ASSESSING AND PROMOTING STUDENT-CENTERED TEACHING AND LEARNING PRACTICES USING A QUANTITATIVE EDUCATIONAL PLANNING TOOL:
RESULTS OF 2016 INDIANA CASE STUDY

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ABSTRACT

This article provides information about an Indiana regional quantitative research study conducted in 2016 as part of a comprehensive national study designed to promote reflections about contemporary teaching-learning practices using a discrepancy survey instrument. This Indiana case study contained data about the differences between the desired instructional practices of 111 contemporary classroom teachers and their actual practices related to differentiating instruction. The objective of the national research project is to promote educators' recognition and appreciation of the fact that many differentiation strategies, techniques, and activities are implemented on a frequent basis in several different teaching-learning contexts. The survey instrument used in this study serves as a valuable tool to measure the specific level of implementation and to assist educators in their respective planning activities for instructional improvement in diverse contexts. This Indiana case study provides valuable quantitative reference information to facilitate the promotion of greater differentiation in micro-local contexts as well as in regional and global settings.

INDIANA CONTEXT

This quantitative case study was conducted in one Indiana county during the Fall 2016 semester. This county, like much of Indiana, is structured as a unitary school district, with elementary, middle, and high schools under the leadership of one set of district level administrators. The county population is slightly under 40,000 and the largest city, also the county seat, consists of less than 20,000 people. The rest of the population of this county lives in one of several smaller towns or unincorporated rural areas. The primary economic drivers in the county are farming, some small manufacturing operations, a small private university, and the school system itself.

There are about 5,000 students in this Indiana school district. According to the Indiana Department of Education (DOE) (2016) COMPASS website, the ethnic representation of this school district is almost identical to the surrounding rural counties, but somewhat less diverse than the overall state population (Stats Indiana, 2013). Both the county and the school system have experienced significant declines in population in recent years, as several manufacturers have either closed or relocated. Approximately 45% of students in the school district receive free or reduced lunch. The district boasts a 96% attendance rate, which is remarkably consistent from kindergarten through high school. The student scores on the ISTEP+ (Indiana Statewide Testing for Educational Progress) for this district have exceeded the state average by about 2-4% over the last 5 years and are typically in the 75% range (Indiana DOE, 2013).

Teachers from ten different schools in the school district returned completed surveys. The total number (N) for this case study was 111 participants. Five of the schools (high school, two middle schools, and two elementary schools) are located within the city limits of the county seat, whereas, three schools are located in one of the small towns in the county and two schools are located in unincorporated rural areas. According to the Indiana DOE (2016) COMPASS website there are about 375 teachers in the district with about 35% having 20 or more years of experience in the classroom. Each of the five-year career increments: 0 to 20+ years, consistently represents between

15-20% of the teaching force of this school district. The overall distribution between newer and experienced teachers is similar to the distribution of teaching experience in other Indiana school districts (Education Next, 2015). Therefore, this sample may be considered a representative sample of the typical Indiana school district that is not located in a major metropolitan region of the state.

The survey was distributed only to full time instructional teachers; therefore, no administrators, counselors, other classified employees, or paraprofessionals were included in this study. Of the 311 surveys distributed, 50% went to elementary teachers and 50% went to secondary (middle and high school) teachers. The overall return rate of about 36% was achieved by delivering hard copies of the survey to each school for distribution in teacher mail boxes and completed surveys were individually submitted in a secure confidential collection box located in each school main office. Return rates from individual schools varied from a high of almost 73% to a low of 21%.

Conceptual Framework and Research Background

Meeting the individual needs of students has been a key consideration of Indiana teachers and a major orientation of the Indiana public school system since its formation in 1852 (Natali, 2007). However, Indiana educators, similar to their peers in other states, have been exposed to a variety of models, programs, strategies, techniques, and activities designed to facilitate constructivist student-centered teaching and learning such as the differentiation of instruction to meet the learning needs of their students (Johnson, Collins, Duperes & Johansen, 1991; Tomlinson, 2009). The researchers involved in the national study of differentiation contend that most educators are literally and figuratively attracted to two diametrically opposed poles related to the teaching-learning process. One pole is the learner-centered approach and the diametrically opposite pole is the teacher-centered approach (Polka, Van Husen, Young, & Minervino, 2016). Figure 1, originally developed by Polka (2002) illustrates these polar magnetic pulls on the philosophical and practical orientations of contemporary educators. It also highlights the belief of the national research team that most current teaching practices occur somewhere between both of those poles depending on current local, state, and federal educational policies as well as teacher perspectives regarding the nine behaviors associated with the teaching-learning process conceptual framework: 1) teacher objectives; 2) teacher planning and preparation; 3) teacher communication and messages; 4) teacher behaviors; 5) student objectives; 6) student planning and preparation; 7) classroom expectations of students; 8) student communication and messages; and 9) student evaluations (Heathers, 1967).

