One Size Does Not Fit All:
Choice Homework as Differentiation in the Mixed Middle School Classroom

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Chapter I: Homework choice as a form of differentiation…analyzing the impact on students.

When students have choice in assignments does it influence their academic performance? Providing opportunities for student choice puts the student at the center of their education with the desired benefit of increasing ownership and interest. So then, would students respond differently to schoolwork if they had a say in the matter? Might they, in fact, be more likely to complete their work on time? If students had interest in their assignments, might they perform better on assessments? This research aims to explore how the implementation of choice can meet the diverse needs of students in a differentiated classroom.

Differentiation… The Basics

Differentiation is designed to benefit all students. Differentiation is tailored to prevent students from being left behind who don't fall in the "middle." Students at the extremes of the academic spectrum (both advanced and low students) struggle to succeed when instruction is generalized to the whole class and lacks in support that is modified to various needs and learning types.

Differentiation is a method that has existed for decades that successful teachers use in varying degrees on a regular basis. Differentiation is both a philosophy and an approach to classroom learning (Tomlinson & Imbeau, 2010). Differentiation provides a flexible approach to the content, process, and product of learning based on readiness, interest, and learning profile (Tomlinson, 1999a; Tomlinson, 2003). Instruction is modified, or differentiated, in order to help each student be maximally successful and appropriately challenged while achieving the same curricular standards (Wormeli, 2007; Tomlinson, 1999a; Tomlinson, 2003; Hamm & Adams, 2008). In essence, differentiation allows each student to meet the same ends while allowing for different means in reaching those ends.

Differentiation's biggest proponent is Carol Ann Tomlinson. Tomlinson was a public school teacher for 21 years and has written dozens of articles and books on the topic of differentiation. Her works are forefront to the topic and are referenced by almost every author that has written about differentiation since 2005.

The goal of a differentiated classroom isn't to differentiate everything, everyday however, but instead to do so when it is most useful for the learner. Tomlinson (1999a) reasons that differentiation should occur only when there is a student need for the modification. She recommends that teachers should implement these methods, if they believe that students will understand critical information and skills better.

Differentiation can be applied to the classroom by adapting one or more of three areas: content, process, and product (Levy, 2008; Anderson, 2007). The forms in which differentiation can occur are dependent on the student characteristics of readiness, interest, and learning profile (Huebner, 2010; Anderson, 2007; Levy, 2008).

Critics of differentiation argue that it cannot co-exist with standards-based education in our current educational culture. However, McTighe and Brown (2005) and Tomlinson (2000) agree that co-existence of the two foundational mindsets can and should occur, but only if teachers and alter the way in which standards are used by ensuring that "best teaching practice" isn't compromised by standards based teaching.

Why differentiate?

Differentiation is an approach to classroom instruction that is intended for every learner. Since each student has individual strengths and needs, instruction delivered in a single format isn't likely to meet the needs of all students. Some students need extra time, repeated instructions, oral delivery of test questions, or assignments split up into smaller pieces. Others

might need additional practice or visual aids. Even still, there are gifted and advanced students who quickly master basic concepts and are ready for extensions and challenges to their understanding in order to avoid boredom and promote growth. Cleaver (2008) defines gifted students as those "who have outstanding abilities, and are capable of high achievement" and may score high on IQ tests.

Differentiating classroom learning provides an environment where students who are advanced, average, low-achieving, English language learners, or emotionally challenged can equally access the material being covered and all make gains in understanding essential material while being in the same classroom. Such a variety of learners is present in nearly every classroom. An important aspect of becoming a successful teacher is getting to know your students and finding ways to help them each be successful and grow.

Research context

In any given classroom at the school where the research was completed, students will likely have a wide range of strengths and weaknesses academically, linguistically, and emotionally. One class might have half the students labeled as "talented and gifted" in language arts or math (or both). Another might have a handful of students with Individual Education Plans (IEP's) with a couple students that are followed by a Response to Intervention (RtI) Program for issues with behavior or assignment completion.

The school is a true middle school in the sense that "teams" of teachers educate a group of students in each grade. A group of seventh graders will all have the same language arts, social studies, and science teachers (and sometimes math). This provides teachers with the opportunity to align curriculum with each other and to work towards consistency in behavior expectations, procedures, and the reinforcement of certain skills. Counselors and assistant principals follow

each class of students from one grade to the next.

This middle school's population has undergone some recent changes, both with students who are residents in the district as well as families who have their children attend the school by choice. Many counselors and teachers note that more military families have joined the population as they move into the federally provided housing. Also, some parents have elected to move their students from other districts in the city to our school district in hopes of improvement in their child's growth and progress.

The school resides in an upper middle class suburban neighborhood. The student population mostly fits the demographics of the surrounding area. However, since the number of students in the neighborhood does not meet the school's capacity, many students elect to attend the school from other areas. As a result of the types of families represented in the population, expectations are high, students are relatively high achieving, and parents are more highly involved in their students' education. Students that receive free or reduced lunch comprise less than 15% of the population. This middle school is part of a district that claims to be one of the best in the state, particularly based on standardized test scores.

Community

This school and district are known for having very involved parents. In a part of the city where the socio-economic status is higher than other areas, family involvement in education is strikingly different than in other districts within Colorado Springs. Most parents keep themselves informed on how their student is doing in school and prefer frequent communication with teachers and administrators to stay in "the know." Students generally have the supplies they need and that are requested of them, and many have guidance and assistance from their parents on staying organized and completing assignments.

Chapter II: Literature Review

"To teach most effectively, teachers must take into account *who* they are teaching as well as *what* they are teaching."
Carol Ann Tomlinson
Fulfilling the Promise of the Differentiated Classroom (2003, p.2)

The term *differentiation* is a commonly used term in middle school, though its interpretation and implementation vary widely. Teachers often believe they already "differentiate" for their students or choose not to include the principle into their teaching philosophy because the work it requires seems sizable. Since differentiation cannot easily be incorporated into every aspect of a classroom, the use of choice in homework in this research was the initial investigative step in figuring out how to reach all students by differentiating. New teachers often have the same sentiment repeated to them by veteran teachers: that learning to teach well takes time. Consequently, the investigation of various avenues of differentiation was a critical process in learning how to teach effectively. Research methodology was used to investigate the successes of providing students with choice. Does the inclusion of choice in homework prove to be more successful with certain students? And is this success more behavioral or academic?

Where Did Differentiation Come From?

One classroom, all ages, one teacher. Differentiation began in the one room schoolhouse, where various levels of student learning occurred simultaneously (Sousa & Tomlinson, 2011). Sousa and Tomlinson (2011) describe a brief history of the general trends in American education that gave rise to the need for differentiation. In the one-room schoolhouse, teachers knew their students well and tailored learning to fit their individual needs. As schools and populations increased in size, schools transitioned to organization by departments where differentiation

began to fall by the wayside. "Differentiation faltered when the one-size-fits-all classroom emerged as the common basis for instruction" (Sousa & Tomlinson, 2001, p. 2). In the 1960's, standards and standardized tests were created in an attempt to move closer to uniformity in educational instruction. As immigration increased, standardized test scores showed little to no growth, in all grade levels of American students. Many others countries scored higher on standardized test than students in the U.S. When educators realized that one-size-fits all teaching did not reach the diversity of languages, cultures, and abilities represented in their classrooms, the idea of differentiation was reborn. Once again, teachers began to incorporate a range of strategies and levels of learning in order to improve student achievement and success (Sousa & Tomlinson, 2001).

The Goal of Differentiation

In today's classroom, the contrast among learners can be a sharp one. Students who are advanced, average, or struggling academically may all be in the same room with the expectation of learning the same curriculum and meeting equivalent standards. Many educators recognize this challenge and seek to differentiate their classrooms in order to meet diverse students needs and keep their students moving forward successfully.

Differentiation, also referred to as differentiated instruction, is an approach to classroom teaching designed with every single student in mind (Anderson, 2007; Tomlinson, Brimijoin, & Narvaez, 2008). A differentiated classroom is in essence a student-centered one (Tomlinson, 1999a; Hamm & Adams, 2008). Just as each child's readiness, learning styles, and interests are different, so needs to be the instruction that grows each student from where they are to where they need to be, and beyond that (Levy, 2008; Tomlinson, 1999a).

Differentiation is designed toward having each student to meet the same ends while allowing for different means in reaching those ends. Anderson (2007) sees this challenge for teachers and supports that "by its nature, differentiation implies that the purpose of school should be to maximize the capabilities of all students" (p. 50). Teachers who incorporate differentiated instruction aim to achieve maximum growth for their students (Wormeli, 2007; Tomlinson, 1999a). They design instruction proactively with flexibility, allowing for adjustments to be made to best meet student needs (Tomlinson, 1999a). Not only is it important for all students to meet the same standards, it is also critical to design lessons that challenge all students (Tomlinson, 2003; Hamm & Adams, 2008). That includes those who have special needs, who have gifted and talented abilities, and those who are limited in their English language skills, as well as everyone in between.

Differentiation's Biggest Proponent… and Others Who Agree

Carol Ann Tomlinson is likely the most published author on the subject of differentiated instruction. Her contribution to the literature as a practicing teacher of differentiation is not only significant but also commonly referenced in the works of other authors, including many that are referred to in this literature review. Tomlinson has been a public school teacher for 21 years, an administrator for a program for struggling and advanced learners for 12 years, and has recently been a professor at the University of Virginia's Curry School of Education (Tomlinson, 2011). She has authored over 75 journal articles and has written 15 books on differentiation and related topics (Tomlinson, 2011).

Tomlinson, together with Imbeau (2010), makes it clear that differentiation is not a set of *instructional strategies*, but rather a *set of principles*, or a philosophy. While many teachers may believe they are differentiating by incorporating some of the techniques that fit under

differentiation, without thoroughly understanding and continually addressing the unique academic and learning differences of their students, differentiation will not succeed as intended in their classrooms. In her article "Why Bother?" (2005), Tomlinson states that differentiation begins taking root in a classroom when a teacher pays close attention to the differences within a group of students and makes an intentional effort to help each of them be successful. Success for each student does not, however, require that each singular student has individualized lessons. Hamm and Adams (2008) agree that differentiation moves beyond "individualized instruction" in that teachers work instead with the needs of small groups of students instead of individuals alone.

Differentiation does, however, entail the structuring of intentional differences that increase the likelihood of all students reaching "clear learning goals" set out by the teacher for their subject area (Tomlinson, 2005). Learning goals can also take the form of essential questions that incorporate the information and skills students will be responsible for, framed in a way that engages students (Tomlinson, 1999b). Concentrating on the essentials allows for flexibility in terms of detail or depth of content, the ways in which students gain an understanding of the material (process), and the format in which they demonstrate their understanding (product). Differentiation is the "use of flexible approaches to space, time, materials, groupings, and instruction" that incorporates student choices in addition to teacher choices about classroom learning (Tomlinson et al., 2008, p. 4).

