

The Impact of Differentiated Instruction Strategies
on the
Academic Outcomes of Secondary English Students

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Submitted in Partial Fulfillment of the Requirements for the
Degree of Master of Education

June 2019

Goucher College
Graduate Programs in Education

I extend my sincere gratitude and respect to Shirley, for her willingness to collaborate on this project with me and to do the heavy work of administering the study to her students; to my advisors, Dr. Marquis Dwarte and Tammi Coit, for their time and guidance; and to the Golden Mean community, for inspiring and challenging me every day to become a better educator.

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Abstract

The purpose of this study was to determine whether or not differentiated instruction improves outcomes for secondary level students in English Language Arts. The measurement tool was a district-created pre/posttest assessment instrument. During the study, treatment and control classes completed a lesson on characterization using the William Golding novel, *Lord of the Flies*. The treatment group participated in a differentiated, interactive lesson designed for diverse learning styles and multiple entry points. Using a t-test analysis, the study compared the difference in growth means between the treatment and control groups, and results indicated no statistically significant difference in the assessment outcomes. Instructor-reported improvements in student engagement suggest that differentiation may contribute to positive classroom climate which has been connected to improved performance. Further research on differentiation at the secondary level is recommended because differentiated instruction strategies support educational needs for more dynamic frameworks that prepare students for 21st century global citizenship.

CHAPTER I

INTRODUCTION

Overview

The trend toward greater automation in industry and technology is impacting the knowledge and skills young people need to move into adulthood and 21st century careers. The education system needs to prepare individuals for this 21st century world. At the same time, the system must also be responsive to a population of learners with more diverse frames of reference (cultural, socioeconomic, ethnic, gender, mental/emotional, and religious, to name a few) that impact how they fundamentally perceive, process, and perform in a traditional academic environment. Differentiation can contribute to more positive outcomes for all students in this contemporary society.

During the Industrial Age of the 19th century, public education transformed the role of the child from laborer to student, created a more literate society across socioeconomic classes, and contributed to the rise of the middle class. In general, the purpose of education was to train children to be productive members of society; society needed workers who could read, follow standard routines, use arithmetic, and participate in the civic life of their communities. As with many activities undertaken on a mass scale, education came to resemble factory production, where students were the products of a large, unwieldy system. In a manufacturing economy, where much work was routine and not necessarily highly skilled, the structure of education aligned with the needs of society.

The evolution from Industrial Age manufacturing to today's Information Age with its rapid pace of changing technology and automation, has created a "new social contract" in which "only people who have the knowledge and skills to negotiate constant change and reinvent

themselves for new situations will succeed” (National Education Association, n.d., p. 6). What it means to be a productive member of society in the 21st century has fundamentally shifted, as have the attendant educational requirements.

The Center for Curriculum Redesign (2015) compiled research from across sectors to address the question, “What should students learn for the 21st century?” (p. ii). The Center synthesized research “drawn from a broad global consensus among from [sic] industry, [that] show consistent convergence of views” among employers expressing “pervasive concern that recent graduates (of high school and college) lack relevant skills for the workforce” (p. 2). The authors of the resulting white paper argued that the education system needs to realign to the needs of a 21st century workforce. Among other skill frameworks, the Center highlights the need for employees to exhibit the Four Cs: a) creativity, b) critical thinking/problem-solving, c) communication, and d) collaboration in response to feedback requesting “simplicity in making the recommendations actionable” (p. 3).

The National Education Association (n.d.) also argues that an education system built for “manufacturing and agrarian economies” is insufficient for the current global society that demands students master complex levels of “information and technological literacy,” solve global climate, economic, social, and health challenges, and adapt to the “rapid increase in jobs involving nonroutine, analytic, and interactive communication skills,” in addition to interacting with “people from many linguistic and cultural backgrounds” (p. 5). The National Education Association supports its position with findings of the American Management Association’s 2010 *Critical Skills Survey*, that “80 percent of executives believe fusing the ‘Three Rs’ and ‘Four Cs’ would ensure that students are better prepared to enter the workforce” (p. 6). The education

system must transform over a century of pedagogy to meet these challenging, changing requirements while also addressing the needs of an increasingly diverse student population.

