Management Systems and Leadership Models in 21st Century Educational Organizations

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Rising teacher attrition rates, decreasing teacher satisfaction levels, and a decline in teachers entering the educational field suggest that educational organizations may not be providing management and leadership structures that are conducive to the types of growth and improvement needed for teachers.

The findings from this research add to the body of knowledge on organizational management and leadership in organizations. The participating organization was North Dakota's Center for Distance Education's (NDCDE). A process-based management framework was identified and analyzed with performance results to show a potential alternative path to the traditional organizational management structures in educational organizations. This research presents an alternative model of leadership and management that could be replicated by other school administrators or organizational leaders, which could profoundly impact how organizations learn and perform.

Theoretical Framework

Traditionally, educational organizations like NDCDE have followed a hierarchical-authoritative management and leadership model. It is theorized that this traditional model has prevented organizational growth and improvement in many educational institutions (Baldy, Green, Raiford, Tsemunhu, & Lyons, 2014). Modern organizational research has shown that individual ownership of work tasks or documented processes is often associated with an increase in employee job satisfaction, which increases the quality of the product or service. Successful management and leadership systems in educational organizations often incorporate individual process ownership that allows members of the organization to improve over time. Collinson, Cook, & Conley (2006) and Shen, Leslie, Spybrook, and Ma (2012) have conducted research that produced evidence supporting the theory that defined and continually improved work tasks increase teacher job satisfaction. Additionally, Baldy et al. (2014) provided evidence that a school's management system has a profound impact on organizational performance.

Other research has been done in the field of organizational quality improvement outside of education supporting the theory of ownership of individual process outputs. Liker (2004) and Rother (2010) found evidence of individual process ownership embedded in Toyota's production system that has also been found in manufacturing and service industries. For example, Weaver, Greeno, Goughler, Yarzebinski, Zimmerman, and Anderson (2013) provided evidence that the adoption of Toyota's approach to individual process ownership can improve overall customer satisfaction by dropping waiting room times. Mohr and Zoghi (2008) further contributed to this theory by showing evidence that flatter organizational structures in which leadership allows greater ownership of processes by employees can lead to increased job satisfaction.

According to this theoretical rationale, if an organization implements a management and leadership system that creates a sense of ownership in employees for their work processes by seeing how their individual process improves organizational performance, then their job satisfaction level should increase. As previous research has identified, an increase in job satisfaction should equate to an increase in organizational performance (Ingersoll, 2001). Given the evidence and implications set forth in this framework, together with the purpose of this study, the following research questions have been devised, which will be addressed sequentially in the data analysis.

Literature Review

Teacher job satisfaction has proven to be a crucial component in organizational performance – especially in online institutions like the NDCDE (Bolliger & Wasilik, 2009). This is critical because teacher job satisfaction plays a crucial role in student performance, which is another important metric for school organizational performance (Woods & Weasmer, 2004). A survey conducted by Harris Interactive in 2012 that gathered data from 1,000 U.S. K-12 public school teachers and 500 U.S. K-12 public school principals found that those who are "very satisfied" with their jobs have decreased from a high of 62% in 2008 to a low of 39% in 2012 (Metropolitan Life Insurance & Harris Interactive, 2013). One of the factors that influences teacher job satisfaction in schools is the leadership competencies demonstrated by the principal (Crane & Green, 2013). The leadership competencies examined by Crane & Green focus on leadership in instruction, organizational management, collaboration, professional development, and professionalism. Other significant factors that influence teacher satisfaction rates are the components involved in school management such as working conditions, staff collegiality, administrative support, positive student behavior, and teacher empowerment (Shen et al., 2012).

According to Boyd et al. (2011), teacher retention rates are also strongly influenced by leadership characteristics and management philosophy. Boyd et al. (2011) pointed out that attrition among teachers is 2% higher than that of other professions, further illustrating the importance of understanding educational organizations and how they are managed and led. Along with teacher job satisfaction, research has shown that support from school leadership regarding allowing creativity and individuality among first-year teachers also have a substantial impact on teacher retention rates within institutions (Inman & Marlow, 2004). This would suggest that school administrators and their leadership characteristics often have a significant impact on teacher retention (Ladd, 2011).

A school's management system also has a significant impact on the organization's overall performance (Baldy et al., 2014). Investing in individual or team competencies through shared learning experiences is one way in which organizational leaders have increased continual learning, which has in turn impacted school performance metrics (Goh, Cousins, & Elliott, 2006). This has been accomplished in schools by committing time weekly or monthly for staff members to meet and discuss the results of different instructional methods and assessments (Goh et al., 2006).

Lyon, Nadersshahi, Nattestad, Kachalia, and Hammer (2014) conducted research that identified the key management or organizational attributes that should be in place for educational institutions trying to increase performance. These design features include: mission and goals, cooperative climate, organizational structure, political structure and policies, and relationships with parents and community members (Lyon et al., 2014). Specifically, they found that "organizations that are highly hierarchical, compartmentalized, and operating in a bureaucratic structure are less successful at implementing successful change" (Lyon et al., 2014, p. 30). Successful management systems in education also often incorporate individual process ownership that allows members of the organization to improve over time (Collinson, Cook, & Conley, 2006). It is explained that this connection exists because ownership in the process also means ownership of the processes results. Therefore, if the results are not meeting expectations, the process owner will seek to improve it.

Non-hierarchical approaches to leadership that emphasize either servant, participative or transformative leadership models have shown to have significant positive impacts on organizational performance as measured through teacher job satisfaction, retention, teamwork, collaboration, and efficacy (Shaw & Newton, 2014; Hauserman & Stick, 2013; Sagnak, 2016). Shaw and Newton (2014) surveyed more than 1,000 teachers from 15 different schools. They showed a significant positive correlation between the teacher's perception of their principals' level of servant leadership and their retention rates at $r(323) = .37$, $p < .02$ (Shaw and Newton, 2014).

Transformative leadership qualities, such as high levels of collaboration, encouraging reflection, teamwork, and collegiality were also linked to an increase in organizational performance (Hauserman & Stick, 2013). Transformative leadership has also been correlated with increased teacher job satisfaction levels (Ross and Gray, 2006). Finally, participative leadership characteristics, such as principals sharing the decision-making process with teachers, had a very positive impact on change-oriented behavior and intrinsic motivation among teachers (Sagnak, 2016).

