Impact of an Educational Leadership Degree on Quality of Teaching as Measured by Student Performance

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Abstract

Recent implementation of professional learning communities in schools has given teacher leaders a new opportunity to influence students beyond their classroom. Though no specific training is required of teachers to serve as leaders, many are pursuing formal training through Educational Leadership degrees from colleges and universities. Current literature discusses this lack of specific training, however, does not address the effect of educational leadership training on student achievement. It was the purpose of this study to determine if obtaining an educational leadership degree for teachers who remain in the classroom relates to student achievement and teacher leadership practices. While this study found no statistical difference in student achievement and teacher leadership practices based on educational leadership degree, results showed teachers with these degrees perceived teaching and leadership practices having changed due to their degree.Impact of an Educational Leadership Degree on Quality of Teaching as Measured by Student Performance

1.Introduction

Public schools today are held accountable for documenting student achievement under the No Child Left Behind (NCLB) Act of 2001 (U.S. Department of Education [USDOE], 2008). Through a shared acceptance of responsibility for student achievement, teachers and administrators are working collaboratively to create effective schools focused on learning (Lezotte, 1991). Professional learning communities provide the vehicle to focus on learning, using assessment to drive decisions (Dufour, Dufour, Eaker, & Many, 2006).

As professional learning community members, teacher leaders share their knowledge and expertise through formal and informal roles to direct school decision making (Danielson, 2007). While no specific training is required for teacher leaders, many pursue educational leadership degrees (Richardson, 2003). Richardson (2003) found vast numbers of teacher leaders completed educational leadership degree programs. The current study investigates the impact of possessing an educational leadership degree on quality of teaching through student achievement and teacher leadership practices. The study was guided by the following research questions.

Research Question 1. What impact does possessing an educational leadership degree have on quality of teaching as measured by student performance on the Georgia Criterion Reference Test CRCT?

Research Question 2. What impact does possessing an educational leadership degree have on teacher leadership practices?

2.Related Literature

After over four decades, the Elementary and Secondary Education Act of 1965 (ESEA) has evolved (National Education Association, 2002) into the NCLB driving accountability in kindergarten through twelfth grade educational institutions (USDOE, 2008). NCLB provides accountability of student achievement, local and state flexibility of federal fund usage, the use of scientifically-based research practices, and school-choice for those attending schools performing below standards for two or more consecutive years (USDOE, 2008). Through their commitment to provide excellent academic opportunities, teacher leaders work collaboratively to create school change to improve student and school achievement (Ackerman & Mackenzie, 2006). Many of these teacher leaders desire to remain in the classroom while sharing leadership responsibilities, rather than becoming administrators (Blankstein, 2004; Danielson, 2007; Richardson, 2003).

2.1 Evolution of School Accountability

Federal oversight of public education began in 1867, with the creation of the Office of Education, which later evolved into the current U.S. Department of Education in 1980 (New York State Education Department [NYSED], 2006b). President Johnson passed the ESEA in 1965 to provide federal financial aid through grants to increase educational opportunities and student achievement for students from low-income households (NYSED, 2006a). Effectiveness of these grants in equalizing education for all students was debated as ESEA became law. Hired by the U.S. Commissioner of Education (NYSED, 2006a), James Coleman reported in 1966 that teacher training was irrelevant to student achievement, which researchersBrookover, Edmonds, and Lezotte refuted through research on effective school correlates (Association for Effective Schools, 1996). Specifically, Lezotte (1991) found shared teacher leadership and empowerment essential to school and student achievement.

2.2 Accountabilityin Georgia

School and student achievement is documented through national and state assessments under NCLB (Office of Assessment and Accountability, 2008). The Georgia Department of Education (GaDOE, 2007) reports mastery of the curriculum at the state and national level through adequate yearly progress (AYP). Georgia's AYP is used to report required accountability towards meeting the national goal of 100% student proficiency (USDOE, 2008). Achievement in Georgia in grades 1through 8 is measured through standardized testing, assessing mastery of state standards through the CRCT)(Office of Assessment and Accountability, 2008). The CRCT provides both a standard measurement of student achievement and identified strengths and weaknesses of students, teachers, and schools.

