to co-create, co-investigate, and co-develop).

The third principle, evidence-based decisions, speaks to collaborative inquiry (investigate current student, staff, and school strengths and growth edges), performance profiling (identify priority growth targets and set priorities for student, staff, and school), progress monitoring (monitor progress in real time and identify measures and benchmarks for student, staff, and school priority growth targets), and leading and lagging indicators (attend to leading and lagging indicators and combine annual, interim, and real-time measures). The final principle, organizational learning, speaks to reflective practice (reflect together and engage weekly and monthly to analyze benchmarking data and reflect on progress toward desired state), double loop questioning (question deeply and raise new questions to guide growth, adaptations, and further learning), systems thinking and alignment (align capacity, resources, process, roles, and responsibilities to support progress toward desired state), and levels of learning (learn, adapt, and evolve as well as support adult learning and protect a safe learning environment for adults and students alike). This literature-based framework provided the conceptual and theoretical basis for the development of a measurement instrument that we intended to use to gauge the quality of school renewal principles and practices.

4. Measuring School Renewal Principals and Practices

The instrument, School Renewal Principles and Practices, was developed as one of the outcomes of the federally funded program with school renewal as its key effort. As can be seen from the above literature review, although the concept of and, to a good extent, the theory of school renewal are well established, the literature is thin in terms of how principals should carry out school renewal (i.e., how they put theory into practice). Obviously, principals need sound principles and practices to implement school renewal with success. To help principals develop sound knowledge and skills to implement school renewal with success, an instrument is necessary to measure principals' school renewal principles and practices but is currently lacking in the literature. With such a motivation, the program adopted the classic five-step procedure for instrument development and validation, recommended in Clark and Watson (1995), to design an instrument measuring principals' school renewal principles and practices.

The first step was the systematic review of the literature on theoretical (conceptual) recommendations and successful (unsuccessful) practices of principals regarding the implementation of school renewal, accompanied by constant discussions and debates on the meaning of successfully implementing school renewal and on the major benchmarks of such an implementation. The second step was the development of various key aspects (indicators) of the implementation that structuralize principals' school renewal principles and practices. The third step was the construction of items that operationalize each aspect (indicator). By these three steps, the construct validity of the instrument (i.e., an instrument designed to measure a certain construct is indeed measuring the construct) was established. The fourth step was the verification of an expert panel of reputable academic scholars and experienced school leaders on the meaning and operationalization of the construct. With the confirmation of the construct validity of the instrument, the final step was the pilot of the instrument by means of a group of school administrators and classroom teachers.

We were confident that the above procedure did produce a sound construct validity of the instrument. The instrument was designed for use with both principals and teachers to measure from different perspectives school renewal principles and practices of principals. In the present study, we carried out psychometric procedures, with confirmatory factor analysis (CFA) to validate both factorial (structural) validity and

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convergent validity of the instrument and with reliability analysis to ensure the internal consistency of the instrument.

5. Method

5.1. Background

The High-Impact Leadership for School Renewal (HIL) is a federally funded leadership development program aimed to build up the leadership capacity of practicing and aspiring principals in local schools. The three pillars of the HIL program was (a) one evidence-based leadership development program, (b) seven research supported strategic levers for high integrity and fidelity implementation to support school renewal activities, and (c) five levels of learning for leadership development (experiential, declarative, procedural, contextual, and evidential). The HIL program adopted a delayed-treatment experimental design to work with two cohorts of elementary schools, over a period of three years beginning in the spring of 2018. This unique experimental design trained the Cohort A schools (school leaders) in the first half of the program (using the Cohort B schools as the control group) and then trained the Cohort B schools (school leaders) in the second half of the program. During the second half of the HIL program with a focus on the Cohort B schools, the instrument, School Renewal Principles and Practices, was developed, and the program used the instrument to work with the Cohort B schools.

5.2. Participants

We worked with the Cohort B schools in the present study. Initially, 72 schools were recruited as Cohort B in the HIL program. There were three data collections for Cohort B, in each year of the three-year program period. The instrument, School Renewal Principles and Practices, was ready in 2021 for use for the final data collection. Although the instrument was designed for use with both principals and teachers, we focused on the teacher data. In the 2021 data collection (the final year of the HIL program), all teachers in the 72 Cohort B schools were invited to respond to a teacher questionnaire, with one of the instruments being School Renewal Principles and Practices. Teacher responses on this instrument were the data source for the present study. Specifically, we obtained a total of 1097 teachers from 62 schools. Data attribution on schools was due mainly to closure and dropout.

