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DIFFERENTIATED INSTRUCTION: A UNIT PLANNING GUIDE TO SUPPORT IMPLEMENTATION

A MASTER'S THESIS

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OF BETHEL UNIVERSITY

BY

WILLIAM H. KORNBAUM

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DIFFERENTIATED INSTRUCTION: A UNIT PLANNING GUIDE TO SUPPORT IMPLEMENTATION

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APPROVED

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### **Abstract**

Classrooms today are filled with diversity in a plethora of spectrums. Students differ in ability, interests, learning styles, cultural backgrounds, and many other ways. In addition, teachers have been tasked with meeting the needs of all students to help them succeed regardless of their differences. Differentiated instruction was developed in order to meet this need, but its use is not consistent from classroom to classroom. This paper analyzes the effectiveness of differentiated instruction, the barriers teachers face in implementing differentiated instruction, and strategies to incorporate differentiated strategies in a classroom. A differentiated unit planning guide was created and is shared to help teachers implement differentiated instruction more effectively.

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## Chapter I: Introduction

Since the era of one-room school houses, teachers have been faced with the task of educating a diverse group of students from Kindergarten through middle-school age grades and beyond. While the age range in each room has narrowed to grade-level bands, the classrooms are still as diverse due to factors such as abilities, interests, cultural backgrounds, and learning styles. Educators have spent at least a century developing differentiated instructional strategies to meet the needs of all students head on (Tomlinson, 1999; Washburn, 1920). Practices used to meet these needs are as diverse as the academic abilities they attempt to address. While some strategies have become commonplace such as tiered assignments and ability grouping (Davis & Autin, 2020), others have been born as creative solutions addressing unique needs. The frequency and diversity of differentiated instructional strategies exhibit various levels of success (Pozas et al., 2019). An analysis of differentiated instruction practices reveals a plethora of strategies used (Demink-Carthew & Netcoh, 2019; Ginja & Chen, 2020; Magableh & Abdullah, 2020; Turner et al. 2017;). However, and unfortunately so, missing is research on the effectiveness of such strategies.

While addressing the diverse learning needs of students, teachers need to take into consideration the strategies they use (Ginja & Chen, 2020). The consideration of frequency is of high importance when the goal is long-lasting support. The diversity of the strategies themselves are also a critical variable to examine. Finally, the coordination of differentiated practices with backward design and differentiating types of formative assessments is crucial to the success of differentiating instruction (Davis & Autin, 2020). Simply, many factors must be evaluated when considering successful implementation of differentiated instruction.

Currently, I teach 7th grade U.S. History at Mahtomedi Middle School in Mahtomedi, Minnesota. On a personal level, I have experienced how using differentiated instruction can benefit a student. There were times this past year when I knew some students understood the concepts I was teaching based on their reflective responses in a short answer essay or a conversation with me, but their achievement was much lower on the multiple-choice summative assessment. When they were able to show their understanding in ways other than a multiple choice test, it was apparent they had a higher level of understanding than their test score indicated. In one particular example, a student averaged an 85% over the course of the school year on nine multiple-choice summative assessments. When the summative assessment was a project allowing her to demonstrate understanding through writing and creative expression, she averaged 97.7% on four such assessments. The class average for the multiple choice tests (82.6%) and alternative summative assessments (84.5%) were comparable. I witnessed this same effect with this student when analyzing her written formative assessments as she produced very insightful thoughts and opinions through written expression. In my observation, this tended to be more true for students who were more expressive through writing or were artistically gifted.

As a part of the teaching staff at Mahtomedi Middle School, I am required to be a part of a professional learning community (PLC). One of the requirements for our PLC is to work together to set specific student learning goals. My PLC's goal was, "Teachers will embed opportunities for student voice and choice so that by May 2022, 75% of students will complete a learner-driven project/lesson/activity in one or more units." This is a directive on which our district is focused to improve engagement and motivation. One such project we assigned was

using the National History Day Project framework for our end of the year summative project. Students chose a topic from the 20th Century and worked in groups while also choosing whether they wanted to present their project on a poster board or create a website. The inclusion of providing interest based choice in their topic and choice in how to present their understanding had an outcome where the students were much more engaged and motivated on their project than in previous units. One such example is a group of two, seventh-grade boys who were C+ average students with low motivation to complete their own work. When they were given choice on their topic and product, their motivation increased. These boys enjoyed the Civil Rights unit we had just finished and their interests revolved heavily around hockey. Their choice of Willie O'Ree breaking the color barrier in hockey provided the motivation they needed to complete the project.

Differentiated instruction (DI) works to increase engagement and motivation by adjusting content, process, product, and environment to better suit a student's learning profile. At the state level, the social studies standards are in the process of being updated and a major inclusion in the new standards is using the national "College, Career, and Civic Life (C3) Framework for Social Studies State Standards," created by the National Council for the Social Studies. As of June 2018, 23 states include the C3 framework in their standards or were planning to use it. Since that time, Minnesota has decided to include the framework as a part of their decennial standards review process.

Other states that have included the C3 framework since 2018 include Vermont and Michigan. In addition to states including the C3 framework, North Carolina and Washington D.C. used the framework as a guide to rewrite their social studies standards. One of the reasons the



C3 framework was created was because of the position that students “quickly become disengaged when instruction is limited to reading textbooks to answer end-of-chapter questions and taking multiple-choice tests that may measure content knowledge but do little to measure how knowledge is meaningful and applicable in the real world. The C3 Framework addresses this issue in fundamental ways” (National Council for the Social Studies, 2022). Differentiated instruction is a strategy that addresses the tension points in my personal experiences, my professional responsibilities, and the standards from a state and national level.

### **Definition of Terms**

This section will provide a general definition of common terms from the included research. Unless noted, these definitions will apply to the terms when used in the paper. On a few occasions, other different or expanded meanings are given to these terms.

### **Differentiated Instruction**

This is the concept of tailoring instruction of content, process, product, or environment in order to meet the needs of all students. Teachers are generally the source of providing differing instruction though there are technology based tools as well.

### **Learning Styles**

This is the style in which a person prefers to receive information. This often refers to the learning modalities (i.e., visual, auditory, kinesthetic).

### **Research Question**

The intersection of my personal experiences in my first year of teaching, the requirements of my PLC, as well as the charge given through the C3 framework and the upcoming new standards has driven me to seek a deeper understanding of differentiated

instruction, its credibility, and the development of a resource to apply my knowledge. In order to do so, my guiding research question for this thesis is “How does differentiated instruction promote academic success in secondary students?”

## Chapter II: Literature Review

The goal of this research was to understand the effectiveness of differentiated instruction on achievement in a secondary school setting. In order to attain this goal, I utilized EBSCO and Google Scholar to search for relevant peer-reviewed articles. Some of the search terms I used were “differentiated instruction,” “differentiation,” “learning styles,” and “learning modalities.” The date range I used was articles published from 2017 up to the present time. In addition to the research I found using this method, I identified that 65% of the articles referenced Tomlinson’s seminal works regarding differentiated instruction. From my research, I identified three areas of focus: 1) effectiveness of differentiated instruction, 2) teacher and student perspectives of differentiated instruction, and 3) methods and strategies to implement differentiated instruction.

### **Effectiveness of Differentiated Instruction**

In all, five articles spoke to the effectiveness of Differentiated Instruction (DI) on increasing achievement. These studies were both national and international and included low-ability, grade level, and gifted students.

Bondie et al. (2019) conducted a literature review of 28 studies involving the changing of use of differentiated instruction (DI) between 2001 and 2015 within the United States in classrooms spanning Pre-Kindergarten through 12th grade. Their goal was to analyze the change in how DI was implemented by teachers over time. In order to meet the initial criteria necessary for inclusion, an article must have been in a peer-reviewed journal from 2001-2015. Their search turned up 157 articles; however, only 28 of the studies met the second and third criteria which were the observation of a change in teaching strategies according to DI methods and the

implementation thereof in P-12 educational settings within the United States. 60% of the studies were illustrative case studies and 32% were experimental, quasi-experimental, or survey-based.

Among these 28 studies, 19 drew data from elementary schools, seven obtained data from middle schools, and two focused on Pre-kindergarten to 12th grade. 54% of the studies collected data for between one and eight school years.

One of the things Bondie et al. (2019) found was a distinct lack of a common definition of DI. Eighteen studies used Tomlinson's (2001) definition with the framework of content, process, and product while other studies used various differing definitions (Black et al., 2004; Dunn & Dunn, 1992; Renzulli, 1988). These differing frameworks uncovered many different DI practices with some similarities regardless of framework. One instructional practice common to all 28 studies was that teachers who implemented DI, grouped students according to common characteristics. Sixty-four percent of the studies that used Tomlinson (2001) found that teachers increased the practice of student choice. Another change was a shift from teacher-led learning to learner-directed learning. All 28 studies found that teachers changed their practice to include grouping students by common characteristics as they engaged in DI strategies.