Method

This research study involved mixed methods and utilized a convergent design. Qualitative data were obtained and analyzed to identify the management and leadership models practiced at NDCDE. Simultaneously, quantitative data was collected to analyze the effectiveness of the applied management and leadership model through execution and analysis of job satisfaction surveys. Data regarding enrollment trends and completion rates were also collected and analyzed.

Research Questions

1. What specific organizational management model or framework exists at North Dakota's Center for Distance Education (NDCDE) and what are the superintendent's leadership beliefs?
2. How has NDCDE's management and leadership model impacted employee job satisfaction when compared to the norms established in the Spector's (1985) Job Satisfaction Survey (JSS) for teachers and other public employees?
3. Is there a statistically significant correlation between NDCDE's employee turnover rates and the implementation of NDCDE's management and leadership system under its new superintendent?
4. Was there a statistically significant increase in NDCDE's completion rates and student enrollments after the arrival of the superintendent's new management model and leadership characteristics?

The qualitative portion of this study required a population with knowledge of NDCDE and its management/leadership characteristics. To meet this requirement, non-probability sampling was utilized, and the participant ($N = 1$) was purposefully chosen. Dr. Alan Peterson, NDCDE's superintendent, was chosen as the only member sampled in the qualitative portion of the research because he instituted the management and leadership utilized by NDCDE when he became superintendent in 2010.

For the quantitative portion of the study, all current NDCDE full time and part-time employees were asked to participate in the Job Satisfaction Survey (JSS) (Spector, 1985). The population size was $N = 45$. Of the 45 that were asked to participate, 32 returned useable completed questionnaires for a participation rate of 71%, and a final sample size of $n = 32$. The data collected for employee turnover rates within the organization was gathered by NDCDE's Human Resources Department and spanned from 2006 - 2016. The data collected includes turnover rates on any full-time employee who has worked for the organization over this 10-year period, which included the tenure of previous management staff.

The data used for examining total enrollment and completion rates were obtained by NDCDE's architect of its two separate Student Information Systems (SIS) dating back to the 2000 – 2001 school year through the 2015 – 2016 school year. This data was captured for the entire population ($N = 111,583$) of enrollments during from 2000 - 2016.

Qualitative instrumentation

To evaluate the leadership and management of the organization, the organization's director was asked semi-structured questions from the 2015-2016 Baldrige Excellence Framework for Education which focuses on the education criteria for performance excellence (Baldrige Performance Excellence Program, 2015). In 1987, Congress created the Malcolm Baldrige National Quality Award (MBNQA) to promote quality awareness in the industry. The United States Department of Commerce administers the award through the National Institute of Standards and Technology (NIST). The criteria used to administer the award is based on seven concepts that make up the interview questions used in this research. Accordingly, "the MBNQA has become a benchmark of world-class companies in the United States" (Russo, 1996, p. 9). In 1995, the NIST developed the Education Pilot Criteria which would be used to assess educational organizations including public, private, for-profit, and non-profit schools and universities (Russo, 1996). It is common for many educational organizations to use the Baldrige criteria as a foundation for their internal quality processes (Russo, 1996, p. 207). Accordingly, these criteria are viewed "as an excellent philosophical foundation" (Russo, 1996, p. 207). Additionally, research conducted by Badri, Selim, Alshare, Grandon, Younis, and Abdulla (2006) evaluated both the validity and reliability of the Baldridge Performance Excellence in Education Criteria as an organizational auditing tool. They found that all the Baldrige categories are significantly linked with both organizational performance results and student, stakeholder and market focus.

Quantitative instrumentation

The Job Satisfaction Survey (JSS) created by Spector in 1985 was the instrument used to collect data on employee job satisfaction. The questionnaire includes 36 items that assess employee attitudes toward their job and its aspects. Nine facets were evaluated and are found in Table 1. The rating scale that the participants completed consisted of six possible choices ranging in number from one (strongly disagree) to six (strongly agree). The JSS has been implemented in more than 53 studies since 1985, with participants from many different disciplines.

Total sample studies that have utilized the JSS as an instrument equal 148 with total sample size participants equaling N = 40,618. When Spector (1985) examined the scale's internal consistency reliability, he found that all but two of the facets had a reliability coefficient above .70 with all above .50. He concluded that all correlations were acceptable (r > .26). He then utilized a test-retest reliability estimate from a small sample of 43 individuals collected eighteen months apart. These coefficients ranged from .37 to .74. The reliability data shows that the "tested scale and subscales have reasonable internal consistency and test-retest data indicates good reliability over time" (Spector,1985, p. 705). The combination of high degrees of reliability, validity, application too many different work backgrounds, and established norms for public sector and educational employees provide adequate support for the use of Spector's (1985) job satisfaction survey with NDCDE employees.

Data Collection and Analysis

Interview sessions were transcribed to facilitate the analysis of the qualitative responses from the superintendent. To complete this process, each interview was recorded using a digital voice recorder and a backup recorder in the researcher computer. Open coding was used to provide basic descriptions of the different themes identified in each interview (Merriam & Tisdell, 2016). Then, analytical coding was used to provide meaning and reflection to each identified theme (Merriam & Tisdell, 2016). After transcription and coding, the identified categories and their themes were analyzed according to the framework presented in the Education Criteria for Performance Excellence Overview: A Systems Perspective (Baldrige Performance Excellence Program, 2015) as demonstrated in the framework previously presented. An organizational management model was then built based upon the assumptions from Baldrige about process management and the superintendent's responses.

To analyze the data from the JSS, a scoring guide was used that was provided by Spector (1985). An independent t-test was performed using SPSS to test for statistical significance between NDCDE's mean job satisfaction score and Spector's (1985) mean job satisfaction score from the provided norms.

Statistical means were calculated for overall completion rates, and for successful completion rates for school years before the arrival of NDCDE's current superintendent and after the arrival of NDCDE's current superintendent. A single sample t-test was first performed for NDCDE completion rates to test for a statistically significant difference between the two-calculated means. After this, another single sample t-test was performed to test for a statistically significant difference between means of successful completion rates.

