How Does Opportunity to Learn Influence Student Achievement?

By Laura Ficarra, Ed.D.

Abstract

The purpose of this article was to explore the differences in opportunity to learn between higher and lower achieving schools. Additionally, the teachers' perception of Opportunity to Learn (OTL) as it relates to students' achievement were investigated. Teachers were surveyed to investigate any difference in their perceptions of opportunity to learn, parental involvement, instructional practices, and quality of leadership between higher and lower achievement schools.

This exploratory study scrutinized the variables and demographics that might predict student achievement. The independent variables were opportunity to learn, parental involvement, instructional qualities, and quality of leadership. The dependent variable was student achievement using New York State (NYS) Math 8th Grade scores and English Language Arts (ELA).

A significant finding in this study was that student achievement was not related to student demographics. English language learners were equally matched between each pair of higher and lower performing schools. Race and Students with Disabilities were approximately equal in each set of schools. Furthermore, this study found that OTL was employed more in higher performing than in lower performing schools.

Introduction

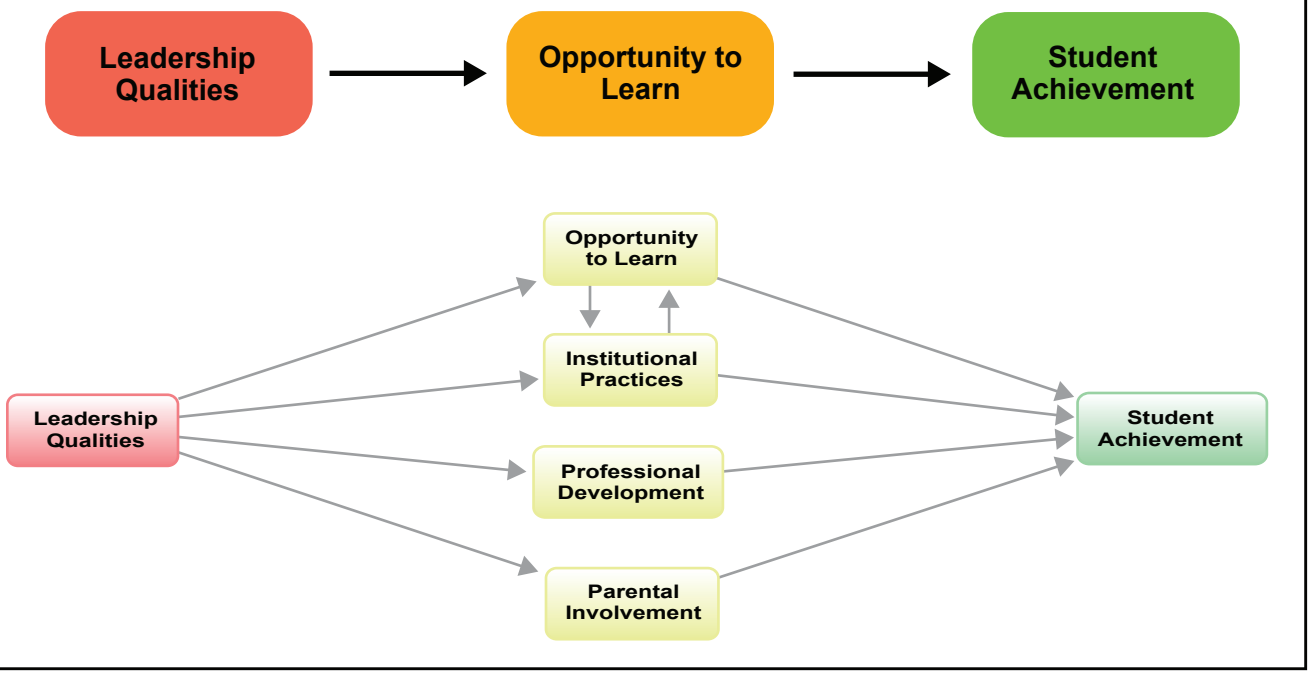
Opportunity to Learn (OTL) is the amount of time a teacher commits to the content of the curriculum, including instructional time, grouping, higher-order thinking questions, and evidence-based teaching practices (Elliot, 2015). The definition of OTL comprises instructional time, curriculum content, and teaching practices (Flores & Robert, 2008; Kurz, Elliot, Lemons, Zigmond, Kloo, & Kettier, 2014; Elliot, 2015). OTL has been found to have a positive relationship to student achievement (Schmidt, Burroughs, Zoldo, & Houang, 2015).