2.3 Effective Schools

Schools and districts working to close achievement gaps are evaluating practices of successful schools and academic research (Jerald & Haycock, 2002). Olson (2007b) and Williams and Kirst (2006) reported the practice of school decisions being guided by an instructional focus as key to student achievement in effective schools research. Effective schools research, originally developed through the work of Edmonds, Brookover, Lezotte, and others to challenge Coleman's report, assists schools in improving student achievement (California Center for Effective Schools, 2008). Divided into correlates, Lezotte (1991) outlined the need for a climate of high expectations, shared instructional leadership from the principal and teachers, and school commitment to instruction and student achievement. Lezotte further emphasized the entire school community sharing in the commitment of student achievement.

2.4 Professional Learning Communities

Professional learning communities, considered a complex model of professional development, bear the expectation of increasing teacher abilities and raising student achievement (Pancucci, 2008). Through professional learning communities, teachers and administrators work together to analyze data and develop plans to support continued student and school improvement (Eaker, Dufour, &Dufour, 2002). This vehicle allows teachers to participate and collaborate in shared decision making (Fullan, 2001). Eaker et al. (2002) stated three major themes in the development of professional learning communities: 1) collaboratively developing a shared mission, vision, values, and goals, 2) interdependent collaborative teams working to achieve the common goals, and 3) focusing on results through commitment to continuous improvement. These professional learning communities provide teachers the opportunity to share their professional knowledge and take initiative in solving problems through shared leadership (Danielson, 2007).

2.5 Teacher Leaders

After a meta-analysis of 69 studies, Marzano, Waters, and McNulty (2005) found 21 responsibilities or behaviors of the principal's leadership to correlate with student achievement. These 21 responsibilities can be shared with teacher leadership teams committed to improving school and student achievement. Approximately 25% of teachers on a faculty accept teacher leadership roles (Barth, 2001). Teacher leadership roles may be formal, such as department chair, committee leader, or instructional coach (Danielson, 2007; Martin, 2007); or they can be informal, through the sharing of expertise and teaching practices (Martin, 2007). Teacher leaders share a voice in decision making, variance in their careers, and influence the lives of students and colleagues (Barth, 2001). A school becomes more proficient as a professional learning community and united body with the empowerment of teacher leaders (Sergiovanni, 1992). Danielson suggestedempowering teacher leaders is critical in meeting ongoing school change through distributing shared knowledge and shaping a school's culture. Richardson (2003) questioned how teacher leaders were to receive leadership training. Currently, formal leadership training is acquired through leadership training in undergraduate programs (Quinn, Haggard, & Ford, 2006), National Board Certification (Wade & Ferriter, 2007), teacher endorsement certification programs, and educational leadership degree programs (Georgia Professional Standards Commission [GaPSC], 2008). Dozier (2007) reported a lack of formal training for teacher leaders. While Georgia, Louisiana, Illinois (Olson, 2007a; Scherer, 2007), Delaware, and Kentucky (Olson, 2007a) have or are considering adding endorsements for teacher leaders to state teacher certifications, limited opportunities are available for training and degrees in teacher leadership (Dozier, 2007).

3. Methods

This quantitative study used hypotheses testing (*t*-tests) an experimental design with pre-test post-test equivalent groups (Norusis, 2008; Tabachnick & Fidell, 2000). Pre-test post-test equivalent groups of elementary teachers holding educational leadership degrees and teachers holding equivalent degree levels in other areas were compared.

3.1 Participants

The study included teachers employed by the Erehwon County Board of Education in Erehwon County, GA. Erehwon County was selected as the location of the study for its similarity in population to the state of Georgia and the United States (U.S. Census Bureau, 2008). Children under the age of 18 represented 26.7% of the population in Erehwon County, 26.2% in Georgia, and 24.6% in the U.S. in 2006. Median household incomes were \$47,134 in Erehwon County, \$42,679 in Georgia, and \$44,334 in the U.S. in 2004. In Erehwon County, 64.20% of educators held a masters degree or higher (Erehwon County Board of Education, 2008), and Georgia reported 62.17% holding a masters degree or higher in the fall of 2007 (GaPSC, 2007). Participant selection from the Erehwon County Board of Education allowed for access to principals for assistance in survey administration and archival data collection. A survey was administered to elementary certified staff members, and respondents were delimited to those having received an initial educational leadership degree. Respondents selected must have taught and administered the Georgia math CRCT in grades one through fivepre and post their educational leadership degree. A four year window was selected because of changes in the CRCT design that occurred. A minimum of two years data were required to represent pre and post data. The researcher-constructed survey included demographic information such as name, highest level of degree, and whether participants held an educational leadership degree.