Differentiated instruction offers one pedagogical solution to 21st century education that considers not only *what* students learn, but *how* they engage the experience of learning and prepare to become global citizens. Just as there is no one-size-fits-all explanation for how each of us processes the world around us, classroom education can no longer adhere to a one-size-fits-all model. When educators design curricula that weave together diverse entry points and multiple, flexible pathways to “maximize the capacity of each learner” to achieve high-quality learning goals, all students can engage and grow (Tomlinson, 2017, p. ix). Students who master multifaceted strategies will enter adulthood empowered to meet the challenges of the 21st century.

Adolescence is a particularly critical time when middle and high schoolers “construct their futures,” yet, Tomlinson (2015) writes that the Association for Middle Level Education advises that education at this juncture does not “exemplify” the “teaching and learning approaches [that] accommodate the diverse skills, abilities, and prior knowledge of young adolescents” (pp. ix-x). Designing robust, high-quality, differentiated curricula at this crucial stage of development may help to narrow persistent academic achievement gaps. Since differentiation comprises flexible strategies for improving inclusivity for learners of differing abilities in the classroom, by its very nature, it can also serve as an effective component of 21st century curriculum design by helping students develop competence in the Four Cs. While this study explores the potential for differentiated instruction to provide useful tools to help all learners succeed, viewed in the larger societal context, differentiation offers a dynamic framework within which students prepare to meet the demands of global citizenship.

Statement of the Problem

One-size-fits-most instructional pedagogies do not adequately serve students or 21st century society. Improving the pedagogical impact of differentiation on secondary instructional outcomes may advance equity, engagement in learning, and development of the requisite skills for young people to succeed in the 21st century.

This study applies differentiated instruction strategies to a traditional secondary level English reading/writing assignment about characterization. By incorporating elements of the Four Cs in the differentiated lesson plan, the study creates opportunities for the students to engage with traditional content from multiple perspectives across a variety of formats in order to assess the effectiveness of this differentiated approach.

Hypotheses

NULL: The implementation of differentiated instruction using the Four Cs WILL NOT have an impact on student achievement as measured by the AACPS 3rd Quarter Assessment.

ALTERNATIVE: The implementation of differentiated instruction using the Four Cs WILL have an impact on student achievement as measured by the AACPS 3rd Quarter Assessment.

Operational Definitions

Differentiation is a system of flexible pedagogies that is informed by and responsive to individuals' learning needs/interests, while challenging individuals to achieve the highest standards of learning excellence.

Differentiated instruction represents a philosophy and teaching model that respectfully addresses individual learning needs and holds students to high expectations of success. The Institutes on Academic Diversity (2016) designed a Differentiated Instruction Model around the following elements:

- High-Quality Curriculum
- Continual Assessment
- Respectful Tasks
- Building Community
- Flexible Grouping
- Teaching Up

CHAPTER II

Review of the Literature

The literature review examines the impact of differentiated instruction on secondary level student outcomes. Section one details current models for differentiating instruction. Section two examines methods of applying and practicing differentiation at the secondary level, as both intervention and prevention strategies. Section three reviews evidence of the impact of differentiated instruction on secondary outcomes, for both at-risk students and the overall student population. Section four considers factors that impact implementation of differentiated instruction techniques.

Models of Differentiated Instruction

Differentiated instruction, as a general concept, includes models and approaches intended to make education more accessible to learners, particularly those who have disabilities or are at-risk. Some researchers extend the concept to all learners, noting all are diverse in how they engage with information and benefit from choices in how they interact with content. Some of the more prevalent methodologies in practice today include Universal Design for Learning (Meo, 2008), Response-to-Intervention (Fuchs & Fuchs, 2016; Owen, 2012) and other variants referred to by such terms as inclusive education, inclusive pedagogy (Young & Luttenegeger, 2014), or adaptive instruction. These are briefly described below.

Universal Design for Learning (UDL) Principles

The Universal Design for Learning (UDL) model recognizes that all learners are diverse and can benefit from a “flexible curriculum that supports access, participation, and progress” (Meo, 2008, p. 22). Rather than imposing a one-size-fits-all curriculum, applying principles of UDL to curriculum design can better accommodate the range of learning styles and backgrounds

in individuals with both general and special education. This framework allows teachers to eliminate barriers between curriculum and learners through UDL's flexible approach to setting "instructional goals, methods, materials, and assessments" (p. 22). UDL, developed by the Center for Applied Special Technology elaborated on Carol Tomlinson's early work on differentiation in the nineties by extending the focus from the individual to the group.