5.3. Variables

Variables in the present study were the 16 items from the instrument, School Renewal Principles and Practices. The instrument has a structure of four factors. As can be seen in Appendix A, F1 = Developing and sustaining the school's positive core, F2 = Developing and sustaining collective ownership, F3 = Making evidence-based decisions, and F4 = Fostering and supporting organizational learning. Each of the 16 items is measured on a 6-point Likert scale (with 1 as strongly disagree and 6 as strongly agree). All items are positively stated so that a higher value indicates a more positive response.

5.4. Analysis

We performed a series of CFA to examine the factorial validity or structural validity of the instrument, School Renewal Principles and Practices. CFA tests how well a specific factorial structure fits the empirical data. Specifically, we compared four CFA models to identify the best-fitting factorial structure to our data, including (a) a null model containing no factors as the baseline, (b) a general model with all 16 items loading on one general factor (i.e., the unitary concept of school renewal principles and practices), (c) a four-factor model identified through the systematic review of the literature, and (d) a higher-order model with the four factors also loading on one general factor (i.e., the hierarchical structure of school renewal principles and practices). For the sake of space, we introduced only the factorial structure of the four-factor model which is also illustrative of the ideas of both the general model and the higher-order model (see Figure 2).

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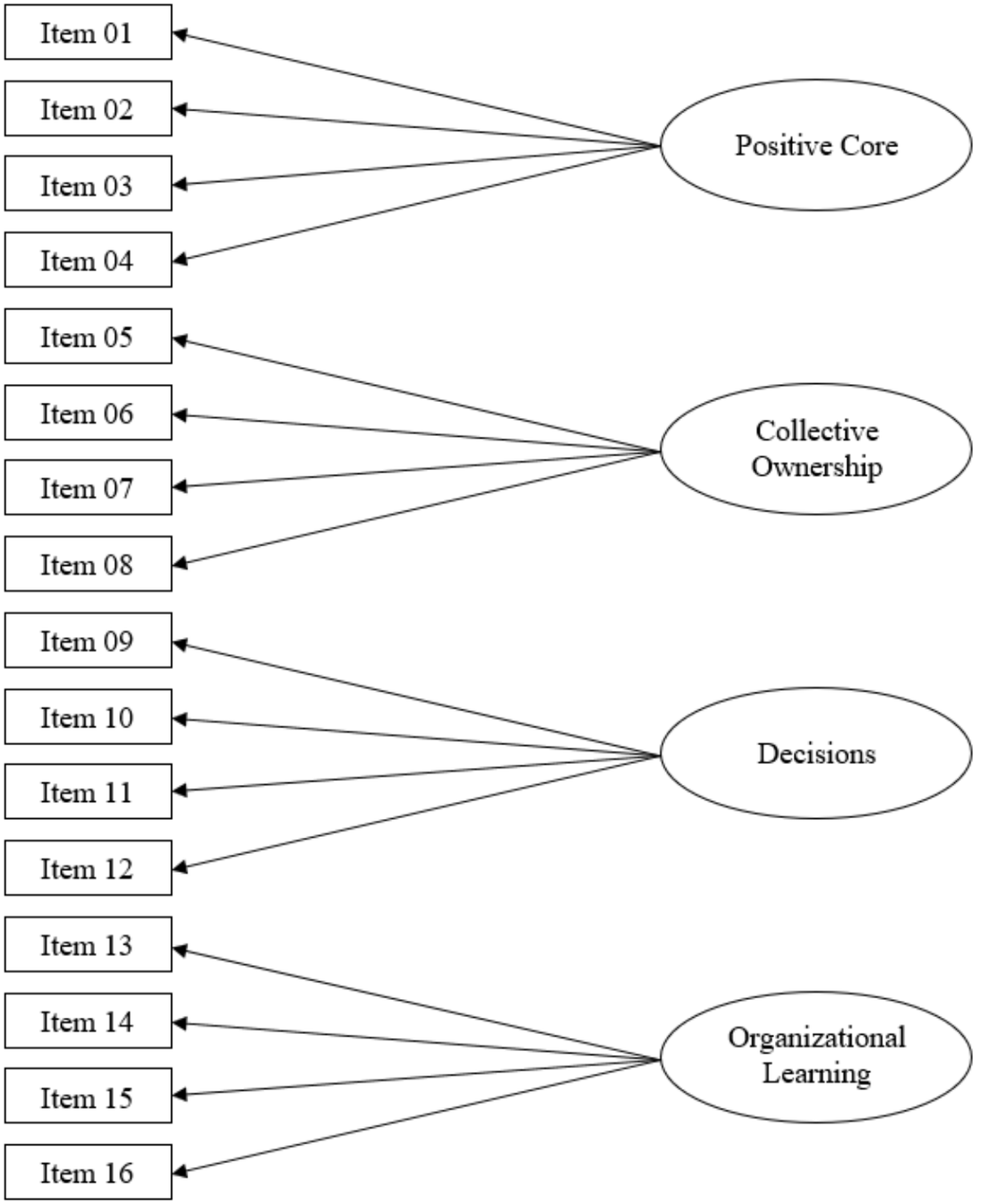