Reeves conducted a study (2012) of high school sophomore students from Database of 2004 - 2006 available from the National Center for Education Statistics using the Educational Longitudinal Study (ELS). Data from 11,170 sophomores in 2004 who would be graduating in 2006 were examined. The achievement gap for rural students during the last two years of high school, the deficiency in OTL for the rural math achievement gap, and the reason for this deficiency were examined in this study. This study broke OTL into two parts. The first concerns the school's resources to learn advanced mathematics topics such as simply offering trigonometry or calculus in the high school. The second centers on the school's inclusiveness when enrolling students in advanced math courses, as well as the quality of instruction in advanced math courses. The level of inclusiveness that counselors employed when advising students from families that are nonprofessional to take advanced math classes was examined.

The quality of instruction, if low, would indicate a lack of Opportunity to Learn for those students. Another facet explored by Reeves was the influence of friendships within academic courses and student achievement. This was measured by examining two questions on the Likert Scale, friends who have dropped out of high school and friends who plan on attending a four-year college. The findings of this study showed that students in a rural community were not given less of an Opportunity to Learn advanced mathematics. There was also no difference found between student achievement and math courses in rural and urban students. However, there was a difference between rural and suburban students' enrollment in advanced math courses. Furthermore, friends and SES did have a noticeable influence. Students who had friends that dropped out of school were less likely to take advanced math courses. Conversely, students who had friends that planned to attend a four-year college, took more advanced math courses. Therefore, the influence of family and friends could account for the achievement gap for rural students.

Schmidt, Burroughs, Zoldo, and Houang, define OTL as curriculum and the exposure of educational content (2012). Their study examined the relationship between OTL and SES (Socio-Economical Status), and how these inequalities affect student achievement, and the degree to which content coverage (OTL) and SES affect achievement. They used the 2012 Programme for International Student Assessment (PISA) to explore the relationship between OTL and SES on student achievement in mathematical literacy. This qualitative study employed a stratified cluster sample

Figure 1 Conceptual Rationale of the research



comparing survey results for 15-year old students in various countries and grade levels. They found that OTL has a positive relationship to student achievement, a positive relationship was also found between SES and OTL, and about one third of the SES relationship to literacy was linked to OTL. Moreover, out of the 32 countries examined, the United States had the highest SES inequalities adding to the association of SES and OTL. The United States would need to address unequal content coverage within schools related to SES.

Furthermore, in a study that explored OTL within socio-economic conditions the researchers found that if OTL is high, it levels the playing field for students in lower socio-economic areas and when OTL increases, student achievement increases (Santibanez & Fagioli, 2016).

Other researchers established relationships between OTL and student achievement. The framework that links teacher practice with student achievement is Opportunity to Learn (OTL) (Perry, Sealy, Ramirez-Perez, DeNicola, & Cohen, 2015). The definition of Opportunity to Learn is teacher quality, curriculum, and instructional time (Kurz et al., 2014). OTL has a positive relationship to student achievement (Schmidt et al., 2015).

Purpose of the Study

The purpose of this study was to explore the differences between Opportunity to Learn within higher and lower achieving schools. Furthermore, this study investigated the variables and demographics that predict student achievement.

Conceptual Framework

The direct and indirect relationship between principal quality and student achievement is shown in the Ripple Effect (Leithwood et al., 2004). The essence of the **Ripple Effect** is that teacher and instructional practices influence student achievement which is directly impacted by principals' practices (Leithwood et al., 2004; Clifford et al., 2012). This conceptual framework examines if OTL is the crucial equalizer for students in lower achieving schools.