Bondie et al. (2019) also identified teacher barriers to implementing DI strategies. Essentially, teachers with more supportive administration, specifically with the provision of resources, used DI more frequently. Teachers also used DI more frequently if their beliefs about DI aligned with the school's belief about DI.

Bondie et al. (2019) determined that there was a lack of quality research to support the use of DI. They proposed that a more clear definition of DI be adopted and replicable research

be completed to find evidence for DI to be established as an effective practice. According to the authors, more research is needed at the high school level as most of the research has been done on elementary and middle school students. They then proposed a clearer definition to be used in future research:

we define differentiation as the outcome of a continuous decision-making process where teachers *look* and *listen* for academic diversity that will strengthen or impede effective and efficient learning, and then adjust instruction to increase *Clarity, Access, Rigor, and Relevance* (CARR) for *all* students within a learning community. (p. 356)

They believe that this approach changes the focus from Tomlinson's (2001) framework of content, process, and product to a greater focus on teacher decision-making. They also highlighted that their definition focuses on student outcomes which is intended to provide better information to understand the effectiveness of DI.

In another research study, Magableh and Abdullah (2020) set out to understand the effect of differentiated instruction on students' English overall achievement and sought to answer the question, "What is the effect of differentiated instruction on students' English overall achievement?" (p. 540). The researchers hypothesized that there would be no significant difference between the experimental and control groups.

Their quantitative, two-group study included 60 eighth-grade students from two public schools in Irbid, Jordan. The experimental group was taught with differentiated instruction and the control group used the one-size-fits-all method. The experimental teacher used strategies of homogeneous grouping, tiered assignments, and tiered instruction in the areas of content, process, and product and had fifteen years of teaching experience. The control group teacher

had fourteen years of experience. The study was quantitative quasi-experimental. Data was collected through a pretest prior to instruction and a post-test after eight weeks of instruction. The pretest data indicated that the experimental and control groups had no significant difference statistically. After the research period, there was a statistically significant difference in the scores of the two classes. The experimental class taught with differentiated instruction improved by a mean of 14 points while the control group improved by a mean of 0.06.

The results of the study indicated support for using differentiated instruction in mixed-ability classrooms. They also found a benefit to differentiation in content, process, and product. When the experimental classroom implemented homogeneous grouping, tiered assignments, and tiered instruction, the class became more homogeneous as the standard deviation was lowered from 6.3 to 4.73 between the pre-test and post-test. Essentially, differentiating instruction was productive with the higher-ability group to increase motivation when the content may have felt too easy for them and with the below-average ability group when the content felt too difficult.

In a similar study, Haymon and Wilson (2020) conducted a quantitative analysis of a differentiated instructional technology based reading curriculum for middle school students. The purpose of this study was to determine the effectiveness of Achieve 3000, a technology-based curriculum which is individually differentiated for students (in this case, advanced learners). The authors of the study analyzed the results of 120 students in grades 6-8 from one middle school in Tennessee who were in the advanced section of their language arts class. Achieve 3000 was included in their regular studies alongside state standards and their typical curriculum. Students took an assessment during the first semester to determine their

LevelSet Lexile reading level and act as a pretest. They then took a second, different but equal, test at the end of the second semester to act as the post-test and to determine growth.

The results of using Achieve 3000 to differentiate instruction to advanced middle school students were statistically significant. The expected growth for a middle school student in reading achievement over the course of a school year was between 75-100 points. When the researchers analyzed the data, the average growth for the advanced middle school students using the Achieve 3000 differentiated curriculum was 185 points (overall mean) higher than their pretest score. When reported by grade level, the sixth-grade students improved the most, by a mean of 279.88. Eighth grade improved by 149.87, and seventh grade improved by 125.48.

Sanchez et al. (2020) conducted a study with a true experimental research design to determine the effects on achievement from using differentiated instruction (DI) based on learning types for eighth-grade Biology students in the Philippines. To determine the cause and effect of using DI, a pretest and posttest equivalent design was used. Two groups of 30 students were assessed over the course of nine lessons in Biology class. These lessons involved the least mastered concepts in the Biology course and were determined based on a 30-question pretest at the beginning of the study. The control group was taught nine lessons that employed teaching a lesson and subsequent focused discussion. The experimental group was given a Learning Style Self-Assessment Questionnaire to determine their preferred learning styles. These results provided information for the teacher on how to differentiate for the group. The experimental group was also taught nine lessons; however, they were differentiated according to learning styles, and the students were also given 25 differentiated activities from which to choose to reinforce learning.

The experimental group consisted of 18 visual learners, seven kinesthetic learners, and five auditory learners. The post-test revealed that both the experimental and control groups increased their achievement at the completion of the lessons. However, the experimental group increased their achievement by a mean of 15.96 as compared to the control group which increased their achievement by a mean of 9.8. These results show that there was a significant difference in the achievement of students taught with this differentiated method as compared to that of lecture and discussion. The researchers also observed that the learners in the differentiated group were excited about the activities and enjoyed them more which led to asking more questions and seeking more clarification. When data was grouped based on learning style, each group had significant achievement growth. Auditory learners increased their score by a mean of 17.00, kinesthetic learners increased their score by a mean of 15.85, and visual learners increased their score by a mean of 15.72. This study showed that lessons that are differentiated for all types of learning styles increase achievement regardless of the type of learning style.

Additionally, Malacapay (2019) conducted a study to determine whether there was a connection between learning styles and academic performance. The purpose of this study was to see if there is a connection between academic achievement and the preferred learning style of students in a classroom. The study was conducted in a fifth-grade classroom of 30 students in Kabankalan City, Negros Occidental, Philippines. The class chosen was an advisory class and complete enumeration was the selected sampling method in order to obtain a representative data set of the entire population. The action-research design was intended to guide the instructor to use teaching instruction in coordination with the students' preferred learning



styles. Data was collected through a two-part survey questionnaire, formative scores, and a structured interview questionnaire. The survey questionnaire gathered information about the students' ethnicities, their access to learning such as books, radios, televisions, phones, and the students' preferred hobbies. After determining the learning styles of each student, the students were grouped according to their learning styles and given a lesson with strategies and instructional methods based on their preferred learning style. When the lessons were complete a formative test was given to each student. Then six students, two from each learning style group, were chosen at random and asked questions in a one-on-one interview. The questions asked were, "What activities did you like the most from all the activities that we had made?" and , "Why?" (p. 629). In the classroom of 30 students, the learning style preferences varied between auditory, visual, and kinesthetic (the terminology of learning styles as auditory, visual, and kinesthetic were according to the author's use). This resulted in the need for the teacher to implement audio, visual, and kinesthetic strategies to best suit the representative styles of the classroom. The need to differentiate instruction included the content, the learning process, and the outcome or product that the students created. The results of the study showed "no significant difference between demographic profile and learning style, and no significant relationship between learning style and academic achievement of the learners" (p. 634). Therefore, as it pertains to this study, learning modality preferences were not dependent on the demographic profile or ability of each individual student.

### **Perspectives of Teachers and Students**

Among the 20 articles reviewed, six spoke to the perspectives which teachers and students hold towards the use of differentiated instruction and methods. The teachers surveyed

in these studies included P-12 and higher education teachers in the United States and internationally. The students surveyed included elementary students in Turkey, middle school students in Vermont, and undergraduate students in England.

Hersi and Bal (2012) conducted a quantitative case study in Maryland to determine teachers' desired use of differentiated instructional strategies as compared to their actual use of differentiated instructional strategies in order to determine the areas most helpful to educators for professional development. The survey was distributed to 13,660 Maryland teachers in the spring of 2020; completed responses were returned by 555 teachers. Teachers had a timeframe of six weeks to complete the survey. Included in the survey were a demographics section, a Likert-scale section that measured the desired and actual instructional strategies used by teachers, and an open-response section. The open-response section was not used by the researchers. The Likert-scale section included 25 statements that respondents answered on a 1-5 scale (1 = never; 5 = always). The respondents completed this rating scale for each statement two times; one indicated their desired use and the other indicated their actual use.