Wormeli (2007) concurs with Tomlinson and Imbeau in describing differentiation as a mindset within which instruction is adapted to the student strengths and weaknesses. He argues that differentiation's purpose is to "do whatever it takes to help students learn " (Wormeli, 2007, p. 3). This includes facilitating students' understanding of themselves and their needs so they are

prepared to handle anything presented to them in the future and are able to be their own advocates. Anderson (2007) supplements Wormeli's description of the role of the student in a differentiated classroom. In such an environment, students have an understanding of learning as a process within which each student "assume[s] responsibility for their learning through the decisions they make… [and] their ability to self-assess their work" (Anderson, 2007, p. 52). Anderson (2007) emphasizes the key players in the classroom aren't just the teachers, but also the students as partners in working toward the same goals.

Proactive planning, based on diagnostic assessment, is also central to differentiation, with the understanding that plans will need to be adjusted on a regular basis to fit the varied interests, learning styles, and readiness' of students (Tomlinson & Imbeau, 2010; Tomlinson et al., 2008; Tomlinson, 1999a; Tomlinson, 1999b; Tomlinson, 2005; Hamm & Adams, 2008). Tomlinson (1999a) describes assessment as "today's means of understanding how to modify tomorrow's instruction" (p. 10). Assessment is designed to inform teachers in how to proceed, not to record deficiencies or mistakes (Tomlinson, 1999a; Tomlinson, 2003).

There exists no one formula, no one method of differentiation that is always successful in every situation, no standard model that fits every classroom (Wormeli, 2007; Tomlinson, 1999a). This method of instruction is not a "one size fits all" approach, but instead one that depends on the readiness and interests of students (Huebner, 2010; Anderson, 2007; Tomlinson, 1999a).

The Debates on Standards-Based and Gifted Education…

The Justification of, and Opposition to, Differentiation

One topic of debate around differentiation is its position relative to standards-based education. McTighe and Brown (2005) make the case for the inclusion of both standards-driven accountability and differentiation in the same classroom. They argue that the two issues are not only reconcilable, but in fact required to improve schools and their districts. This opinion is not

necessarily widely accepted or promoted across American school systems. According to McTighe and Brown (2005), since the introduction of curriculum standards following No Child Left Behind (NCLB), teachers and institutions have felt a great deal pressure to adhere closely to outlined standards. Many teachers feel pressured to cover every single standard and end up "teaching to the test" in order to ensure that each student gains competency in the curriculum. In some classrooms, standards rule the pace and depth at which they cover material, causing rapid fire, shallow coverage of concepts (McTighe &Brown, 2005). It is not uncommon to hear teachers comment that there is simply 'not enough time' to teach using differentiation due to the sheer amount of material that needs to be "covered." McTighe and Brown (2005) state that the standardized test scores of students taught under this style of teaching reflect the ineffectiveness of the method. Instead, these authors reason that a balance can, and should, be attained between meeting standards and "remaining responsive" to the needs of diverse learners. The authors argue that they "must function as two sides of the same accountability coin" (McTighe & Brown, 2005, p. 235). Anderson (2007) asserts that part of the intention behind differentiated instruction is precisely to make possible that each student achieves the same standards despite their different roads to an identical end goal.

In agreement with McTighe and Brown (2005), Tomlinson (2000) maintains that a conflict between focusing on learner needs and focusing on standards only exists when teachers misuse standards and allow what they know about quality instruction and curriculum to fall by the wayside. She suggests that the problem instead is the implementation of standards, not the existence of opposition between standards-based education and differentiation. Focusing on learner needs through differentiation follows naturally when best teaching practices aren't compromised by standards-based teaching. Tomlinson (2000) clarifies the purpose and role of

differentiation by describing it as "a refinement of, not a substitute for, high-quality curriculum and instruction" (p. 7). This approach places the curriculum as parameters for what is taught and differentiation as the way in which it is taught, resulting in the effective instruction for all learners (Tomlinson, 2000).

Providing adequate modification of lessons for gifted students is another common problem for most classroom teachers. Critics of differentiation point out that, though differentiation has the proper foundation to encourage the success and appropriate challenge of gifted students, in practice, its implementation fails to meet their particular needs (Sisk, 2009; Hertberg-Davis, 2009). Cleaver (2008) implies that many classrooms don't adequately challenge gifted learners. When these students finish work quickly, many teachers either provide them with more of the same work or free time to read or use the computer. Cleaver (2008) argues that gifted students are easily bored in class, a temperament that may give rise to poor behavior and attitude toward school, providing them the perception that school is "easy" and "not worth the effort." Successful differentiation is the solution she suggests to the inclusion of gifted students in the regular classroom. Cleaver (2008) highlights common myths held by teachers about "giftedness," including that gifted students are easily identifiable, do not need teacher guidance, and are always high achievers. Perhaps it is these myths, in conjunction with ill preparedness for guiding gifted students, which causes these students to pass through school unchallenged.

Hertberg-Davis (2009) supports that differentiation should, in theory, be an "appropriate substitute" for gifted programs. In reality, teachers often fail to successfully integrate differentiation due to one or several factors: the pressure of high-stakes testing culture, an unwillingness to spend the time needed to make the change to differentiation, or a lack of sufficient training on how to differentiate for, or work specifically with, gifted students

(Hertberg-Davis, 2009; Sisk, 2009). One further issue with the implementation of differentiation is that teachers tend to focus more heavily on the low end of achievers, with the belief that they need it most, rather than concentrating on all students, particularly if they are the type of teacher who believes that gifted learners can learn on their own (Hertberg-Davis, 2009).

Each of these authors supports differentiated instruction as an avenue to the appropriate challenge of gifted students in the regular classroom. However, many obstacles exist that prevent more teachers from successfully incorporating differentiation into their classroom environment, particularly for the sake of gifted students.

Categories of Differentiation

The literature covered thus far has stated that differentiated instruction does indeed mean "different." But different how exactly? Differentiation can be applied to the classroom by adapting the content, process, or product through which the students come to learn and demonstrate understanding of material and skills (Levy, 2008; Anderson, 2007). A teacher could differentiate one or all three of these categories on any given subject or unit. Tomlinson (1999a; 2003) provides explanations as to what it means to modify instruction within these categories. The content of a lesson is the material the teacher has chosen for the students to learn and the ways in which students encounter that body of knowledge; this could include the topics themselves as well as the materials through which students access the content. The goal of differentiating content would be to enable all students to gain access, and build onto, essential information and skills. To differentiate process on the other hand, would be to adapt the activities and assignments through which students make sense of, and come to understand, essential information and skills. Finally, products are the various forms of assessment. Products are the different formats in which students demonstrate "what they have come to know, understand, and

be able to do" and perhaps extend what they've learned in class. Products can take the form of exams, projects, portfolios, or solutions to problem-based inquiries. Differentiation, according to Wormeli (2007), is not about changing the *amount* of work by giving students more or less, but instead changing the *nature* of the work while keeping all students accountable for the same content and skills.

When to Differentiate

Listed above are a variety of categories within which to modify differentiation, and tools that can be used to tailor instruction to the variety of learners within a mixed-ability classroom. The goal of a differentiated classroom, or even a single lesson, is not to adapt the content, process, ***and*** product, or to include all permutations of these many possibilities, but instead to use differentiation when it is most useful for the learner. Tomlinson (1999a) reasons that a component of the curriculum should only be modified or differentiated when there is a student need for the modification. She recommends doing so only when the teacher strongly believes that students will understand critical information and skills better by doing so. In agreement with Tomlinson, Wormeli (2007) suggests that teachers follow a series of questions when looking to modify lessons for differentiation. These questions involve predicting misunderstandings and brainstorming ways to avoid them, considering the individuals in their classes and contemplating how each of their specific needs can be met, and ensuring that each student is being held "accountable for learning the same information and skills" (Wormeli, 2007, p. 53).

Readiness, Interest, and Learning Profile

Content, process, or product may take different forms depending on student characteristics and needs. Huebner (2010), Anderson (2007), Levy (2008), and Tomlinson all

consider these student characteristics to fall into the categories of readiness, interest, and learning style.

Readiness is a common factor used as a basis for differentiating instruction. It can be defined as the entry point of a student; it is their understanding, knowledge, or skill level (Hamm & Adams, 2008; Tomlinson, 1999a; Tomlinson, 2003). In simple terms, readiness is what a student knows, understands, and is able to do (Hamm & Adams, 2008). This characteristic is specific to the particular information or skills being addressed at any one point in a classroom environment. In other words, readiness is not necessarily synonymous with ability. Explained further, readiness is a concept dependent on a specific context and, as a result, can vary widely. Ability is considered more fixed and overarching, and less situational (Tomlinson, 2003). A student could have a lower readiness for word problems than for general algebraic equations, for example.

Interest is another factor upon which to differentiate learning in the classroom. Student interests could be topics or pursuits for which a student has an affinity, curiosity, or passion; interest in a topic may provide motivation for student engagement by making that information more appealing or relevant, and therefore worth the time and energy required to understand it (Tomlinson, 1999a; Tomlinson, 2003; Hamm & Adams, 2008).

Classroom learning could be differentiated based on student learning profiles as well as, or instead of, readiness and interest. A learning profile contains information based on how a student learns, and can include intelligence and learning preferences and styles, as well as culture and gender (Tomlinson, 1999a; Tomlinson, 2003; Hamm & Adams, 2008).

Choice as Differentiation

Offering student choice can serve as a means of differentiation in a classroom full of diverse learners appeals to a variety of learning profiles and interests and can increase student motivation. Providing students with choice allows them to take responsibility for their own learning (Gardner, 2011). Teachers, however, may resist integrating student choice into their classroom because with choice comes risk (Quate &McDermott, 2009). It is certainly simpler to avoid handing the decision-making over students. Efficiency in grading and planning are a clear advantage to assigning the same thing to all students (Quate &McDermott, 2009). Nonetheless, fusing choice with structure can rein in uncertainties associated with the freedom of choice. Benjamin (2006) argues that successful differentiation requires a balance of both ritual and variety. Students find comfort and security in the rituals and expectations outlined by their teachers (Benjamin, 2006). In contrast, free choice often leads to student work that fails to meet the objectives outlined by the educator. Without clear expectations under the freedom of choice, students can easily become lost and overwhelmed. Instead, "variety must exist within a ritualized structure" (Benjamin, 2006, p. 58).

To accomplish this complicated balance, the choices offered to students must be designed under an umbrella of clear learning goals so that work is "rigorous, meaningful, and engaging" (Quate & McDermott, 2009, p. 52). After the learning goals have been established, the scope of choice should then be evaluated. A teacher's aim in offering choice is to provide the "right amount of choice" by narrowing the options to a range of tasks and/or objectives that are appropriate and meaningful, but also flexible enough the meet the needs of all students (Quate &McDermott, 2009). Benjamin (2006) reasons that supplying variety means "students are more likely to be successful if the assessment system encompasses a broad spectrum of abilities and

modes of expression" (p. 59). To meet the needs of all students, perhaps assessment can be modified to address the various capacities in which students can demonstrate their learning. Interestingly, variety is frequently in contrast with the standards-based culture of today's education where common assessments for standard evaluation of achievement are encouraged.