Results

Research Question #1: *What specific organizational management model or framework exists at North Dakota's Center for Distance Education (NDCDE) and what are the superintendent's leadership beliefs?*

Identified Theme #1: NDCDE's Management Model: Process-Based Management

Since Dr. Peterson's arrival at NDCDE in 2010 as the organization's superintendent, he instituted a management system that he referred to multiple times during the interview sessions as "process-based management" (NDCDE Management Manual, 2017).

Operations. Dr. Peterson described what he thinks are the core principles of a process-based management system.

> The first principle of a process-based management system is that it is considered not to be traditionally hierarchical. There is no strict chain of command in the relationship between leadership and the rest of the workforce. The second core principle of a process-based management system is that it drives out fear because it shifts managing from an action that typically focuses on members of the system to the system itself. This allows members to find and correct problems knowing they will not be blamed. The intent is that facts, instead of personal opinions are then used to make decisions. The third core principle of a process-based management system is that it sets the stage for continual improvement throughout the organization. Continual improvement can only occur after the organization's system has achieved stability and predictability. (A. Peterson, personal communication, February 23rd, 2017).

Since Dr. Peterson made it clear that NDCDE follows a process-based management system, more details were revealed to show exactly what NDCDE's process-based management is and how it operates. According to multiple interviews with Dr. Peterson, core and sub-processes provide organization to NDCDE's process-based management system. This was validated in NDCDE's Management Manual (2017).

Figure 1 was provided during the interview sessions and is found in NDCDE's Management Manual (2017) to show the different identified work processes within NDCDE's management system. Dr. Peterson indicated that the core processes are in bold face type, which includes Office, Learning, Communications, and Review. Dr. Peterson explained how the management system is applied to these work processes.

> NDCDE's operations are based on the management of its work processes. Each work process at NDCDE has an owner that has been given authority and resources by senior leadership to manage their process. The owner of each process then has the responsibility to measure the output of the process they own and to show how they are continually improving to meet the expected output of the customer. (A. Peterson, personal communication, March 21st, 2017).

A process within NDCDE's process-based management system is defined as "a set of interrelated or interacting activities which transforms inputs to outputs" (NDCDE's Management Manual, 2017, p. 1).

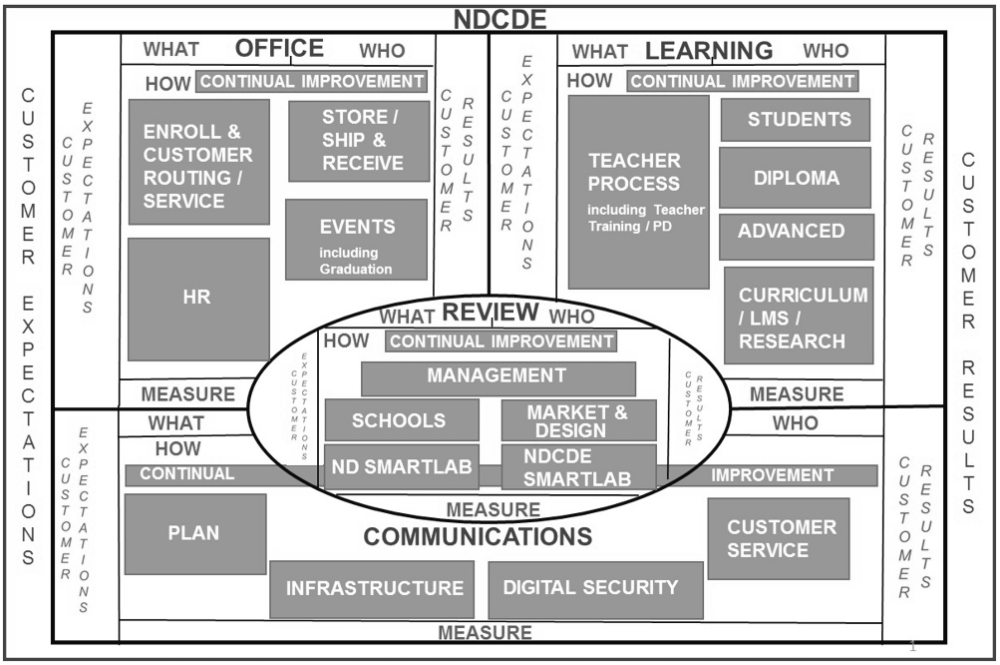

Figure 1. NDCDE process map that shows different core and subprocesses. Adapted from "NDCDE Management Manual 2017".

Customers. Dr. Peterson frequently acknowledged the importance of the customer when making organizational decisions while managing in a process-based system.

> Those at NDCDE view their relationships with customers significantly different when compared to most schools. Most traditional schools fail to recognize that there is a customer in education. The first task for NDCDE in adopting a process-based management system was to acknowledge that it has a customer. Then, they needed to define who that customer was. For NDCDE, parents and students were initially identified as the key customers. (A. Peterson, personal communication, March 6th, 2017).

Dr. Peterson stated that the acknowledgment of a customer's voice was "one significant characteristic that separates NDCDE's management system from that of a traditional school" (A. Peterson, personal communication, March 6th, 2017).

Innovation through continual improvement. It was stated multiple times during the interview sessions that "innovation occurs through organizational learning and continual improvement" (A. Peterson, personal communication, March 21st, 2017). Dr. Peterson also explained the significance of the relationship between organizational stability and continual improvement.

> When stability exists in an organization, there is a predictability to what is being produced, whether it is a good or a service. For any organization to innovate, it must be stable. This

> stability then leads to continual improvement, continual improvement to learning, and learning to innovation. (A. Peterson, personal communication, March 21st, 2017).

The model that for incremental growth Dr. Peterson explained he implemented for NDCDE's management system is a combination of Check, Act, Plan, Do (CAPDo), and his own *Learning Model*. Dr. Peterson stated that "CAPDo is a version of Plan Do Check Act (PDCA). The problem with the traditional PDCA model is that too much planning goes into it. Organizations that implement a PDCA model spend all their energy planning and not enough time executing" (A. Peterson, personal communication, March 2nd, 2017). To measure the progress of a design or innovative program developed with CAPDo, Dr. Peterson indicated that "the opinion of the customer is ultimately the measuring stick" (A. Peterson, personal communication, March 21st, 2017).

