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Differentiated instruction : learning profiles, assessment, and professional development

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Differentiated instruction : learning profiles, assessment, and professional development

Abstract

Differentiated instruction, in which a teacher recognizes and seeks to accommodate each student's method of learning (a learning profile), optimizes the classroom experience for all students (Tomlinson, 1999). Though differentiated instruction can be an excellent strategy to manage the diverse learning culture of the contemporary classroom, many educators have concerns about it. This literature review examines the following questions: 1. What is the role of learning profiles in a differentiated instruction classroom? 2. What is the role of assessment in a differentiated instruction classroom? 3. What should be the content and processes of a professional development program for the implementation of differentiated instruction using learning profiles and assessments? Gardner's Multiple Intelligence Theory and the Revised Bloom's Taxonomy (Noble, 2004) are recommended as the theoretical frameworks for identifying intelligence preferences in students' learning profiles. The author recommends teachers invest more fully in the assessment process: data-gathering (pre-, formative, and summative assessments); analysis of data; comparison of unsuccessful learners' learning profiles and instructional strategies used; adjustment of content, product, process, or affect in the re-teaching based on the data. The author agrees with Erickson (2008) who noted that the implementation of differentiated instruction requires a rethinking of educational strategies. The author recommends specific concepts and skills be included in professional development: sessions led by mentor teachers; access to resources and information about the principles of differentiated instruction; skill instruction on ways to develop or use existing learning profiles; design and analysis of assessments; instructional changes as a result of assessments; and peer coaching.

DIFFERENTIATED INSTRUCTION:
LEARNING PROFILES, ASSESSMENT, AND PROFESSIONAL DEVELOPMENT

A Literature Review

Submitted

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts in Education

Sharon Kay Meyer

University of Northern Iowa

Spring Semester 2012

This Literature Review by:

Sharon Kay Meyer

Entitled:

Differentiated Instruction: Learning Profiles, Assessment, and Professional Development

has been approved as meeting the literature review requirement for the degree of

Master of Arts in Education

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Differentiated instruction, in which a teacher recognizes and seeks to accommodate each student's method of learning (a learning profile), optimizes the classroom experience for all students (Tomlinson, 1999). Though differentiated instruction can be an excellent strategy to manage the diverse learning culture of the contemporary classroom, many educators have concerns about it. This literature review examines the following questions: 1. What is the role of learning profiles in a differentiated instruction classroom? 2. What is the role of assessment in a differentiated instruction classroom? 3. What should be the content and processes of a professional development program for the implementation of differentiated instruction using learning profiles and assessments? Gardner's Multiple Intelligence Theory and the Revised Bloom's Taxonomy (Noble, 2004) are recommended as the theoretical frameworks for identifying intelligence preferences in students' learning profiles. The author recommends teachers invest more fully in the assessment process: data-gathering (pre-, formative, and summative assessments); analysis of data; comparison of unsuccessful learners' learning profiles and instructional strategies used; adjustment of content, product, process, or affect in the re-teaching based on the data. The author agrees with Erickson (2008) who noted that the implementation of differentiated instruction requires a rethinking of educational strategies. The author recommends specific concepts and skills be included in professional development: sessions led by mentor teachers; access to resources and information about the principles of differentiated instruction; skill instruction on ways to develop or use existing learning profiles; design and analysis of assessments; instructional changes as a result of assessments; and peer coaching.

Dedications

To my professor, Dr. Schumacher Douglas, for her continual encouragement, her understanding that life gets in the way, and most of all for her expertise and guidance in the completion of my literature review;

To Dr. Jean Schneider, for challenging me to think in new ways;

To my students at Durant Middle School for showing me the importance of learning profiles in a differentiated instruction classroom;

To all my children, Jackee, Devin, Dustin, and Ashley, for their belief in the power of learning;

To my son, Dustin, whose ability to edit and nicely make suggestions allowed me to move forward in completing my review of literature;

And to my husband, Rick, for his encouraging words and patience.

TABLE OF CONTENTS

ABSTRACT	iii
CHAPTER 1	
INTRODUCTION	1
CHAPTER 2	
METHODOLOGY	4
CHAPTER 3	
REVIEW OF LITERATURE	8
CHAPTER 4	
CONCLUSIONS	24
REFERENCES	29

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CHAPTER 2	
METHODOLOGY	4
CHAPTER 3	
REVIEW OF LITERATURE	8
CHAPTER 4	
CONCLUSIONS	24
REFERENCES	29

CHAPTER 1

INTRODUCTION

Historically, educators have chosen a “one size fits all” strategy for classroom learning—all students were taught the same way in the same amount of time (Wormeli, 2007). According to Wormeli (2007) it is unlikely this strategy was ever truly effective. Modern classrooms are incredibly diverse, featuring a multitude of cultural, emotional, economical, physical, and intellectual differences among students. Students of equivalent age differ in readiness to learn, interest, learning style, background knowledge, and life circumstances (Tomlinson, 2001). These differences impact not only what students learn, but also the pace at which they learn it (Tomlinson, 2001). Each student’s cognitive processes are determined by his or her own unique situation and it is increasingly clear that, to be truly effective, teachers must meet each student’s individual intellectual needs (Tomlinson, 2001).