Summary

Choice was used in this research as a potential bridge from a traditional classroom approach to a more student-centered classroom, the heart of differentiation. Does the application of student choice change the structure and character of the classroom? Does it foster greater student independence and ownership of learning? Determining the successfulness of student choice in homework could provide data useful in deciding when to differentiate. The purpose of the methods used was to draw conclusions as to which students the strategy was most successful with and the reasoning behind those successes.

Chapter III: Methods

Homework with a choice "is what I want to learn, not what the teacher thinks I want to learn."
A.J., 7th grade

Data collection overview

By collecting these data and analyzing the results, the effect of choice as a form of differentiation was interesting. This effect was measured both quantitatively and qualitatively, looking specifically at growth in content knowledge, work completion, student reasoning behind choices, and student opinion of having "choice" of assignments. The intention was to add relevant data to the question: "Does "choice in homework assignments" serve as a successful means of differentiation?" If so, what information supported this conclusion? Patterns of students' choices were compared to growth in content knowledge as well as the less quantitative answers to survey questions. For example, what were the relationships between students' readiness levels and their likelihood of making a particular kind of choice?

Sample Selection

Four seventh grade class periods were used for data collection. Each class contained a variety of students ranging from students with Individual Education Plans (IEP's) to students who are Talented and Gifted (TAG). Each group contained a full spread of abilities, though the distribution of types of students in each class was unique. Seven students had IEP's. One class contained a student who was labeled Significant Identifiable Emotional Disability (SIED) due to a medical condition. His case permitted accommodations and modifications similar to a student with an IEP. Two students had a Response to Intervention (RtI) plan (based primarily on lack of homework completion and organization). As is common in many middle school science classrooms, there were many other students who were low-achieving due to weak understanding

of concepts and materials, trouble focusing, and/or missing work. Though theses students didn't qualify for an IEP, they certainly added to the diversity of classroom learners. All four class periods were selected because they represented a diversity of learners according to their readiness levels and provided ideal populations to measure the effectiveness of differentiated student choice.

Existing Documents and Data

Worksheets that were not self-created were used as some of the homework choices on the "List Menu" with the permission of the cooperating teacher in the classroom.

Data from the Cognitive Ability (CoGat) tests were accessed using the Infinite Campus program. CoGat scores helped qualify students as Talented and Gifted in one or more areas and confirmed the skill aptitudes of students on IEP's. Furthermore, it provided some interesting on data for students who achieve low in their class grades by indicating whether or not their cognitive abilities matched their achievement or not.

Quantitative Data Collection Methods

Scores from pre- and post-assessments were collected and compared for growth in content knowledge. Pre-assessments were used independently as measures of "readiness" levels for the content. Additionally, averaged work completion rates were recorded and compared with previous units.

After completing the homework assignments students were asked to complete a Likert survey on assignment "choice" (Table 1). These surveys were relatively brief to increase likelihood of completion. The responses provided insight into patterns of student choice.

Qualitative Data Collection Methods

At the end of the Likert survey, two short-answer questions were included for open-ended responses. These questions were "Do you like getting to choose which homework assignments you do? Why or why not?" and "For each of the homework assignments you completed/chose, write why you chose each of the homework assignments. Be specific!" The second question had a space next to each of the nine assignments on the list menu for open responses.

Likert Survey Statements	Strongly Disagree	Disagree	Agree	Strongly Agree
1. I chose homework assignments that interested me.				
2. I prefer having a choice on which homework assignments I get to complete.				
3. I spent more time on this homework than I normally do on homework that I don't get a choice.				
4. I liked working on the homework assignments I chose.				
5. The homework I chose was really easy for me.				
6. The homework I chose was challenging for me.				
7. I liked having a longer period of time to finish ALL the choice homework instead of having one assignment at a time.				

Table 1. Students completed a Likert survey on statements about choice homework using responses ranging from "strongly disagree" to "strongly agree" after finishing the unit on the skeletal and muscular systems.

Procedures and Instructional Strategies Used

During the skeletal and muscular system unit, students were given the opportunity to choose their homework assignments for the week. Students were required to complete 50 points worth of assignments from a "List Menu" (Westphal, 2009*) (Table 2).* This menu included nine different assignments with point values based on Bloom's Taxonomy (Kelly, 2012).

Assignments at higher levels of thinking were worth more points than assignments that required more basic levels of thinking. Students then chose a combination of assignments to earn

a total of at least 50 points, with the possibility of earning up to 10 points of extra credit. Students on IEP plans that suggested limited workload as a means to building success were allowed to complete a minimum of 25 points worth of assignments.

Keeping in mind that students will often choose the "easiest" version of an assignment, the options available required that students complete at least one mid-level assignment to reach the full amount of points (for example, only two 5-point assignments and two 10-point assignments were available so no student could do all low-point assignments.) Furthermore, students were required to choose at least one assignment pertaining to the muscular system and one assignment pertaining to the skeletal system. Students were required generally required to print off their own copies of the assignments. Exceptions were made for those who did not have access to a printer or those students with accommodations and modifications.

Skeletal and Muscular System
Homework Choices "List Menu"

□	**Assignment Name**	**Point Value**	
	1. "Leg Bone Comparison"	20	S
	2. "Muscles in Action!"	20	M
	3. Skeletal and Muscular WebQuest	15	S or M
	4. Original Song or Poem: Human Skeleton	15	S
	5. "A Pain in the Back" and "Pumping Iron"	15	M
	6. "ER Doctor Explains Terrible Accident"	10	S
	7. "Keep on Your Phalanges"	10	S
	8. "Scrambled Bones"	5	S
	9. "Muscle Man"	5	M
	Total Points (At least 50)		

Double-check yourself!!
Did you…

- Choose at least one "S" and one "M"?
- Choose options that add up to at least 50 points?

Table 2: The table above matches the "list menu" provided to students to make their selections for "choice homework." The name of the assignment, point value, and skeletal (s) or muscular (m) system designations are included.

After listening to an explanation of each of the assignments, students marked their choices on a copy of the "List Menu" that included assignment names and point values. The "List Menus" were collected for a time to allow for teacher recording of student choices. Students received their "List Menu" the following day and were able to start on their assignments on which they had twelve days to complete. Students were able to acquire the assignment sheets and work on them one-by-one, or all at once, as long as they were completed by the final due date. Assignments completed early were turned in early. Over the course of the 12-day period, the majority of class time was spent at stations through which students rotated. The material covered in the stations was the same skeletal and muscular system material reinforced by the homework assignments on the "List Menu."

Choice Homework Assignment Descriptions

The choices on the menu incorporated several components of readiness, interest, and learning profile (Bloom's Taxonomy (Kelly, 2012), Gardner's Multiple Intelligences (Hayden, 2010), as well as other general format differences; Table 3).

Assignment Name	Description	Bloom's Score*
Leg Bone Comparison	• Compare leg bone structures of an animal that walks on two legs with one that walks on four legs. Explain differences in leg bone sizes and why they need to be that way. • **Skills:** Research, Paragraph writing • **Intelligence:** Verbal-Linguistic, Visual-Spatial, Logical-Mathematical, Naturalist	12
Muscles in Action	• Explain how a specific human action demonstrates the paired contracting and relaxing of a pair of muscles. Repeat for 2 other muscle pairs. • **Skills:** Paragraph writing, Recall of terms and concepts, Vocabulary, Real-world application • **Intelligence: Verbal-**Linguistic, Visual-Spatial, Logical-Mathematical	10
ER Doctor Explains Terrible Accident	• Explain to the family of a car-accident victim which bones were broken and how they were broken (using realistic explanations) • **Skills:** Real-world application • **Intelligence:** Interpersonal, Verbal-Linguistic	6
Keep on Your Phalanges	• Find the scientific names of bones in a word search when given the common names of bones. • **Skills:** Recall of terms • **Intelligence: Verbal-**Linguistic, Visual-Spatial	3
* *Bloom's Score is an author-generated score based on Bloom's Taxonomy.*		

Table 3. The table above provides an overview of the homework assignments on the "list menu," including a description of the type of assignment in addition to the Bloom's score given to the assignment. For a complete list of all nine assignments, see Appendix A.

The homework assignments on the "List Menu" were created with the help of the Talented and Gifted (TAG) Coordinator. Existing documents (worksheets from the cooperating teacher) were mixed with assignments created in collaboration with the TAG Coordinator to complete the list of options for "Choice Homework." "Leg Bone Comparison," "Muscles in Action," "Original Song or Poem," and "ER Doctor Explains Terrible Accident" were created in

collaboration. The pre-existing documents were used for the lower-point assignments. While creating the "List Menu," an effort was made to include as many of the different "intelligences" as possible. The "intelligence(s)" applicable to each assignment are as follows.

Gardner's Multiple Intelligences: (Hayden, 2010)

1. Visual-Spatial
2. Bodily-Kinesthetic
3. Musical
4. Interpersonal
5. Intrapersonal
6. Verbal-Linguistic
7. Logical-Mathematical
8. Naturalist

In addition to the "multiple intelligence" variety in the homework assignments, there also existed assignments pertaining to a various levels of Bloom's Taxonomy. For the purpose of comparison with other quantitative data, a "Bloom's Score" was given to each homework assignment as a measure of cognitive challenge. Within each of the levels of Bloom's Taxonomy resides a list of verbs whose directive falls under that category (Kelly 2012). For example, within the "Comprehension" level, the verbs "summarize," "discuss," "explain," "identify," and "find" may be used to instruct students in completing a task that requires their comprehension. These verbs were used as a reference to determine how the skills required for each assignment belonged to one or more of Bloom's Taxonomy levels. Each level was awarded a point value (listed below). Assignments on the "Menu List" were given a total "Bloom's Score," consisting of the sum of the all points for each level the assignment matched.

Bloom's Taxonomy Level (Kelly 2012)	**Points Towards "Bloom's Score" (Author-generated)**
1. Knowledge	1
2. Comprehension	2
3. Application	3
4. Analysis	4
5. Synthesis	5
6. Evaluation	6

Table 4: The six levels of Bloom's Taxonomy are listed along with an author-generated "Bloom's Score" assigned to each each level.

Analysis Methods

The data collected were analyzed for overall patterns. Responses to Likert survey questions were aggregated to visualize trends in student affect and opinion towards choice homework. Patterns discovered at the group level were then paired with open responses to survey questions to connect student reasoning with attitudes and opinions. Grade books were used for the quarter in which the study was completed and the preceding quarter to compare homework completion rates for individuals and the group as a whole.

Based on the trends observed in the group data, a select group students was assembled into a "case study" to take a closer look at the connections between student affect and opinion, student reasoning behind choices, and homework completion rates. These data were again combined with open responses to survey questions for a student's perspective on the strategies employed. These individuals were studied in more detail because at the core of successful differentiation is attention to the individual. The analyses attempt to find which students were successfully reached through the implementation of choice homework.

Chapter IV: Data Interpretation

"I like getting to choose what homework assignments I do because I have freedom and can enjoy my homework."
Jonathan, 7th grade

Results and Discussion

In response to Likert survey questions given after the completion of choice homework assignments, students answered with a generally positive affect towards the assignments.