Rose and Meyer summarized Meo's (2008) outline of the principles of UDL which noted that curricula designed using UDL principles exhibit:

1. multiple or flexible representations of information or concepts (the "what" of learning),
2. multiple or flexible options in expression and performance (the "how" of learning), and
3. multiple or flexible ways to engage learners in the curriculum (the "why" of learning) (Rose & Meyer, as cited in Meo, 2008, p. 22).

The UDL model attempts to anticipate, account for, and address the diversity of learning styles in the classroom population as a whole in order to incorporate achievable, standards-based, high-expectations into the curriculum that can be adapted to meet the needs of the population.

Response-to-Intervention (RtI)

Response-to-Intervention or the three-tiered model of supports, strives to apply evidence-based practices at the classroom level to identify and target students who need more intensive instruction both in or out of the classroom (Owen, 2012). Owen described how RtI has been promoted as "being a promising model for remediating students who struggle academically while adjusting for the reality of education's shrinking resources" (p. 97). In other words, RtI is a response intended to address the fact that more students are starting school with "education

deficits” (p. 97) which places an undue economic burden on schools to meet these student needs through expensive special education and remediation programs. Response-to-Intervention attempts to shift some of the burden from specialized programs to the classroom. Response-to-Intervention grew out of the 2001 No Child Left Behind legislation and the 2004 Individuals with Disabilities Education Act (IDEA) which mandated greater accountability and measurable results reflecting student learning, as well as improved accommodation for students with disabilities in the classroom.

Literature describing multi-tiered model of supports levels concurs that: a) Tier 1 represents the 80% majority of students who perform successfully in a general education environment; b) Tier 2 represents approximately 15% of students who benefit from extra time and smaller groups to overcome skill deficits; and c) about 5% of students make up Tier 3 and require more intensive, targeted instruction in order to achieve appropriate academic progress (Owen, 2012; Jones, Yssel, & Grant, 2012; Kupzyk, Daly, Ihlo, & Young, 2012). Response-to-Intervention relies on a system of screening all students, applying strategic interventions, progress-monitoring, and data-based instruction to address student academic deficits (Fuchs & Fuchs, 2016; Kupzyk et al., 2012; Owen, 2012). Differences in how RtI is applied and practiced are examined in Section II.

Other Models

Whereas RtI has focused primarily on the elementary grades, other models offer suggestions for differentiating instruction at the secondary level. Young and Luttenecker (2014) consider similar principles as UDL by examining inclusive education and inclusive pedagogy as models of instruction that strive to make education accessible to more students. These models shape instruction to eliminate practices that exclude individuals, instead of adapting instruction

to include a few individuals. Young and Luttenegeger asserted that the concept of inclusive education addresses the reality of there being “more variation within a category of difference than across categories,” and that by implementing a system of more inclusive pedagogy, teachers can extend their lessons to accommodate the variety of learning differences in the overall classroom rather than adjust or ‘add on’ to their existing lessons for a few (p.26). Put simply, teachers can make lessons accessible to more of the overall population when they limit assumptions about cultural knowledge, prior content knowledge, etc., and plan ahead to meet the diverse perspectives, experiences, and abilities of their students.

Young and Luttenegeger (2014) worked with preservice teachers across core academic subjects to develop their lesson planning recommendations. After careful analysis of 48 instructional units over the course of four semesters, Young and Luttenegeger developed six tenets to guide secondary lesson planning: “[1] high standards for everyone in the class; [2] multiple entry and exit points; [3] authenticity; [4] flexibility; [5] broad use of specific educational strategies; and [6] purposeful student collaboration” (p. 27). They conclude that, by incorporating the six tenets into their pedagogy, teachers ultimately create greater inclusivity in the classroom and plan one comprehensive lesson rather than multiple focused lessons.

Fuchs and Fuchs (2016) highlighted several other programs to adapt group (vs. individual) instruction to meet the needs of more learners. These programs included: a) collaborative learning, b) reciprocal teaching, c) peer-assisted learning strategies, d) co-teaching, and e) behavioral consultations.

Application and Practice of Differentiation in Secondary Education

The models described in Section I approach differentiation from two general perspectives. One perspective attempts to anticipate diverse needs of all learners and minimize

interventions by incorporating preventive strategies into the general education curriculum, while the second perspective considers differentiation that responds to student academic challenges with intervention strategies.