Figure 2. Factorial structure of the instrument, School Renewal Principles and Practices, with four factors. The 16 items are allowed to correlate with one another, but correlation symbols are omitted for simplicity.

Model comparisons were done with model-data-fit statistics. We followed the common statistical practice to employ multiple indicators of model-data-fit to cross validate a preferred factorial structure. The χ^2 test estimates an absolute overall fit of the data to the model, sensitive to sample size, model size, and variable distribution. Being such, the χ^2 test provides a rough measure of model-data-fit. The root mean square error of approximation (RMSEA) and the standardized root mean square residual (SRMR) are much better alternatives to χ^2 as the absolute indices. The comparative fit index (CFI) and the Tucker-Lewis index (TLI) are good

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relative measures of model-data-fit, using an alternative model as the base to make comparisons. Both indices can work with small samples. Obviously, our CFA models are non-nested, and thus we also adopted the information-based estimates, the Akaike information criterion (AIC) and the Bayesian information criterion (BIC), to evaluate model-data-fit. In the literature, RMSEA ≤ .08 and SRMR ≤ .06 as well as CFI and TLI ≥ .95 are common standards for acceptable model-data-fit (see Hu & Bentler, 1999). Finally, a best fitting model shows a smallest estimate in terms of both AIC and BIC. All of our CFA models were estimated using Mplus 8.1 (Muthén & Muthén, 2017). So was the examination of the convergent validity of the instrument, School Renewal Principles and Practices, within the analytical framework of structural equation modeling.

Convergent validity is often considered as a sub-type of construct validity. To examine convergent validity, the common strategy is to consider two instruments, both of which aim to measure the same construct or very similar constructs. Usually, one instrument is a psychometrically established instrument, against which the other instrument to be examined for convergent validity is compared. If the two instruments produce highly and positively correlated responses, then the other instrument demonstrates good convergent validity. This type of validity is often required to label an instrument for sound construct validity. In the present study, another instrument on the teacher questionnaire, Orientation for School Renewal (see Ma et al, 2020), measures a very similar construct to school renewal principles and practices. Because both instruments measure principals' behaviors in renewing a school for educational policy and practice, we used the instrument, Orientation for School Renewal, in the examination of the convergent validity of the instrument, School Renewal Principles and Practices. The instrument, Orientation for School Renewal, has a seven-factor structure (see Appendix B). Each factor was correlated with all of the four factors from the instrument, School Renewal Principles and Practices. Finally, for reliability analysis, we adopted McDonald's omega (ω) to measure the internal consistency of the instrument, because of the advantages of McDonald's ω over Cronbach's alpha (α) (see Deng & Chan, 2017).

6. Results

We performed a series of CFA to examine how teachers would perceive their principals' school renewal principles and practices. The instrument, School Renewal Principles and Practices, was introduced in Appendix A, together with descriptive information on all of the 16 items. With this background, the 16 items on the instrument were organized into various factorial structures in an attempt to identify the best fitting factorial structure to the data. Table 1 presents estimates from multiple model-data-fit indices that functioned to compare various CFA models to discern which factorial structure represented the best fit to the teacher data.

Table 1. Model-Data-Fit Indices.