- 85% of students said they preferred having a choice on which homework assignments they were able to complete (Figure 5).
- 87% of students responded that they liked working on the assignments they chose (Figure 6).
- 95% of students agreed that they chose homework assignments that interested them (Figure 7).

The majority of students agreed to having a preference in choosing which homework assignments they are able to complete (Figure 5).

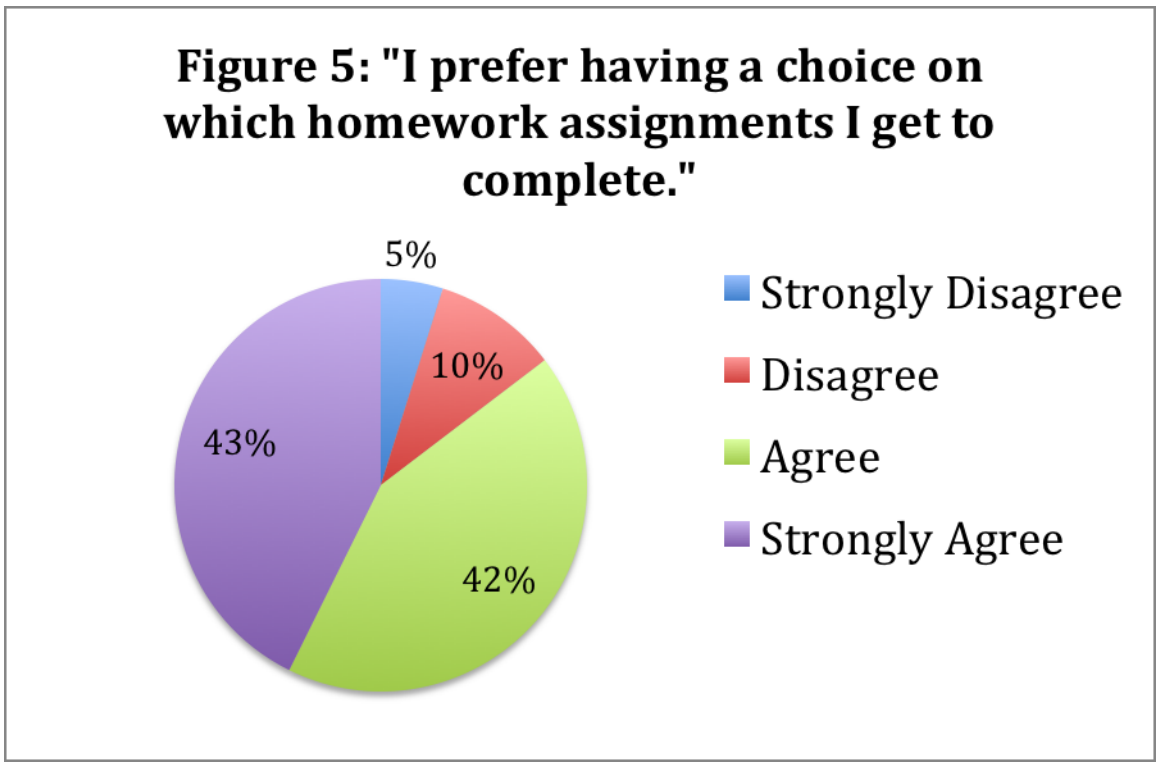

Figure 5: Overall student response (n≈ 82) to the Likert survey question "I prefer having a choice on which homework assignments I get to complete." 85% of students responded with either "agree" or "strongly agree."

This statistic by itself indicates a positive response to the implemented strategy. This preference could undoubtedly come from a variety of reasons including interest in the assignment type or its real-world application in addition to having a longer period of time to finish multiple assignments. Open-ended responses to survey questions, in fact, confirmed this. However, the open-responses to survey questions also provided some reasons as to why 15% of students do not prefer having choice homework. Some negative responses to the statement "Do you like getting to choose what homework assignments you do? Why or why not?" included the following:

- *"No because there's more stuff that we have to do rather just a packet or worksheet."*
- *"I don't because there are more homework assignments."*
- *"No, because it seems like we have more homework so it puts more pressure on me."*

- *"I don't like getting to choose on what homework assignments I get to do. Even though I got to do things I wanted to do and would help me learn, it felt like there was a little too much freedom and there was a lot to do in just a short amount of time."*
- *"I don't like getting a choice on my homework because I have to spend more time thinking about which assignments I want to do than getting them done. I felt that I was choosing the easiest, to get an easy A+. Choosing my homework did not challenge me."*
- *"Don't take this the wrong way but I did not quite enjoy having choice homework. I did not really enjoy it because I like having homework given to me by the teacher and having a specific time to do it in (sorry)."*
- *"No because I always choose something too hard to get a higher grade."*
- *"No because it doesn't let me be challenged."*

Overall, the negative responses to preference in choice homework generally pertained to a theme of "too much freedom" or a perception of "too much work." Perhaps these students felt too overwhelmed with the possibilities that choice homework provided and prefer instead to have structure provided to them by the teacher.

Most students responded that they liked working on the assignments they chose (87%) (Figure 6). When asked why students chose the assignments that they did (in an open-response format), responses often corresponded to an interest in assignment or that it simply appeared "fun." Interest in choice homework assignments was very high.

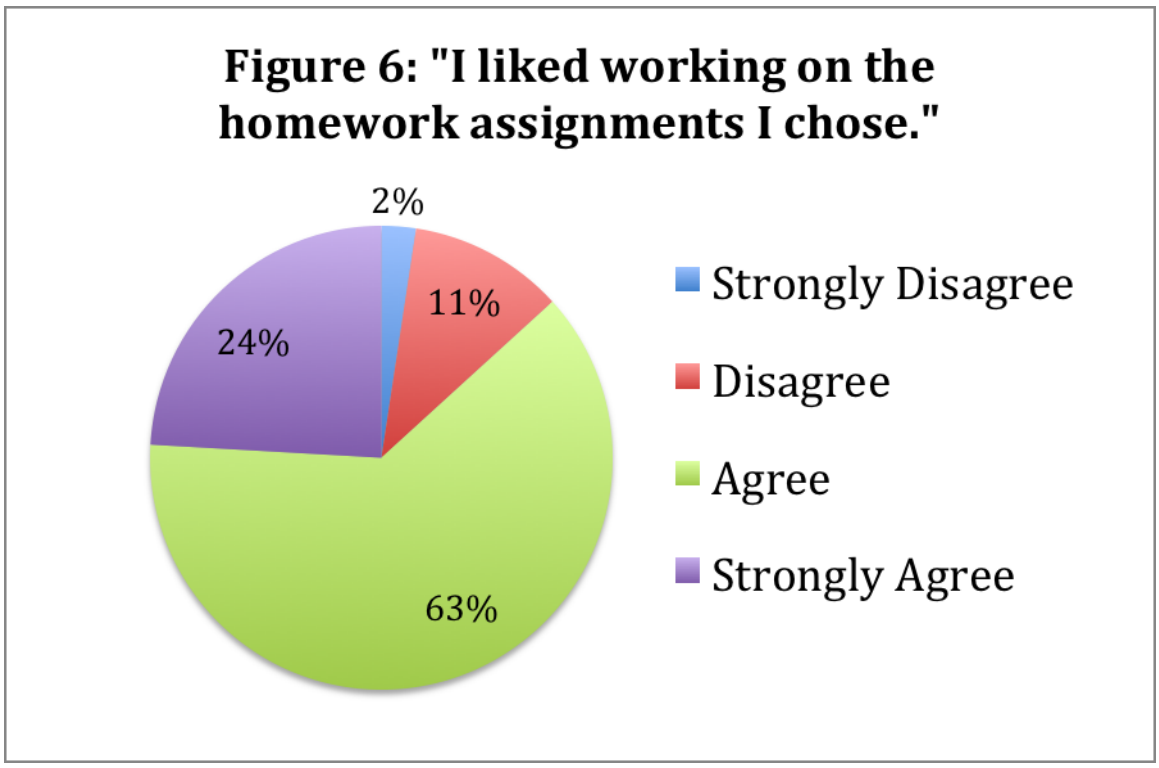

Figure 6: Overall student response (n≈ 82) to the Likert survey question "I liked working on the homework assignments I chose." 87% of students responded with either "agree" or "strongly agree."

In fact, 95% of students agreed that they chose homework assignments that interested them (Figure 7). When asked why students chose the assignments that they did, the responses that pertained to interest fell in four general categories: interest in the learning more about the topic, interest in the assignment format or "multiple intelligence," interest in the real-world application, or perception of the assignment as one that was "fun." Since so many students agreed that they chose assignments that they were interested in, assignments could be adapted in the future to appeal to a multitude of interests in order to increase student motivation. Including a variety of "multiple intelligences" and assignment formats served as positive motivation for student interest in the homework choice assignments.

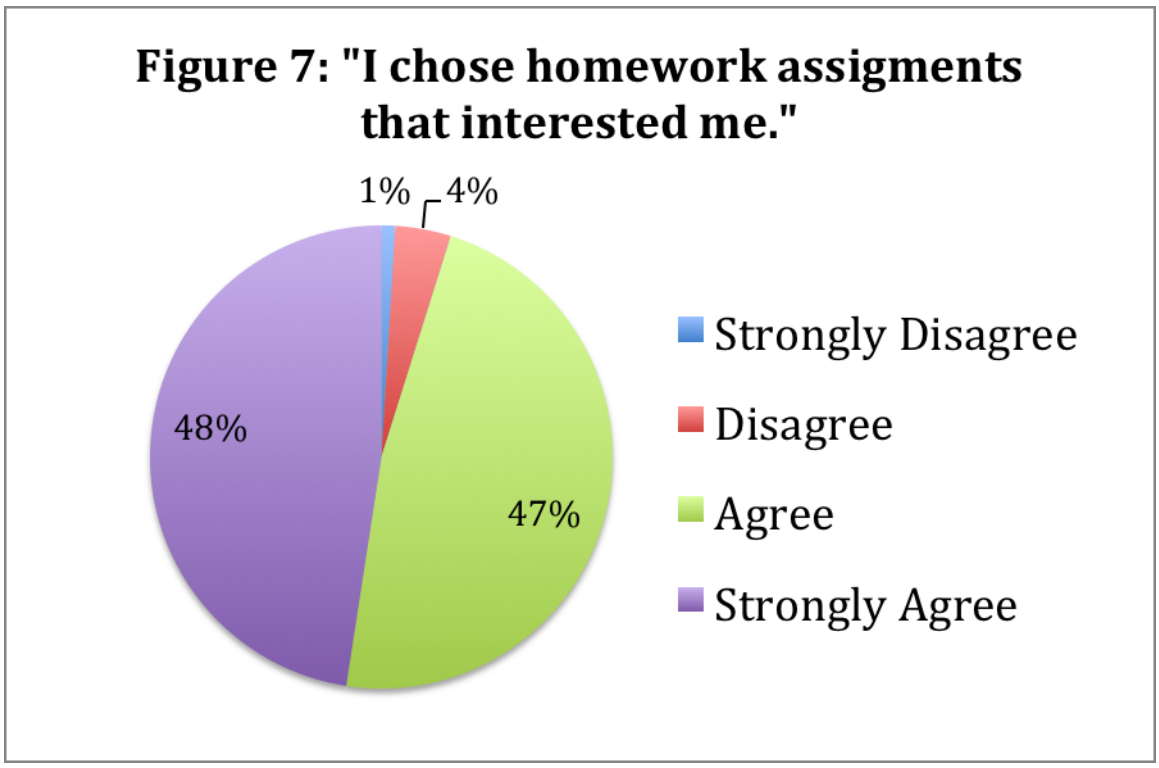

Figure 7: Overall student response (n≈ 82) to the Likert survey question "I chose homework assignments that interested me." 95% of students responded with either "agree" or "strongly agree."