The second characteristic that documented Dr. Peterson's beliefs about management of continual improvement and organizational learning is described as the *Learning Model* provided in Figure 2. This is a model that Dr. Peterson claimed: "applies to everyone both inside and outside of the organization, including the students that NDCDE works with" (A. Peterson, personal communication, March 20th, 2017). It is a model that he contends is "especially applicable to how organizations themselves can learn and grow" (A. Peterson, personal communication, March 20th, 2017). Figure 2 is used as a reference and was drawn by Dr. Peterson to show the implementation of his developed *Learning Model* for application in NDCDE's process-based management system to show organizational learning. According to Dr. Peterson, "the most important part of NDCDE as an organization is that it learns" (A. Peterson, personal communication, February 23rd, 2017).

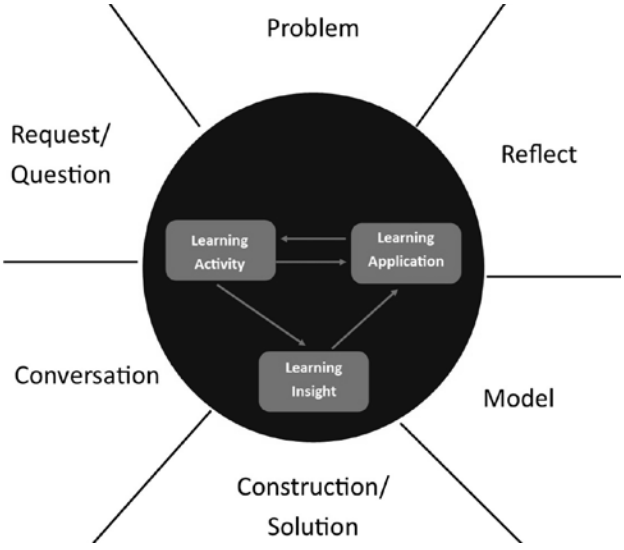

Figure 2. The Learning Model. By Peterson, A., personal communication, March 20th, 2017.

Identified Theme #2: Superintendents' Leadership Beliefs: Stewardship Model

Senior leaders. Dr. Peterson's leadership model reinforced a firm reliance on senior leadership within the organization administered by process owners. He noted specific qualities

when looking for senior leaders, such as leading others by example, ethical decision making, and not dictating policy (A. Peterson, personal communication, February 28th, 2017).

Employee growth through continual improvement. An employee professional growth concept through organizational innovation was identified as another core component when interviewing Dr. Peterson. This was explained as trying to create an environment that eliminates fear.

> Leadership must be able to create a workplace culture of innovation and risk-taking, which requires driving out fear. Often in organizations, employees are reluctant to speak out or innovate because they are fearful of what leadership in the organization will say, or how it will respond to something different. To drive fear out of the workplace, leaders need to show trust in decision making and trust that the members of the organization will accurately represent what the organization stands for. (A. Peterson, personal communication, February 28th, 2017).

Validation of this finding was represented in NDCDE's Management Manual as "a set of principles and practices that create a way of governing oneself that creates a strong sense of ownership and responsibility for outcomes" (NDCDE Management Manual, 2017, p. 9).

Communication. In addition to driving out fear and establishing trust, Dr. Peterson emphasized the importance of communication when applying a stewardship model of leadership. He felt that the "most valuable form of communication occurs face to face with employees, students, and any other customers or partners with which NDCDE must work" (A. Peterson, personal communication, February 28th, 2017). Even though NDCDE is primarily an online school, "the organization spends quite a bit of money to allow its employees to communicate face-to-face with those that it interacts with" (A. Peterson, personal communication, February 28th, 2017). Dr. Peterson stated that he makes a daily habit of interacting with multiple employees, discussing new ideas, and what they are working on. He felt that it is "these types of meetings and interactions that spur innovation in an organization" (A. Peterson, personal communication, February 28th, 2017).

Workforce Evaluation. The final component identified in Dr. Peterson's stewardship model of leadership is how leaders themselves are evaluated for performance and then how they evaluate others in the workforce for performance. Dr. Peterson described how NDCDE, as a state agency, has required annual performance evaluations. Overall, it was stated that "there is very little value in these yearly reviews" (A. Peterson, personal communication, February 28th, 2017). Instead, he stated that "people should be evaluated every day by leadership meeting with them face-to-face" (A. Peterson, personal communication, February 28th, 2017). He indicated that "individual performance evaluations occur daily according to what individuals produce in the processes that they are responsible for managing' (A. Peterson, personal communication, February 28th, 2017).

Research Question #2: *How has NDCDE's management and leadership model impacted employee job satisfaction when compared to the norms established in the Spector's (1985) Job Satisfaction Survey (JSS) for teachers and other public employees?*

The means were calculated for all the measured categories in Spector's survey and are reported in Table 1.

Table 1
NDCDE Employee Job Satisfaction Scores

Category	NDCDE Mean	Norm Mean	*t*-test	Sig.(2 tailed)
Overall Job Satisfact.	163.09	138.3	6.462**	.000
Pay	15.56	12.1	4.733**	.000
Promotion	13.00	11.9	1.671	.105
Supervision	21.16	19.1	3.447*	.002
Fringe Benefits	18.78	14.4	6.063**	.000
Contingent Rewards	17.94	13.5	6.007**	.000
Operating Conditions	17.69	12.9	10.486**	.000
Coworkers	19.16	17.9	2.029	.050
Nature of Work	21.41	18.9	5.707**	.000
Communication	18.97	14.5	7.881**	.000

Note. Satisfact. = Satisfaction. Norm Mean = Spector's convenience sample.
*$p < .01$. **$p < .001$.

The independent samples *t*-test comparing the mean overall job satisfaction score for all NDCDE employees and the mean overall job satisfaction score for Spector's norms for employees in the public sector found a significant difference between the two groups (t (31) = 6.462, $p < .001$). The mean for NDCDE employees was significantly higher (M = 163.09, SD = 21.679) than the mean of the norm group (M = 138.3, SD = 27.9).