Those respondents holding an educational leadership degree were asked to identify the year and college/university where they received their initial leadership degree and to answer four perception questions about their degree's influenceon teaching practices, increase in student achievement, teacher leadership, and involvement in school leadership. A control group of teachers was selected from survey respondents who did not hold educational leadership degrees. These teachers must have taught and administered the Georgia math CRCT in grades onethrough five for the Erehwon County Board of Education during the same years as other educational leadership degree holders.

3.2 Variables Examined

Graduate degree type included educational leadership and non-educational leadership graduate degrees. For those with educational leadership degrees, degree program, to include degrees from a program in the University System of Georgia and degrees from a program outside of the University System of Georgia was examined. A between-participants approach identifying mean group differences analyzed the causal relationship between the independent variable (educational leadership degree) and the dependent variable (student achievement) and the relationship between the independent variable (educational leadership degree) and the dependent variable (student achievement) and the relationship between the independent variable (educational leadership degree) and the dependent variable (teacher leadership practices) (Norusis, 2008; Tabachnick & Fidell, 2000).

3.3 Procedures and Data Analysis

The survey was administered through the principal at each of the district's 23 elementary schools. Of the 1,103 certified staff surveyed, 600 responded, resulting in 91 educational leadership respondents and 509 noneducational leadership respondents. Of the 91 educational leadership respondents, 18 had pre and post or two years of CRCT data available within the four year window. The 91 educational leadership respondents' answers revealed 56% of the respondents held positions outside of the first through fifth grade classroom including prekindergarten, kindergarten, physical education, music, art, instructional coach, content area, and special education resource teachers. A control group of 18 non-educational leadership respondents with equivalent graduate level degrees were randomly selected.

CRCT data were collected pre and post an initial educational leadership degree for each participant (n=18). Thefollowing data were entered into a database for each educational leadership respondent's class: degree level, educational leadership degree year, test year, number of students, mean, and standard deviation for both pre and post CRCT data. Effect size was calculated and indicated the change for each respondent and the average of all educational leadership degree year and with two years of CRCT data representing pre and post data. Effect size was calculated the change for each control group with the exception of educational leadership degree year and with two years of CRCT data representing pre and post data. Effect size was calculated and indicated the change for each control group respondent and the average of all control group respondents. Statistical comparisons were made between control group and educational leadership group. Significance testing through *t*-tests was conducted and effect size calculated between each comparison group.Data were also entered for the Likert-scale perception survey responses of all 91 educational leadership respondents.

4. Limitations

Hypothesis testing is sensitive to sample size, therefore potential exists for a type II error in this study (n = 18). However, the effect size was very small ($d = \le .25$), suggesting a substantial increase in sample would be required to increase measured effect. A population sample of only one school district and addressing a four year window were also limitations. Finally, educational leadership participants were further limited to those having earned their degree during a three year window (allowed for pre and post CRCT data), remained in the classroom for a year after their degree, and taught math in the first through fifth grades. Control group participants were also selected by these stated limitations, with exception to earning an educational leadership degree.

5. Results

Descriptive statistics for the 18 educational leadership respondents for all CRCT mean scores pre and post educational leadership degrees were between 304 and 356. These scores represented all mean averages at the Meets or Exceeds levels of standards on the CRCT. Cohen's effect size (*d*) values for individual respondents ranged from -0.68 to 2.15.All 18 educational leadership respondents' number of students, scores, and standard deviations were averaged for a total educational leadership respondent rate (n = 20, M = 332, SD = 28) for pre educational leadership degree years. An averaged total educational leadership respondent rate (n = 19, M = 336, SD = 26) was computed for post educational leadership degree years.