The results of the demographic section indicated respondents were representative of the teaching force in Maryland except in regard to years of service. The sample size was, in fact, more experienced in terms of years of service when compared to the percentage in the state. 33.9% of the sample group had more than 21 years teaching experience compared to only 16.2% of all Maryland teachers who had the same amount. Just over 25% of teachers in the sample group had between 1-10 years experience as compared to 47% of all Maryland teachers who had between 1-10 years experience. 77.5% of respondents were white females, 83.6% held a Master's degree. Public school teachers represented 85.6% of the respondents and 77.5% of

the surveyed teachers worked at a suburban school. When analyzing the Likert-scale section, the researchers looked at the overall difference between the desired and actual use of differentiated practices as well as the differences between the desired and actual use of differentiated practices for each statement. The results showed a significant difference overall and for each statement. The mean difference overall between the desired and actual practice of DI was .79 on the Likert scale. In every individual statement, the desired use of DI was higher than the actual use. One of the most significant differences between desired and actual use of DI was with the statement "Lesson planning is done for individual students rather than for the entire class" (Hersi & Bal, 2012, p. 65) which had an average difference of .935 points on the Likert-scale. The researchers grouped the data according to the degree of difference between desired and actual use of differentiated strategies. They then determined that the statements with the highest degree of difference should be where professional development and reflective inquiry should begin.

Similarly, Ginja and Chen (2020) conducted a study of teachers in Ethiopia to determine their perspectives of differentiated instruction (DI) and their experiences using DI. This mixed-quantitative and qualitative study was conducted over a week-long period. There were 67 participants in the study from three different teacher preparation schools in Ethiopia. In the quantitative portion of the study, they gathered responses through a 56-question survey using a Likert scale followed by an open-ended section. This questionnaire included questions about the educators' demographic profile, the teacher's attitudes toward DI, and a section for teachers to share their thoughts and experiences with DI strategies. Furthermore, six educators were interviewed for the qualitative portion of the study. Two educators from each preparation

school participated, a classroom teacher and a university level instructor. The interview questions were given to the teachers ahead of time, so they had time to be reflective with their responses. After the interview, the respondents were able to view the notes the interviewers took for accuracy.

The group being studied had a variety of levels of experience. A little more than a third of the group were new teachers with between one and three years experience. A little less than a third had more than eleven years of experience, and approximately half of the educators held a Master's degree. Overall, 53.7% of the teachers had received some sort of training in the use of DI through in-service training with the other 46.3% having received no formal training in DI. Additionally, there were 20 respondents each from language studies and educational science content areas; the remaining 27 divided nearly equally between social science and natural science areas.

The results of the study showed that most of the educators felt they knew DI in theory and agreed with the importance of using DI. In terms of implementation, they were more likely to generally use DI practices in their lessons and lectures. Fewer implemented DI in the process and product area except when grouping by preferred learning modality and providing a variety of assessment options respectively. Although 65.7% of teachers felt they had the ability to use DI practices and 73.2% felt motivated to use it after receiving training, fewer actually used DI because of the time and effort needed. In the open-ended part of the survey, those who reported using DI observed a closing of the achievement gap, better relationships with students, and increased motivation among students and themselves.

Ginja and Chen (2020) concluded, in agreement with teachers surveyed, that more training was needed in order to increase the use of DI practices. They believed that including training of DI in workshops and professional development would positively affect teachers' attitudes toward DI and increase the use of DI in the classroom.

In a related study, Turner et al. (2017) conducted an exploratory study using qualitative methods to determine the perception of differentiated instruction (DI) and the challenges of implementing DI in large class sizes of 50-500 in higher education settings in order to see evidence of higher achievement and individual growth of students. The researchers utilized the Instructor Perceptions of Differentiated Instruction Survey which consisted of seven multiple-choice questions and two open-ended questions. The subjects of this study were 20 instructors from a research university in southeastern United States who taught classes of 50-500 students, which was categorized as a large class size according to Christopher (2011).

The results of the study showed that instructors generally had a vague understanding of DI and even strategies associated with DI. Across the board, however, there was no clear or common understanding. The overwhelming strategy of instruction used was whole-class lecture (more than 85% indicated they used that strategy "always" or "often"). Conversely, 19% of the respondents used DI methods regularly, 44% used them sporadically, and 37% did not use DI methods at all. Of note, the survey did not suggest specific types of DI methods, so that interpretation was left up to the respondent.

Regarding the perceptions of the instructors toward the importance of DI, 75% of the respondents felt using DI at the university level was either "somewhat important" or "extremely important," whereas the remaining 25% claimed it is "not effective in higher education" or "a

buzzword that will fade” (Turner et al., 2017, p. 496). When questioned about the practicality of implementing DI in large class sizes, less than 20% of the instructors felt that DI was practical and reasonable; 25% determined it was impractical and unreasonable. In another question that asked whether “the benefits of differentiated instruction in higher education were significant and somewhat worthy of the effort required to implement” (p. 496), 50% of the respondents agreed. Another 25% said that the benefits were insignificant but somewhat worthy of the effort to implement. In response to the open-ended questions, 73% of the instructors indicated a lack of time to prepare DI for such a large class size. One instructor added that the other demands and the pathway to tenure in their respective job at a research university took away from their focus on pedagogy outside of the traditional lecture method. Overall, the authors concluded that there needs to be more research done to ignite the discussion of the importance of DI in higher education.

To understand students’ perspectives, Demink-Carthew and Netcoh (2019) conducted a study of a mixed seventh and eighth-grade social studies class in Vermont in order to understand students’ feelings and experiences of making choices in their learning environment. The authors followed along as a teacher implemented a personalized learning project using the Hands Joined Learning method. The authors noted a difference between personalized learning and differentiated instruction in that differentiated instruction focuses on the teacher individualizing content, process, and product while personalized learning incorporates students’ voice and choice in the learning process. The project was about a semester long with students working around two hours each week on it. The teacher required students to fill out an “Input and Reflection Form” on three occasions. This promoted reflection, the capacity to provide

resources for the project, and how to give opportunities for his students to make choices in how they learn best. The Input and Reflection Form had two Likert-scale questions that asked about student perspectives on choice. The authors created five groups based on the responses from these Likert scales. The groups were 1) students who liked choice and reported low levels of stress, 2) students who like choice and reported higher levels of stress, 3) students who were indifferent, 4) students who did not like choice and reported low levels of stress, and 5) students who did not like choice and reported high levels of stress. After creating these groups, the authors invited 11 students, such that all five groups were represented, to be interviewed for further analysis.

Of the students interviewed, nearly three-fourths (74%) liked choice and experienced low levels of stress. Another 10% liked choice, but they felt stressed about the project. In addition, the interviews provided a deeper insight into what made the opportunity for choice successful as well as the challenges it provided for students. For example, students had the freedom to learn and research in ways they knew they worked best for them; apparently, the abundance of choices gave the students more autonomy. This sense of freedom did, however, provide stress to a student who didn't feel like he knew what success would look like for the project. His stress revolved around wondering if how he was taking notes was the right way to take notes. The students who had less self-awareness of their abilities did not do as well on the project, while the students who had more self-awareness were able to make good choices regarding the project. The students with less self-awareness found it stressful when they did not know how they learned best. These students would have liked fewer options and to receive greater teacher guidance.

Allcock and Hulme (2010) conducted a study to determine whether differentiating instruction based on learning styles was effective at increasing students' achievement relative to differentiating based on ability. They led a 2x2 mixed design with 33 students. The same instructor taught all of the students. Students were given the same pre and posttest based on the unit of study, and they were also all given the same inventory tests to determine their preferred learning style. Two learning styles models were used: Gardner's Multiple Intelligences and the Learning Styles Questionnaire developed by Honey and Mumford. For the duration of the study, students were divided into two groups. The first group of 16 students was given tasks, and they worked in groups that matched their preferred learning style for nine consecutive lessons. The second group of 17 students was given tasks, and they worked in groups based on their abilities and specific skills. The methods and tasks used for the ability-based group varied.

Both groups improved similarly from the pre test to the post test; there were no significant differences in the effect of one method of differentiation over the other in terms of achievement. Upon reflection, students who were given only tasks that matched with their learning styles were more critical of the approach, which indicated that it was more effective to use different methods and tasks for different situations. Also, students in both groups determined that differentiation based on learning styles was a helpful instructional strategy but not as the main method of differentiating. The authors concluded that an effective teacher should include learning styles as one of many methods of differentiation, but it should not be the only method. Allcock and Hulme (2010) believe that learning styles may be effective in increasing student self-awareness of what will help engage them with content as well as increase motivation and engagement.



Additionally, Demir (2021) performed a study of 63 fourth-grade students at Ziyapasa Elementary School in Turkey to understand the effect of differentiating instruction according to their learning styles on their motivation for learning science lessons. The author used Kolb's (1984) definition of learning styles to identify students who have a disintegrating, changing, assimilative, or placing learning style. This study utilized a quasi-experimental two-group design with a pretest and posttest. The Science Learning Orientation Motivation Scale (SLOMS) created by Dede and Yaman (2008) was used to understand the attitudes toward learning science. A semi-structured interview form was also used to gather data. Thirty-three students were assigned to the control group; 30 students were assigned to the experimental group. The control group was taught science lessons with traditional teaching methods for 18 lessons over the course of six weeks. The experimental group was taught the same content for the same duration, and they were provided with different resources and products based on their specific learning styles. In addition, students gave feedback at the end of each lesson; as a result, the teacher could reflect on their teaching practice in accordance with differentiated instruction strategies.