Meaningful, tailored instruction motivates students and results in increased learning (George, 2005). According to Tomlinson, Brimijoin, and Narvaez (2008), research strongly suggests maximum learning takes place when teachers continually and vigorously adjust curriculum in response to individual student readiness, interest, and learning profile; these are all addressed in differentiated instruction classrooms. As Tomlinson and Doughty (2006) stated:

[T]he variance in middle-level students requires those who serve them to be fully aware of their diversity and to possess the skills necessary to address the full

range of learners—including those who have already demonstrated advanced academic abilities and those who have potential that has not yet surfaced. (p. ix)

George (2005) concluded that differentiated instructional strategies recognize and accommodate the heterogeneity of student learning; it promises to ensure that each student experiences effective and challenging instruction

Many educators have examined differentiated instruction (McTighe & Brown, 2005; Noble, 2004; Tomlinson, 2001; Wormeli, 2007). The purpose of this literature review is to synthesize the concepts and conclusions regarding three aspects of differentiated instruction presented in the literature by the aforementioned authors and others. Specifically, the author addresses the ways in which analyzing learning profiles assists teachers in making instructional decisions, the role of assessment in guiding teacher decisions, and finally, the author explores the content of professional development programs related to the development of differentiated instruction classrooms which incorporate the use of learning profiles and varied assessments.

Statement of the Problem

Instruction in the differentiated classroom is guided by rigorous standards and driven by continual assessments (Tomlinson, 1999). While many agree with the theory of differentiated instruction (McTighe & Brown, 2005; Noble, 2004; Tomlinson, 2001; Wormeli, 2007), there remain many unanswered questions regarding its practicality (Tomlinson et al., 2003). In many schools, teachers and administrators have struggled with the actual implementation of differentiated instruction (Horn, 2003), resulting in the forfeiture of valuable institutional inertia and hindering the uptake of otherwise valuable differentiated instruction strategies (Tomlinson et al., 2003).

Purpose

According to Tomlinson (1999), an educator's objective when using differentiated instruction is for all students to demonstrate the ability to understand, explain, apply, and interpret the subject matter. This review of literature about differentiated instruction may assist teachers and administrators in deciding whether differentiated instruction is suited to their educational setting and compatible with their objectives. This literature review may serve as a guide for those educators looking to promulgate their own strategies, while also allowing them to bypass common obstacles encountered in past efforts.

Research Questions

This review of literature about differentiated instruction focuses on the following questions:

1. What is the role of learning profiles in a differentiated instruction classroom?
2. What is the role of assessment in a differentiated instruction classroom?
3. What should be the content and processes of a professional development program for the implementation of differentiated instruction using learning profiles and assessments?

CHAPTER 2

METHODOLOGY

Differentiated instruction is a set of principles and “can be accurately described a classroom practice with a balanced emphasis on individual students and course content” (Tomlinson & Imbeau, 2012, p. 14). While Tomlinson is the predominant author about the principle-guided practice of differentiated curriculum (Tomlinson, 1999; Tomlinson, 2003; Tomlinson, Brighton, Hertberg, Callahan, Moon, Brimijoin, Conover, & Reynolds, 2003; Tomlinson, Brimijoin, & Narvaez, 2008; Tomlinson, & Doubet, 2006), many other authors and published sources exist (e.g., McTighe & Brown, 2005; Noble, 2004; Wormeli, 2007). The purpose of this literature review is to synthesize the concepts and conclusions regarding three aspects of differentiated instruction. Specifically, the author addresses the ways in which analyzing learning profiles assists teachers making instructional decisions in a differentiated instruction classroom, the role of assessment in guiding teachers in differentiated instruction classrooms, and finally, the author explores the content of professional development programs related to the development of differentiated instruction classrooms which incorporate the use of learning profiles and varied assessments.

Sources were located using online web-based search engines, discussing the topic with colleagues and professors, and searching online book vendors. Through these sources, the author located peer-reviewed education journal articles and texts from notable authorities in the field of education. Further information was acquired when the author attended seminars on differentiated instruction sponsored by the National Middle

School Association, the International Reading Association (IRA), and the State Department of Education's Area Education Agency #9 (AEA 9). Many professional education associations offer professional development resources to dissemination research on this topic: the Association of Middle Level Educators (formerly National Middle School Association), the International Reading Association, the Association for Supervision and Curriculum Development, and the National Education Association. Many publications from these sources were reviewed for possible use in this review of literature.

When deciding which resources were appropriate for use in this review of literature, several factors were taken into consideration: relevance to the topic, the author's reputation, the date of publication, access to the primary publication, and the professional prominence of the publishing source. Analysis of the selected sources included several readings of each article or text, highlighting text, making margin notes, entering information on index cards, and sorting those cards into subheadings: differentiated instruction—general concepts; assessment and differentiated instruction; implementation; and professional development.