Two additional Likert survey questions resulted in thought-provoking student responses. These questions pertained to the time spent completing choice homework. Interestingly, the response to the statement, "I spent more time on this homework than I normally do on homework that I don't get a choice," 45% responded "disagree" or "strongly disagree" while 55% responded with "agree" or "strongly agree" (Figure 8). Student responses to this statement were split relatively evenly between "agree" and "disagree." Put simply, just because students prefer choice homework and like it doesn't necessarily indicate that they will put more time into the assignments they choice. One thing to consider for the future would be to change this statement to "effort" instead of "time." Perhaps students would respond differently if the statement read "I put more effort into this homework than I normally do on homework that I don't get a choice."

Further insight into this particular survey response will be covered in more detail in the "case study" portion of the data interpretation.

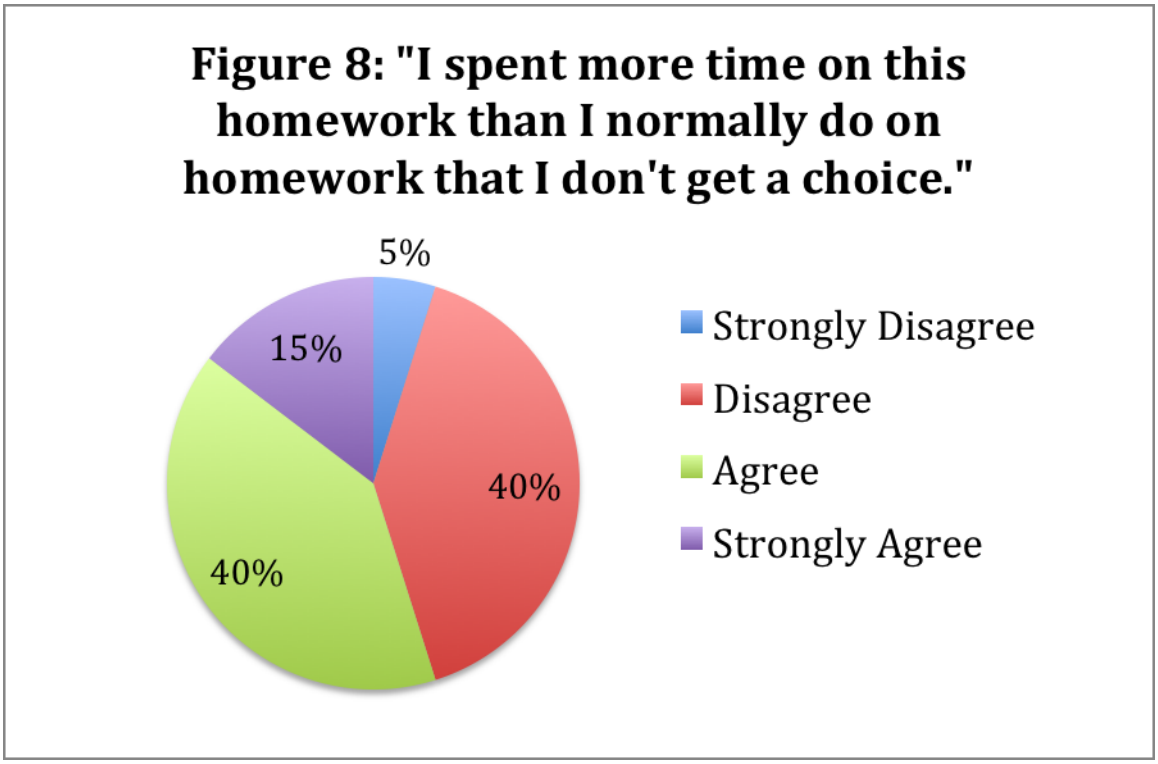

Figure 8: Overall student response (n≈ 82) to the Likert survey question "I spent more time on this homework than I normally do on homework that I don't get a choice." Student responses were split: 45% negative ("disagree" or "strongly disagree") and 55% positive ("agree" or "strongly agree."

Student perception of the amount of time they spent on these assignments demonstrates that for some students, having an interest in the assignments they chose and liking those assignments may have resulted in more time spent completing them. This conclusion can be drawn since students identified the difference in the amount of time they spent on the assignment as being attributed to having choice in their assignments. A greater amount of time spent on homework could result in either a higher quality of work and/or a higher rate of completion. Perhaps the difference in the amount of time students spent completing their homework was instead due to the fact that students had more time to complete assignments. In fact, 78% of

students agreed that they like having a longer period of time to complete ALL of the homework than doing one assignment at a time (Figure 9). Previous to this unit, students were assigned homework and given 1-4 days to complete it. Homework was assigned one at a time at a rate of about 1-3 assignments per week. In the case of choice homework, students had to complete 3-6 assignments over the course of 12 days.

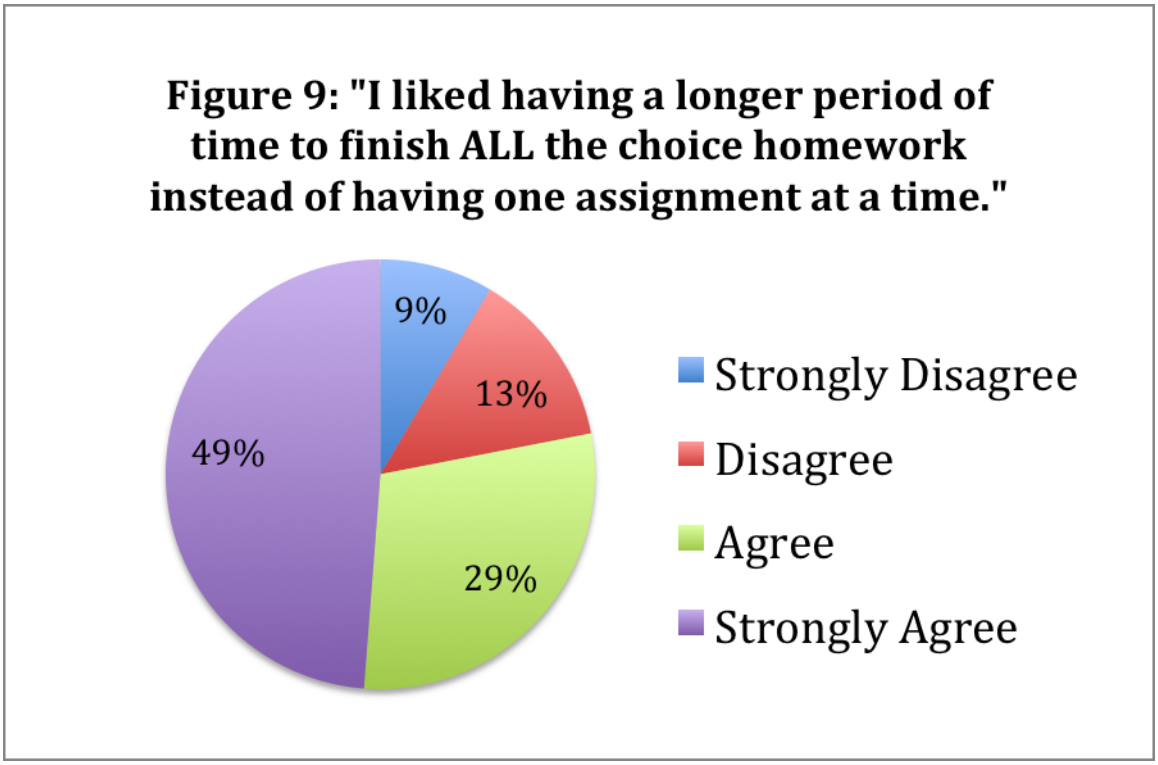

Figure 9: Overall student response (n≈ 82) to the Likert survey question "I liked having a longer periods of time to finish all the choice homework instead of having one assignment at a time." 78% of students responded with either "agree" or "strongly agree," with "strongly agree" strongly represented.

Finally, the responses to the statement "the homework I chose was challenging for me" provided further interesting data. 65% of students responded either "disagree" or "strongly disagree" to that statement (Figure 10). The majority of students did not find the choice homework to be "challenging."

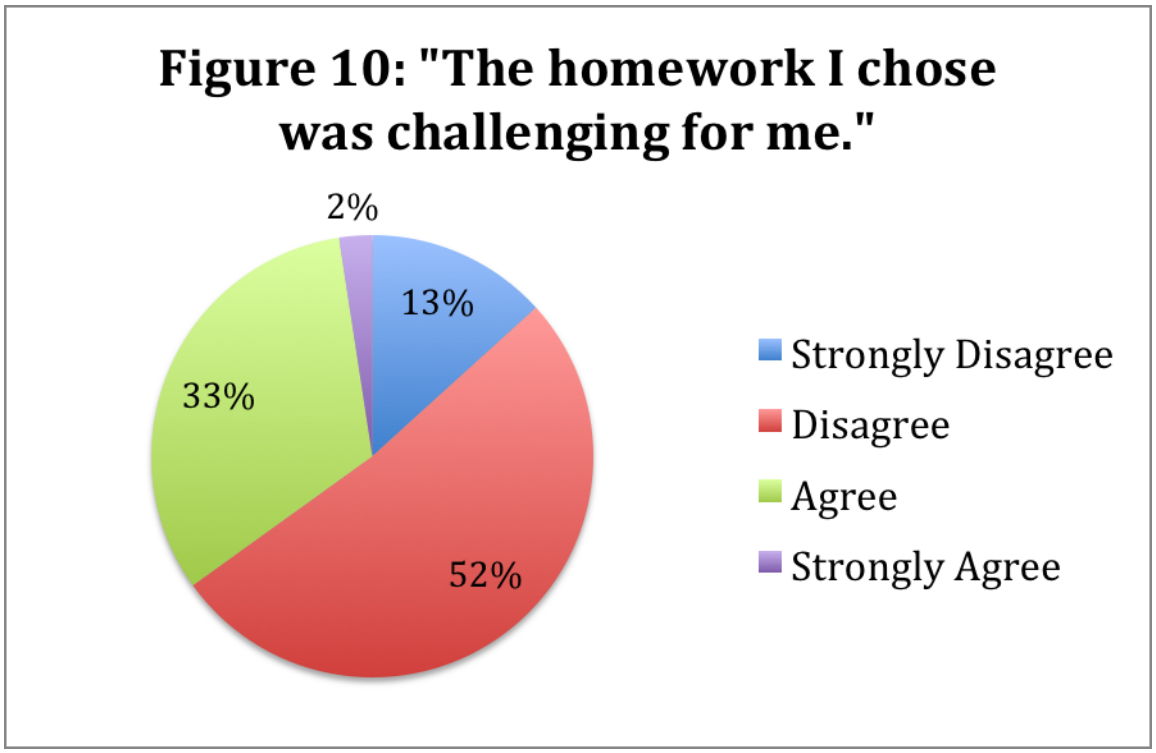

Figure 10: Overall student response (n≈ 82) to the Likert survey question "The homework I chose was challenging for me." 65% of students responded with either "disagree" or "strongly disagree."