Research Question #3: *Is there a statistically significant correlation between NDCDE's employee turnover rates and the implementation of NDCDE's management and leadership system under its new superintendent?*

The four recorded years before the current superintendent's arrival, NDCDE had a mean organizational turnover rate of 1.99%. The current superintendent arrived at NDCDE in July of 2010. The six years between 2011 and 2016 had a mean organizational turnover rate of 2.95%. The 2010 calendar year represented a transition as the former superintendent left in 2009, and the new one did not arrive until July 2010. This means that the average turnover rate for employees under NDCDE's new superintendent was slightly higher than it was under the former.

A Pearson correlation was calculated to examine the relationship between NDCDE's turnover rates and years to represent the arrival of a new superintendent and his new management model. This yielded a statistically insignificant correlation: $r(9) = -.123$, $p > .05$. The results indicated that there was no statistically significant correlation between employee turnover rates and different management and leadership styles implemented between 2006 and 2016.

Research Question #4: *Was there a statistically significant increase in NDCDE's completion rates and student enrollments after the institution of the superintendent's new management model and leadership characteristics?*

Each school year started on July 1st and ran through June 30th of the next year. Summary data of the findings are listed in Table 2.

Table 2
NDCDE Summary of Performance Data

School Year	Completion Rate	Completion with Passing Grade Rate	Enrollment Totals	Percent Change in Enrollments
2000 – 2001	57%	57%	9,423	N/A
2001 – 2002	58%	57%	9,209	-2.27%
2002 – 2003	59%	58%	9,754	5.92%
2003 – 2004	60%	59%	9,882	1.31%
2004 – 2005	61%	60%	9,151	-7.4%
2005 – 2006	58%	57%	9,680	5.78%
2006 – 2007	59%	58%	8,259	-14.68%
2007 – 2008	58%	57%	7,610	-7.68%
2008 – 2009	68%	61%	6,755	-11.24%
2009 – 2010	68%	67%	5,585	-17.32%
2010 – 2011	99%	97%	2,173	-61.09%
2011 – 2012	84%	73%	3,248	49.47%
2012 – 2013	88%	87%	3,544	9.11%
2013 – 2014	89%	82%	5,650	59.42%
2014 – 2015	89%	82%	5,829	3.17%
2015 – 2016	90%	84%	5,831	.03%

Note. N/A = Not available. Data was only collected starting in the 2000 – 2001 year.

A single-sample *t*-test that compared the mean completion rate prior to the current management and leadership model of 60.6% to the mean completion rate after the implementation of NDCDE's current management and leadership model of 89.8% was conducted. A significant difference was found (t (5) = 14.447, $p < .001$). The sample mean of 89.8% (SD = 4.95648) was significantly greater than the mean prior to the adoption of NDCDE's current management and leadership model.

Table 3
Mean Data 2000-2010

	N	Minimum	Maximum	Mean	Std. Deviation
Completion Rate	10	57%	68%	60.6%	4.06065
Completion Rate with Passing Grade	10	57%	67%	59.1%	3.10734

Note. Data prior to the arrival of Dr. Peterson.

Table 4
Mean Data 2010 – 2016

	N	Minimum	Maximum	Mean	Std. Deviation
Completion Rate	6	84%	99%	89.8%	4.95648
Completion Rate with Passing Grade	6	73%	97%	84.2%	7.83369

Note. Data after the arrival of Dr. Peterson.

An additional single-sample *t-test* was conducted that comparted the mean successful completion rate from before the implementation of the current management and leadership model to that of after its implementation. The means were 59.1% and 84.2%, respectively, showing a significant difference ($t(5) = 7.838$, $p < .001$). The sample mean of 84.2% (3.19809) was significantly greater than the mean before the adoption of NDCDE's current management and leadership model.

A two-proportion *z*-test was then performed to confirm the findings of the *t*-tests. By analyzing the highest percentage of completions with a passing grade prior to Dr. Peterson's arrival as 67% in 2010 ($x = 3742$, $n = 5585$), compared to the lowest percentage of completions with a passing grade after Dr. Peterson's arrival as 73% in 2011 ($x = 2371$, $n = 3248$), an analysis found $z = -5.89$, which was statistically significant at $p < .01$. Findings show the difference between the minimum and maximum percentages of completion rates with a passing grade prior to Dr. Peterson's arrival and after Dr. Peterson's arrival to be statistically significant.

The remaining research question sought to explain whether there was a significant increase in enrollments with the arrival of the new superintendent and the implementation of his management system and leadership beliefs. Figure 9 shows NDCDE's enrollment totals from 2000 – 2016. Starting in the 2006 – 2007 school year, enrollments began to drop steadily. This drop continued through the first year of Dr. Peterson's tenure as superintendent (2010 – 2011). After that, enrollments began to rise steadily.

Since this data compares two specific populations and not representative samples, a simple comparison of means was calculated. The mean enrollment totals after Dr. Peterson's arrival was significantly lower ($M = 4379.17$, $SD = 1591.80$) than the mean of enrollments prior to his arrival ($M = 8530.80$, $SD = 1454.35$) dating back to the 2000 – 2001 school year.

Discussion and Recommendations

The intent of this research study was to discover and model a management and leadership framework that adds to the body of professional knowledge about educational organizations and ultimately improves teachers' working conditions and performance results. Evidence presented in the previous section confirms what previous research has discovered regarding worker ownership and how it leads to higher job satisfaction and improved organizational performance. What separates this work from previous research is the depth provided in the structure and characteristics of a process-based system in an educational institution.