Definitions

In order to establish a common understanding of the terminology included in this literature review about differentiated instruction, the following terms are defined:

- *Bloom's Revised Taxonomy (BRT)* — Bloom's Revised Taxonomy classifies instructional activities or questions as they progress in difficulty from low-level to high-level thinking skills (Noble, 2004). The labels range from lowest to highest on the scale for the BRT (which may differ from the traditional Bloom Taxonomy

labels): knowledge, understanding, application, analysis, synthesis, and evaluation.

- *Differentiated Instruction* — Differentiated instruction recognizes and appropriately tailors classroom instruction to each student’s background knowledge, readiness, language skills, learning preferences, and interests (Wormeli, 2007).
- *Gardner’s Multiple Intelligences Theory*— Gardner sought to move educators and the general population beyond a single definition of “intelligence.” Gardner’s Multiple Intelligence Theory established eight intelligences: verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical-rhythmic, interpersonal, intrapersonal, and naturalistic (Wormeli, 2007).
- *Heterogeneous Classroom* — A heterogeneous classroom is one in which students with mixed abilities, varying backgrounds, and different learning profiles are present (Tomlinson, 1999).
- *No Child Left Behind (NCLB)* — Passed in 2000, No Child Left Behind is a federal law limiting federal funds to schools failing to produce adequate performance on standardized tests.
- *Professional Development* — Professional development is continuing education for teachers, designed to update their skills and knowledge on a regular basis. Typically professional development programming is provided by school districts; these efforts are ongoing and aligned with student learning standards and assessments (Wormeli, 2007).

Significance of the Study

Many educators believe that the integration of differentiated instruction in the classroom leads to critical improvements in student learning and achievement (Tomlinson, 2008). Other educators are daunted by the challenges of adopting this principle-guided philosophy (Tomlinson & Imbeau, 2010; Wormeli, 2007). This review may assist teachers and administrators in deciding whether differentiated instruction is suitable to their educational setting and compatible with their objectives. By establishing the elements of effective differentiated instruction implementation, this review may function as a guide for those educators looking to promulgate their own strategies, while also allowing them to bypass common obstacles encountered in past efforts.

CHAPTER 3

REVIEW OF LITERATURE

Nearly five decades ago, Jerome Bruner (as cited in Tomlinson et al., 2003) argued that in order to truly honor the diversity of students in our classrooms, we must place the same focus on the less advanced learner as we do on the more advanced. Bruner stressed the importance of maintaining each student's confidence in the learning process and called on educators to reevaluate their teaching practices to ensure all young citizens feel welcome in the classroom (Tomlinson et al., 2003).

Noble (2004) states classroom diversity has always existed, but the modern inclusive schooling movement—which advocates the inclusion of students with disabilities and learning difficulties in all classrooms—has made this realization particularly acute. Many academic leaders have been quick to recognize the perceived benefits of differentiated instruction, and it is frequently included in school improvement plans (Wormeli, 2007). Believing that differentiated instruction is far from a passing fad, VanSciver (2005) goes so far as to state, “differentiated instruction is or should be as American as apple pie and baseball” (p. 2).

“At the core of the classroom practice of differentiation is the modification of four curriculum-related elements” (Tomlinson & Imbeau, 2010, p. 15-16): Content (The knowledge, understanding and skills we want students to learn.); Process (How students come to understand or make sense of the content.); Product (How students demonstrate what they have come to know, understand, and are able to do after an extended period of learning.); and Affect (How students' emotions and feelings impact their learning).

Adjusting instructional practices in differentiated instruction classrooms is facilitated when teachers first address the three categories of student need and variance (Tomlinson & Imbeau, 2010, p. 16-17): Readiness (A student's current proximity to specific knowledge, understanding, and skills.); Interest (That which engages the attention, the curiosity, and involvement of a student.); and Learning Profile (A preference for taking in, exploring, or expressing content.).

This review will focus on one of the three student needs and variance categories: the role of learning profiles in the differentiated instruction classroom. Burns (2007) places great emphasis on the role of learning profiles in increasing academic achievement.

A student's learning profile is shaped by four elements and the interactions among them:

- Learning style—a preferred contextual approach to learning;
- Intelligence preference—a hard-wired or neurologically shaped preference [used] for learning or thinking;
- Gender—approaches to learning that may be shaped genetically or socially for males versus females;
- Culture—approaches to learning that may be strongly shaped by the context in which an individual lives and by the unique way in which people in that context make sense of and live their lives (Tomlinson & Imbeau, 2010, p. 17-18).

Learning Profiles

Differentiated instruction, in which a teacher recognizes and seeks to accommodate each student's method of learning, that is, a learning profile, optimizes the classroom experience for all students (Tomlinson, 1999). To successfully engage their students, teachers first need insight on the students as individuals (Tomlinson et al., 2003). Academic diversity now characterizes the classroom (Tomlinson et al., 2003), and along with this diversity comes a multitude of learning profiles—from highly advanced learners to underachievers, from those with learning disabilities to those who do not speak English. Added to the mix are students with a wide range of interests and socioeconomic backgrounds, as well as many other differences (Tomlinson et al., 2003). Tomlinson et al. (2003) found in light of this heterogeneity, teachers can no longer dismiss the need to make classrooms a good fit for the full range of learners.