The significance of this conceptual framework initially enumerated by Heathers and the nine specific teaching-learning behaviors associated with it has been intensively and extensively analyzed for several decades by numerous researchers including: Armstrong, Henson & Savage, 2005; Brooks & Brooks, 1993; Danielson, 2002; Darling-Hammond, 1997; Eggen & Kauchak, 2001; Ernest, Heckaman, Thompson, Hull, & Carter, 2011; Foote, Vermette & Battaglia, 2001; Gillies, R., 2011; Koh, Tan, & Ng, 2012; Marzano, Pickering & Pollock, 2001; Ornstein & Levine, 2008; Polka et al., 2016; Slavin, 2006; Sternberg & Williams, 2002; Tomlinson, 2009; Tomlinson, 2014; Tomlinson, Brimijoin & Narvaez, 2008; Tomlinson & Imbeau, 2011.

The researchers involved in this study, similar to their colleagues in other regions of the United States, believe that promoting practicing educators to reflect about their desired as well as their actual teaching-learning behaviors using Figure 1 as a key reference is an important first step in helping educators comprehend the degree of differentiation of instruction that they would like to employ with their students and the degree of differentiation that they currently do. An analysis of the discrepancy between those desired teaching-learning practices and their actual practices provides an opportunity for each participating professional to reflect about those differentiation approaches that are most congruent with their current practices as well as those approaches that are most non-congruent (Polka et al., 2016).
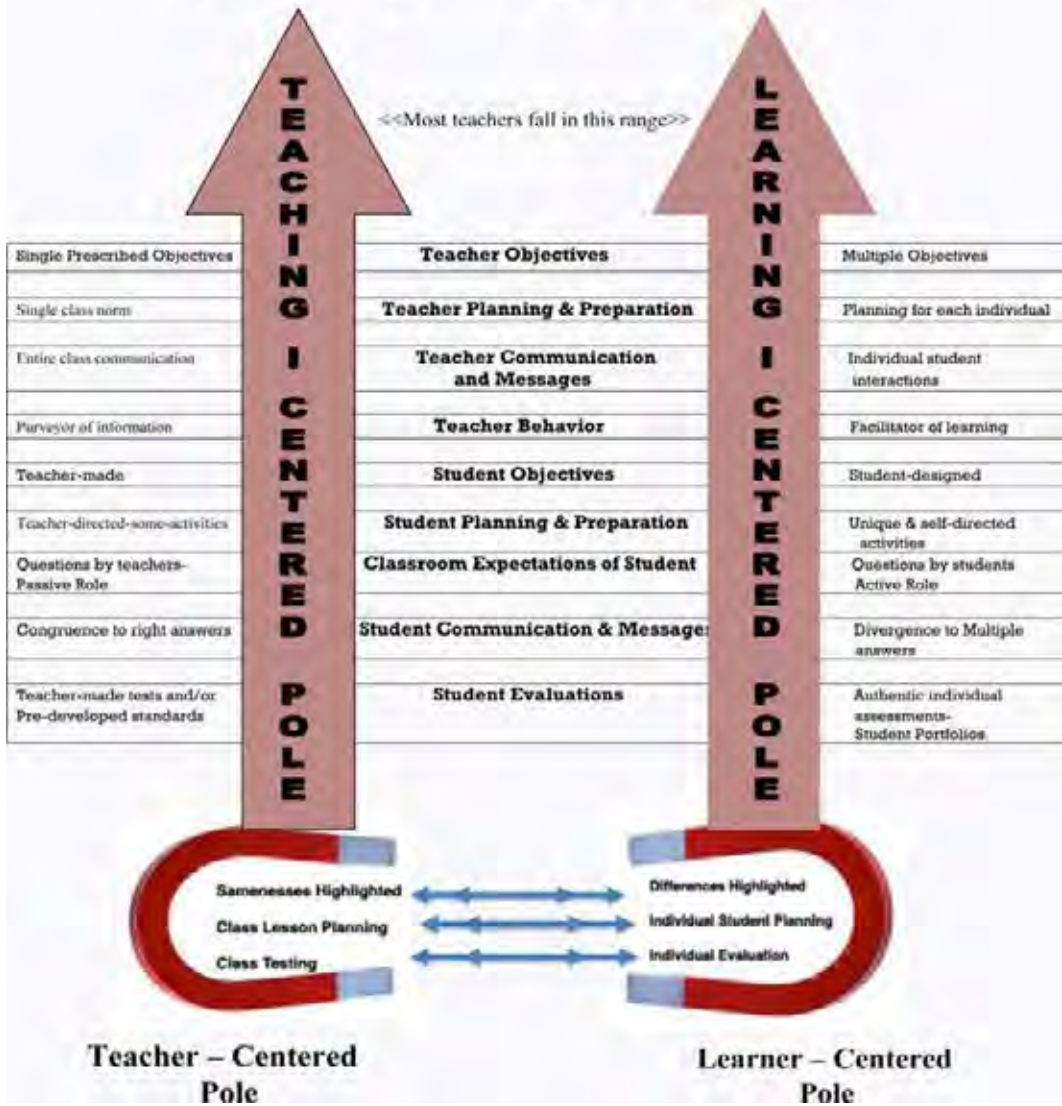
The Teaching-Learning Polarity Diagram