Upon contemplation of the responses to this question, two different possibilities of student perception of "challenge" come to mind. One potential student perception of challenge could be "academic challenge" in the form of material that is difficult to understand or a required process that is complex. Another student perception of challenge could be the time it takes to complete an assignment. Considering that 45% of students did not agree to spending more time on choice homework than regular homework, it makes sense that a number of students might not consider the homework challenging if they based their perception of challenge on the amount of time spent on assignments. Additionally, students who did not complete 20-point assignments may have perceived the choice homework as "easy" because they chose assignments that fit lower levels of Bloom's Taxonomy.

Student Choices

It is sensible to bring attention to the specific selections that students made for their choice homework assignments in addition to their affect towards choice. Students had nine different assignments to choose from and needed to complete at least 50 points worth of assignments. They could complete up to 10 additional points of assignments for the possibility of extra credit.

It is clear that several factors could be attributed to influencing student choice. These include, but are not limited to, interest in the subject matter, interest in the format of the assignment (research, writing, computer program, song, word search, etc.), perceived level of difficulty, perceived level of time-intensity, point value, and total number of assignments to complete. Though this study does not attempt to quantify or categorize all of the reasons students had for choosing each assignment, or combinations of assignments, it does examine general patterns. Figure 11 shows the distribution of student selections.

"Keep on Your Phalanges," a word search in which students needed to find the scientific name of a bone when given the common name, was the most popular selection. Completion of "Keep on Your Phalanges" accounted for 20% of the total number of assignments completed. Other popular assignments included the 20-point "Muscles in Action" assignment and the 5-point "Muscle Man" labeling sheet. The least popular assignments were the 15-point "Original Song or Poem" on the human skeleton and the 15-point "Skeletal and Muscular System WebQuest."

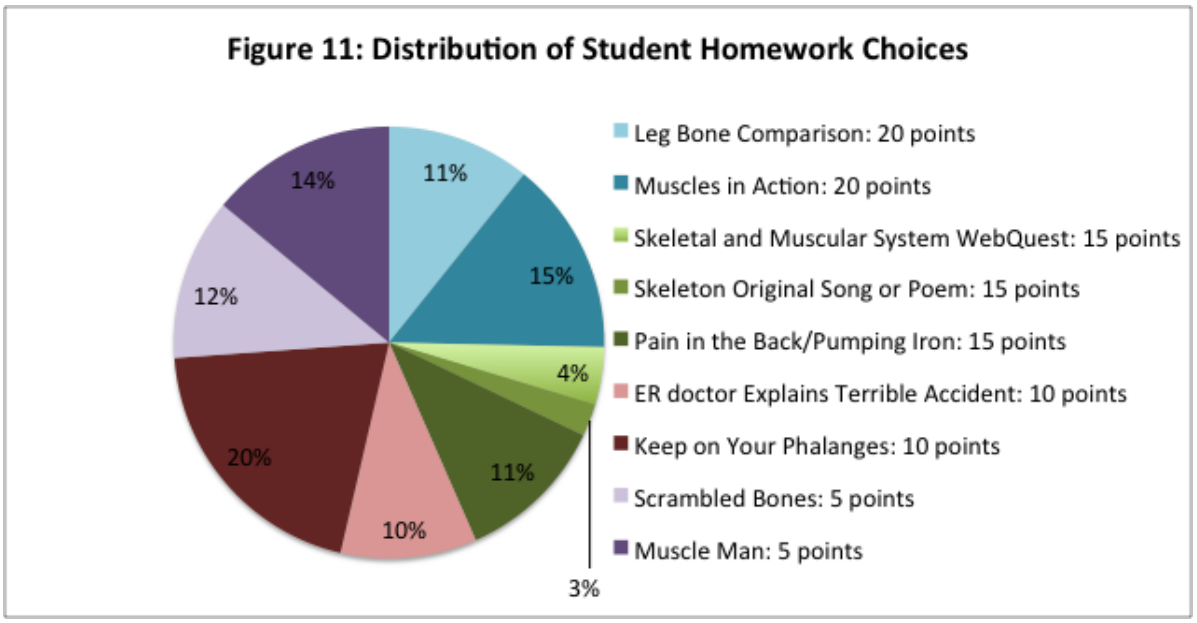

Figure 11: Overall student choices made on "choice homework" based on the all assignments completed and submitted for a grade. Assignment names and point values are included.

Figure 12 highlights the distribution of assignments completed within the point values categories. Overall, 25% of assignments completed were 20-point assignments, 18% were 15-point assignments, 31% were 10-point assignments, and 26% were 5-point assignments. The evenness of student choices when analyzed by point-value is surprising. More detail on the choices of students with a history of high levels of missing and late work is included in the "case study" section" to follow.

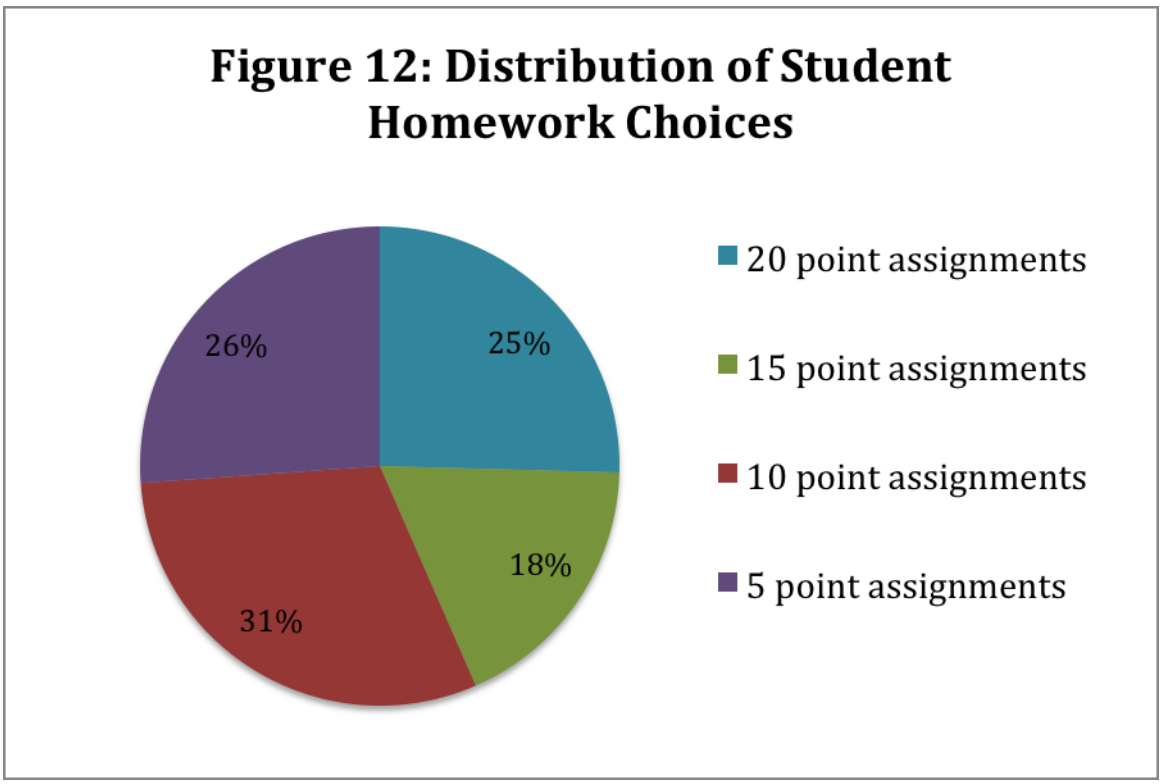

Figure 12: Overall student choices made on "choice homework" based on the all assignments completed and submitted for a grade. Assignments were grouped by point values.

Bloom's Scores

Student choices were used to calculate a "Total Bloom's Score" based on the author-generated system described in the previous chapter. Each student's score was a sum of the Bloom's scores of the assignments they completed. When this "Total Bloom's Score" was compared with pre-assessment percentage scores, post-assessment percentage scores, and academic growth percentages of the entire group (each independently), no apparent correlations were found. Students on IEP's who were given the opportunity to complete a lower number of total points and therefore had lower "Total Bloom's Scores" accordingly. Even when these scores were removed from the data to adjust appropriately, no apparent correlations were found. As such, neither pre-assessment percentage score, post-assessment percentage score, or academic

growth percentage are strong indicators of the overall types of choices a student made when measured by "Bloom's Score."

Academic Growth

Academic growth for the unit that incorporated choice homework was measured as the difference in percentage scores between pre- and post-assessments. The pre-assessment was a fact or fiction worksheet that covered the skeletal and muscular systems. The post-assessment was an exam that covered the skeletal and muscular systems. When measured in this way, student achieved an average growth of 24.8% within one unit. No other unit pre- and post-assessment data had been collected to compare any difference in growth with the strategies employed.

Homework Completion

The homework completion rate was examined for choice homework and compared with homework completion in previous units in which students did not get a choice. Since the choice homework was completed over a period of 12 days, assignments that were qualified as "homework" and were assigned and completed within a 12-day period without choice were used for comparison. Two sets of data within units from the previous quarter were used to compare completion rates. For the purpose of this general analysis, "completion rate" will be used to describe homework that was turned in and did not receive a zero. Assignments that were turned in late were still considered "completed."

The completion rate for choice homework assignments was 88.45% for all students in the course (approximately 100). The completion rates for all students in each of the two units of non-choice homework in the previous quarter were 92.8% and 93.4%. As it turns out, homework completion rate was lower for choice homework than for non-choice homework

assigned one at a time when completion rates were average for all students. The results were different, however, for a specific population of students.

One class period of students had a higher tendency than the other 3 class periods to have late and missing assignments throughout the entire school year. The completion rate for this group of students on choice homework was 88.2%. For this group of students, completion rate was higher for choice homework than "regular" homework assigned one at a time. The completion rates for this group of students on non-choice homework for each of two units in the quarter preceding choice homework were 77.4% and 90.4%. When averaged together, these two completion rates come out to 83.9%. These data indicate that perhaps, for some students who tend to have frequent late and/or missing assignments, implementation of choice homework may increase the overall completion rate of homework assignments. This change could be due to several of the factors listed in the "survey responses" section either individually or in combination, including interest, additional time to complete multiple assignments, and additional time spent on choice homework assignments by students.