Wormeli (2006) advises educators to acknowledge and not discount the immensity of this challenge. Many teachers are unaware of the broad array of students within their classroom and develop classroom routines that ignore variance in readiness and interest (Wormeli, 2006). Additionally, with limited time and limited funds, it is often exceedingly difficult to maximize learning opportunities for each student (Wormeli, 2006). Differentiated instruction, states Wormeli (2006), was designed to put students first and enable teachers to accommodate classroom diversity.

Adjusting instructional practices in differentiated instruction classrooms is facilitated when teachers first address the three categories of student need and variance (Tomlinson & Imbeau, 2010): readiness, interest, and learning profile. A learning profile is defined as “a preference for taking in, exploring, or expressing content” (Tomlinson &

Imbeau, 2010, p. 17). Burns (2007) advocates for differentiated instruction in the classroom, but qualifies his highest support for those programs that utilize learning profiles. Burns (2007) asserts that differentiated instruction with a focus on learning profiles plays a vital role in fostering a climate of high academic learning. Four elements and the interactions shape a learning profile: learning style, intelligence preference, gender, and culture (Tomlinson & Imbeau, 2010). The concept of intelligence preference was selected by the author as an area to be more closely examined. Gardner's Multiple Intelligence Theory and the Revised Bloom's Taxonomy were used as theoretical frameworks to examine the concept of intelligence preference (Tomlinson & Imbeau, 2010).

According to Nobel (2004), a vital component of differentiated instruction is first establishing a learning profile for each student based on Gardner's Multiple Intelligences Theory and Bloom's Revised Taxonomy. As the name suggests, Gardner's Multiple Intelligences Theory recognizes several types of intelligence beyond the traditional academic linguistic and logical mathematical intelligences (Noble, 2004). The intelligences identified by Gardner include the following: spatial, musical, bodily kinesthetic, interpersonal, intrapersonal, naturalist, and existentialist intelligences (Noble, 2004). Bloom's Revised Taxonomy, meanwhile, identifies six levels within the cognitive thought process described below in order from lowest to highest:

1. *Knowledge* –define, duplicate, label, memorize, name, order, recognize, recall, repeat, reproduce, state.
2. *Comprehension* – classify, describe, discuss, explain, express, identify, indicate, locate, recognize, report, restate, review, select, translate.

3. *Application* – apply, choose demonstrate, dramatize, employ, illustrate, interpret, operate, practice, schedule, sketch, solve, use, write.
4. *Analysis* – analyze, appraise, calculate, categorize, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test
5. *Synthesis* – arrange, assemble, collect, compose, construct, create, design, develop, formulate, manage, organize, plan, prepare, propose, set up, write
6. *Evaluation* – appraise, argue, assess, attach, choose, compare (Noble, 2004, p. 194).

Both Gardner's Multiple Intelligences Theory and Bloom's Revised Taxonomy are the result of modern epistemological research and both suggest diversified instruction is necessary to facilitate multiple types of learning (Noble, 2004).

Merely recognizing classroom diversity is insufficient on its own; one must understand the diversity and understand exactly how each student is different (Subban, 2006). Cognitive development theory shows that several areas—social interaction, engagement between teacher and student, physical space and arrangement, student ability, and powerful content—must be considered in the contemporary classrooms (Subban, 2006).

By combining assessment data about each student based on Gardner's Multiple Intelligence Theory and Bloom's Revised Taxonomy, teachers can formally assign each student a learning profile that aligns with his or her strengths, weaknesses, and interests (Moon, 2005). Decoding individual learning styles and learning requirements can be a challenging task (Erickson, 2008). Subban (2006) states differentiated instruction begins

with pre-assessments given by the teacher to determine each student's learning profile. Based on the outcome of the assessments, the teacher then selects instructional methods, resources, and activities (Tomlinson et al, 2003). A post-assessment given by the teacher to confirm the results of the methodology (Subban, 2006) allows the teacher, according to Tomlinson et al. (2003), an opportunity to proactively modify curricula, teaching methods, resources, and activities to maximize learning for everyone in the classroom.

Nobel (2004) suggests that Bloom's Revised Taxonomy and Gardner's Multiple Intelligence Theory help teachers make sense of the differences between students and can be incorporated into the differentiated classroom to assist teachers in becoming aware of various learning profiles. When teachers pay attention to the starting point of each student, they steer clear of the static starting point at the beginning of curriculum guides (Erickson, 2008). When students make a connection between the curriculum, their interests, and their life experiences, optimal learning occurs (Erickson, 2008). Teachers implementing differentiated instruction understand each student's interests, readiness, and learning profile, and they attempt to stimulate those natural learning opportunities (Carolan & Guinn, 2007). For example, in the reading classroom, offering an abundance of books on a variety of subjects allows students to choose texts that match their interest, and the freedom to choose motivates students to learn (Ericson, 2008).