<<Most teachers fall in this range>>

T E A C H I N G   I   C E N T E R E D   P O L E

L E A R N I N G   I   C E N T E R E D   P O L E

Single Prescribed Objectives	**Teacher Objectives**	Multiple Objectives
Single class norm	**Teacher Planning & Preparation**	Planning for each individual
Entire class communication	**Teacher Communication and Messages**	Individual student interactions
Purveyor of information	**Teacher Behavior**	Facilitator of learning
Teacher-made	**Student Objectives**	Student-designed
Teacher-directed-some-activities	**Student Planning & Preparation**	Unique & self-directed activities
Questions by teachers-Passive Role	**Classroom Expectations of Student**	Questions by students Active Role
Congruence to right answers	**Student Communication & Messages**	Divergence to Multiple answers
Teacher-made tests and/or Pre-developed standards	**Student Evaluations**	Authentic individual assessments-Student Portfolios

Samenesses Highlighted ⟷ Differences Highlighted

Class Lesson Planning ⟷ Individual Student Planning

Class Testing ⟷ Individual Evaluation

Teacher – Centered Pole

Learner – Centered Pole

Figure 1. The Teaching-Learning Polarity Diagram (Polka, 2002)

SURVEY INSTRUMENT

The survey instrument used to collect the data for this Indiana study was initially developed in 2007 by a research team of practicing Georgia educators. The instrument titled, *Desired and Current Use of Constructivist Activities and Techniques*, utilizes a discrepancy approach to determine the degree of difference between the "desired" frequency of use of those instructional activities, techniques, and strategies identified in the above Figure 1 and the "actual" use of those instructional approaches in Georgia classrooms similar to other discrepancy research models (Denig, 1994; Polka, 2007, 2010; Polka & Van Husen, 2014;). The survey instrument consists of following three components:

Part I. *Demographic data* – collects information about participants' current educational experiences.

Part II. *Frequency of Instructional Use and Desired State* – designed to collect information about participants' desired frequency of use and their respective actual frequency of use of the various learner-centered approaches as identified in Figure 1

Part III. *Personal Responses* – designed to provide participants the opportunity to respond to the following open-ended questions: 1. What do you feel needs to be done to make individualized instruction and customized learning or differentiation practices more common in today's classrooms? 2. Please provide any additional comments you may wish regarding individualizing instruction and customizing learning in contemporary contexts

Each of the 25 statements in the survey instrument includes both a "desired" and an "actual" component. Thus, participants in this case study were asked to respond to a total of 25 survey statements (see Table 1) that included two response components: "desired" teaching-learning behaviors and "actual" teaching-learning experiences. Each of these statements are also correlated to the nine teaching-learning behaviors initially articulated by Heathers (1967) similar to other differentiation studies conducted using this instrument (Polka, 2010; Polka & Van Husen, 2014). The results of the Part III *Personal Responses* component of this research instrument are not reported in this article so as to focus exclusively on the quantitative data.