The results of the science motivation pretest indicated that there was no significant difference between the control and experimental groups. However, the science motivation posttest showed that students in the experimental group showed a higher motivation level than those in the control group. The views of the students in the experimental group were assessed; 93.3% liked the differentiated activities provided to them. Also, 76.66% of the experimental group believed they gained more confidence at the end of the activities, and 90% said they were interested in participating in the activities. As well, 83.3% of the experimental group said

they gained a better understanding of their lessons as a result of the differentiated activities. The author of the study concluded that differentiating according to learning styles increased students' motivation to engage in science lessons.

### **Strategies and Models to Implement Differentiated Instruction**

The most common theme among the research gathered involved different strategies, methods, and models to help implement differentiated instruction. Nine articles suggested items such as checklists, models, and frameworks as well as specific methods to differentiate during instruction. Others focused on the teacher being reflective and adaptive in their teaching methods. A theme across these studies was that differentiation happens pre-instruction, during instruction, and post-instruction.

Davis and Autin (2020) reviewed the strategies of backward design, formative assessment, and differentiated instruction to highlight how the interaction between the three can be used to help all students succeed. They called the combination of these strategies the “Cognitive Trio.” The question answered in the article was, “What outcome does integrating backward design, formative assessment, and differentiated instruction have on academic success of all learners?” (p. 56). For their research, Davis and Autin (2020) reviewed the seminal works of backward design, formative assessment, and differentiated instruction independently. The works on which they focused were differentiated instruction (Tomlinson, 2001; 2005), backward design (McTighe & Wiggins, 2012), and formative assessment (Davis, 2013; Stiggins & Guskey, 2007). They then analyzed how the three strategies could be integrated together to provide the optimal environment for learners who need more support, for learners who are where they should be, and for learners who can expand on what they already know.

Davis and Autin (2020) recommended that research be done to determine the impact of intentionally integrating the three strategies. This research is intended to provide an understanding of how student achievement is impacted, how these strategies impact school culture, and determining potential barriers and challenges of incorporating the cognitive trio.

In an oft-cited work, Pashler et al. (2008) conducted a meta-analysis of research regarding the effectiveness of matching instruction with preferred learning styles, also known as the meshing hypothesis. This hypothesis claims that learners will have higher achievement when instruction is individualized to their preferred learning style. The authors defined learning styles as the way a person would like information to be presented to them. They also acknowledged that learning styles could also refer to differing abilities, different modes of instruction, as well as different personalities. Criteria was decided upon to help determine whether each study showed conclusive evidence that using learning styles to guide instruction is a scientifically-backed practice. The criteria established that studies must have crossover results showing increased performance when subjects were matched with their particular learning style. The crossover interaction between learning style and method must have learning style plotted on the X-axis.

Upon completing a review of available research, only one study fit the criteria and had results showing evidence that matching preferred learning styles with instruction was productive (Sternberg et al. 1999). Three studies fit the criteria but contradicted the learning styles hypothesis (Constantinidou & Baker, 2002; Cook et al., 2009; Massa & Mayer, 2006).

In addition to the findings related to learning styles based on how people prefer information to be given to them, there were related studies with similar theories which showed

more evidence. The personality by treatment instruction showed evidence for differentiating the level of instructional support to students with differing levels of “locus of control.” The “locus of control” refers to how an individual views their successes and failures in relation to internal or external factors. More specifically, this refers to whether the outcomes are a result of a person’s actions, or if they are unrelated.

The results of this meta-analysis communicate that there is little evidence to continue to use learning styles, or how a person is presented with information, as a way to differentiate instruction and increase achievement.

Following in Pashler’s (2008) path, Aslaksen and Loras (2018) completed a concise review of literature to assess the effectiveness of the meshing hypothesis that claims students will experience higher achievement when taught with a method that matches their preferred learning modality: visual, auditory, or kinesthetic. For this review, they conducted a search of the EBSCO database for articles including the terms “learning styles,” “visual,” and “auditory” in January 2018. This search yielded 10 studies which used the criteria created by Pashler et al. (2008).

In order for the meshing hypothesis to be confirmed, post-test data from studies needed to have crossover interaction with the experimental groups taught with matching modalities that achieved significantly higher scores when compared to the control group. None of the 10 articles showed significant evidence for the meshing hypothesis to be proven true. While a few studies adhered to correct methodology, the studies under review lent significant evidence toward disproving the meshing hypothesis. The authors concluded that the meshing hypothesis

is a neuromyth in education in which methodologies of teaching are based on popular beliefs of how the brain works, but these are not backed by scientific evidence.

Furthermore, Sulisawati et al. (2019) conducted a study of 28 students from class VIII-B at SMP Negeri 1 Arjasa in Indonesia. The goal was to understand behavioral tendencies of students in connection with their learning modality preferences (auditory, visual, kinesthetic) as they performed mathematical problem solving tasks. The authors tested 28 students for their learning style preferences and found that 15 had a strong preference for either the visual, audio, or kinesthetic learning modality. They also tested these students to determine their mathematical abilities. After the learning style and math tests, the researchers selected the highest performer on the math test for each modality and gave them each a questionnaire and a mathematical problem-solving question. The authors observed each student as they performed the problem-solving question and had the student explain their thought process via a semi-structured interview.

The results showed that students with different learning modalities exhibit different behaviors as they practice problem solving. Visual modality learners were typically more organized. Their process was systematic; they read the question two to three times and wrote down the problem and the needed information to solve it. Audio modality learners read the question internally and often moved their lips as they read silently. They read the question four times through and took scattered notes. Kinesthetic learners read the question two to three times and pointed to the words as they read them. They took few notes, though they marked cues (e.g., circles) on the paper indicating important information. As they read the question, they also fidgeted with their hands.

In another study, Adu and Duku (2021) conducted a quantitative and correlational study to analyze the effect of utilizing instructional materials and learning styles on Grade 6 students' mathematics achievement in Buffalo City, South Africa. The authors used data from 1,225 sixth-grade students from 35 schools in Buffalo City. The data examined included the Students' Learning Style Scale (SLSS), the Availability and Utilization of Instructional Materials Inventory, and the Mathematics Achievement Test. The SLSS included two sections: biodata and a 17-item rating scale (4 = great extent; 1 = not at all). The availability and utilization of instructional materials inventory included two sections: biographical information and 15 questions about the availability and use of instructional materials. The mathematics achievement test was a 25-question, multiple-choice assessment. Data was analyzed in relation to one another to understand the effect that instructional materials and learning styles had on achievement.

The results revealed a significant relationship between learning styles and academic performance ( $B=-.113$ ,  $t=-3.886$ ,  $p<0.05$ ); that is, the inclusion of learning styles brings about success in students. Adu and Duku (2021) indicated that students who see, hear, and do will have higher performance than students who only see, hear, or do. The results also showed that there was no significant relationship between math performance and the availability and utilization of instructional materials. Finally, the interplay of learning styles and the availability and utilization of instructional materials was responsible for 1.2% of performance variance among the students who were studied. Adu and Duku (2021) declared, "use of these materials with commensurate learning styles has a great deal in promoting or enhancing academic performance" (p. 251).

Additionally, Jang et al. (2018) reviewed literature about literacy instruction among all disciplines and then proposed a model to help teachers differentiate instruction (DI) for all the differences their students may have from cultural background to ability. In their analysis of the literature, they clarified their use of “literacy across the disciplines instead of content literacy or disciplinary literacy” (p. 45) in order to speak generally to literacy practices as well as allow for practices specific to disciplines. They created a five-part model to help teachers differentiate in the areas of content, process, and product. In practice, teachers can focus on one part or use any and all parts in conjunction with each other to differentiate instruction in their classroom.

Within the five-part model, two factors were considered. “For factors” (Jang et al., 2018, p. 47) consider student characteristics like cultural background and motivations which are unchangeable. The “for factors” are differentiating for cultural and linguistic diversity, differentiating for diverse literacy proficiency, and differentiating for students’ motivation.

Differentiating for cultural and linguistic diversity requires teachers to be mindful of the differing cultures present in their respective classrooms and provide specific texts and background knowledge to increase their understanding. Differentiating for diverse literacy proficiency specifically supports struggling readers by providing appropriate leveled texts as well as alternative modes of content like podcasts and videos. This factor also allows for multiple assessment options to incorporate multiple modes of communication. Differentiating for students’ motivation leads students to be more engaged through being mindful of the mindset students have toward their ability in the process. This can be accomplished by allowing students to choose between digital and print texts to read as well as producing a digital or print product.