A Case Study

Overview

A handful of students were chosen as a case study to examine the effectiveness of choice homework as a form of differentiation. These students were chosen based on homework completion rate and/or quality of homework completion on the choice homework assignments in comparison to previous patterns on assignments. Xavier, Molly, Joe, Carla, and Cole (names have been changed) represent each of four class periods of our 7th grade life science class. In these case studies homework completion rate, academic growth, survey responses, and choice homework selections were considered for analysis.

Homework Completion

Each of these students demonstrated an increase in homework completion. Xavier, Molly, Joe, Carla, and Cole each had a number of missing or late assignments during the quarter preceding this study. Their "on-time" completion rates were only 52%, 56%, 76%, 48%, and 60% respectively. In contrast, their on-time completion rates for choice homework were 0%, 88.3%, 100%, 75%, and 88.3% respectively. For four out of the five students, completion rates improved, ranging from 24% to 32.3%, and averaging a 27.9% increase. Though Xavier's on-time completion rate was 0%, all of his choice homework assignments were turned in, but they were all submitted late. His assignments would have received full points if turned in on time.

Xavier had a failing grade in science class the previous quarter due to assignments that were missing, late, incomplete, or some combination of the three. His choice homework, though late, received full points for quality.

Though Joe's second quarter grade was a B-, he struggled following directions and receiving full points for assignments turned in on time. The quality of Joe's choice homework was definitely eye-catching. His responses were organized, complete, and high quality. I saw such a difference in Joe's work that, while grading assignments in class, I called him up to talk about one of the 20-point assignments he completed. I mentioned how I was really impressed with the quality of his work. The same was true for another choice assignment. He mentioned that he spent a lot of time working on the assignments at home. I even emailed his parents to mention the impressive positive difference I was noticing in Guy's work. They also responded that he spent a great deal of time on the choice homework assignments at home.

Academic Growth

The students involved in the case study did not display a common pattern of academic growth between pre-assessment and post-assessment scores. Two of the three students actually achieved lower percentage scores on their post-assessment than on their pre-assessment (by 17% and 24%). The academic growth between assessments for the other three students ranged from 3% to 24% growth.

Survey Responses

The students highlighted in this case study had similar responses to some of the Likert survey statements prompting "agree/disagree" responses to statements about choice homework. Primarily, their responses to three statements had a common pattern. These statements were as follows, " I prefer having a choice on which homework assignments I get to complete" (Figure 1), "I spent more time on this homework than I normally do on homework that I don't get a choice" (Figure 4), and "I liked having a longer period of time to complete ALL of the choice homework instead of having one assignment at a time" (Figure 5). Four out of the 5 students answered either "agree" or "strongly agree" to all three statements. Molly was the only student who answered "disagree" to the statement "I spent more time on this homework than I normally do on homework that I don't get a choice." It is clear that this particular group of students preferred having choice homework and that it served as effective differentiation for each of them. Not only did they spend more time on their assignments, but their homework completion rates increased as well. These students had positive changes in their affect towards homework and in the products that they submitted.

Choice Homework Selections

In terms of homework choices, all but one of the case study students completed at least one 20-point assignment. Their choices are outlined in Table 12 below.

Student (*names changed)	Homework Choices Given in Point-Values
Xavier	20, 20, 10
Molly	20, 10, 5, 5
Joe	20, 15, 10, 10, 5, 5
Carla	15, 10, 5
Cole	20, 10, 5, 5

Table 12: "Choice Homework" selections made by five students in the case study group. Student selections are distinguished by the point value of the assignments.

It's notable that the majority of the students whose homework completion rates and/or homework quality increased also chose at least one "challenging" high-point assignment. Choice homework seems to fill an important gap in motivation for these types of students. Open-ended survey response answers demonstrate how for some of these students, having the choice and the extra time to complete multiple homework assignments might be increasing these students' own perception of their ability to complete a task, also known as "self-efficacy." Responses to the question "do you like getting to choose what homework assignments you do? Why or why not?" are listed in Table 13 below.

Xavier	"Yes, because if you absolutely can't do one assignment you can choose another."
Molly	"Yes I do because I don't like some the homework we get. But I liked doing these homework assignments."
Joe	"Yes because then we can have assignments that we like to do instead of not getting it."
Carla	" I do because it kept me interested in what I was doing."
Cole	"Yes I do, because there were some that were fun and some that looking boring. I would like less writing though."

Table 13: Case study student open-responses to the survey question "Do you like getting to choose what homework assignments you do? Why or why not?" (*Names have been changed.)

Summary

Though the overall results collected are significant, the most interesting information lies in the case study group in conjunction with the whole class' data. Analysis of the data collected from the case study group, in addition to personal observations of these students in class, allowed for a deeper understanding of some students that are difficult to reach. Sometimes these struggling learners influence the character of the classroom. The purpose of differentiation is to reach as many individuals as possible and influence the character of the classroom to a more student-centered one where all students meet the same standards, even if by different means. Choice homework seems to fill an important gap in motivation for a select group of students who struggle with late and missing assignments.

Chapter V: Reflection

Choice homework "lets you fit your interests more and lets you work on your strengths and weaknesses."
Julie, 7th grade

June

Here I was, in the first week of a master's in teaching program, thrust in front of summer school students. What did I know about teaching? And designing lesson plans? No clue. Managing a classroom full of wily students? Definitely not yet. So how could I find my place in a summer school language arts classroom?

I began by focusing on individual students. In the sixth grade group there were a few who struggled getting started on in-class assignments. I quickly gravitated to the individual coaching of these students. I soon learned that a good starting point was to break down prompts and tasks into smaller pieces. It was here that I got my first introduction to the need for differentiation, the importance of motivation and self-efficacy, and necessity of relationship with students.

Not all of the students in the summer school classroom fit a single profile, either academically or personally. As such, giving each student the same writing prompt without scaffolding the skills needed simply wasn't working in this classroom. As student teachers in this environment, we either sat ourselves down with the students who, as it turns out, were in special education. Other times we circulated and helped students brainstorm when they were stuck. Each of these students had different needs and skills. Some could hardly put sentences together, while others' flew through assignments with creative juices flowing plentifully. These students needed a classroom framework that would help them reach the same standards, while providing motivation through both relationship and interest.

Many students hesitated to openly trust student teachers. We hardly knew anything about them, and they didn't know much about us, making it difficult for them to understand our level and care and willingness to invest in their success. As a result, taking risks was far from commonplace. It became apparent that students who didn't believe than they could complete the task didn't usually make an effort. Self-efficacy was potentially contributing to the students' struggles.

August

So now I had taken a course on teaching secondary students. I had loads of theory under my belt. The time had come to think about putting that theory into practice. Of course, I needed to apply this theory as I learned how to teach 100 students each day while simultaneously working on master's degree. I focused on getting to know my students personally and academically. Without knowledge of one's students, a teacher cannot successfully differentiate her classroom.

During the summer months, I had begun searching for the research question I wanted to answer throughout the year. After suggestions from my cooperating teacher, I researched differentiation. I learned that the basis of a differentiated classroom is a learning environment that is student-centered. Differentiation can be implemented at any stage of the learning process. Differentiation can be based upon student readiness, interest, or learning profile. The purpose of differentiation is to best support each student in growing from where they are to where they need to be, and beyond that. "Teaching to the middle," means that some students are sure to be left behind while others are bored and unmotivated. Within my new classroom, I began looking for a specific need for differentiation as well as a means of implementing it. In my research, student choice had caught my attention. Choice provides students with ownership in their learning and

increases interest and motivation to complete work, while reaching the same standards outlined by the teacher.

November and December

So after getting to know my students, it was time to assume the role of the primary teacher in the classroom by delivering material, leading activities, and managing grades and parent communication. I had the opportunity to periodically incorporate my own lesson plans into each unit among pre-existing lesson plans. Differentiation primarily took the form of student choice on projects. Students could pick the topic and/or product type for their project from lists created by the teacher. As a complement to this pre-existing differentiation, I decided that it would be fitting to incorporate choice into the "process" stage of learning. In this case, that would be either an in-class activity or homework. The "process" stage comes before a student "demonstration of learning." For the sake of logistics, I found that homework might be the best fit. The unit at the time of implementation would be the skeletal and muscular system unit. While students worked through a series of stations, they could have the time and opportunity to complete "choice homework."

January and February

The time to implement was upon us! The skeletal and muscular system unit would consist of an entire week where students would be rotating through stations. Activities at these stations involved individual, pair, and group work to help students learn the scientific names of the muscles and bones. Before beginning the stations, students would be introduced to the "choice homework" and have a little over a week to complete multiple assignments.

After finding the book "Differentiating Instruction with Menus: Science" by Laurie E. Westphal, I decided that a choice menu would be the simplest way for students to make their

choices. I collaborated with the Talented and Gifted Coordinator at Eagleview Middle School in creating the menu choices by piecing together existing worksheets with ones that we created. On the menu would be a variety of assignments appealing to different intelligences (musical, intrapersonal, linguistic, spatial, etc.) as well as differing levels of Bloom's Taxonomy. The TAG coordinator and I used pre-existing word searches, word scrambles, and diagram labeling worksheets for low point assignments as well as a WebQuest for a mid-level point assignment. The remaining assignments were designed together. Students would be required to choose assignments that added up to 50 points total. Since the point value of each assignment would be based on the levels of Bloom's Taxonomy that fit the task, the number of assignments that each student would complete would depend on the difficulty level of the assignments they chose. Completing "easier" assignments would result in needed to complete more assignments. Doing the higher point assignments that required some research and comparison would result in the need to do fewer assignments. Students also had the opportunity to complete up to 10 points of assignments for extra credit. Students were responsible for printing out their assignments and getting all of them done before the due date. Of course, they were welcome to turn in assignments early.

Due to technical difficulties with the library printer, requiring students to print off their assignments turned out to be more complicated than helpful. As a result, I provided students with the copies that they needed upon request. In the future, I would make more copies for students to choose whichever assignments they wished out of a communal resource bin in addition to providing them online.

On a different note, students seemed to like the idea of getting to choose their homework. After grading assignments and assisting struggling students throughout the week, I found many

small things that I would change about the assignments that the TAG Coordinator and I created. Some changes pertaining simply to wording or the clear structuring of requirements on a worksheet. In other cases, I realized that the assigned point values of some assignments needed to be adjusted. As for the time provided, I feel that students had ample time both in class and outside of class to complete 3-6 assignments and get the teacher support they needed. A further option might be to give students the opportunity to design their own assignment to complete pending teacher approval on the tasks and point value.