Reliability and Validity of Survey Instrument

The survey instrument used in this case study has high reliability based on the result of the Cronbach Alpha reliability test (Coladarci, Cobb, Minium, & Clarke, 2008) that was applied to survey instrument data collected from over 500 practicing teachers in Georgia and New York and the results were as follows: Questions 1-25 (Desired) R=.942; Questions 1-25 (Actual) R=.922 (Polka et al., 2016). The survey instrument also has content validity based on a meta-analysis of the research and literature associated with those nine teaching-learning behaviors and their impact on student-centered instruction during the past 6 decades as previously referenced. Subsequently, the teaching-learning statements included in this survey instrument are valid and reliable to assess participant desired frequency of use as well as their actual frequency of use of those specific teaching-learning activities, techniques, and techniques associated with constructivism and differentiation. Therefore, collecting this data from practicing teachers establishes a valid and reliable "snapshot" of their respective placement on Figure 1: The Teaching-Learning Polarity Diagram.

RESEARCH FINDINGS

As a result of collecting, tabulating, and analyzing the data from the 111 practicing Indiana teachers who completed the survey instrument during the Fall of 2016 the following descriptive statistics about the Indiana case study participants are presented in the following tables.

Table 1.

Descriptive statistical information of sample demographics

Total teaching experience	Total	Percentage	Present teaching level	Total	Percentage
1-4 years	17	15.3%	Elementary school	69	62.2%
5-10 years	16	14.4%	Middle school	21	18.9%
11-15 years	14	12.6%	High school	21	18.9%
16-21 years	17	15.3%			
21+ years	47	42.3%			
Totals	111	100%	Total	111	100%

Accordingly, participants in this Indiana case study were a very experienced group of educators with over half of the sample (57.6%) having 16 or more years of teaching experience and with most of this group (42.2%) having over 21 years of teaching experience. However, there were

also 57.6% of the teachers who had 21 years of teaching experience or less and the teachers in this category were fairly evenly distributed in each of the four teaching experience sub-groups of this category. Most of the teachers in this sample were elementary teachers (62.7%) but 37.8% of the sample was secondary teachers who were evenly divided between middle school and high school teachers. Therefore, this sample of teachers represented educators at all levels of teaching experience but with the overwhelming predominance of teachers being well-experienced professionals and over half of them being elementary teachers. In addition, nearly half of the sample (41.4%) reported teaching all subjects which is consistent with the elementary orientation of the sample. But, the next highest percentage (18%) of subjects taught was Language Arts/English.

Table 2.

The current average number of students within the classes taught by the sample

Number of students	Total	Percentage of sample
10 or less	7	6.3%
11-15	3	2.7%
16-20	16	14.4%
21-25	61	55.0%
26-30	21	18.9%
Over 30	3	2.7%
Totals	111	100%

The above data illustrates that over half of this sample (55%) had an average class size of 21 to 25 students in their classes. Whereas, 21.6% of the sample identified that they had an average class size over 26 students. Thus, this Indiana sample had average class sizes that may be typically found in schools throughout the United States (National Center for Education Statistics, 2012). The teachers with smaller average class sizes (<16) were special education teachers whose class size averages are traditionally less than those of regular classroom teachers (United Federation of Teachers, 2017). Thus, the demographic data from Part I of the survey instrument confirms that this Indiana sample is fairly representative of the general teaching population of Indiana and the United States.

Table 3 provides an overview of the 25 statements contained in the research study instrument: Part II *Individualization and Customization in the Classroom*. The specific teaching-conceptual framework related to each survey statement is identified in column 1 and the specific statement number from the survey instrument is identified in column 2, whereas the specific survey instrument statements are listed in column 3 of the table for reference. Columns 4, 5, and 6 identify the degrees of differences between the *Desired* and *Actual* practices of the 2016 Indiana sample (column 4) and the 2007-2010 baseline sample (column 5), whereas, column 6 identifies the difference between the samples for each statement. Column 7 presents the discrepancy category of each statement based on the initial baseline categories or quartiles developed to analyze similar research studies (Polka & Van Husen, 2014). Column 8 identifies significant differences, using asterisks, within the Indiana sample as a result of applying various statistical procedures to the data.