The following research question guided this study:

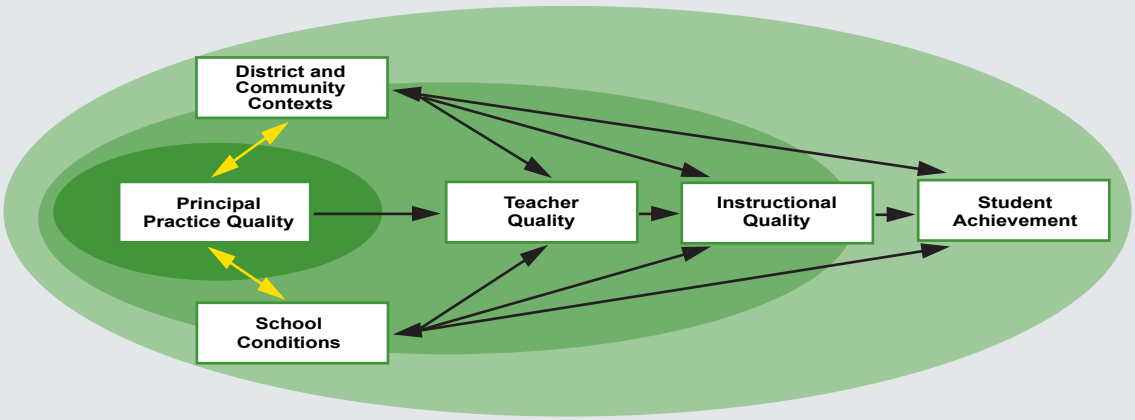
How do teachers in higher and lower achieving schools differ on students' opportunity to learn, instructional practices, parental involvement, their principal's leadership qualities, and teacher's professional development?

Review of Related Literature

Opportunity to Learn

Opportunity to Learn (OTL) is defined as teacher quality, curriculum content, and time on task (Flores & Robert, 2008; Kurz et al, 2014; Elliot, 2015). OTL is the time a teacher dedicates content coverage to the expected curriculum and time on instructional, accentuation higher-order thinking, grouping, and evidence-based instruction (Elliot, 2015). OTL incorporates teachers cooperating collaboration (Schmidt et al., 2015).

Figure 2. The Ripple Effect: Framework for Principal Impact



Source: Halliger & Heck, 1998; Leithwood et al., 2004; Stronge, Richard, & Catano, 2008; Waters, Marzano, & McNulty, 2003

Student Achievement

Student achievement is measured using New York State English Language Arts and Math 8th Grade scores for the purpose of this study. Schools whose students score above average on New York State 8th grade Common Core English Arts and Math Assessments are operationally defined as higher achieving schools. Schools whose students score below New York State average on 8th grade Common Core English Language Arts and Math Assessments are operationally defined as lower achieving schools.

Instructional Practices

For the purpose of this study, Opportunity to Learn did not include instructional practices as theorized by Elliot (2015). The operational definition of instructional practices is teaching using evidence based and differentiated lessons that incorporate higher order thinking during content coverage of curriculum, time on task, and reflective teaching. Researchers have confirmed that instructional practices include quality of instruction, content coverage, and time on instruction (Kurz et al., 2014; Elliot, 2015).

Professional Development

Professional development is professional growth and the continuous learning of pedagogy that provides immense progress in teachers' instructional practices (Wilson, Sztajin, Edgington, & Myers, 2015). Professional development is the unceasing training of teachers that aligns with the curriculum and focuses on the district mission and vision (Manley & Hawkins, 2010).

Kurz et al., (2014) conducted a quantitative study across three states to examined OTL for Students with Disabilities (SWD). They employed MyiLOGS, an online program that uses a Likert Scale to monitor OTL in the classroom. The OTL definition they used in their study included three key dimensions which were content, time, and quality of instruction. The study was conducted during a 151-day period. The participants of the study were 38 general and special education teachers which included 89 SWD and 49 reading and math classes.

The researchers found that SWD in general education classes experienced more non-instructional time, less time on standards, and less content coverage than their overall class (Kurz et al., 2014). They found some limitations to the study. One limitation that the researchers found was that, although it was across three states, it was a small sample as well as a limited class type. Therefore, it lacked generalizability. However, other research was consistent with their previous studies. Their recommendations consist of improvement of SWD instructional practices and further research on OTL assessments. They also recommended to find an alternative method of assessment other than standardize testing. These recommendations emphasized the need to expand methods of assessing schools to elucidate how to make improvement and the complexity of assessing OTL.

Reeves (2012) used the Educational Longitudinal Study (ELS) Database from 2004 - 2006 available from the National Center for Education Statistics to examine 11,170 sophomores in 2004 that would be graduating in 2006. In this study, OTL is defined as supply and demand function. The supply is the resources within the school that fostered advanced mathematical course such as calculus and trigonometry (Reeves, 2012). The demand function represents the quality of instruction and the school's inclusive and practices to enroll students in more advanced math classes (Reeves, 2012). The latter refers to the probability of recommendations by counselors to students from nonprofessional families to enroll in advanced math classes. This component is crucial when trying to understand performance and

achievement among students. These beliefs from teachers and counselors about their students negatively affects students.