Tomlinson et al. (2003) indicates that no student learning profile is better than another—they are just different. Tomlinson et al. (2003) emphasizes that commonalities do exist across the spectrum; students inherently value self-awareness and they show a strong preference for having an active voice in their learning. Students' awareness of their strengths, guides their choices in learning, and they will readily accept challenging

tasks that build on existing confidence (Tomlinson et al., 2003). Experiencing success within their experiential comfort zone motivates students to develop a deeper understanding of the subject matter (Noble, 2004). Furthermore, students who understand their own learning strengths are increasingly likely to respect their classmates and encourage struggling students to shine in their own learning strengths (Noble, 2004). Nobel (2004) notes that students come to understand that not everyone starts at the same place or learns in the same way. Shared understanding of other classmates' approaches to learning can be quite effective in fostering a cooperative classroom climate (Noble, 2004).

Struggling students, more so than high achieving students, connect primarily by building on what they already know (Tomlinson et al., 2003). Many have experienced failure in the past and need more time and attention, so they may be less confident journeying beyond their cognitive comfort zone (Tomlinson et al., 2003). For them, it is particularly important for instruction to engage them and scaffold on their prior knowledge to boost their confidence and increase their learning (Tomlinson et al., 2003).

Tomlinson (2003) notes that old habits are difficult to eradicate, so it is vital for teachers to identify what must first be *un*learned before setting the stage for *re*learning. Teachers should demonstrate that there is more than one way to solve a problem (Tomlinson et al., 2003). Practicing new skills and alternative methods will allow struggling students to internalize and grapple with new ideas (Noble, 2004). By building upon prior knowledge while simultaneously focusing on new, higher order learning strategies, teachers can ultimately create more meaningful learning and greater output from struggling students (Noble, 2004).

In the differentiated classroom, all students are encouraged to think at high levels, and consistent opportunities are created to foster active learning (VanSciver, 2005). Differentiated instruction allows each student to acquire, process, and demonstrate knowledge in different ways to reach equal proficiency (VanSciver, 2005). As George (2005) asserts, teachers need to offer more than one example and more than one strategy, and each student needs to learn and decide what works best for him or her. In doing so, the differentiated classroom fosters learning that is personal, meaningful, and satisfying (George, 2005).

Assessment and Differentiated Instruction

Instruction in the differentiated classroom is guided by rigorous standards and driven by continual assessments (Tomlinson, 1999). According to Tomlinson (1999) an educator's objective when using differentiated instruction is for all students to demonstrate the ability to understand, explain, apply, and interpret the subject matter. Tomlinson (1999) states assessment is necessary to confirm this outcome, and choosing the proper assessment is a critical component of differentiated instruction.

Moon (2005) notes that teachers make informed decisions based on student readiness, interest, and learning profile in a differentiated classroom. Their focus is on what to teach and how best to teach it, but they must also continually assess the success of their decisions. Burns (2007) suggests that accountability is a crucial component of a teacher's differentiated instructional strategy. Teachers have to modify their teaching to accommodate each student's learning profile (Burns, 2007), and good teachers accumulate a bank of approaches to be used in different circumstances and employ them as needed (Kilgore et al., 2002).

In facing the challenge of classroom diversity, teachers should design their instruction to narrow significant achievement and readiness gaps (McTighe & Brown, 2005). Erickson (2008) notes differentiated instruction is a viable alternative when traditional teaching methods have continually proven ineffective. When the strategies used are interesting and authentic, differentiated instruction creates an academically responsive classroom and an environment of active learners (Erickson, 2008).

Carolan and Guinn (2007) assert that an academically responsive classroom cannot exist unless the teacher assesses and understands the contextual factors which influence the learners, and then adjusts the context appropriately. Teachers not only have the responsibility to be experts in a subject area, but also to have the ability to navigate the subject in many different ways (Carolan & Guinn, 2007). Carolan and Guinn (2007) suggest that teachers must have tools in their toolbox that connect different learning profiles with the diverse students in their classrooms. Without this instructional flexibility from the teacher, students—especially the struggling ones—will find school increasingly restrictive and frustrating (George, 2005). Students become uninspired unless they have challenging and meaningful instruction that is delivered in a manner that is compatible with their individual learning profiles.

Subban (2006) believes the lack of meaningful and challenging instruction is unfortunate, not only for students, but for teachers as well; when student morale deteriorates, teacher morale most often follows suit. Teachers take pride in their work when all students begin to show evidence of meaningful learning (Lynch & Warner, 2008).

Moon (2005) states three types of assessments have been shown to be of value in differentiated instruction: pre-assessment, formative assessment, and summative assessment. Research reveals assessments are crucial in allowing teachers to organize fundamental skills that focus on students' needs within the appropriate cognitive framework (Tomlinson et al., 2003). Tomlinson (2008) emphasizes the importance of teachers being trained to use a wide range of instructional strategies; it is equally important that they learn to determine which strategies work and which do not (Tomlinson et al., 2008).