The following are the category classifications used in column 7 of Table 3 and based on the 2011 analyses and generally confirmed by this 2016 Indiana sample with some slight differences:

Category A**.** These are the differentiation teaching-learning approaches that have the greatest degree of congruency between desired and actual use. Most teachers in the Indiana sample already use these various differentiation strategies and techniques.

Category B. These are the differentiation teaching-learning approaches that have the second most degree of congruency between desired and actual use. Several teachers in this sample already use them in their classrooms.

Category C. These are the differentiation teaching-learning approaches that have a greater degree of difference between desired and actual use than those approaches in the previous two quartiles according to this sample.

Category D. These are the differentiation teaching-learning approaches that have a greatest degree of difference between desired and actual use according to this Indiana sample.

Accordingly, the Indiana sample reflected no categorical changes from the baseline sample for 11 of the survey statements. However, four of the statements: 1, 19, 21, 8 reflected a one category positive change. Whereas six statements: 3, 8, 15, 18, 23, 25 had a one category negative change. But the actual degree of numerical difference between the two samples, positive or negative, was minimal (<0.22) or less than a 4.4% change in the discrepancy between desired practices and actual teaching-learning practices as identified on Table 3, column 6.

In addition, three statements: 17, 11, 22 had a more meaningful change in categorical ranking as they moved up two categories with a range of difference between 0.35 and 0.42 or a positive change of 7% or greater. Whereas, one statement, 5, *Different students, when working on a unit of instruction, use different materials, resources, and equipment*, had a negative change of two categories from baseline *Category B* to Indiana sample rating of *Category D.* This negative change may be attributable to the inclusion of more convergent materials, resources, and equipment used by Indiana teachers because of implementation of the Common Core Curriculum over the past five years.

Table 3.

Ranking of survey instrument statements according to 2016 Indiana sample differences between desired and actual teaching-learning practices compared to baseline sample with differences between both data sets cited, category ranking listed (top = Indiana; middle = baseline; bottom = changes) and significant differences within the Indiana sample identified (* Desired and ** Actual).

Conceptual framework category	Survey number	Survey instrument statement	Indiana sample	Baseline sample	Difference between samples	Discrepancy category Indiana/Baseline/ Category changes	Indiana sample significant differences *Desired **Actual
3). Teacher communication & messages	14	The personal problems or learning exceptionalities of students are accepted with consideration, understanding, and empathy.	0.36	0.46	0.10	A / A	
3). Teacher communication & messages	20	The teacher communicates individually with students or in small groups, as opposed to *total* class discussion.	0.48	0.52	0.04	A / A	* / **
2). Teacher planning and preparation	17	Diagnostic elements, such as IQ, reading level and math ability are used to plan individual activities.	0.50	0.85	0.35	A / C +2	
6). Student planning and preparation	24	Students are offered instructional assistance and guidance individually rather than in a large group setting.	0.51	0.65	0.14	A / A	**
2). Teacher planning & preparation	21	Different instructional techniques are used with different students	0.56	0.78	0.22	A / B +1	* / **

Category	Item	Description						
8). Student communication & messages	1	The teacher practices the use of open-ended questioning rather than focusing on the *right* answer syndrome.	0.57	0.57	0.0	A B	+1	
4). Teacher behaviors	11	The student and teacher respect the diverse opinions of others and come to agreements in a collegial fashion.	0.57	0.89	0.42	A C	+2	
9). Student evaluations	16	Formal evaluation and marking are based on authentic assessment principles.	0.58	0.66	0.08	A A		
2). Teacher planning and preparation	25	The teacher varies the type and degree of difficulty of questions to assure that each student understands.	0.61	0.65	0.04	B A	-1	
7). Classroom expectations of students	3	Cooperative learning experiences are used so that students often receive instructional assistance from one another.	0.62	0.56	0.06	B A	-1	**
1). Teacher objectives	2	Classroom objectives focus on cultivating and facilitating social skills, cooperation, idea exchange, and shared-problem-solving, as opposed to memorizing.	0.62	0.70	0.12	B B		
5). Student objectives	19	Pretests and other similar diagnostic instruments are used to determine the parts of a unit that individual students need.	0.72	0.90	0.18	B C	+1	
6). Student planning & preparation	22	Students play an active role of contributing to the direction or content of the lessons in their learning experiences.	0.74	1.16	0.42	B D	+2	