If school personnel such as teachers and counselors believe that students from certain demographic backgrounds cannot manage metacognitive undertakings and do not provide them with them the resources they need to become successful, OTL is being denied. This dimension of organizational climate is what Taguiri described as organization culture which referred to the behavior of the individuals within the organization (Owens, 2004). Smith (2001) discussed how these biases were what Senge called mental models. Milieu is what Tagueri coined as another dimension of organizational climate (Owens, 2004). Tagueri's milieu includes the organizational social dimension which comprise social interactions and demographical facets of an organization (Owens, 2004).

Schmidt, Burroughs, Zoldo, and Houang, conducted a study that analyzed the correlation between Socio-Economical Status (SES) and OTL (2012) and if and how these disparities influence the extent of content coverage (OTL), student achievement, and how SES affects achievement. The researchers defined OTL as contact to educational content and curriculum (Schmidt et al., 2012). This qualitative study used the 2012 Programme for International Student Assessment (PISA) to explore the connection between OTL and SES on student achievement in mathematical literacy. A stratified cluster sample compared 15-year old's surveys in various grade levels from 32 countries (Schmidt et al., 2012). Schmidt et al. (2012) found that OTL had a positive relationship with SES, and about one third of the SES relationship to literacy was linked to OTL.

Santibanez and Fagioli, (2016) conducted a study that found if students in lower SES areas have a high OTL, student achievement rises. The plethora of research supporting the importance of OTL and how student achievement correlates with OTL underscores why OTL should be further researched.

Parental Involvement

Parents' roles in their child's life is not only crucial at home but equivalently important at school. The No Child Left Behind Act (NCLB) reauthorized the Elementary and Secondary Education Act of 1965 (ESEA) echoed this sentiment when creating this legislation. NCLB (2004) emphasized the collective responsibility amid schools and parents to improve learning and teaching. The definition of parental involvement according to NCLB (2004) orders parental involvement and allotted finances to support Title I which incorporates a legally binding contract between schools and parents (Department of Education, 2004). Parental involvement includes parents' significant role in child's learning, parents were persuaded to be an integral parent of their child's education (Department of Education, 2004). Furthermore, parents were included in their child's education such as advisory committees and decision-making (Department of Education, 2004. Other legislation from the Interstate School Leaders Licensure Consortium (ISLLC) also stressed that schools should collaborate with families while administrators are regarded as the primary educational leaders (Florida Gulf Coast University, 1997). The National Education Association (NEA) also reiterated that parental involvement is just as important as curriculum, test scores and national standards (National Education Act, 2008).

Parental involvement has been proven to be a catalyst for academic achievement (Rapp & Duncan, 2011). Parental involvement increases student aptitude, sense of belonging, and provides a sense of wellbeing (Young, Austin, & Growe, 2013). Parental involvement was found to increase student achievement and was just as significant as school leadership and teacher quality (Gaynor, 2012).

Epstein (2011) stressed that parental involvement should be a joint responsibility between them and the school regarding a student's development and learning, not just sharing information, accomplishment celebrations, and problem solving. Parents should also nurture interest in school activities, help their child with homework, promote reading, and limit television watching (Hornby & Witte, 2010).

Moreover, Jeynes (2005) also found a statistically significant relationship between academic achievement and parental involvement regardless of race and gender in urban area students.

Rapp stated that parents should consistently be implored to be involved with their child's education (Rapp, 2005). Moreover, parental involvement was shown to increase the likelihood their child will graduate high school (Lopez et al., 2001). Parental involvement and parental engagement are used interchangeable. However, they are not the same. Parental involvement is affiliated with participation, while engagement is affiliated with commitment which includes strategic planning and shared decision making (Bernato, 2017). Regardless, both variables were related significantly to student achievement.

Instructional Practices

Instructional practices were found to be more important than amount of time spent in class as a forecaster of higher student achievement (Yair, 2000). Student achievement in mathematics was also linked to instructional practices (Firmender et al., 2014). Palardy and Rumberger (2008) found that instructional practices were much more related to raising student achievement than background characteristics.