“By factors” (Jang et al., 2018, p. 47) are changeable pieces that teachers can modify to differentiate for their students. These factors include differentiating by multiple texts and differentiating by technology. Differentiating by technology incorporates the use of interactive websites, phones, tablets, and other multimedia devices in order to help students feel like they are proficient at reading and writing. Differentiating by multiple texts requires the teacher to introduce a main text as well as supporting text. The supporting text may include other modalities such as audio and visual representations. This factor also incorporates the use of multiple genres of literature and text.

The authors created their five-part model by combining components from recent literature published on the combination of differentiated instruction and literacy. They believe that by incorporating their five-part model, teachers will be able to more effectively differentiate instruction for all of their students.

Similarly, Reis and Renzulli (2018) presented a framework for thinking about ways to differentiate instruction through their formation of five dimensions of differentiation. They then promoted the Renzulli Learning System as a way to more easily and effectively differentiate instruction for all learners.

Reis and Renzulli (2018) categorized differentiation into five categories which they call dimensions: 1) content, 2) instructional strategies or process, 3) the classroom or environment, 4) product, and 5) the experiences of and personality of the teacher. Each of these dimensions provide unique opportunities to differentiate for all students. Within the content dimension, educators can adapt lessons based on interests or academic abilities. Differentiation within the instructional strategies can be through individual or group work. Teachers may also differentiate



by utilizing project based learning or discussion. The classroom dimension can be differentiated by bringing in different resources, including guest speakers or taking students out of the classroom on a field trip. Differentiating in the product dimension allows students to communicate what they have learned through many different modalities. The teacher dimension is differentiated through the flexibility exhibited by the teacher and the choices they make in how to present a lesson based on their personal reflections. Teachers can adapt differentiation consistently through the dimensions in order to meet the needs of all their students. Reis and Renzulli (2018) suggested that teachers use all dimensions as well as finding multiple ways to group students (e.g., ability, interests, learning styles, other identifiers). By differentiating, teachers can meet the academic needs of all their students.

In another study, Smets (2017) conducted a meta-analysis of literature on differentiated instruction and the research, evidence, and teaching practices discussed in said literature. Smets (2017) focused on strategies proposed by Tomlinson and Struyven and Coubergs who are some of the most well-established experts on differentiated instruction. The strategies found in the reviewed articles were analyzed and summarized to create eight operational characteristics.

The results of the meta-analysis found three common themes in the eight operational characteristics. The three themes were 1) the relationship between the teacher and their students, 2) the teacher's awareness of learning goals and the different ways to achieve those goals, and 3) the teacher and how they design lessons. The author then found 13 strategies or practices within the three themes in such a way as to provide a checklist for teachers to use as a scaffold for their teaching methods and to begin implementing differentiated instructional strategies in their classroom. The checklist provides teachers a way. Further discussion was

provided on the topic of using learning styles as a way to differentiate. While there has been no solid evidence to support using learning styles to increase achievement, Smets (2017) argued that students who are aware of their learning styles may create more effective study habits and increased motivation based on their increased autonomy.

Additionally, Chen and She (2020) conducted a study to understand the effects of using visual or textual analogies and metaphors on achievement. This study used eye-scanning technology to map student learning processes as lessons were worked to completion. The authors examined whether there was a difference in student processing of pictorial and textual presentations. This study included 80 ninth-grade students from four different classes in a school in Taiwan. The 80 students were divided into four equal groups and taught a lesson during an electricity concepts unit. Students were given a pretest to identify their basic understanding of electrical concepts, a posttest after the specific lesson being evaluated with the eye-scanning technology, and a retention test at the end of the entire electricity unit. During the evaluated lesson, students participated in an online lesson for about 40 minutes while the eye-scanning software tracked their eye movements. Each of the four groups were given different lessons. The first group used pictorial modalities. The second group used textual analogies. The third group used pictorial metaphors. The fourth group used textual metaphors.

The results were statistically significant for the students who were given the pictorial analogy, textual analogy, and pictorial metaphor lessons (according to achievement from pre to posttest and retention). The textual metaphor group's achievement from pre to post test was statistically significant but the retention test did not show statistical significance from the pretest to the retention test as it had a  $t$ -retention-pre of .91. Also, groups taught with analogies

had higher achievement than the groups taught with metaphors. The groups taught with pictorial modality also had higher achievement than the groups taught with textual modality. Finally, the pictorial modality exhibited a higher retention rate than the textual modality.

### **Chapter III: Application of the Research**

Differentiated instruction is an effective tool to increase achievement for all learners (Haymon & Wilson, 2020; Magableh & Abdullah, 2020; Sanchez et al., 2020). However, teachers find planning for differentiation to be a time consuming process which hinders their ability to consistently incorporate DI strategies (Ginja & Chen, 2020; Hersi & Bal, 2021; Turner et al., 2017). As a result of these two generalized findings, I created a DI tool for educators to utilize as they prepare their unit lesson plans. The purpose of this 10-day (Figure 5) and 15-day (Figure 6) differentiated unit planning guide is for teachers to use them as they plan their units in order to consistently incorporate DI strategies. This tool is intended to streamline the process of planning differentiated strategies by focusing on the use of evidence-based strategies with high effectiveness in order to reduce the time a teacher may typically spend planning DI.

#### **10-day and 15-day Differentiated Unit Planning Guide**

The guide combines backward design, formative assessment, and differentiated assessment to create an optimal learning environment for all learners (Davis & Autin, 2020). The guide is designed to be flexible so that teachers can utilize it regardless of their personal instructional style.

The first step when using the planning guide is to develop multiple options for the summative assessment on the final day of the unit (Davis & Autin, 2020). The strategy of differentiating by product allows students to demonstrate their learning in a mode most comfortable to them (Reis & Renzulli, 2018) and one in which different learning paths can achieve the same learning goal (Smets, 2017). This choice also increases student motivation (Demink-Carthew & Netcoh, 2019). Summative assessment suggestions are provided in the

guide (see Figure 1) but teachers should feel free to incorporate any kind of summative assessment they see fit.

### Figure 1

#### *Summative Assessment Options*

<b>Day 10 or 15</b>
<b>Include Multiple Summative Assessment Options:</b>
<input type="checkbox"/> Multiple Choice Test
<input type="checkbox"/> One Page Paper
<input type="checkbox"/> Poster Project
<input type="checkbox"/> Multimedia Presentation

The second step when using the planning guide is to utilize multiple learning modalities to introduce the unit's main ideas (see Figure 2). Sanchez et al. (2020) found that varying learning modalities increases engagement and achievement. Also, students learn more when multiple modalities are used (Adu & Duku, 2021; Allcock & Hulme, 2010). The purpose of including multiple modalities to introduce the unit's subject is to create an on ramp for all learners to have increased engagement and achievement.

The third step when using the planning guide is to pre-assess students in order to create homogenous and or heterogeneous grouping during the unit (Reis & Renzulli, 2018; Smets, 2017). This may be done with an interest survey, a pre-quiz to understand students' prior knowledge, or other data sets (see Figure 2). As the guide is intended to be used throughout the school year, student groupings from previous units will be options to use as well.

### Figure 2

#### *Differentiated Unit Planning Guide - Day 1*

<b>Day 1</b>
<b>Introduce topic with multiple learning modalities</b>
<input type="checkbox"/> Visual
<input type="checkbox"/> Audio
<input type="checkbox"/> Kinesthetic
<b>Pre-Unit Formative to determine grouping arrangements</b>
Can use to create homogeneous or heterogeneous grouping
<input type="checkbox"/> Ability (create pre-test)
<input type="checkbox"/> Interest level (create survey)
<input type="checkbox"/> Prior knowledge

The fourth step is to start each week with a day for individual work with a choice of learning modalities to complete the learning for the day (See Figure 3). Differentiating for students' choice in the process of learning increases their motivation (Smets, 2017). This day should be concluded with a discussion based on individual learning (Smets, 2017) in the format of scaffolded questions leading to higher-level thinking questions (Reis & Renzulli, 2018).

### Figure 3

#### *Modality Choices*

<b>Day 6, 10</b>
<b>Independent work with with a choice of modalities</b>
<input type="checkbox"/> Visual: _____
<input type="checkbox"/> Audio: _____
<input type="checkbox"/> Textual: _____
<input type="checkbox"/> Interactive: _____
Whole class scaffolded discussion questions:

Completing the remainder of the differentiated unit planning guide will require the inclusion of a variety of strategies to ensure instruction is differentiated in a variety of ways. The guide is meant to be flexible in order to allow the teacher to make reflective decisions on what will be needed for each day and each lesson (Bondie et al., 2019; Davis & Autin, 2020). The unit will be differentiated by content through using multiple modalities to present information, offering multiple reading levels or modalities to make the content accessible to all abilities (Jang et al., 2018; Reis & Renzulli, 2018), and providing choice in work based on interests or learning modalities. The unit will be differentiated by process through the combination of individual and group work, the use of multiple formative assessments, and the inclusion of tiered assignments based on ability (see Figure 4). Formative assessment suggestions are provided on the guide, but teachers should feel free to use formative assessments that are familiar to them and their students.