Cohen's effect size value (d = 0.15) suggested low practical significance.CRCT scores for the control group (n = 18), non-educational leadership respondents, were between 302 and 376. These scores represented all mean averages at the Meets or Exceeds levels of standards on the CRCT. Cohen's effect size (d) values for individual respondents ranged from -0.32 to 1.48. All 18 control group respondents' number of students, scores, and standard deviations were averaged for a total control group respondent rate (n = 19, M = 335, SD = 30) for first year data. An averaged total control group respondent rate (n = 19, M = 342, SD = 26) was computed for second year data. Cohen's effect size value (d = 0.25) suggested low practical significance.Table 1 lists statistical comparisons of student achievement of educational leadership respondents' (EDL) pre and post CRCT data vs. control group respondents' (Control) pre and post CRCT data.

Group	n	М	SD	Group	п	М	SD	t	p	d
Control Pre	19	335	30	Control Post	19	342	26	.77	.45	.25
EDL Pre	20	332	28	EDL Post	19	336	26	.46	.65	.15
Control Pre	19	335	30	EDL Pre	20	332	28	.32	.75	15
Control Post	19	342	26	EDL Post	19	336	26	.71	.48	23

Table 1: Student Achievement Co	nparison of Educational Leadershi	p and Control Group	Respondents
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All 91 educational leadership respondents answered the following four questions on a 5-point Likert scale of 1 = Not at all, 3 = Moderately, and 5 = Significantly: 1) My teaching practices changed after receiving my educational leadership degree, 2) My students' achievement increased after completing my educational leadership degree, 3) I use my educational leadership degree training as a classroom teacher leader, and 4) I am actively engaged in school leadership as a teacher leader focusing on school improvement and student achievement. Teaching practices were perceived by 91.21% of survey respondents to have changed moderately to significantly after receiving their educational leadership degree, with 18.68% perceiving their teaching practices to have changed significantly. Of the respondents, 81.32% perceived moderate to significant increases in their students' achievement, with 12.09% significantly perceiving student achievement increases. Perceived use of their educational leadership degree as a teacher leader was reported by 89.01% of respondents to be moderate to significant engagement in school leadership as a teacher leader, focusing on school improvement and student achievement achievement increases to significant engagement in school leadership as a teacher leader, focusing on school improvement and student achievement achievement was also perceived by 89.01% of respondents, with 52.75% perceiving their engagement in school leadership to be significant. Frequencies to specific ratings for each of the four perceptions are listed in Table 2.

Question	5-point Likert Scale					
	1	2	3	4	5	
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	n(%)	
Changed teaching practices	3(3.30)	5(5.49)	28(30.77)	38(41.76)	17(18.68)	
Increased achievement	6(6.59)	11(12.09)	27(29.67)	36(39.56)	11(12.09)	
Use EDL as teacher/leader Engaged in school leadership	7(7.69) 4(4.40)	3(3.30) 6(6.59)	8(8.79) 13(14.29)	35(38.46) 20(21.98)	38(41.76) 48(52.75)	

Table 2: Educational Leadership Respondents' Perception of Degree Influence

1 = Not at all; 2 = Minimally; 3 = Moderately; 4 = Noticeably; and 5 = Significantly

Descriptive statistics for responses to these questions are listed in Table 3, where the respondents' answers were reported as a whole (ALL, n = 91), those receiving their initial educational leadership degree from a college or university within the University System of Georgia (USG, n = 66), and those receiving their initial educational leadership degree from a college or university outside of the University System of Georgia, to include out of state and on-line institutions (Non-USG, n = 25).

Question	All (91) M(<i>SD</i>)	USG (66) M(<i>SD</i>)	Non-USG (25) M(<i>SD</i>)	t	р
Changed teaching practices	3.67(0.96)	3.62(0.99)	3.80(0.87)	.80	.43
Increased achievement	3.38(1.06)	3.33(1.06)	3.52(1.08)	.76 .4	.43
Use EDL as teacher/leader	4.03(1.16)	3.97(1.25)	4.20(0.87)	.84	.40
Engaged in school leadership	4.12(1.15)	4.06(1.24)	4.28(0.89)	.81	.42

Table 3: Survey Results by Degree Granting Institution of Leadership Certified Respondents

6.Discussion

The implications of the findings of this research extend beyond just the impact of possessing an educational leadership degree on quality of teaching as measured by student achievement. These findings also influence broader issues including teacher leadership, training, and teacher compensation.