Category	Item	Statement							
9). Student evaluations	13	Divergent ideas are encouraged by the teacher in evaluating student work, as opposed to expecting convergence in exams and other evaluations.	0.75	0.83	0.08	B	B		
2). Teacher planning & preparation	23	A variety of diverse learning assignments are designed to meet individual student interests and needs.	0.80	0.83	0.03	C	B	-1	*
8). Student communication & messages	15	Information is presented in a manner that promotes authentic inquiry and students are encouraged to consider questions for which a *right* answer may not exist.	0.83	0.82	0.01	C	B	-1	
3). Teacher behaviors	8	The role of teacher is that of a facilitator of learning or resource *guide on the side*	0.87	0.82	0.05	C	B	-1	
1). Teacher objectives	10	Knowledge of each student including life outside of school is used to plan instructional activities.	0.87	0.88	0.01	C	C		*
7). Classroom expectations of students	7	Students conduct a major part of their learning on a self-directed basis.	0.88	0.94	0.06	C	C		
8). Student communication & messages	4	Sufficient time is allocated for students to think, play with ideas, manipulate objects, and experiment in learning without pressure to get the *right answer* at the *right time*.	0.89	0.97	0.08	C	D	+1	
1). Teacher objectives	12	The time that students have to complete or master a given concept or skills varies based on individual differences.	0.90	1.00	0.10	D	D		*

Category	No.	Statement						
1). Teacher objectives	5	Different students, when working on a unit of instruction, use different materials, resources and equipment.	0.92	0.83	0.09	D B	-2	* **
9). Student evaluations	9	Student evaluations are based on individual learning growth instead of a fixed standard all are expected to learn.	1.01	1.06	0.05	D D		*
2). Teacher planning & preparation	18	Lesson planning is done for individual students rather than for the entire class.	1.02	0.94	0.08	D C	-1	
9). Student evaluations	6	Students are evaluated individually and move on to another task once they have mastered the objectives on a unit.	1.10	1.12	0.02	D D		* **

In order to further analyze the collected data from this Indiana sample, One-way ANOVAs were conducted to examine the impact of teaching experience on survey results. Significant results were found for the following groups regarding their responses to the identified survey statements:

- A significant difference was found (F (4, 106) = 2.637, $p < .05$) between teachers with 16-21 years of experience and teachers with 5-10 years of experience regarding their responses to statement 3 A (*actual*). Teachers with more experience (16-21) identified more frequent use (m= 3.82, sd = .728) than their counterparts with 5-10 years of experience (m = 3.00, sd = .730) in terms of the following teaching-learning approach: *Cooperative learning experiences are used so that students often receive instructional assistance from one another*
- A significant difference was found between teachers with over 21 years of experience and teachers with 1-4 years of experience regarding their responses to statements 9A (*actual*) (F (4, 106) = 4.106, $p < .05$): *Student evaluations are based on individual learning growth instead of fixed standards all are expected to learn*; and 10D (*desired*) (F (4, 106) = 2.686, $p < .05$) and 10A (*actual*) (F (4, 106) = 3.374, $p < .05$): *Knowledge of each student, including life outside of school, is used to plan instructional activities*

Tukey's HSD was used to determine the nature of the differences between the two groups described above. Teachers with 1-4 years of experience had higher scores in response to the following survey statements when compared to their counterparts with over 21 years of experience:

- 9. *Student evaluations are based on individual learning growth instead of fixed standards all are expected to learn - Actual* frequency responses (m = 3.65, sd = 931) of teachers with 1-4 years of experience compared to those with 21+ years (m = 2.74, sd = 1.113).
- 10. *Knowledge of each student, including life outside of school, is used to plan instructional activities - Actual* frequency responses of teachers with 1-4 years of experience (m = 4.18, sd =.883) compared to teachers with 21+ years (m = 3.02, sd = .989). *Desired* frequency responses of teachers with 1-4 years of experience (m = 4.53, sd = .800) compared to teachers with 21+ years (m = 3.87, sd =.900).