Prevention: Curriculum Design for Diverse Learners

Universal Design for Learning principles, inclusive education, and inclusive pedagogy focus on designing overall curricula and lesson planning with prevention in mind. Developers of these frameworks posit that grounding broader ideas of what and how to learn in the planning process makes learning accessible to more students from the beginning and reduces the need for instructional interventions later.

Meo (2008) discussed how the UDL framework could be applied through the practice of planning for all learners, referred to as PAL (Planning for All Learners). Where the RtI authors focused more on the elementary level, Meo examined the application of PAL to build reading comprehension and vocabulary skills for high school students. Similar to Jones et al.'s (2012) later findings, Meo (2008) cited 2002 National Assessment of Education Progress statistics showing that 26% of 8th and 12th grade students “performed below basic levels in reading ... and competency,” as a rationale for high schools to teach reading comprehension to improve student outcomes (p. 23).

The PAL process involves a PAL team of regular and special education teachers and other specialists who collaborate on a plan that follows these four steps:

- 1) setting of goals;
- 2) analysis of current classroom and curriculum;
- 3) application of UDL to lesson planning/development;
- 4) teaching the lesson (Meo, 2008).

The PAL team has access to online resources and planning materials that provide a basis of support for instructing with evidence-based strategies.

Young and Luttenegeger (2014) applied their six tenets (see Section I) to offer suggestions for how to design and apply inclusive education and inclusive pedagogy principles in core academic subject areas at the secondary level. The authors explained that, with practice, general classroom teachers would be able to save time and require fewer interventions by designing a single lesson plan to meet more diverse learner needs versus responding and adding to/adapting lessons retroactively. Young and Luttenegeger used a high school science unit plan to provide concrete examples of how to apply the six tenets in a practical manner and consequently offer opportunities for all learners to achieve standards-based unit objectives.

Intervention: Differentiated Strategies to Respond to Students At-Risk of Academic Failure

As the name suggested, RtI is an intervention model. Research shows that there is wide variation in how RtI is applied and practiced. Kupzyk et al. (2012) explained the decision process to place students in the appropriate Tier in order to receive supports at the right level of intensity. They outlined a process of screening and progress-monitoring to identify students who need Tier 2 and Tier 3 supports and described how the system is designed to move students to higher levels of support when they fail to show adequate progress at their current level of support. They cited research that found 25% to as high as 70% of students did not respond to instruction in their levels. The authors used these findings to recommend methods for modifying instruction within tiers to provide additional opportunities for students to show adequate progress rather than transferring those students to higher levels. They applied Lentz and Shapiro's 1986 work on functional assessment frameworks to develop a two-part system for "examining different aspects of current instruction as a basis for recommending [simple] modifications

within tiers” at the classroom level (p. 221). The authors worked from an assumption that most RtI supports are confined to the classroom and developed their modifications with minimizing demands on the classroom teacher in mind.

Jones et al. (2012) described how RtI has focused mostly on improving reading for elementary students, while Owen (2012) included math as an additional focus area for RtI at the elementary level. Owen outlined the purpose of universal screening at the elementary level to identify the lowest performing 20% to receive Tier 2 and 3 supports, arguing that schools are not resourced to adequately accommodate more than 20% of their students requiring intensive interventions. Owen also explained that resources for universal screening are best deployed at the elementary level, assuming that students requiring higher levels of support at the secondary level will have already been identified and placement can be determined by teacher nomination. Like Kupzyk et al. (2012), Owen’s (2012) research looked at application of RtI as focused within the classroom, implemented by the classroom teacher. Only after the tiered supports fail to adequately support students did Owen recommend adding outside supports or identifying students for special education services.

Where Kupzyk et al. (2012) and Owen (2012) focused on Tiers 2 and 3, Jones et al. (2012) argued for adding more evidence-based instruction at the Tier 1 level where “effective practices need to be seamlessly included in everyday instruction” (p. 210). Jones et al. cited evidence from the 2007 National Center for Educational Statistics that indicated only one-third of students scored at or above grade-level proficiency in basic skills, and they argued that strengthening core academic programs in the RtI model could “result in more targeted, meaningful practices, including at Tier 1” (p. 211). Additionally, Jones et al. provided rationale that differentiation within the core curriculum, especially reading fluency and comprehension in

the elementary grades, is essential to building competent reading skills for future academic success across subject areas. The authors presented a reading instructional tool, called Repeated Reading, modified for the general classroom, as an example of how to apply an evidence-based practice in Tier 1 to improve reading fluency and comprehension, and they outlined practical strategies for teacher implementation.