6.1 Student Achievement and Degrees

The results of the present study demonstrated no statistically significant differences in the achievement of students taught by teachers holding educational leadership degrees compared to those not holding such degrees. These findings are consistent with those of Goldhaber and Brewer (1998), who found no statistical difference in student achievement of teachers with advanced degrees other than a subject-specific advanced degree for which they taught. Their finding of subject-specific advanced degrees impacting student achievement was small however, representing one-tenth of a standard deviation. The results of both studies suggest that advanced degrees may not have a major impact on the student achievement of students in teachers' classrooms.

Findings of the current study were also supported by Goldhaber and Brewer's (1998) determination of statistical insignificance of teacher certification. However, survey perception data of the 91 educational leadership respondents from the current study showed 30% moderately, 40% more than moderately, and 12% significantly felt their students' achievement increased after completing their degree. Therefore, 82% perceived their degree to positively influence student achievement. The role of positive teacher perceptions concerning the influence of a leadership degree on instructional practice and resultant student achievement levels should not be overlooked. Educational researchers (Bond, Dykstra, Clymer, & Summers, 1997; Neuman& Dickinson, 2002) have suggested that specific teacher characteristics play an important role in determining the effectiveness of instructional approach. With this in mind, teachers who maintain a positive perception of the influence of their leadership degree on student achievement will likely translate this into their instructional practice. For example, teachers may be more willing to take risks in trying out new and innovative instructional techniques or begin to reconsider how traditional classroom resources may be used in unique ways to meet the needs of diverse learners in the classroom.

6.2 Training

The current study supports the claim of Gimbert, Cristol and Sene (2007), showing no statistical significant differences in perception responses based on training at University System of Georgia and non-University System of Georgia universities. Gimbert et al.also found the insignificance of teacher certification in their study of student achievement of non-traditionally trained first year teachers compared to traditionally trained first year teachers in mathematics. The researchers found students with non-traditionally trained teachers scored equivalent or better than students with traditionally trained teachers. Podgursky (2005) agreed, stating teacher quality or performance, which he found difficult to measure, was not related to licensure or training. The findings of the present study may also influence future educational leadership graduate students in their selection of colleges and universities. Byrd and Williams' (2008) study evaluated courses of a Texas university's educational administration preparation classes for impact on passing the state administrator certification exam. While their findings only showed a significant impact of two core classes on passing the exam, they concluded it was difficult to fully account for the impact of the graduate program without data on an administrator's performance in the field after graduation (Byrd & Williams).

To assist educational leadership candidates in their selection of a college or university, the current study provides the post graduate data Byrd and Williams suggest, through student achievement comparisons of post graduate performance for the 91 educational leadership respondents. However, the present study found selection of colleges or universities to be statistically insignificant in teacher leadership practices.

6.3 Teacher Leadership

Professional learning communities continue to evolve as the vehicle for teacher leaders and teacher leadership practices in shared decision making. Through this vehicle, teachers are able to access and incorporate best practices throughout their school (Fullan, 2001). Teachers share responsibility for their school as teacher leaders and use the professional learning community as a vehicle to build leadership capacity in others (Pancucci, 2008). Respondents in this study perceived themselves as teacher leaders with this increasing level of capacity. In this study, approximately 90% of respondents perceived themselves as using their degree as a teacher leader and being actively engaged in school leadership focused on school improvement and student achievement. While Barth (2001) reported teacher leaders represented approximately 25% of teachers on a faculty, almost 90% of respondents in this study perceived themselves as using their educational leadership degree as a teacher leader. This perception of using leadership skills possessed through the earning of an educational leadership degree may give the teachers the confidence they need to participate in shared leadership through the opportunities afforded by the professional learning community.

6.4 Compensation Policies

While the phenomena of the present study did not demonstrate increased performance in student achievement among teachers with educational leadership degrees, this study may inform policy relating to such alternate compensation strategies as pay for performance in Georgia. Podgursky (2005) did not consider salary schedules and tenure as incentives for performance due to high and low performing teachers receiving the same benefits. Goldhaber and Brewer (1998) suggested monetarily rewarding only those teachers earning advanced degrees and professional training in their assigned teaching subjects. However, Goldhaber and Brewer found fewer teachers had advanced degrees in areas in which they taught than those with advanced degrees in other areas. Rockoff (2003) found credentials and degrees less of an indicator of student achievement than teacher evaluations and principals' opinions. Rockoff reported finding little consistent evidence of improved student achievement related to credentials, however, noted variance in teacher quality and characteristics as key to improving student achievement.