Professional Development

Professional development should be an unceasing training of teachers to help them reach their highest potential and address the district's and school's mission and vision (Manley & Hawkins, 2010). The effectiveness of professional development should be assessed to make better

informed choices as to what professional development should address (Koellner & Jacobs, 2015). Higgin & Bonne (2011) found professional development not only increased student achievement and it promoted a climate of trust.

The Sample and Population

The location of this study was in the Northeast region of the United States in a suburban area known as Long Island. Long Island is a bedroom community of New York City and contains a wide range of demographic areas. Ninety-five (95) teachers from four schools responded to the survey. There was a minimum of 20 surveys completed from each school. Two of the schools were high performing and two were low performing in Long Island, New York.

Instruments

Survey

Teaching and Learning International Survey (TALIS) 2013 Teacher Questionnaire was also used as a guide to develop the survey used in this study. The Organization for Economic Co-operation and Development (OECD) is an international educational consortium that develop TALIS to survey principal and teachers in over 30 countries including the United States of America. Each of the TALIS questions were examined and only the ones that pertained to the variables in this study were used to create the questions in the survey instrument. A five-point Likert scale was used in the survey. **Table 1** outlines how each question relates to the variables in the study.

Procedures for Collecting Data

Subsequent to Institutional Review Board (IRB) approval, a semi-structured interview protocol and survey were utilized that were adapted from Teaching and Learning International Survey (2013). A purposeful sample of middle school principals were mailed consent letters. Thereafter, principals were followed up with phone calls to build interest to participate and schedule interviews. Eight principals were interviewed from higher and lower achieving schools. Those principals that were interviewed, then shared the survey to their middle school teachers. The five-point Likert Scaled survey was color coded to differentiate between higher and lower achieving schools. The purpose of the study was explained in an invitation letter that also stated that anonymity and confidentiality would be upheld. Participants could withdraw from the study at any point and was conducted voluntarily.

Reliability

Reliability tests were used for each variable in this study. Cronbach alpha coefficients' calculations are shown in **Table 2**. When analyzing the reliability of the variables, the researcher eliminated some items.

Research Questions

For the purpose of this study, three research questions were formulated to guide this study.

Table 1

Survey Questions by Dimension

Variable	Item	Number of Items	Range	Source
Opportunity to Learn	22, 23, 24, 25, 26, 27	6	6 to 30	Kurz, et al. (2014); Elliot (2015); TALIS (2013)
Parental Involvement	29,30,31,33,34r	5	5 to 25	Robbins & Searby (2015); TALIS (2013)
Instructional Practices	6, 7, 8, 9, 10	5	5 to 25	Firmender, et al. (2014); TALIS (2013)
Professional Development	12,14,15,16,17,18,19r	7	7 to 35	Wilson et al. (2015); TALIS (2013)

Table 2

Refined Variables Table

Dimension	Item	Items	Raw Score	Alpha Coefficient
Opportunity to Learn	22, 23, 24, 25, 26, 27	6	6 to 30	0.763
Parental Involvement	29,30,31,33,34r	5	5 to 25	0.741
Instructional Practices	6, 7, 8, 9, 10	5	5 to 25	0.728

Table 3

Independent Samples t-Test Comparing the Difference of Teachers' Perceptions of OTL, PI, IP, And LQ Based on Their School Achievement

	School Achievement	*N*	*M*	*SD*	*t*	*p*
OTL	Low	45	23.22	3.16	-2.89	.005
	High	49	25.12	3.20		
PI	Low	45	13.18	4.89	-2.22	.030
	High	49	15.08	3.18		
IP	Low	45	21.18	2.38	-2.17	.033
	High	49	22.29	2.56		
LQ	Low	42	25.69	4.03	-2.87	.005
	High	42	28.12	3.71		

OTL – Opportunity to Learn, PI – Parental Involvement, IP – Instructional Practices, LQ- Leadership Qualities

Research Question One

How do teachers in higher and lower achieving schools differ on students' opportunity to learn, instructional practices, parental involvement, effective leadership qualities, and teacher's professional development?