#### Figure 4

##### *Differentiated Unit Planning Guide - Daily Options*

This week I have differentiated...

Content:

Modalities

Reading levels or modality options

Choice in interests or modalities

Process

Individual AND Group work

Formatives

Tiered assignments

Day 2-5, 7-10, 12-13
<p><b>Individual or Group Work</b> (circle choice)            Characteristic grouped by: _____            Homogeneous or Heterogeneous (Circle One)</p> <p>Content: _____</p> <p>Process: _____</p> <p>Formative strategy or            Scaffolded Discussion Questions:</p>

The goal of creating this unit planning guide is to provide a process to incorporate differentiated learning at a minimal planning time cost to the teacher. With increased use of the guide (See Figure 5 and Figure 6), the hope is that teachers will begin differentiating their instruction instinctively. In order to utilize this tool, teachers will need the planning guide, more time to plan a unit, and time to find resources with multiple modalities and text levels. Texts with multiple Lexile levels are a resource and include the likes of *Junior Scholastic*, *Newsela*, and *Britannica School*.



Figure 5

10-Day Differentiated Unit Planning Guide

<p><b>Day 1</b></p> <p>Introduce topic with multiple learning modalities</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Visual</li> <li><input type="checkbox"/> Audio</li> <li><input type="checkbox"/> Kinesthetic</li> </ul> <p><b>Pre-Unit Formative to determine grouping arrangements</b></p> <p>Can use to create homogenous or heterogeneous grouping</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Ability (create pre-test)</li> <li><input type="checkbox"/> Interest level (create survey)</li> <li><input type="checkbox"/> Prior knowledge</li> </ul>	<p><b>Day 2</b></p> <p><b>Individual or Group Work</b> (circle choice)</p> <p>Characteristic grouped by: _____</p> <p>Homogenous or Heterogeneous (Circle One)</p> <p>Content: _____</p> <p>Process: _____</p> <p>Formative strategy or Scaffolded Discussion Questions:</p>	<p><b>Day 3</b></p> <p><b>Individual or Group Work</b> (circle choice)</p> <p>Characteristic grouped by: _____</p> <p>Homogenous or Heterogeneous (Circle One)</p> <p>Content: _____</p> <p>Process: _____</p> <p>Formative strategy or Scaffolded Discussion Questions:</p>	<p><b>Day 4</b></p> <p><b>Individual or Group Work</b> (circle choice)</p> <p>Characteristic grouped by: _____</p> <p>Homogenous or Heterogeneous (Circle One)</p> <p>Content: _____</p> <p>Process: _____</p> <p>Formative strategy or Scaffolded Discussion Questions:</p>	<p><b>Day 5</b></p> <p><b>Individual or Group Work</b> (circle choice)</p> <p>Characteristic grouped by: _____</p> <p>Homogenous or Heterogeneous (Circle One)</p> <p>Content: _____</p> <p>Process: _____</p> <p>Formative strategy or Scaffolded Discussion Questions:</p>
<p><b>Day 6</b></p> <p><b>Independent work with a choice of modalities</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Visual: _____</li> <li><input type="checkbox"/> Audio: _____</li> <li><input type="checkbox"/> Textual: _____</li> <li><input type="checkbox"/> Interactive: _____</li> </ul> <p>Whole class scaffolded discussion questions:</p>	<p><b>Day 7</b></p> <p><b>Individual or Group Work</b> (circle choice)</p> <p>Characteristic grouped by: _____</p> <p>Homogenous or Heterogeneous (Circle One)</p> <p>Content: _____</p> <p>Process: _____</p> <p>Formative strategy or Scaffolded Discussion Questions:</p>	<p><b>Day 8</b></p> <p><b>Individual or Group Work</b> (circle choice)</p> <p>Characteristic grouped by: _____</p> <p>Homogenous or Heterogeneous (Circle One)</p> <p>Content: _____</p> <p>Process: _____</p> <p>Formative strategy or Scaffolded Discussion Questions:</p>	<p><b>Day 9</b></p> <p><b>Review Unit for Assessment</b></p> <p>Introduce assessment options to students</p> <p>Allow students time to prep for assessment</p> <p>Individually or in groups</p> <p>Teacher is available to meet to help students prepare</p>	<p><b>Day 10</b></p> <p><b>Include Multiple Summative Assessment Options:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Multiple Choice Test</li> <li><input type="checkbox"/> One Page Paper</li> <li><input type="checkbox"/> Poster Project</li> <li><input type="checkbox"/> Multimedia Presentation</li> </ul>
<p><b>Day 6</b></p> <p><b>Independent work with a choice of modalities</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Visual: _____</li> <li><input type="checkbox"/> Audio: _____</li> <li><input type="checkbox"/> Textual: _____</li> <li><input type="checkbox"/> Interactive: _____</li> </ul> <p>Whole class scaffolded discussion questions:</p>	<p><b>Checklist: This week I have differentiated</b></p>			
<p><input type="checkbox"/> Content</p> <p><input type="checkbox"/> Modalities</p> <p><input type="checkbox"/> Reading levels or modality options</p> <p><input type="checkbox"/> Choice in interests or modalities</p> <p><input type="checkbox"/> Process</p> <p><input type="checkbox"/> Individual AND Group work</p> <p><input type="checkbox"/> Formatives</p> <p><input type="checkbox"/> Tiered Assignments</p>	<p><input type="checkbox"/> Product</p> <p><input type="checkbox"/> Summative Assessment Options</p>	<p><b>Ideas for differentiating Content</b></p> <p>Modalities (Textual, Audio, Visual, Experiential)</p> <p>Levels (Lexile reading levels or other)</p> <p>Choice by interest or preferred modality</p> <p><b>Ideas for differentiating Process</b></p> <p>Individual vs group work</p> <p>Formatives</p> <p>Tiered Assignments</p> <p>Choice in assignment topic by interest</p>	<p><b>Ideas for differentiating Product (Summative)</b></p> <p>Multiple choice test</p> <p>One page paper</p> <p>Poster project</p> <p>Multimedia presentation</p>	<p><b>Formative Ideas</b></p> <p>Think-Pair-Share</p> <p>Exit ticket</p> <p>Multiple choice quiz</p> <p>RAFT (role, audience, format, topic)</p> <p>RIDGES</p> <p>SOAPStone</p> <p>AVID Storyboard</p>