In addition, for the *Actual* use frequency of statement 10, further significant differences were found between teachers with 1-4 years of experience and those with 11-15 years of experience and 16-21 years of experience. Similar results were found for teachers with 21+ years of experience. The teachers with 1-4 years of experience scored higher frequency of actual use when compared to teachers with 11-15 years of experience and 16-21 years of experience. These results identify that educators with less experience were more likely to use individual student information within assessment and instructional planning, as opposed to instructors with more experience.

One-way ANOVAs were also conducted with the survey data regarding the respondent's present teaching level as identified as either: elementary school, middle school, or high school as reflected in the following Table 4:

Table 4

Results of one-way ANOVAs regarding teaching level and responses to actual frequency that yielded significant Tukey HSD results

		df	F	Sig.
Q3Actual. Cooperative learning experiences are used so that students often receive instructional assistance from one another.	Between Groups	4	1.555	.038
	Within Groups	106		
	Total	110		
Q5Actual. Different students, when working on a unit of instruction, use different materials, resources and equipment.	Between Groups	2	5.128	.007
	Within Groups	107		
	Total	109		
Q6Actual. Students are evaluated individually and move on to another task once they have mastered the objectives on a unit.	Between Groups	2	6.904	.002
	Within Groups	108		
	Total	110		
Q20Actual. The teacher communicates individually with students or in small groups, as opposed to "total" class discussion.	Between Groups	2	8.175	.000
	Within Groups	106		
	Total	108		
Q21Actual. Different instructional techniques are used with different students.	Between Groups	2	6.745	.002
	Within Groups	107		
	Total	109		
Q24Actual. Students are offered instructional assistance and guidance individually rather than in a large group setting.	Between Groups	2	4.177	.018
	Within Groups	106		
	Total	108		
	Total	108		

Specific conclusions were drawn as a result of applying Tukey's HSD to the Indiana sample's responses regarding their *Actual* frequency of use of each of the following survey instrument statements in relationship to their respective teaching levels:

- *3. Cooperative learning experiences are used so that students often receive instructional assistance from one another* **-** high school teachers scored themselves higher in their *Actual* frequency of use of this teaching-learning approach than middle school teachers.
- *5. Different students, when working on a unit of instruction, use different materials, resources and equipment* - elementary school teachers scored themselves higher than their middle school colleagues regarding their *Actual* frequency of use regarding this teaching-learning approach.
- *6. Students are evaluated individually and move on to another task once they have mastered the objectives of a unit* - elementary school teachers scored themselves higher than their middle school colleagues regarding their *Actual* frequency of use regarding this teaching-learning approach.
- *20. The teacher communicates individually with students or in small groups, as opposed to "total" class discussions* - elementary school teachers scored themselves higher than their middle school colleagues regarding *Actual* frequency of use regarding this teaching-learning approach.

- *21. Different instructional techniques are used with different students* - elementary school teachers scored themselves higher than high school teachers in regards to their *Actual* frequency of use regarding this teaching-learning approach.
- *23. A variety of diverse learning assignments are designed to meet individual student interests and needs* - elementary school teachers scored themselves higher than their middle school colleagues regarding *Actual* frequency of use regarding this statement.

Table 5

Results of one-way ANOVAs regarding teaching level and responses to desired frequency that yielded significant Tukey HSD results

		df	F	Sig.
Q5Desired. Different students, when working on a unit of instruction, use different materials, resources and equipment.	Between Groups	2	5.702	.004
	Within Groups	107		
	Total	109		
Q6Desired. Students are evaluated individually and move on to another task once they have mastered the objectives on a unit.	Between Groups	2	3.622	.030
	Within Groups	108		
	Total	110		
Q9Desired. Student evaluations are based on individual learning growth instead of a fixed standard all are expected to learn.	Between Groups	2	7.063	.001
	Within Groups	108		
	Total	110		
Q10Desired. Knowledge of each student including life outside of school is used to plan instructional activities.	Between Groups	2	3.808	.025
	Within Groups	108		
	Total	110		
Q12Desired. The time that students have to complete or master a given concept or skills varies based on individual differences.	Between Groups	2	5.297	.006
	Within Groups	108		
	Total	110		
Q20Desired. The teacher communicates individually with students or in small groups, as opposed to "total" class discussions.	Between Groups	2	4.460	.014
	Within Groups	107		
	Total	109		
Q21Desired. Different instructional techniques are used with different students.	Between Groups	2	6.480	.002
	Within Groups	107		
	Total	109		
Q22Desired. Students play an active role of contributing to the direction or content of the lessons in their learning experiences.	Between Groups	2	3.667	.029
	Within Groups	105		
	Total	107		
Q23Desried. A variety of diverse learning assignments are designed to meet individual student interests and needs.	Between Groups	2	3.751	.027
	Within Groups	106		
	Total	108		