Pre-assessment. Wormeli (2007) explains the pre-assessment phase in a differentiated classroom. The pre-assessment phase provides data that facilitates the development of baseline instruction. The goal of pre-assessment is to develop each student's objectives prior to instruction. It determines where a student begins and where he or she should end up. Effective use of pre-assessments helps a teacher find deficits or gaps in the student's existing knowledge and thereby avoids unnecessary repetition of previous learning (Tomlinson, 1999). Pre-assessments need not be time consuming; the identification of extenuating conditions that may impair student progress is the goal (Moon, 2005).

Moon (2005) found that the most commonly effective forms of pre-assessments are extended observation, analysis of test results, and one-on-one interviews with the student. The teacher uses the data to make instructional modifications prior to the launch of the unit. Specific student objectives are created and aligned with standards and curriculum guides, leading to a planned sequence that ultimately leads to fulfillment of instructional goals. The sequence can incorporate several different strategies and

resources, though early on, scaffolding—in the form of templates or direct guidance—has been shown to be especially helpful in enhancing student learning (Moon, 2005).

Formative assessment. Wormeli (2007) notes the second phase of assessment in the differentiated classroom is formative assessment—the ongoing process of designing classroom instruction to meet students’ learning profiles and making them confident learners. Wormeli (2007) found that teachers should gather data during instruction to make informed decisions about students and their progress. Formative assessments can take the form of a written test, the evaluation of other work, or even student responses to questions and participation in discussions, among other forms (Wormeli, 2007). Even though each formative assessment can be different in format, ultimately, Moon (2005) reminds educators, the focus must be on the specific learning goal of the current unit.

Moon (2005) states that formative assessments are most useful in determining whether the student has mastered the new material, or has at least assimilated the new material into their existing framework. The teacher can then re-teach or extend the lessons for any material not yet mastered (Moon, 2005). The pace of learning can be reconsidered after the data from the formative assessment has been analyzed; mixed-ability student groups can be established to support learning. The student’s progress toward the learning outcome, measured during the formative assessment, can be used to properly realign instruction (Moon, 2005).

Summative assessment. The last of the three assessments, summative assessment, is the gathering of data through an assessment activity after instruction has concluded (Moon, 2005). The summative assessment must be aligned with the previously established learning goals for the unit. Moon (2005) found the main objective

of summative assessment in the differentiated classroom is to determine whether the instructional methods employed resulted in improved student learning. Teachers can gather data by a paper and pencil test or by a comprehensive performance evaluation, to name a few options (Moon, 2005). After the data is gathered and analyzed, the final step in the summative assessment process is for the differentiated classroom teacher to use the data to answer reflective questions, such as, “Was the outcome sufficiently aligned with the stated goals of the unit?” Moon (2005) suggests teachers reflect on and decide whether the teaching was conducive to student learning, or was the learning compromised? Moon (2005) notes the intent of summative assessment for a teacher in a differentiated classroom is to comprehensively evaluate the successes and failures of the strategies chosen for the particular unit in question. Moon (2005) suggests that studies continually show the importance of modifying instruction based on the results of summative assessment, and reluctance to do so is one of the most common reasons for inadequate long-term student performance in a differentiated instruction classroom.

The relationship between differentiated instruction and assessment allows teachers to continually modify strategies based on what the data tells them (Moon, 2005). Assessments are not only used as building blocks for differentiated instruction; they also act as a bridge to inform the teacher and student of the learning experience. They measure factual knowledge and ask whether the student knows when, how, and why to use that knowledge (Moon, 2005).

Professional Development and Differentiated Instruction

Erickson’s research (2008) determined that in many schools, the implementation of differentiated instruction requires a sweeping rethinking of educational strategy, and

therefore necessitates professional development and peer coaching for involved teachers. In this context, professional development does not generate new skills, but initiates a new mindset (Tomlinson et al., 2003). Each teacher must work toward this mindset in a systematic way, taking advantage of his or her specialties as an educator while accumulating high-level knowledge about novel educational approaches (Tomlinson et al., 2003).

Collaboration among educators is a particularly valuable aspect of professional development (Tomlinson, 2001). In the past, expert teachers were often uncomfortable sharing the instructional strategies implemented in their classrooms. Tomlinson (2001) asserts that studies continually show that teachers teaching teachers can be incredibly effective at fostering change, while simultaneously creating valuable faculty-wide leadership skills.

Effectively implementing differentiated instruction involves far more than minor or occasional classroom modifications, so establishing the model of teachers-teaching-teachers and faculty-wide leadership within a school is one of the keys for the successful implementation of the major changes needed (Tomlinson, 2001; Tomlinson et al., 2003). Teachers learning differentiated instruction have benefited greatly from a mentoring relationship with a confident individual experienced with the challenges of differentiated instruction (Tomlinson et al., 2008). Teachers exposed to concrete differentiated instruction examples and differentiated vocabulary demonstrate increased learning of differentiated strategies and begin to properly plan for the diverse heterogeneous classroom (Tomlinson et al., 2008). Although for some, the changes will be drastic;

many realize they have actually been practicing differentiated instruction all along (Tomlinson et al., 2008).