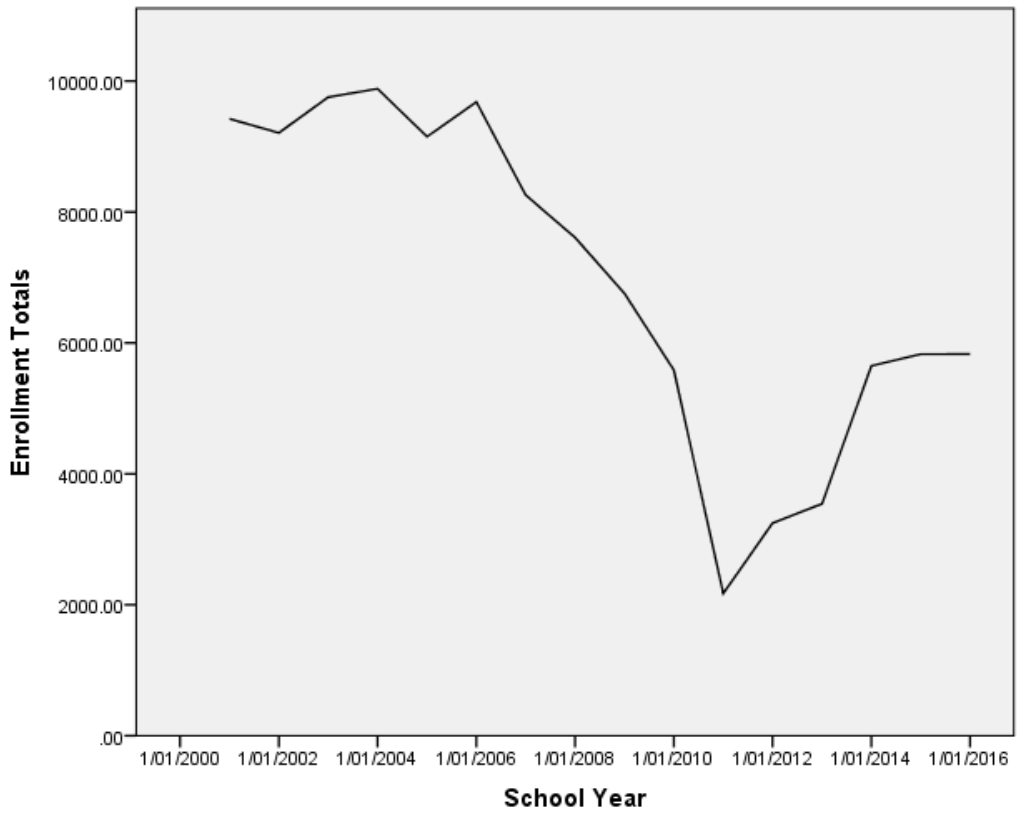

Figure 3. Enrollment data history from NDCDE Student Information System 2000 – 2016. Collected March 2017.

NDCDE's process-based approach to management is defined as an "application of a system of processes within an organization, together with identification and interactions of these processes and their management that provides the advantage of ongoing control provided over the linkage between the individual processes within the system of processes, as well as over their combinations and interaction" (NDCDE's Management Manual, 2017, p. 1). When designing processes, there are defined inputs and outputs. For NDCDE, inputs are defined as the expectations of the customer. Customers are students, their parents, and North Dakota's Legislative and Executive branches. After the transformation of the service occurs and value is added to the product (student learning), an output is generated that ideally meets the specifications established by the customer.

A concern for all organizations in the future will be how to logistically incorporate continual improvement into the processes of all members. Previous research conducted by Collinson et al. (2006) showed that often school reform efforts for improving performance fail because there is no established process for organizational learning. CAPDo provides NDCDE with its innovation model with the intention that the organization can learn quickly so it can better meet the expectations placed on it by its customers.

Prior research of management systems in educational organizations has shown that more stratified levels of hierarchical leadership, compartmentalization, and bureaucratic structure in organizations make them much less successful at implementing change (Lyon et al., 2014). Data

analyzed from NDCDE supports Lyon et al.'s (2014) theory about how decentralized management systems allow an organization to grow and show continual improvement.

Even though job satisfaction at NDCDE was significantly high, one potential limitation of this research is that it did not interview all the members in the organization for their interpretation of how much decision-making authority they had in the system. It was evident that although customer expectations are clearly stated throughout all processes in the organization, each process does still have an owner that employees will ultimately report to. This would be a good area for additional study. An interview of NDCDE employees to gain their interpretations of whom they are working for, customers or their core process owners (supervisors), would be an essential contribution to the application of a process-based system.

The leadership model implemented at NDCDE is hybrid theory described as the stewardship model. The stewardship model involves granting employees decision making power by providing them with the authority and resources to make specific decisions. Employees are then responsible for the outcome of those decisions as measured by the level of how well the outcome can achieve NDCDE's customer expectations. Although NDCDE is an online school, this theory of leadership could be successful in a traditional educational setting as well. The administration needs to provide the authority and resources to individual teachers to meet the expectations of students and their guardians. This would mean including teachers in the budgeting process, curriculum adoption and development process, school culture and discipline policies, scheduling, research, and continual improvement. This would then reinforce the stewardship model as a democratic approach to school leadership. Instead of many operational decisions being made by an authoritative figure such as the superintendent, principal, or assistant principal, decision-making authority would be relegated to other employees by empowering them to make their own decisions and to be responsible for those decisions.

This stewardship model emphasizes that when the workforce is given authority and resources, workforce members will take real ownership of their work processes. This allows them to reflect on and improve those work processes through intrinsic motivation. Figure 4 provides a visual summary of NDCDE's management system and leadership model.

Organizational performance as measured by mean successful completion rates was higher by a statistically significant amount after the implementation of a process-based management system and stewardship leadership model at NDCDE. The mean percentage of students passing their course went from 59.1% to 84.2% after three years of implementation of the organization's process-based system and stewardship leadership model. The results cannot conclude for certain that the implementation of a process-based management system and a stewardship leadership model caused the significant increase in successful completions. Other variables that were not accounted for might have impacted successful completion rates. However, once there was adoption of a process-based management system and a stewardship leadership model, students' successful completion rates increased. Other research of distance learning organizations has found successful course completion rates around 50% (Hawkins, Graham, Sudweeks, and Barbour, 2013). Asynchronous distance learning organizations have even shown lower rates of successful completion at 34% (Hawkins et al., 2013). NDCDE's reported mean percentage of successful completions after the application of a process-based management system, and stewardship

leadership model of 84% exceeds the findings of Hawkins et al., (2013). NDCDE's management system has seemed to foster an organization that significantly exceeds performance metrics of other similar institutions.