Model	χ^2	CFI	TLI	RMSEA	SRMR	AIC	BIC
Null model	11229.61	-	-	-	-	-	-
One factor	1632.39	.86	.84	.13	.05	34278.82	34508.91
Four factors	684.61	.95	.94	.08	.03	33343.05	33601.89
Higher-order factor	762.63	.94	.93	.09	.04	33417.06	33666.32

Note: CFI = comparative fit index. TLI = Tucker-Lewis index. RMSEA = root mean square error of approximation. SRMR = standardized root mean square residual. AIC = Akaike information criterion. BIC = Bayesian information criterion.

Specifically, comparing across the four factorial structures, the four-factor structure demonstrated the best model-data-fit result across all fitting indices. The four-factor CFA model showed the smallest χ^2 = 684.61, representing a substantial reduction from χ^2 = 11229.61 for the null CFA model. It reported the largest value for both CFI = .95 and TLI = .94 within the acceptable range. Both RMSEA = .08 and SRMR = .03 were the smallest within the acceptable range. Both AIC = 33343.05 and BIC = 33601.89 were also the smallest among the applicable CFA models. The four-factor structure was clearly the best fitting model to the data. Meanwhile, the one-factor structure was not supported, indicating that there were indeed dimensions underlying principals' school renewal principles and practices. Neither was the higher-order factorial structure supported, indicating that there was not any substantial hierarchical factorial structure for principals' school renewal principles and practices.

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Table 2. Pearson's Product Moment Correlation Coefficients as Convergent Validity.

	SR Principles and Practices F1	SR Principles and Practices F2	SR Principles and Practices F3	SR Principles and Practices F4
School renewal (SR) F1	0.72 (.02)	0.66 (.03)	0.61 (.03)	0.57 (.03)
School renewal (SR) F2	0.70 (.03)	0.68 (.03)	0.65 (.03)	0.62 (.03)
School renewal (SR) F3	0.66 (.02)	0.69 (.02)	0.61 (.03)	0.58 (.03)
School renewal (SR) F4	0.71 (.02)	0.66 (.02)	0.67 (.02)	0.63 (.03)
School renewal (SR) F5	0.69 (.02)	0.65 (.02)	0.68 (.02)	0.63 (.02)
School renewal (SR) F6	0.72 (.02)	0.69 (.03)	0.69 (.03)	0.68 (.03)
School renewal (SR) F7	0.74 (.02)	0.77 (.02)	0.71 (.02)	0.69 (.02)

Note: Values in parentheses are standard errors. For both instruments, higher values on items indicate more positive responses. For school renewal, F1 = Focus on students and their achievement; F2 = Continuous school improvement; F3 = Balance between the internal and external influences; F4 = The dialogue, decision, action, and evaluation (DDAE) process; F5 = Implementation integrity; F6 = Implementers as active developers; and F7 = Internal responsibility and professionalism. For school renewal principles and practices, F1 = Developing and sustaining the school's positive core, F2 = Developing and sustaining collective ownership, F3 = Making evidence-based decisions, and F4 = Fostering and supporting organizational learning.

Table 2 represents our attempt to pursue the convergent validity of the instrument, School Renewal Principles and Practices. Correlation was sought between the instrument, School Renewal Principles and Practices, and a psychometrically established instrument, Orientation for School Renewal. The table shows the correlations between the seven factors underlying orientation for school renewal and the four factors underlying school renewal principles and practices. Correlations in general were high and positive. Among the 28 correlations, seven were larger than .70 with the highest as .74 and 19 correlations were larger than .60 (and smaller than .70). Only were two correlations smaller than .60 (respectively .57 and .58). These results clearly led to the conclusion that the instrument, School Renewal Principles and Practices, possessed acceptable convergent validity.

Our final effort, reliability analysis based on MacDonald's ω, indicated strong internal consistency of the instrument, School Renewal Principles and Practices (ω = .96). The four factors also indicated acceptable internal consistency (ω = .92, .89, .87, and .92 respectively). Overall, we concluded that the instrument, established based on a systematic review of the literature, demonstrated acceptable construct validity via both factorial validity and convergent validity. Meanwhile, the instrument was reliable, with evidence of strong internal consistency.

7. Discussion

7.1. Summary of Findings

This study reported the development and validation of a measurement instrument that aims to gauge school principals' school renewal principles and practices. Clark and Watson's (1995) classic, five-step approach was used to establish the construct validity of the instrument, School Renewal Principles and Practices. The validation of the instrument was further confirmed via both factorial (structural) validity and convergent validity. Both procedures produced acceptable results. The internal consistency of the instrument was .96 via MacDonald's ω. Overall, the instrument demonstrated sound psychometric properties, and we conclude that the instrument is valid and reliable for application in empirical research. It is our hope that the instrument has started to fill in a critical gap in the current research literature on school renewal or educational change.