Accordingly, the data included in Table 5 enabled the researchers to conclude that elementary school teachers scored themselves higher regarding their *Desired* frequency of use when compared to high school teachers for the following teaching-learning approaches:

- *5. Different students, when working on a unit of instruction, use different materials, resources and equipment.*
- *6. Students are evaluated individually and move on to another task once they have mastered the objectives of a unit.*
- *9. Student evaluations are based on the individual learning growth instead of fixed standards all are expected to learn.*
- *10. Knowledge of each student including life outside of school is used to plan instructional activities.*
- *12. The time that students have to complete or master a given concept or skill varies based on individual differences.*
- *21. Differential instructional techniques are used with different students.*
- *23. A variety of diverse learning assignments are designed to meet individual student interests and needs.*

In addition, elementary school teachers scored themselves higher when compared to their middle school counterparts in regards to the *Desired* frequency of the following survey instrument statement*: 20. The teacher communicates individually with students or in small groups, as opposed to "total" class discussions.*

The results of this Indiana case study show that, when compared to high school and middle school teachers, the elementary school teachers within the study would ideally like to integrate information about each student and his/her individuality within lesson planning and curriculum development. The elementary school teachers would also prefer to customize instructional techniques and provide a range of required tasks for students.

DISCUSSION

Teachers in this Indiana case study consistently, across all demographics, feel like they generally do a good job of treating students with empathy and understanding as evidenced by their self-identification of their actual teaching-learning practices. In addition, according to this sample, survey statements showing the greatest degree of congruency between teachers' desired practices and actual practices tend to be associated with more traditional best practices such as: small groups, open-ended questions, different instructional strategies, etc. Whereas, those survey statements showing the most discrepancy between teachers' desired practices and actual practices tend be practices that would align with more "aggressive" differentiation strategies such as differentiation by content, differentiation by time, different kinds of evaluations, differentiated lesson planning, etc.

The Indiana results are, in most cases, what might be expected. The greater focus in recent years in teacher preparation programs on differentiation could be seen as influencing younger teachers (1-4 years) to actually put into practice more individualized evaluations and to plan more individualized instructional activities. It is also not surprising that elementary teachers tend to see themselves as using more significant differentiation than colleagues who work with older students. In many cases, the nature of the curriculum and instructional guidelines essentially require them to do so. It is somewhat surprising that the youngest teachers (1-4 years) were more likely to base evaluations on the growth of individual students rather than fixed standards (Survey statement 9). Surprisingly, these are the teachers who have grown up in the era of high stakes standardized testing and have gone through educator preparation programs that, most likely, require them to base lesson objectives on state and/or content area standards. One might anticipate that they would be the most comfortable applying fixed standards.

The survey instrument survey used in this case study is a powerful tool to promote the personal identification of current professional practices about differentiation compared to desired professional practices. In addition, the survey instrument and the analysis of case studies like this

Indiana case study reinforce that a number of teachers desire to use and currently employ various differentiation techniques and strategies to various degrees in their teaching-learning settings and with some additional reflection and minimal professional assistance they may move further along the teaching-learning continuum toward the student-centered pole.

Consequently, the survey instrument serves as a key professional development activity within schools, as teachers share their actual and desired outcomes with one another since it provides a system to rank current practices into categories that are context-based yet norm referenced. The use of the survey instrument promotes a "baby-steps" progressive professional approach to greater differentiation based on what is and what should be within a specific context based on comprehensive research data that is also applicable to similar contexts.

Subsequently, this quantitative approach encourages short-term and long-term goal setting and strategic planning for greater differentiation based on current practices and professional reflections. This article is a key reference component of the nationwide research project currently being conducted by research teams in the following states: Arkansas, Georgia, Idaho, Kansas, Mississippi, Missouri, New York, Ohio, South Dakota, Texas, Vermont, and Virginia using the same survey instrument to further build baseline information regarding the desired use and actual use of differentiation approaches with the goal of helping more educators move along the continuum to greater student-centered differentiated education.

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