Figure 6

15-Day Differentiated Unit Planning Guide

<p><b>Day 1</b></p> <p><b>Introduce topic with multiple learning modalities</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Visual</li> <li><input type="checkbox"/> Audio</li> <li><input type="checkbox"/> Kinesthetic</li> </ul> <p><b>Pre-Unit Formative to determine grouping arrangements</b></p> <p>Can use to create homogeneous or heterogeneous grouping</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Ability (create pre-test)</li> <li><input type="checkbox"/> Interest level (create survey)</li> <li><input type="checkbox"/> Prior knowledge</li> </ul>	<p><b>Day 2</b></p> <p><b>Individual or Group Work</b> (circle choice)</p> <p>Characteristic grouped by: _____</p> <p>Homogeneous or Heterogeneous (Circle One)</p> <p>Content: _____</p> <p>Process: _____</p> <p>Formative strategy or Scaffolded Discussion Questions: _____</p>	<p><b>Day 3</b></p> <p><b>Individual or Group Work</b> (circle choice)</p> <p>Characteristic grouped by: _____</p> <p>Homogeneous or Heterogeneous (Circle One)</p> <p>Content: _____</p> <p>Process: _____</p> <p>Formative strategy or Scaffolded Discussion Questions: _____</p>	<p><b>Day 4</b></p> <p><b>Individual or Group Work</b> (circle choice)</p> <p>Characteristic grouped by: _____</p> <p>Homogeneous or Heterogeneous (Circle One)</p> <p>Content: _____</p> <p>Process: _____</p> <p>Formative strategy or Scaffolded Discussion Questions: _____</p>	<p><b>Day 5</b></p> <p><b>Individual or Group Work</b> (circle choice)</p> <p>Characteristic grouped by: _____</p> <p>Homogeneous or Heterogeneous (Circle One)</p> <p>Content: _____</p> <p>Process: _____</p> <p>Formative strategy or Scaffolded Discussion Questions: _____</p>	
<p><b>Day 6</b></p> <p><b>Independent work with a choice of modalities</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Visual: _____</li> <li><input type="checkbox"/> Audio: _____</li> <li><input type="checkbox"/> Textual: _____</li> <li><input type="checkbox"/> Interactive: _____</li> </ul> <p>Whole class scaffolded discussion questions: _____</p>	<p><b>Day 7</b></p> <p><b>Individual or Group Work</b> (circle choice)</p> <p>Characteristic grouped by: _____</p> <p>Homogeneous or Heterogeneous (Circle One)</p> <p>Content: _____</p> <p>Process: _____</p> <p>Formative strategy or Scaffolded Discussion Questions: _____</p>	<p><b>Day 8</b></p> <p><b>Individual or Group Work</b> (circle choice)</p> <p>Characteristic grouped by: _____</p> <p>Homogeneous or Heterogeneous (Circle One)</p> <p>Content: _____</p> <p>Process: _____</p> <p>Formative strategy or Scaffolded Discussion Questions: _____</p>	<p><b>Day 9</b></p> <p><b>Individual or Group Work</b> (circle choice)</p> <p>Characteristic grouped by: _____</p> <p>Homogeneous or Heterogeneous (Circle One)</p> <p>Content: _____</p> <p>Process: _____</p> <p>Formative strategy or Scaffolded Discussion Questions: _____</p>	<p><b>Day 10</b></p> <p><b>Individual or Group Work</b> (circle choice)</p> <p>Characteristic grouped by: _____</p> <p>Homogeneous or Heterogeneous (Circle One)</p> <p>Content: _____</p> <p>Process: _____</p> <p>Formative strategy or Scaffolded Discussion Questions: _____</p>	
<p><b>Day 11</b></p> <p><b>Independent work with a choice of modalities</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Visual: _____</li> <li><input type="checkbox"/> Audio: _____</li> <li><input type="checkbox"/> Textual: _____</li> <li><input type="checkbox"/> Interactive: _____</li> </ul> <p>Whole class scaffolded discussion questions: _____</p>	<p><b>Day 12</b></p> <p><b>Individual or Group Work</b> (circle choice)</p> <p>Characteristic grouped by: _____</p> <p>Homogeneous or Heterogeneous (Circle One)</p> <p>Content: _____</p> <p>Process: _____</p> <p>Formative strategy or Scaffolded Discussion Questions: _____</p>	<p><b>Day 13</b></p> <p><b>Individual or Group Work</b> (circle choice)</p> <p>Characteristic grouped by: _____</p> <p>Homogeneous or Heterogeneous (Circle One)</p> <p>Content: _____</p> <p>Process: _____</p> <p>Formative strategy or Scaffolded Discussion Questions: _____</p>	<p><b>Day 14</b></p> <p><b>Review Unit for Assessment</b></p> <p>Introduce assessment options to students</p> <p>Allow students time to prep for assessment individually or in groups</p> <p>Teacher is available to meet to help students prepare</p>	<p><b>Day 15</b></p> <p><b>Include Multiple Summative Assessment Options:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Multiple Choice Test</li> <li><input type="checkbox"/> One Page Paper</li> <li><input type="checkbox"/> Poster Project</li> <li><input type="checkbox"/> Multimedia Presentation</li> </ul>	
<p><b>Checklist: This week I have differentiated</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Content</li> <li><input type="checkbox"/> Modalities</li> <li><input type="checkbox"/> Reading levels or modality options</li> <li><input type="checkbox"/> Choice in interests or modalities</li> <li><input type="checkbox"/> Process</li> <li><input type="checkbox"/> Individual AND Group work</li> <li><input type="checkbox"/> Formatives</li> <li><input type="checkbox"/> Tiered Assignments</li> </ul>		<p><b>Ideas for differentiating Content</b></p> <p>Modalities (Textual, Audio, Visual, Experiential)</p> <p>Levels (Lexile reading levels or other)</p> <p>Choice by interest or preferred modality</p> <p><b>Ideas for differentiating Process</b></p> <p>Individual vs group work</p> <p>Formatives</p> <p>Tiered Assignments</p> <p>Choice in assignment topic by interest</p>		<p><b>Ideas for differentiating Product (Summative)</b></p> <p>Multiple choice test</p> <p>One page paper</p> <p>Poster project</p> <p>Multimedia presentation</p>	<p><b>Formative Ideas</b></p> <p>Think-Pair-Share</p> <p>Exit ticket</p> <p>Multiple choice quiz</p> <p>RAFT (role, audience, format, topic)</p> <p>RIDGES</p> <p>SOAPStone</p> <p>AVID Storyboard</p>

In addition to the blank differentiated unit planning guides, I have created a completed example. This example represents how I would incorporate the guide for a 15-day unit on the Civil Rights Movement (Figure 7). It incorporates the use of a pre-assessment on prior knowledge which I then use to group students heterogeneously, so that each group will have a peer who has some prior knowledge to add to their learning. The first day also includes multiple modalities to draw students in and increase their engagement. Throughout the unit, the content is differentiated through the use of multiple reading levels with text, multiple modalities, and student choice. Process is differentiated through the use of individual and group work, multiple formative assessments, and tiered assignments. The unit is concluded by differentiating the summative assessment to allow choice of topic and product.

Figure 7

15 Day Differentiated Unit Planning Guide: Social Studies Example

MN Standard 7.4.4.22.6

Civil Rights Unit

15 Day Differentiated Unit Planning Guide

Specific Learning Objectives:  
 1. Students will be able to describe the events and circumstances leading up to the Civil Rights Movement.  
 2. Explain the strategies used to fight for Civil Rights in the mid 20<sup>th</sup>-Century.  
 3. Analyze the impact of the Civil Rights movement on the present.

	Day 1	Day 2	Day 3	Day 4	Day 5
This week I have differentiated: M Pre-unit assessment (ability, interest, etc) M Modalities M Reading levels or modality M Choice in interests or modalities M Individual AND Group work M Formative M Tiered assignments	Introduce topic with multiple learning modalities M Visual - I have a dream M Audio - Letter from Birmingham M Kinesthetic - Photo Activities Pre-Unit Formative to determine grouping arrangements M Choice in interests or modalities M Interest level (create survey) M Prior knowledge M Formative of key vocabulary & concepts	Individual or Group Work (circle choice) Characteristic grouped by: <u>Pre-knowledge</u> Homogenous or Heterogenous (Circle One) Content: <u>Pre Civil Rights</u> Process: <u>Jigsaw</u> Formative strategy or Scaffolded Discussion Questions Present Jigsaw as group	Individual or Group Work (circle choice) Characteristic grouped by: <u>Pre-knowledge</u> Homogenous or Heterogenous (Circle One) Content: <u>Commit Till</u> Process: <u>Leveled Reading</u> Formative strategy or Scaffolded Discussion Questions SWS, How were benefits of Chicago different?	Individual or Group Work (circle choice) Characteristic grouped by: <u>Pre-knowledge</u> Homogenous or Heterogenous (Circle One) Content: <u>Plessy v Ferguson</u> Process: <u>Compare Contrast</u> Formative strategy or Scaffolded Discussion Questions SOAPStone	Individual or Group Work (circle choice) Characteristic grouped by: <u>Pre-knowledge</u> Homogenous or Heterogenous (Circle One) Content: <u>Rosa Parks</u> Process: <u>Read, Highlight and Paraphrase</u> M Choice in interests or modalities M Scaffolded Discussion Questions M Formative aspects of the comic panel topic
This week I have differentiated: M Modalities M Reading levels or modality M Choice in interests or modalities M Individual AND Group work M Formative M Tiered assignments	Independent work with with a choice of modalities M Visual - <u>Video (Images/Sound)</u> M Audio - <u>Dr. King's Letter</u> M Textual - <u>Manifesto</u> M Interactive M Choice in interests or modalities M Formative M Tiered assignments	Individual or Group Work (circle choice) Characteristic grouped by: <u>Pre-knowledge</u> Homogenous or Heterogenous (Circle One) Content: <u>Creole</u> Process: <u>Interactive</u> M Choice in interests or modalities M Formative strategy or Scaffolded Discussion Questions SWS, what did they feel? How would you feel?	Individual or Group Work (circle choice) Characteristic grouped by: <u>Pre-knowledge</u> Homogenous or Heterogenous (Circle One) Content: <u>Freedom Riders</u> Process: <u>Google Earth</u> M Choice in interests or modalities M Formative strategy or Scaffolded Discussion Questions SWS, What would you sit in for?	Individual or Group Work (circle choice) Characteristic grouped by: <u>Pre-knowledge</u> Homogenous or Heterogenous (Circle One) Content: <u>March on Wash</u> Process: <u>Choice: Lyndon B. Johnson</u> M Choice in interests or modalities M Formative strategy or Scaffolded Discussion Questions SWS, I have a dream SOAPStone	Individual or Group Work (circle choice) Characteristic grouped by: <u>Pre-knowledge</u> Homogenous or Heterogenous (Circle One) Content: <u>Freedom</u> Process: <u>Leveled Reading</u> M Choice in interests or modalities M Formative strategy or Scaffolded Discussion Questions M Tiered Assignment
This week I have differentiated: M Modalities M Reading levels or modality M Choice in interests or modalities M Individual AND Group work M Formative M Tiered assignments M Summative Assessment	Independent work with with a choice of modalities M Visual - <u>Video of Signing</u> M Audio - <u>Dr. King's Letter</u> M Textual - <u>Read Act</u> M Interactive M Choice in interests or modalities M Formative M Tiered assignments M Summative Assessment	Individual or Group Work (circle choice) Characteristic grouped by: <u>Pre-knowledge</u> Homogenous or Heterogenous (Circle One) Content: <u>Selma</u> Process: <u>Video</u> M Choice in interests or modalities M Formative strategy or Scaffolded Discussion Questions SWS, Why did they march again?	Individual or Group Work (circle choice) Characteristic grouped by: <u>Pre-knowledge</u> Homogenous or Heterogenous (Circle One) Content: <u>Voting Rights</u> Process: <u>Interactive</u> M Choice in interests or modalities M Formative strategy or Scaffolded Discussion Questions SWS, Who could vote? Think-Pair-Share	Review Unit for Assessment Introduce assessment options to students Allow students time to prep for assessment individually or in groups Teacher is available to meet to help students prepare Review Unit Present options Assessment Prep work	Include Multiple Summative Assessment Options M Multiple Choice Test 30 Qs M One Page Paper M Poster Project M Multimedia Presentation M Choice in interests or modalities M Formative M Tiered assignments M Summative Assessment
	Ideas for differentiating Content Modalities (Textual, Audio, Visual, Experiential) Levels (Leveled reading levels or other) Choice by interest or preferred modality	Ideas for differentiating Process Individual vs group work Formative Tiered Assignments Choice in assignment topic by interest	Ideas for differentiating Product (Summative) Multiple choice test One page paper Poster project Multimedia presentation	Formative Ideas Think-Pair-Share Exit ticket Multiple choice quiz SOAPStone (speaker, occasion, audience, purpose, subject, tone) ROGERS (read problem, I know statement, draw picture, goal statement, equation development, solve equation) SOAPStone (speaker, occasion, audience, purpose, subject, tone) AUDIO Storyboard (summarize, draw an image, ask a question)	