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7.2. Instrument Characteristics

Apart from being a whole scale (ω = .96), the instrument, School Renewal Principles and Practices, has four subscales: developing and sustaining the school's positive core, developing and sustaining collective ownership, making evidence-based decisions, and fostering and supporting organizational learning (see Appendix B) (ω = .92, .89, .87, and .92 respectively). The results of the factorial (structural) validity (with the four subscales specified) as well as the results of the convergent validity (each subscale in correlation with subscales from a similar instrument) provided confidence that these subscales are well established. They can therefore be used individually or collectively as a whole for empirical research.

The instrument, School Renewal Principles and Practices, is consisted of 16 individual items, classified into four subscales (see Appendix B). The findings from this study with a focus on the development and validation of the instrument suggest that such an instrument is both efficient and effective, efficient in that the instrument with just 16 items can be easily applied in any empirical research (additionally, these 16 items were shown in this study to be sufficient to capture the phenomenon of school principals' school renewal principles and practices), and effective in that the instrument did demonstrate properties that suggest strong validity and reliability. The efficiency and effectiveness of an instrument would make the instrument quite conducive to empirical research (see Khan, 2019).

7.3. Teacher Perspective versus Principal Perspective

Data can be collected from various perspectives to gauge the same social or educational phenomenon. Educationally, especially when research concerns about principal leadership, there are multiple ways to collect information on school principals' leadership principles (e.g., their knowledge) and leadership practices (e.g., their skills). Superintendents (of a school district), parents, teachers, students, and even principals themselves can be sources from which to collect data on principals' leadership qualities. Ma et al. (2020) argued that a best data source provides objective and accurate information about the social or educational phenomenon to be measured. Following this logic, Ma et al. (2020) suggested that teachers would be the best data source when research concerns about principal leadership. For this reason, the instrument presented in this study, School Renewal Principles and Practices, was designed to work with both teachers and principals. In particular, this study examined the psychometric properties of the instrument based on the teacher data (as the best data source).

The results of this study then support the use of the instrument with teachers to collect data on school principals' school renewal principles and practices. The same instrument (i.e., with identical individual items and identical instrument structure) can also be used by principals to assess their own principles and practices regarding school renewal. However, in the context of this empirical research (i.e., this study worked with schools in Cohort B), we did not have the number of schools (or the number of principals) that was large enough to reasonably estimate the psychometric properties of the same instrument when applied to principals. For this reason, we could not discuss the behaviors of the instrument when applied to principals, an issue that we would leave to further research, together with some other suggestions for further research.

8. Limitations and Further Research

The development and validation of the instrument, School Renewal Principles and Practices, were credible for many theoretical and methodological reasons. For example, the construct validity of the instrument was established strong based on a comprehensive review of the literature, and then the construct validity of the instrument was further strengthen via the factorial (structural) validity and the convergent validity, both established with strong analytical outcomes. Nonetheless, we have some suggestions for further research, with the ultimate goal to establish even stronger credibility for the instrument. Of course, these suggestions can be reasonably considered as limitations of this study, thus in need of further research efforts.

One of such suggestions is to establish the divergent validity of the instrument. Different from convergent validity, divergent validity seeks to compare an instrument measuring a certain construct with a well-established instrument that measures the opposite of the construct. In such a case, correlations between subscales of the instrument and subscales of the well-established instrument would be either positively weak or negatively strong. In the context of this study, we did not pursue divergent validity because we simply did not have any well-established instrument that measures something opposite of school renewal principles and practices. This is a limitation but also an opportunity for further research concerning the instrument.

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The measurement invariance is another potential issue for further research. Again, in the context of this study, we did not follow this line of thinking because our sample was simply not diverse enough to pursue answers to this suggestion. This is another limitation but also another opportunity for further research concerning the instrument. Measurement invariance may concern the reactions from teachers of different racial ethnic backgrounds to school principals' school renewal principles and practices or from teachers practicing education at different age levels of students (i.e., different grade levels). All efforts like these suggested ones would add further evidence to the credibility of the instrument.