Research question One was answered by using a series of independent sample t-tests and mean scores for each dimension in higher and lower achieving schools. Opportunity to learn (OTL) variable contained six items with a six to 30 score range. The standard deviation was 3.30 with a mean score of 24.21. The mean score was 4.03 when divided by the number of items signifying that teachers not only agreed that OTL should be used but also employed OTL in their classroom and they consider OTL as an important practice to be implemented and to address student achievement. Parental involvement (PI) was comprised of an actual range of five through 25 of five items and the mean score was 14.17 with a standard deviation of 4.18. The mean score was 2.83 when divided by the number of items signifying teachers slightly agreed that they implement PI and slightly agreed it is an indispensable resource toward student achievement.

Research Question Two

What were the relationships among students' opportunity to learn, instructional practices, parental involvement, their principal's leadership qualities, teacher's professional development, and teacher's gender, years of experience, level of education and higher and lower achievement?

Research question two was answered using correlation analysis.

The correlational analysis results presented in **Table 4** indicating that OTL is strongly correlated with parental involvement with r = .301 where 9% of the variance shared by OTL and PI. Subsequently, schools that utilize OTL anticipate high level of parental involvement. Furthermore, OTL is strongly correlated with Instructional practices (IP) 23 percent of the variance is shared by OTL and IP (r = .482). Hence, when high use of OTL occurs in school classrooms, high IP is expected, as well as higher math and ELA test scores.

Research Question Three

Research question three asked which variable predicted student achievement. A multiple regression table was used to answer this question.

The Exp(B) value of item principal leadership qualities (1.179) indicated that for each one-point increase of Principal leadership item, the probability of that school of being placed in a high-achieving school increased by 1.179 times.

The logistical regression analysis found that the variables teacher level of education, teacher gender, teacher years of teaching, teacher age, opportunity to learn, parental involvement, and instructional practices were not added to the prediction model as they were not found to be significant predictors of student achievement. The correlation analysis demonstrates a high relationship between School Leadership Quality and Opportunity to Learn, indicating that teachers perceived the quality of the principal's leadership was related to opportunities to learn and instructional practices.

Table 4

Correlation among OTL, PI, IP, LQ, Gender, Years of Experience, Level Of Education, and Higher & Lower Achievement

		OTL	PI	IP	LQ	Gender	Years Teaching	Level of Education
PI	r	.301**						
	r^2	0.09						
	N	94						
IP	r	.482**	.490**					
	r^2	0.23	0.24					
	N	94	94					
LQ	r	.506**	.606**	.540**				
	r^2	0.25	0.37	0.29				
	N	84	84	84				
Gender	r	0.080	0.18	.257*	0.213			
	r^2	0.01	0.03	0.07	0.04			
	N	94	94	94	84			
Years	r	0.089	-0.101	-0.031	-0.011	-0.061		
Teaching	r^2	0.01	0.01	0.00	0.00	0.00		
	N	94	94	94	84	94		
Level of	r	-0.085	-0.029	-0.085	-0.078	-0.075	.374**	
Education	r^2	0.01	0.00	0.01	0.00	0.00	0.14	
	N	94	94	94	84	94	94	
hl2	r	.288**	.229*	.221*	.303**	-0.052	.262*	0.192
	r^2	0.08	0.05	0.05	0.09	0.00	0.07	0.04
	N	94	94	94	84	94	94	94

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
OTL - Opportunity to Learn, PI - Parental Involvement, IP - Instructional Practices, LQ - Leadership Qualities.

High 49 22.29 2.56

OTL – Opportunity to Learn, PI – Parental Involvement, IP – Instructional Practices

Table 5

Variables in The Equation

		B	*S.E.*	*Wald*	*df*	*P*	*Exp(B)*
Step 1[a]	Principal Leadership Qualities	.165	.062	7.042	1	.008	1.179
	Constant	-4.440	1.694	6.868	1	.009	.012

a. Variable(s) entered on Step1: Leadership Qualities.

Conclusions

The findings in this study reveal that higher achieving schools have significant higher levels of opportunity to learn, parental involvement, effective instructional practices and quality of leadership.

For teachers to improve opportunity to learn they may utilize small group instruction, employ data driven instruction, give more frequent student feedback, and differentiate instruction according to student needs. Another recommendation is to incorporate MyiLogs (educational system) into their daily practice since it lets teachers document instructional practices, utilize data, and provides the teachers with related feedback to improve instructional practices, differentiation of instruction and assessment of learning (Elliot, Roach, & Kurz, 2014).

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