Fuchs and Fuchs (2016) started their argument with evidence that most classrooms are not adaptive in practice. They summarized the qualities necessary for a classroom teacher to successfully differentiate/adapt instruction for all of their students and questioned whether it is realistic to assume that “the classroom is the right full-time educational environment for all students and that the classroom teacher is always the most appropriate educator” (p. 228). According to Fuchs and Fuchs, successful RtI extends beyond the classroom and necessarily involves professionals across the school in a system of instructional adaptations. The authors outlined a detailed system of instructional strategies, from generalists (classroom teachers) applying evidence-based instructional protocols to specialists (such as reading specialists) in the school using data-based individualization, to meet all students’ learning needs.

Evidence of Impact of Differentiation on Outcomes in Secondary Education

There are only a few examples of the effect of differentiated instruction on secondary education outcomes (Prewett et al., 2012). Mastropieri et al. (2006) described the challenges for students at the secondary level, especially those with learning disabilities, to meet the “increased demands on content area learning,” which can lead to frustration, academic failure, and “loss of future opportunities in society” (p. 130). The studies highlighted in this review demonstrated the effects of a range of differentiated strategies on student outcomes, not only for at-risk and diverse learners, but also for students in the overall population.

Impact of Differentiated Instruction Techniques on At-Risk and Diverse Learners

Two studies of secondary science students – one with high school freshmen, and one with 8th grade students – revealed positive effects of differentiating instruction by ability level for learning new content (Mastropieri et al., 2006; Richards & Omdal, 2007). In both studies, researchers used an inclusive approach to design unit lessons based on groupings derived from assessments of students' prior/background knowledge.

In a quasi-experimental study, Richards and Omdal (2007) used tests of background knowledge to create three subgroups in a tiered curriculum that varied depending on the learning needs of each subgroup. Results of this study supported that tiered differentiation was most effective for lower background knowledge (bottom 10%) students in increasing academic achievement. The combined means posttest scores for the control and treatment groups were not significantly different: combined control=18.14, combined treatment = 19.87. The combined means posttest score for low background knowledge students, however, showed notable improvement between the control and treatment groups: low background control = 11.39, low background treatment = 17.37. Additionally, the low background knowledge treatment means posttest (17.37) was closest to the midrange background knowledge (80%) control (18.20), suggesting that the low background students receiving differentiated instruction may have improved enough to move to a higher tier subgroup.

Mastropieri et al. (2006) conducted two different experiments that applied a peer tutoring strategy to increase science comprehension. Their 2005 study examined the impact of differentiated content embedded in tutoring materials for peer tutoring for high school chemistry students. The study results “revealed that experimental condition students with learning disabilities outperformed their comparison peers by 42.5%” on unit tests (p. 132). In the second

study, detailed in the report, researchers used proficiency data from previous high-stakes testing to determine peer groupings for 8th grade science classes. Differentiation for these peer groupings started at different levels of instruction depending on their placement. Results of this study indicated that differentiating activities with peer partners in middle school was effective in raising both unit test scores and end of year high-stakes scores. The “Covariate-Adjusted Mean by Group and Treatment Condition” for the experimental group was 458.87 on the end-of-year high-stakes test, and 438.05 for the control group (p. 135). The researchers hesitated to ascribe too much credit for the test results because of the limited scope of the study; they acknowledged that the nature of information covered in the study: scientific method and other “generalizable information” may have improved students’ overall knowledge sufficiently to increase test scores (p. 136).

Impact of Differentiated Instruction on Overall Student Population

Prewett et al. (2012) conducted an exploratory, multiphase study of 40 diverse middle schools across the United States to examine the effect of RtI at the secondary level. The schools they followed in their study were at various stages of implementing RtI strategies following elementary models, and Prewett et al. evaluated the degree to which schools adhered to RtI principles in practice as part of the study. Results suggested that, while there is still insufficient evidence to suggest that RtI is effective at the middle school level, there may be potential for RtI strategies to impact academic and behavioral success.