Declaration of Conflicting Interests:

The author(s) declared no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

Declaration of Conflicting Interests:

All research elements of the study followed research ethnics standards as reviewed and approved by IRB (Institution Review Board).

Ethics Statement:

Instrument and procedure for data collection associated with this article have both been approved by the Institutional Review Board (IRB) at the University of Kentucky, Lexington, Kentucky, USA. IRB Number: 48374.

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References

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. Psychological Assessment, 7(3), 309–319. https://doi.org/10.1037/1040-3590.7.3.309

Day, C., Gu, Q., & Sammons, P. (2016). The impact of leadership on student outcomes: How successful school leaders use transformational and instructional strategies to make a difference. Educational Administration Quarterly, 52(2), 221–258. https://doi.org/10.1177/0013161X15616863

Deng, L., & Chan, W. (2017). Testing the difference between reliability coefficients alpha and omega. Educational and Psychological Measurement, 77(2), 185–203. https://doi.org/10.1177/0013164416658325

Earl, L., & Katz, S. (2006). Leading schools in a data-rich world. Corwin.

Fullan, M. (2004). System thinkers in action. Department for Education and Skills.

Hallinger, P. (2000). A review of two decades of research on the principalship using the Principal Instructional Management Rating Scale. Paper presented at the annual meeting of the American Educational Research Association, Seattle, WA.

Hallinger, P. (2003). Leading educational change: Reflections on the practice of instructional and transformational leadership. Cambridge Journal of Education, 33(3), 329–351. https://doi.org/10.1080/0305764032000122005

Hallinger, P., & Heck, R. (1999). Next generation methods for the study of leadership and school improvement. In J. Murphy & K. S. Louis (Eds.), Handbook of research on educational administration (2nd ed., pp. 141–162). Jossey-Bass.

HIL Project. (2023). HIL model for school renewal. Retrieved February 4, 2023, from https://wmich.edu/hil-school-renewal/hil-model-school-renewal

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural Equation Modeling, 6(1), 1–55. https://doi.org/10.1080/10705519909540118

Hudak, G. (2021). Understanding schools that were able to show sustained improvement within the Renewal School program [Unpublished doctoral dissertation]. Fordham University.

Khan, A. (2019, August 26). Characteristics of good measuring instruments in education. Toppr Bytes. https://www.toppr.com/bytes/characteristics-of-good-measuring-instruments-in-education/

Klocko, B. A., & Wells, C. M. (2015). Workload pressures of principals: A focus on renewal, support, and mindfulness. NASSP Bulletin, 99(4), 332–355. https://doi.org/10.1177/0192636515611881

Leithwood, K., & Day, C. (2007). Starting with what we know. In C. Day & K. Leithwood (Eds.), Successful principal leadership in times of change (pp. 1–16). Springer. https://doi.org/10.1007/978-1-4020-5516-1_1

Leithwood, K., Jantzi, D., & Steinbach, R. (1998). Leadership and other conditions which foster organizational learning in schools. In K. Leithwood & K. S. Louis (Eds.), Organizational learning in schools (pp. 67–92). Taylor & Francis.

Ma, X., Shen, J., Reeves, P., & Yuan, J. (2020). A multilevel examination of an instrument measuring school renewal via teachers. Studies in Educational Evaluation, 65, Article 100850. https://doi.org/10.1016/j.stueduc.2020.100850

Muthén, L. K., & Muthén, B. O. (2017). Mplus user's guide (8th ed.). Muthén & Muthén.

Shatzer, R. H., Caldarella, P., Hallam, P. R., & Brown, B. L. (2014). Comparing the effects of instructional and transformational leadership on student achievement: Implications for practice. Educational Management Administration & Leadership, 42(4), 445–459. https://doi.org/10.1177/1741143213502192

Shen, J., & Burt, W. (Eds.). (2015). Learning-centered school leadership: School renewal in action. Peter Lang.

Shen, J., & Cooley, V. E. (2012). Learning-centered leadership development program for practicing and aspiring principals. In K. L. Sanzo, S. Myran, & A. H. Nomoore (Eds.), Successful school leadership preparation and development: Lessons learned from US DOE school leadership program grants (pp. 113–135). Emerald. https://doi.org/10.1108/S1479-3660(2012)0000014009

Silcox, S., MacNeill, N., & Cavanagh, R. (2003). Principal leadership and school renewal. In Proceedings of the New Zealand Association for Research in Education: Educational Research, Risks, and Dilemmas (pp. 1–12).