Holland Elementary School. In 2000, Holland Elementary School was given the lowest possible ranking in California's annual evaluation of its public schools, which came as a great disappointment to the dedicated and experienced staff (Cusumano & Mueller, 2007). To be sure, the school faced many challenges—the poverty rate at Holland was 90% and 25% of the students were non-native English-speakers—but Holland was ranked well below other schools dealing with the very same issues (Cusumano & Mueller, 2007). Student learning goals were not being met, and staff morale was suffering as a result (Cusumano & Mueller, 2007).

Cusumano and Mueller (2007) stated that after extensive consideration, the Holland School District administration implemented differentiated instructional strategies at all grade levels. By nearly every measure, the program was a resounding success (Cusumano & Mueller, 2007). Holland Elementary School's rankings steadily increased over the next five years, and in 2006, when compared to similar schools, they received a perfect 10, the highest ranking possible. Holland Elementary School's focus on differentiated instruction accelerated learning by providing explicit, equitable learning opportunities for all its students (Cusumano & Mueller, 2007). Reading, writing, and math performance dramatically increased, especially for students who had previously been struggling, predictably, teacher morale increased, and student discipline referrals declined (Cusumano & Mueller, 2007).

Through the use of instructional leadership and grade-level professional learning teams, Holland Elementary School addressed the diverse learning needs of its students

(Cusumano & Mueller, 2007). Through examination of differentiated instruction and the alignment of instructional strategies, standards, and learning profile of students, Holland Elementary School was awarded in 2006 a federal Title I Achievement Award (Cusumano & Mueller, 2007).

Moon (2005) attributes successes such as those at Holland Elementary School to several factors: differentiated classrooms identified as the means to achieve important outcomes at the school; the faculty and administration developed programs and practices collaboratively; professional development time was used specifically to accomplish the establishment of differentiated classrooms; and the work sessions were facilitated by the principal and the teacher-leader team. Efforts to duplicate the accomplishments at Holland Elementary School, according to Moon (2005), can occur with dedicated educators who pursue best practices, relentlessly strive for equitable learning opportunities, maintain their focus on individual students, and commit to and maintain a consistent and systematic effort.

Challenges to Differentiated Instruction. While Holland Elementary is a terrific example of the benefits of a successfully implemented differentiated instruction curriculum, Tomlinson et. al. (2008) acknowledges challenges still exist in the implementation of differentiated instruction. McTighe and Brown (2005) note that determining which strategy will be most effective with a specific student can be quite complicated, especially if a disability is involved. Encouraging student collaboration without stigmatizing lower achievers is also a challenge for the instructor (Moon, 2005; Tomlinson et al, 2008; & Wormeli, 2007). Ideally, each student is given equal support, but inevitably, teachers will have students who seem to require more attention than

others, based on readiness and learning profile (Wormeli, 2007). Erickson (2008) states that limited funding is a serious issue in many public schools, and teachers are not provided with the required resources for a fully differentiated classroom.

Tomlinson (1999) affirms that these challenges are real, but with proper attention, the challenges can be overcome. Solutions do not come quickly or easily; instead, they require perseverance and adaptive curriculum design (Tomlinson, 1999). Moon (2005) notes harmonious solutions consist of key concepts, principals, and skills, and striving to help students understand the purpose of the academic discipline would be advantageous. Making accommodations for the needs of various learners ensures that all students participate in respectful tasks, but it requires a wide variety of materials that deal with key ideas and skills that reflect a broad range of cultural interests (Tomlinson, 1999).

CHAPTER 4

CONCLUSIONS

Years ago, students with academic diversity were divided in different classrooms. Now they are in the same classrooms, and students with very different needs are seated next to each other. Tomlinson et al. (2003) states that teachers must adapt their instructional strategies to ensure that each student has equal access to high quality learning. Nobel (2004) notes differentiated instruction with a focus on learning profiles plays a vital role in fostering a climate of high academic learning. The literature favorably supports differentiated instruction as a method that can maximize the potential of each diverse student within the classroom (Erickson, 2008; Moon, 2005; Noble, 2004; Subben, 2006; Tomlinson, 2010).

Summary and Recommendations

In the following section, the results of the author's review of literature regarding differentiated instruction classrooms are summarized and recommendations for practice are presented. The three research questions used to guide this literature review provide the organizational framework for this section.

Question One. What is the role of learning profiles in a differentiated instruction classroom?

Adjusting instructional practices in differentiated instruction classrooms is facilitated when teachers first address the three categories of student need and variance (Tomlinson & Imbeau, 2010): readiness, interest, and learning profile. A learning profile is defined as "a preference for taking in, exploring, or expressing content" (Tomlinson &

Imbeau, 2010, p. 17). Burns (2007) believes that differentiated instruction in the classroom is necessary, but thinks that the consideration of learning profiles is essential because of the role learning profiles play in fostering a climate of high academic learning. Four elements and the interactions shape a learning profile: learning style, intelligence preference, gender, and culture (Tomlinson & Imbeau, 2010), and this paper examined intelligence preference in depth, using Gardner's Multiple Intelligence Theory and the Revised Bloom's Taxonomy as the theoretical frameworks.