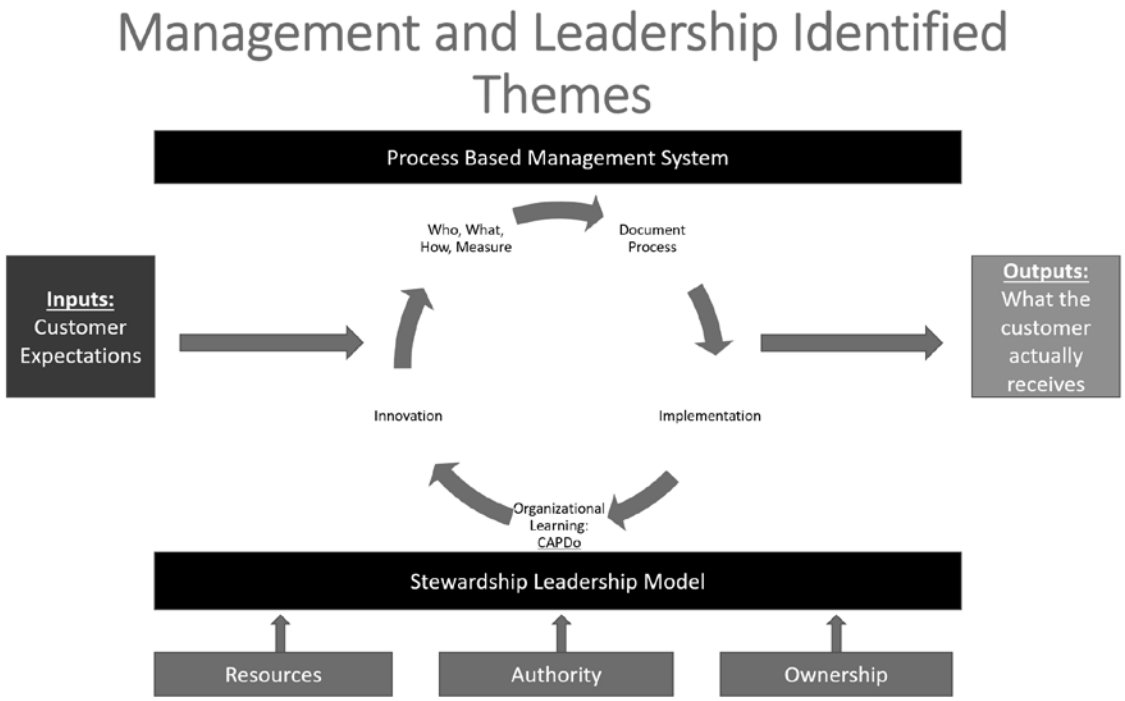

Figure 4. Summary of leadership and management themes collected from NDCDE's superintendent Dr. Peterson.

When examining the data and enrollment means, the mean enrollment in the ten years before a process-based system was 8,530.8. This was statistically higher at a significant level when compared to the mean enrollment after implementation which was 4,379.17. Enrollments began to drop a few years sharply before implementation. Within the first year of implementation, enrollments hit a low of little more than 2,000 annually. After the 2010 – 2011 school year they began to rebound sharply with enrollments rising over 5,600 during the 2013 – 2014 school year.

It should be noted that there are other variables that may have increased NDCDE's enrollments as well. North Dakota began feeling the impact of teacher shortages throughout the state at the same time of the implementation of a process-based system. This may have created increased demand for NDCDE's online courses as many small rural schools had limited options. Also, NDCDE reduced their prices by more than half by the third year of implementation.

Overall, data analyzed from this study has provided a blue print for a leadership model and organizational management system that could be implemented at other educational and non-educational organizations. The blue prints of the process-based management system in this research point to the high performance of an organization that manages work processes instead of people by allowing individuals to have resources and authority within a process area. The assumption is that individual employees will then take ownership and will work to continually

improve the processes that they are accountable for to the organization. This then leads to innovation through a CAPDo model.

An additional component of that blueprint is that the stewardship leadership model seems to complement the process-based management model. The stewardship leadership model focuses on serving others, so they can grow and learn professionally. In that capacity, leadership through serving others takes the form of helping organizational members learn so they can continually improve their work processes. In most educational organizations, this would equate to school leadership looking to remove obstacles that are preventing teachers from gaining greater authority and resources in their classrooms and their Professional Learning Communities (PLC's). These obstacles often take the shape of rules, hierarchical procedures, and cultural norms.

Changing management and leadership practices of an entire organization is not something to be dismissed. Change of organizational systems takes time and commitment. Small steps that educational organizations can apply to help them adopt more of a process-based approach could be an internal examination of their policy with PLC's.

An administrator would want to reflect on how many resources and how much authority that PLC possesses. Does the PLC have a defined work process? Has it identified its inputs and outputs? Is the PLC working to meet the expectations of the students and their parents in the school district? Additionally, small steps could include the conduct of a similar analysis of office personnel. Specifically, do they have the resources and authority to correctly complete their assigned processes? Have they defined what their work processes are and documented them? Even identifying ownership of work processes across the organization would be a good start in transitioning towards a process-based management system by identifying gaps and excess workloads for individuals in the existing management system. These suggestions are just a few potential first steps that could help an educational organization move along the path of a process-based management system that encourages continual improvement.

The most significant limitation of this study was that this research was done at a non-traditional educational organization. NDCDE is a state-run distance learning organization that is forced to look at customer expectations since it must charge tuition. Therefore, it must provide a recognizable value above and beyond many other traditional K-12 educational institutions. No students are required to use NDCDE's services. Consequently, its management model must identify a paying customer. Additionally, NDCDE works with students almost exclusively from a distance. This may have also played a role in the successful implementation of a stewardship leadership model and a process-based management system.

A significant area for future research would be to examine the success of organizations' stewardship leadership and process-based management models in other educational organizations in either K-12 or higher education. It would be valuable to study the impact that the identified process-based management system would have on other educational organizations. In the K-12 model, it would be a significant change compared to the current commonly accepted hierarchical public-school governance model of a school board, superintendent, principals, teachers, and supporting staff and the roles they are commonly expected to play in the system.

The management and leadership of any organization are important. Much has been written about the important role an organization plays in any society, especially educational organizations. This is especially true for the people that rely on them to have their most elemental needs fulfilled. Having a documented, replicable, and evidence-based management and leadership model that can improve organizational performance is of the highest value. This study was able to provide evidence of how a process-based management system has the potential to create ownership of individual work tasks among employees, which can translate to significantly high levels of job satisfaction and organizational performance.