## **Chapter IV: Conclusion**

This study reviewed 24 articles relating to the effectiveness of differentiated instruction, perceptions of teachers and students about DI, and strategies to incorporate DI in the classroom. Chapter I introduced the topic of differentiated instruction and discussed the importance of educators meeting the diverse needs present in a classroom. The impact of DI locally and nationally was analyzed. The guiding research question, “How does differentiated instruction promote academic success in secondary students?” was introduced. Chapter II was a review of the 24 peer-reviewed articles which included five that speak to the effectiveness of DI, six that report on the perceptions of teachers and students on DI, and 13 that suggest strategies, models, and/or frameworks to implement DI. Chapter III introduced a 10-day and 15-day differentiated unit planning guide. This guide applied the research from Chapter II to be a useful template for teachers to consistently incorporate DI. Chapter IV reflects on the research along with the assumptions held before the process and how they changed during it. It also covers the steps taken to create the differentiated unit planning guide. Then it draws conclusions from this reviewed set of the research and gives implications for future research.

### **Reflection on process**

At the onset of the research, I had a limited knowledge of what differentiating instruction meant. I believed DI was a strategy to support struggling students. I assumed that each student identified for differentiated instruction would need to receive an individualized plan created by the teacher at a great cost of preparational time. I had an assumption about a way to make the process simpler by understanding the learning modality a student had and tailoring instruction toward that preference. For instance, I had reasoned that if a person has a

learning modality with which they learn best (e.g., visual, auditory), then matching information with that learning modality would be more effective than using any other learning modality. Therefore, I assumed that if students were presented with information in their most effective learning modality as much as possible, then their achievement would increase.

### **Reactions during the process**

During the process, my assumptions quickly changed. I came to understand that differentiating instruction is for all students and not just struggling students (Haymon & Wilson, 2020; Tomlinson, 1999). It became apparent that it was also not creating individual lessons unique for every student, but rather one plan that could be effective for all students. I had previously thought of DI as a way of modifying the content, but I had not considered the possibility of also modifying the process by varying individual and group work, product by varying assessment type, and environment by varying seating arrangements, voices heard, and classroom location. I came to find out that the assumption I held that matching a student's preferred learning modality with instruction, known as the meshing hypothesis, was an incorrect assumption and that there is actually no evidence to support this theory (Aslaksen & Loras, 2018; Pashler et al., 2008). Further, my assumption about the amount of time it takes to differentiate was shared by many teachers in the United States and internationally; in fact, 73% of higher education instructors identified a lack of instructional time as a challenge to implementing DI (Turner et al., 2017). In Ethiopia, teacher educators agreed with the statement, "If I had more time, I would use DI more often" with a mean of 3.64 on the Likert scale (Ginja & Chen, 2020). However, the assumption of the amount of time it takes to differentiate changed as I came across different frameworks, checklists, and instructional tools. Implementing DI in a

classroom can be a long and complicated process made easier through the use of Smet's checklist which scaffolds DI for the educator (2017). The use of the checklist provides a series of statements to direct an educator to differentiate in three different elements, 1) the teacher and their students 2) the teacher and the learning goals 3) the teacher and the lesson design. This makes the process easier and more efficient as the teacher has a road map to differentiate their instruction. These elements influenced me to include a checklist of strategies to incorporate throughout the week in the planning guide and also include strategies following the second and third element. Reis and Renzulli created the Renzulli Learning System to make DI much easier to implement (2018). The system creates an online learning profile which helps educators match effective strategies with their students.

It was during this process that I began to envision how I could incorporate differentiated instruction in my classroom. At first, I was thinking of strategies that I could use. I reflected on my own practices of using grouping and felt that I could be much more intentional than I currently practice. My routine has been to have students group together either with those sitting near them or with their friends. I have found that allowing students to choose who they group with can increase engagement and motivation, but this comes with the inherent risk of off-task behavior. Having students group with those near them is easier to communicate, but in my experience I have not seen evidence of it increasing achievement. By intentionally including heterogeneous and homogeneous grouping, I could increase achievement for all students in my classroom. The learning process is enriched by grouping students homogeneously according to their interests and learning profiles (Smets, 2017). In addition, grouping students according to ability or by learning styles has been found to increase achievement, although one is not

significantly better than the other (Allcock & Hulme, 2010). Groups can also be organized heterogeneously according to learning styles so that students can work in groups where everyone can share their specific style with the others (Reis & Renzulli, 2018). Another strategy that I had in mind was periodically including student choice in learning modalities at certain intervals to regain motivation during a unit. Not long thereafter, I began to envision constructing a guide that could help me consistently use differentiated practices in my classroom. This process led to the creation of a differentiated instruction unit planning guide.

### **Conclusions**

Differentiated instruction is an effective model to increase achievement of all learners (Haymon & Wilson, 2020; Magableh & Abdullah, 2020; Tomlinson, 1999). While it can be overwhelming to envision differentiating instruction for a teacher's entire student body, small adjustments can be made to be effective for all students. Adjustments such as including texts that match a student's reading level and interest are small but effective (Jang et al., 2018). Another small adjustment is to vary the use of modalities to present content which will increase engagement and achievement (Sanchez et al., 2020).

In addition to small changes, using the differentiated unit planning guide (Kornbaum, 2022) can help a teacher consistently practice effective differentiated instruction practices. The guide is intended to be used to help teachers create their unit plan and refer to it daily to reinforce differentiated strategies. In addition, each time a teacher creates a unit with the guide, they have the opportunity to be reflective, thereafter to become more effective as they continue to use what has worked for them and adjust what has not. These adjustments can be

as simple as giving students choice in their work, providing multiple modalities for assessment and learning content, or using homogenous and heterogenous grouping.

Future research should be conducted to understand the effectiveness of using the differentiated unit planning guide. I plan to implement this DI guide as I plan my seventh-grade U.S. History units this year. I will compare the mean scores of my classes this year with the scores from last year on comparable summative assessments. I will also use surveys to gain a student's perspective of what they feel has been effective, especially as it relates to grouping strategies. Additionally, the perceptions teachers have toward this resource will need to be investigated. I will offer this unit planning guide to members of my PLC and grade-level team to get feedback from those who choose to try it out.



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