Sutton, P. S., & Knuth, R. (2020). How high school academic departments impact school reform efforts. Journal of Curriculum Studies, 52(1), 118–137. https://doi.org/10.1080/00220272.2019.1679187

Wallace Foundation. (2013). The school principal as leader: Guiding schools to better teaching and learning (Expanded ed.). The Wallace Foundation. https://www.wallacefoundation.org/knowledge-center/pages/the-school-principal-as-leader-guiding-schools-to-better-teaching-and-learning.aspx

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Appendix A. Instrument Measuring School Renewal Principles and Practices, with Descriptive Statistics

Item	M	*SD*
Developing and Sustaining the school's Positive Core		
We use our school mission and vision to prioritize focus areas for student success	4.78	1.09
We use an appreciative approach to assess our school's current status in a focus areas	4.62	1.03
We identify current strengths we can leverage to achieve student success in priority focus areas	4.75	1.04
We focus on growth opportunities in priority areas for student success.	4.88	1.00
Developing and Sustaining Collective Ownership		
Principal and teachers share leadership roles for student success	4.74	1.20
We feel that we are collectively responsible for student success	5.01	1.09
We cultivate an environment of mutual trust, inclusion, and safety	4.70	1.24
We work interdependently to co-create ways for achieving student success	4.74	1.05
Making Evidence-based Decisions		
We practice routines of collaborative inquiry in our professional activities	4.67	1.04
We maintain current profiles of our school strengths and growth opportunities	4.55	1.12
We monitor implementation of evidence-based practices for student success	4.67	1.07
We use data dashboards with multiple indicators to track student growth	4.51	1.27
Fostering and Supporting Organizational Learning		
We routinely practice reflective dialogue informed by evidence of student and school growth	4.46	1.18
We use probing questions to gain deeper understandings of our strengths and growth opportunities	4.46	1.16
We align school resources, processes, and systems to support student success growth targets	4.59	1.16
We engage in professional learning at different levels including knowing, doing, and reflecting	4.62	1.14

Note: Response options: 1 = Strongly disagree, 2 = Moderately disagree, 3 = Slightly disagree, 4 = Slightly agree, 5 = Moderately agree, 6 = Strongly agree.

Appendix B. Instrument Measuring Orientation for School Renewal, with Descriptive Statistics.

	M	*SD*
Focus on students and their achievement		
Our school improvement process is guided strongly by the goal of improving student achievement	5.23	1.01
Our school truly has high expectations for all students	4.95	1.07
All teachers have a clear, shared vision about expectations for all students	4.65	1.06
Continuous school improvement		
Our school has a continuous focus on teaching and learning	5.22	.93
All our teachers continuously seek ways to enhance the teaching and learning processes	4.98	.96
Our school consistently uses a continuous improvement process, rather than starting from scratch for each initiative	4.59	1.15
Balance between the internal and external influences		
We openly welcome ideas and input on school improvement from all stakeholders	4.69	1.15
We successfully balance external pressure and internal initiative for school improvement	4.34	1.08

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We successfully prioritize our school improvement efforts despite competing priorities	4.50	1.06
The dialogue, decision, action and evaluation (DDAE) process		
We consistently dialogue in our school about our school improvement priorities	4.62	1.21
Our school improvement strategies are well coordinated within the school	4.44	1.17
Our school successfully monitors the progress of our school improvement initiatives with data	4.77	1.17
Implementation integrity		
We consistently monitor our data and develop school improvement initiatives accordingly	4.69	1.15
We have a clear process in place to continuously generate new ideas for school improvement	4.30	1.17
We consistently re-prioritize school improvement efforts based on continuous data updates	4.43	1.18
Implementers as active developers		
Our school really decides our school improvement priorities	4.42	1.22
We usually develop our own programs for school improvement (rather than buying from an external vendor)	4.11	1.33
We consistently adapt and adjust existing programs based on our outcome data	4.43	1.18
Internal responsibility and professionalism		
We all hold ourselves and each other accountable	4.70	1.11
We all hold our students accountable for their own achievement	4.62	1.16
Continuous reflection on school improvement is part of our professional culture	4.71	1.12

Note: Response options: 1 = Strongly disagree, 2 = Moderately disagree, 3 = Slightly disagree, 4 = Slightly agree, 5 = Moderately agree, 6 = Strongly agree.

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