In 2009, the state of Georgia enacted legislation eliminating advancement on the state salary schedule based on an educational leadership degree, unless working in an educational leadership position on or after July 1, 2010 (Elementary and secondary education; annual contracts for certified personnel; extend certain deadlines, 2009). The present study provides additional data in support of this law and the possibilities of pay for performance. The Department of Defense (DoD) recently implemented a "competency-focused," "performance-based," management and compensation system replacing the General Schedule (GS) and other compensation systems with the National Security Personnel System (NSPS) (National Security Personnel System, 2009). NSPS bases pay for performance on a 5-point rating scale from unacceptable to role model, attaching no additional compensation up to additional compensation in three individual criteria areas. Current DoD employees are being converted to NSPS without loss of pay grade, with all future evaluations being on their performance in relation to the mission.

7. Future Research

This study provides a model for replication to further evaluate the impact of educational leadership, or other degrees, on quality of teaching as measured by student performance. Additional research needs to be conducted directly related to educational leadership degrees or advanced degrees held by teachers, and student achievement in the classroom. Conducted by a large educational or state organization, fewer limitations would be required when selecting teacher participants and would provide additional access to current and archival data, with larger, more diverse sample sizes over extended periods of time. Access to large amounts of data would allow for further investigation into where degrees were earned, specifically non-traditional vs. traditional training in relation to student achievement. Research conducted with large data sets would allow the present research model to evaluate not only elementary teachers but teachers in middle and high school and teachers of specific subjects taught in relation to degree held.

Research by colleges and universities would provide pre degree data, coursework data, teacher leadership practices and their students' achievement, to evaluate a teacher through their evolution as a leader and provide a complete picture of a teacher leader for comparison through educational leadership training and teacher endorsement training.Researchers have demonstrated that the quality of classroom instruction provided by the teacher is often the most powerful indicator concerning how successful children will be in developing academic abilities (Allington, 2006). Academic coaching has been identified as a promising approach to improving the quality of instruction offered by elementary teachers (Elish-Piper &L'Allier, 2010). Therefore, future research shouldexplore the role that an advanced educational leadership degree may play in preparing teachers to serve as leaders in the academic coaching capacity. In other words, one final implication for future research is that there is a need to investigate the development of teacher expertise might be fostered by teachers with advanced educational leadership degrees so that the instruction offered to elementary learners promotes high levels of achievement.

The evaluation of teacher leadership through a mixed methods approach is also recommended. In order to evaluate teacher leadership more completely, focus groups are recommended in addition to the statistical analysis completed in this study. By conducting focus groups with the teachers in the study the researchers could collect additional perception data about involvement in professional learning communities and use of educational leadership degrees. Peer focus groups of teachers in the study and interviews with their principals would provide an inclusive perspective of perceived use of an educational leadership degree and involvement as a teacher leader through professional learning community involvement. Marzano et al. (2005) found leadership to be fundamental to school achievement, while only Richardson's (2003) study addressed benefits of educational leadership training for teachers. As teachers continue to be critical to school leadership degree impact on student achievement, as well as teaching and leadership practices of teacher leaders with and without educational leadership degrees. Increased evaluation of all teacher leadership practices, training, and impacts will guide school decisions and shared leadership trends for the future. This study provides an excellent model for future research in this area.

8. Conclusion

Results of this study indicated there was no statistically significant impact on student achievement between teachers holding and not holding an educational leadership degree. However, survey participants in the study perceived their educational leadership degree had an impact on teaching and leadership practices. Of the educational leadership respondents, 91% perceived their teaching practices changed and about 90% indicated that they used their learning from the educational leadership degree as a teacher leader. This may imply the value added of holding an educational leadership degree cannot be solely measured by classroom student achievement but by the contributions made to the broader professional learning community as a teacher leader. This suggests educational leadership degrees should evolve into not only emphasizing and addressing traditional administrative and supervisory functions, but also the roles of teacher leadership. Such a program redesign would enable educational leadership programs to better support the vital work of professional communities in schools and therefore have a greater opportunity to improve student performance.

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