References

Badri, M. A., Selim, H., Alshare, K., Grandon, E. E., Younis, H., & Abdulla, M. (2006). Baldrige education criteria for performance excellence framework. *International Journal of Quality & Reliability Management, 23*(9), 1118-1157. doi: 10.1108/02656710610704249

Baldrige Performance Excellence Program. (2015). *2015–2016 framework. A systems approach to improving your organization's performance.* Gaithersburg, MD: U.S. Department of Commerce, National Institute of Standards and Technology.

Baldy, T., Green, R., Raiford, S., Tsemunhu, R., & Lyons, M. (2014). Organizational structure and school performance: The relationship in select Florida and South Georgia elementary schools. *National Teacher Education Journal*, 7(1), 17-29.

Bolliger, D. U., & Wasilik, O. (2009). Factors influencing faculty satisfaction with online teaching and learning in higher education. *Distance Education, 30*(1), 103-116. doi: 10.1080/01587910902845949

Boyd, D., Grossman, P., Ing, M., Lankford, H., Loeb, S., & Wyckoff, J. (2011). The influence of school administrators on teacher retention decisions. *American Educational Research Journal*, *48*(2), 303–333. Retrieved from http://www.jstor.org/stable/27975291

Collinson, V., Cook, T. F., & Conley, S. (2006). Organizational learning in schools and school systems: Improving learning, teaching, and leading. *Theory into Practice*, *45*(2), 107–116. Retrieved from http://www.jstor.org/stable/40071584

Crane, D., & Green, R. (2013). Exploring leader behavior informed by the thirteen core competencies and their influence on teacher job satisfaction. *National Forum of Applied Educational Research Journal*, *26*(1 & 2), 33-56.

Gaziel, H. (2014). The effect of the school organization on teacher's efficacy and satisfaction. *Education Policy, Reforms and School Leadership*, 281-288.

Goh, S., Cousins, J. B., & Elliott, C. (2006). Organizational learning capacity, evaluative inquiry and readiness for change in schools: Views and perceptions of educators. *Journal of Educational Change*, *7*(4), 289-318. doi: 10.1007/s10833-005-5033-y

Hauserman, C. P., & Stick, S. L. (2013). The leadership teachers want from principals: Transformational. *Canadian Journal of Education / Revue Canadienne De L'éducation*, *36*(3), 184–203. Retrieved from http://www.jstor.org/stable/canajeducrevucan.36.3.184

Hawkins, A., Graham, C., Sudweeks, R., & Barbour, M. K. (2013). Academic performance, course completion rates, and student perception of the quality and frequency of interaction in a virtual high school. *Distance Education, 34*(1), 64-83. doi:10.1080/01587919.2013.770430

Ingersoll, R. M. (2001). Teacher turnover and teacher shortages: An Organizational Analysis. *American Educational Research Journal, 38*(3), 499–534. Retrieved from http://www.jstor.org/stable/3202489

Inman, D., & Marlow, L. (2004) Teacher retention: Why do beginning teachers remain in the profession? *Education, 124*(4), 605-614.

Ladd, H. F. (2011). Teachers' perceptions of their working conditions: How predictive of planned and actual teacher movement? *Educational Evaluation and Policy Analysis*, *33*(2), 235–261. Retrieved from http://www.jstor.org/stable/41238549

Liker, J. K. (2004). *The Toyota Way: 14 management principles from the world's greatest manufacturer*. New York, NY: McGraw-Hill.

Lyon, L., Nadershahi, N., Nattestad, A., Kachalia, P., & Hammer, D. (2014). A curricular reform viewed through Bolman and Deal's organizational frames. *Journal of the Scholarship of Teaching & Learning, 14*(3), 16-33. doi:10.14434/josotl.v14i3.4940

Merriam, S. B., & Tisdell, E. J. (2016). Qualitative research: A guide to design and implementation. San Francisco, CA: Jossey-Bass.

Metropolitan Life Insurance, & Harris Interactive. (2013). The MetLife Survey of the American teacher: Challenges for school leadership. New York, NY: Metlife, Inc.

Mohr, R. D., & Zoghi, C. (2008). High-involvement work design and job satisfaction. *Industrial and Labor Relations Review, 61*(3), 275–296. Retrieved from http://www.jstor.org/stable/25249148

Ross, J. A., & Gray, P. (2006). School leadership and student achievement: The mediating effects of teacher beliefs. *Canadian Journal of Education / Revue Canadienne De L'éducation, 29*(3), 798–822. doi: http://doi.org/10.2307/20054196

Rother, M. (2010). *Toyota Kata: Managing people for improvement, adaptiveness, and superi results*. New York, NY: McGraw Hill.

Russo, C. R. (1995). *Iso 9000 and Malcolm Baldrige: In training and education. a practical application guide*. Kansas City, KS: Charro, Inc.

Sagnak, M. (2016). Participative leadership and change-oriented organizational citizenship: The mediating effect of Intrinsic Motivation. *Eurasian Journal of Educational Research,* (62), 199-212. doi:10.14689/ejer.2016.62.11

Shaw, J., & Newton, J. (2014). Teacher retention and satisfaction with a servant leader as principal. *Education, 135*(1), 101-106.

Shen, J., Leslie, J. M., Spybrook, J. K., & Ma, X. (2012). Are principal background and school processes related to teacher job satisfaction? A multilevel study using schools and staffing survey 2003-04. *American Educational Research Journal*, *49*(2), 200–230. Retrieved from http://www.jstor.org/stable/41419455

Spector, P. E. (1985). Measurement of human service staff satisfaction: Development of the job satisfaction survey. *American Journal of Community Psychology, 13*(6), 693-713. doi: 10.1007/bf00929796

Weaver, A., Greeno, C., Goughler, D., Yarzebinski, K., Zimmerman, T., & Anderson, C. (2013). The impact of system level factors on treatment timeliness: Utilizing the Toyota Production System to implement direct intake scheduling in a semi-rural community mental health clinic. *The Journal of Behavioral Health Services & Research, 40*(3), 294-305. doi: http://dx.doi.org/10.1007/s11414-013-9331-5

Woods, A., & Weasmer, J. (2004). Maintaining job satisfaction: Engaging professionals as active participants. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas, 77*(3), 118-121. doi: http://dx.doi.org/10.1080/00098650409601242