May… A Reflection and a Summary

As the school year comes to a close, the time to reflect on the year has arrived. I think that the action research process has shown me the importance of using a variety of tools to measure the success of implementing a new technique or approach into the classroom. Teacher observations, while useful, provide a less accurate picture than we'd like to give ourselves credit for. I have found the survey answers to this action research, in conjunction with student growth and assignment completion rate, to be rather curious. Student affect towards choice homework is quite positive. Most students in a middle school classroom like having a choice on the assignments they get to complete. They also generally prefer having a longer period of time to complete multiple assignments instead of getting one assignment at a time. I would conclude that choice homework is generally appealing to students. This is the case not only for the level-of-interest students have in their assignments but also an appreciation of flexibility since students had extra time to complete the work and change their minds as to their choices if needed.

However, since the assignment completion rate for choice homework was actually lower than the assignment completion rate of homework assigned one at a time, I wouldn't necessarily conclude that the element of choice in homework is one that overcomes completion issues by

itself. However, a select group of students whose grades have been laden with late and missing assignments had higher completion rates for choice homework. Their survey answers indicated that they often spent more time on choice assignments than regular homework. They also like choice homework and the longer period of time to complete multiple assignments. For these types of students, choice homework may serve as a successful means of differentiation. If the goal of differentiation is to get all students from where they are to where they need to be, then increasing student completion of homework can certainly help them meet the same standards. Implementing differentiation through the use of choice is a way to meet individual student needs without instruction being completely "personalized" or "individualized." Teachers must recognize individual needs while balancing the need to instruct an entire classroom each day, and differentiation is one way to do that.

Recommendations

According to the generally positive student affect towards choice homework, I would implement this structure once per semester in my future classroom. I think it provides the change of pace that students appreciate while also helping motivate some students who are hard to motivate. The case study data provide support for implementing choice homework earlier in the year. This might provide more information as to whether or not positive affect toward choice homework transfers to regular homework and perhaps affects or changes students' homework completion patterns for the remainder of the year. I'd be curious to know if choice homework might help jump-start, or motivate, students with homework completion issues to complete assignments on-time and at a higher rate from that point forward in a particular class. As a more accurate way to measure the impact of choice homework, it would be valuable to collect student

data on both pre- and post-assessments for units with and without choice homework as a further evaluation of its effectiveness as a form of differentiation in terms of academic growth.

On a technical note, completing an analysis on "original completion rate" would emphasize the importance of frontloading on assignments. The question that "original completion rate" aims to answer is as follows: Did students complete and turn in the assignments they originally chose? If not, why did the student change his or her mind and select another assignment in its place? If the percentage were high, meaning that the majority of students completed the assignments that they originally chose, then that would indicate that the teacher's explanation of the assignments was effective in informing students of the details necessary to make an informed decision on their "choice homework."

Additionally, I would recommend a deeper look at both challenge and self-efficacy in the implementation of choice homework. Student responses to the level of challenge on choice homework were varied. I think the next question tied to differentiation would be "what does challenge mean to students?" Do students perceive something that takes more time as challenging? Or are tasks that are harder to understanding or find the answers to more challenging? Could it be both? Self-efficacy could certainly play a role in the types of choices students make and whether or not they complete the assignments. Linnenbrink (2003) discusses self-efficacy:

> Self-efficacy concerns students' beliefs that they can do something like solve a math problem, read a book, ride a bicycle, or tie their shoes. It involves some judgment that the individual can or cannot do these activities, just as self-perceptions of competence or self-concept beliefs reflect similar beliefs. (p. 121)

If students don't believe that they can complete the 20-point assignment, they might not chose it, regardless of their motivation to complete a smaller number of total assignments or their interest in the material or format. I would recommend that self-efficacy also be measured in survey format as part of the assessment of student reasoning behind their choices. A window into self-efficacy might answer some questions about student-perception of challenge. In relation to "original completion rate," students with stronger self-efficacy would be more likely to continue putting in effort and be persistent in completing an assignment that is challenging instead of deciding to complete an "easier" assignment instead (Linnenbrink, 2003). It is interesting that in regards to motivational engagement, self-efficacy can be built over time when interest in a task follows an initially positive affect towards an assignment (Linnenbrink, 2003). Implementing choice in homework assignments may be one way to increase student self-efficacy in particular skills or areas of knowledge.

References

Anderson, K. M. (2007). Tips for teaching: Differentiating instruction to include all students. *Preventing School Failure, 51*(3), 49-54.

Benjamin, A. (2006). Valuing differentiated instruction. *Education Digest, 72*(1), 57-59.

Cleaver, S. (2008). Smart and bored: Are we failing our high achievers? *Instructor, 117*(5), 28-32.

Gardner, H. (2011). Promoting learner engagement using multiple intelligences and choice-based instruction. *Adult Basic Education & Literacy Journal, 5*(2), 97-101.

Hamm, M., & Adams, D. (2008). *Differentiated instruction for K-8 math and science: Ideas, activities, and lesson plans*. New York: Eye on Education, Inc.

Hayden, K. (2010). ***Gardner's eight multiple intelligences in the classroom***. Retrieved May 8, 2012, from http://www.brighthubeducation.com/teaching-methods-tips/75816-overview-of-gardners-eight-intelligences-in-the-classroom/

Hertberg-Davis, H. (2009). Myth 7: Differentiation in the regular classroom is equivalent to gifted programs and is sufficient: Classroom teachers have the time, the skill, and the will to differentiate adequately. *Gifted Child Quarterly, 53*(4), 251-253.

Huebner T.A. (2010). Differentiated instruction. *Educ.Leadersh.Educational Leadership, 67*(5), 79-81.

Kelly, M. (2012). *Bloom's taxonomy verbs: Applying bloom's taxonomy through the use of verbs.* Retrieved May 28, 2012, from http://712educators.about.com/od/testconstruction/tp/Blooms-Taxonomy-Verbs.htm?rd=1

Levy, H. M. (2008). Meeting the needs of all students through differentiated instruction: Helping every child reach and exceed standards. *Clearing House, 81*(4), 161-164.

Linnenbrink, E. A., & Pintrich, P. R. (2003). The role of self-efficacy beliefs in student engagement and learning in the classroom. *Reading and Writing Quarterly, 19*, 119--137.

McTighe, J., & Brown, J. L. (2005). Differentiated instruction and educational standards: Is detente possible? *Theory into Practice, 44*(3), 234-244.

Quate, S., & McDermott, J. (2009). *Clock watchers: Six steps to motivating and engaging disengaged students across content areas*. United States of America: Heinemann.

Rock, M. L., Gregg, M., Ellis, E., & Gable, R. A. (2008). REACH: A framework for differentiating classroom instruction. *Preventing School Failure, 52*(2), 31-47.

Sisk, D. (2009). Myth 13: The regular classroom teacher can "go it alone". *Gifted Child Quarterly, 53*(4), 269-271.

Sousa, D. A., & Tomlinson, C. A. (2011). *Differentiation and the brain: How neuroscience supports the learner-friendly classroom*. Bloomington, IN: Solution Tree Press.

Tomlinson, C. A. (1999). *The differentiated classroom: Responding to the needs of all learners*. Alexandria, VA: Association for Supervision and Curriculum Development.

Tomlinson, C. A. (2003). *Fulfilling the promise of the differentiated classroom: Strategies and tools for responsive teaching* . Alexandria, VA: Association for Supervision and Curriculum Development.

Tomlinson, C. A. (2005). Differentiating instruction: Why bother? *Middle Ground, 9*(1), 12--14.

Tomlinson, C. A. (2011). *"Biography"*. Retrieved 08/28, 2011, from http://www.caroltomlinson.com/biography.html

Tomlinson, C. A., Brimijoin, K., & Narvaez, L. (2008). *The differentiated school: Making revolutionary changes in teaching and learning*. Alexandria, VA: Association for Supervision and Curriculum Development.

Tomlinson, C. A., & Imbeau, M. B. (2010). *Leading and managing a differentiated classroom*. Alexandria, VA: Association for Supervision and Curriculum Development.

Tomlinson, C. A. (1999). Mapping a route toward a differentiated instruction. *Educational Leadership, 57*(1), 12.

Tomlinson, C. A. (2000). Reconcilable differences? standards-based teaching and differentiation. *Educational Leadership, 58*(1), 6.

Westphal, L. E. (2009). In Robins J. (Ed.), *Differentiating instruction with menus: Science*. Waco, Texas: Prufrock Press, Inc.

Wormelli, R. (2007). *Differentiation: From planning to practice grades 6-12*. Portland, Main: Stenhouse Publishers.

Appendix A

Table 3. The table below gives an overview of each homework assignment on the "list menu," including a description of the type of assignment in addition to the Bloom's score given to the assignment.

Assignment Name	Description	Bloom's Score*
Leg Bone Comparison	• Compare leg bone structures of an animal that walks on two legs with one that walks on four legs. Explain differences in leg bone sizes and why they need to be that way. • **Skills:** Research, Paragraph writing • **Intelligence:** Verbal-Linguistic, Visual-Spatial, Logical-Mathematical, Naturalist	12
Muscles in Action	• Explain how a specific human action demonstrates the paired contracting and relaxing of a pair of muscles. Repeat for 2 other muscle pairs. • **Skills:** Paragraph writing, Recall of terms and concepts, Vocabulary, Real-world application • **Intelligence:** Verbal-Linguistic, Visual-Spatial, Logical-Mathematical	10
Skeletal and Muscular WebQuest	• Compare leg bone structures. Explain differences in leg bone sizes and why they need to be that way. • **Skills:** Vocabulary, Research, Paragraph writing • **Intelligence:** Visual-Spatial, Verbal-Linguistic	6
Original Song or Poem: Human Skeleton	• Write a song or poem to include the names of all the bones learned in class. Submit a video with a dance that goes along with the song for extra credit • **Skills:** Vocabulary, Composition, Creativity, Recall of terms • **Intelligence:** Musical, Verbal-Linguistic, (Bodily-Kinesthetic)	11
"A Pain in the Back" and "Pumping Iron"	• Answer questions on how lifting weights builds muscles and uses muscles in pairs. Answer	10

Assignment Name	Description	Bloom's Score*
("A Pain in the Back" and "Pumping Iron" *continued*)	questions on body position and its influence on pain and injury. • **Skills:** Real-world application, Answer worksheet questions with background info • **Intelligence:** Verbal-Linguistic, Bodily-Kinesthetic	
ER Doctor Explains Terrible Accident	• Explain to the family of a car-accident victim which bones were broken and how they were broken (using realistic explanations) • **Skills:** Real-world application • **Intelligence:** Interpersonal, Linguistic	6
Keep on Your Phalanges	• Find the scientific names of bones in a word search when given the common names of bones. • **Skills:** Recall of terms • **Intelligence:** Verbal-Linguistic, Visual-Spatial	3
Scrambled Bones	• Unscramble the letters to discover the names of bones. Use the bone names to label a skeleton diagram. • **Skills:** Labeling, Recall of terms • **Intelligence:** Verbal- Linguistic, Visual-Spatial	3
Muscle Man	• Label a muscular system picture with the scientific names of muscles provided. • **Skills:** Labeling, Recall of terms • **Intelligence:** Verbal-Linguistic, Visual-Spatial	3
** Bloom's Score is an author-generated score based on Bloom's Taxonomy.*		