Question One--Recommendations. Based on the literature reviewed, the author recommends that the use of learning profiles in differentiated instruction classrooms be further implemented in schools across the United States. The literature demonstrated favorably that differentiated instruction is a method that can maximize the potential of each student within the classroom by addressing the varied learning profiles of the students. Each student is unique (Tomlinson, 1999), and teachers need to meet the intellectual needs of all of their students with adequate use of differentiated instruction. Tomlinson et al. (2003) asserts that teachers must adapt their instructional strategies to ensure that each student has equal access to high quality learning. By addressing students' learning profiles when implementing differentiated instruction, teachers will be accommodating each student's individual method of learning, thus optimizing the classroom experience for all.

Question Two. What is the role of assessment in a differentiated instruction classroom?

Formative assessment should be ongoing. Teachers need to check learning gains. If a student is not making gains, then the teacher needs to re-examine and re-consider the

student's learning profile. A student's learning profile includes learning style, intelligence preference, gender, and culture (Tomlinson & Imbeau, 2010). It is at the point after those areas have been re-examined that the teacher can most effectively identify a revised instructional approach and re-teach the content or skill.

The author of this review of literature unequivocally concludes that the role of assessments in the implementation of differentiated instruction is the guiding force behind the effectiveness teachers provide in differentiated instruction classrooms. Beginning with the pre-assessment phase, and continuing through the formative and summative phases, teachers are strongly encouraged to use data to drive their instructional decisions within their classrooms. Wormeli (2007) credits the ongoing process of assessments leads to confident academic learners and teachers in today's diverse classrooms. Assessments allow teachers to continually modify strategies and academic instruction based on what the data tell them (Moon, 2005).

Question Two--Recommendations. The author confirms, with confidence, that the role of assessments is the guiding force behind differentiated instruction. Based on this literature review and the application of the conclusions drawn by research, the author strongly encourages teachers to use assessment data to drive instruction within their classrooms. Teachers will find that the content of their courses becomes well defined, and the focus on aligning the learning profile of the student with instructional strategies is an invigorating and successful process. Wormeli (2007) supported this recommendation when he explained that the ongoing process of assessments leads to designing classroom instruction that matches student learning profiles, ultimately, creating confident academic

learners in today's diverse classrooms. Based on the data, assessments will guide teachers as they modify their academic instruction (Moon, 2005).

Question Three: What should be the content of a professional development program for the implementation of a differentiated instruction classroom that uses learning profiles and assessments to make instructional decisions?

Erickson (2008) suggests that professional development in regards to differentiated instruction is a way of rethinking current instruction. Differentiated instruction is a “principle-guided method to approach teaching and learning” (Tomlinson & Imbeau, 2010, p. 19). Professional development programming should acknowledge that successful adoption of differentiated instruction strategies can be challenging, but research studies consistently show the rewards of differentiated instruction far outweigh the costs (Tomlinson et al., 2008). With proper implementation, differentiated instruction can make success for all students a reality (Tomlinson, 1999).

Question Three—Recommendations. The author recommends that professional development be provided which first establishes an understanding of the components essential to the implementation of differentiated instruction. The case of Holland Elementary School (Cusumano & Mueller, 2007) sets an example for teachers and administrators about how educating teachers and teaching differentiated instruction with fidelity addresses academic growth for all students.

Professional development programming should acknowledge that successful adoption of differentiated instruction strategies can be challenging (Wormeli, 2006). One struggle that may be present is “teachers not getting on board” with the “new way of thinking.” The author recommends allowing teachers to learn through guided

professional development. Peer teachers who have experienced the successes and challenges of the change process should lead the professional development sessions; the teacher-leaders should then serve as mentors to provide guidance as teachers move through the adoption process.

In a school setting where the climate is influenced by the process and outcomes associated with state-mandated testing, it is recommended administrators and teachers continue to gain knowledge about differentiated instruction. Differentiated instruction can improve the climate of a school and classroom; this “principle-driven method” encourages high-level thinkers and active, engaged learners.

Concluding Remarks

Wormeli (2007) states that, historically, educators have chosen a “one size fits all” strategy for classroom learning. That is, all students have been taught the same way in the same amount of time. Modern classrooms contain incredibly diverse groups of students, and teachers need to effectively maximize learning by continually and vigorously adjusting curriculum and instruction in response to each individual student’s readiness, interest, and learning profile (Tomlinson, Brimijoin, & Narvaez, 2008).

NOTE: The next section is based on the author’s personal-professional experiences, knowledge and perspective; therefore, this section is written from the first-person perspective. S. Meyer

This literature review assisted me as a teacher in deciding that differentiated instruction is a suitable instructional method to enhance academic learning in my educational setting. It is my hope that teachers and administrators will feel the same way after reading this literature review.

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