Reflecting back on the Richards and Omdal (2007) study of differentiated instruction in tiered groups of high school freshmen science classes, while the results supported improvement of low background knowledge students in the treatment group they did not show notable improvement for the midrange (80%) and high background knowledge students (top 10%). The

results supported a narrowing of the score ranges of the three tiers in the treatment group with the most change at the low background tier, as previously noted. As far as the overall student population, the combined means posttest scores between midrange and high background knowledge control and treatment groups were not significantly different: control = 18.20 / treatment = 19.50 for the midrange groups, and control = 23.66 / treatment = 23.86 for the high groups. The authors discussed some of the testing limitations that may have contributed to the very small differences between scores for the midrange to high background students and recommended adjustments to future studies to address limitations. While the gains for midrange and high background knowledge groups may not have been significantly different between control and treatment groups, there was significant improvement in the low background knowledge treatment group compared to the control.

Fruth and Woods (2015) conducted a posttest only, quasi-experimental design study to examine the impact of an inclusive environment on 10th grade students without disabilities. The test included social studies, science, reading and math – and the results indicated that there was “no significant difference in performance” for students without disabilities in inclusive environments versus segregated environments in any of the subject areas except for math (p. 358). The null hypothesis was rejected in math where students without disabilities performed notably higher in a segregated environment than in the inclusive environment. The researchers noted that stakeholders, teachers, and administrators should examine the results of the study as they establish policies and funding for accommodating students with disabilities in general education (inclusive) environments. With the exception of math, the effects on students without disabilities does not appear to be deleterious, as “student [without disabilities] performance was unaffected by the presence and the needs of students with disabilities in the inclusive classroom”

(p. 360). In other words, for most subjects, creating inclusive classrooms did not have a negative effect on academic performance and may have strong social benefits for both student populations.

While there is not conclusive evidence in these studies to suggest that differentiated instruction improves academic outcomes for the overall student population, there is evidence to support the benefits of differentiated instruction for students with disabilities or at-risk for failure at the secondary level.

Factors Impacting Implementation of Differentiated Instruction

“... [W]ell-intentioned initiatives are destined to die on the vine unless accompanied by a vibrant support system” (Jones et al., 2012, p. 216). The success of differentiating instruction to improve student outcomes regardless of model, relies on a highly organized, evidence-based, carefully resourced, administratively supported and staffed system of differentiated instruction strategies. A brief discussion of barriers to successful implementation of differentiated instruction strategies and effective support systems/practices follows to address these points.

Leadership and Administrative Factors

The literature included in this review agrees that the “success [of RtI, UDL, and other differentiated strategies] hinges on the support it receives from school leaders” (Sansoti, Noltemeyer, & Goss, 2010, p. 287). Sansoti et al. examined school leadership perceptions of differentiated instruction at the secondary level as a necessary component to establishing school-wide culture acceptance of adoption and implementation of differentiated strategies. An email survey completed by 476 secondary principals and assistant/vice-principals concluded that these secondary school leaders recognized the benefits of RtI and supported the importance and implementation of RtI, but that they faced challenges to actualization of such plans. There were

additional dichotomies noted between support for evidence-based accountability and intervention, and the lack of actual systems to implement or measure results.

Prewett et al. (2012) prefaced their discussion of factors impacting implementation of RtI strategies by emphasizing the importance of addressing “contextual and cultural features of RtI ... [before the] ... essential components” (p. 146). They classified contextual features as specific RtI professional development, administrator-led implementation, and support from both school and district level staff. Cultural features refer to how the school leadership establishes and facilitates a supportive climate within all areas of the school (Owen, 2012; Prewett et al., 2012). Researchers noted that “staff support and buy-in was the key underpinning of the implementation process” (Prewett et al, 2012, p. 146).

Jones et al. (2012) pointed out the importance of support for the classroom teachers, especially the critical role of school psychologists in training and empowering teachers who differentiate instruction. Like Prewett et al. (2012), Jones et al. (2012), Kupzyk et al. (2012), Owen (2012), and Richards and Omdal (2007) all stressed the necessity of coaching and professional development, training on progress-monitoring techniques, effective appropriation of resources, and sufficient time to help guide implementation of differentiated instruction by classroom teachers.

Education Standards

As one of the goals for differentiating instruction is for more (ideally all) students to perform at grade-level proficiency, adhering to education standards is a factor impacting implementation of differentiated instruction. Jones et al. (2012) asserted that school leadership needs to take “the responsibility for ensuring the fidelity of intervention implementation” (p.

216). Aligning differentiated instruction with standards is one method of ensuring that interventions meet the needs of students as defined by policies.

In their research on the question of the compatibility of education standards and differentiation, McTighe and Brown (2005) noted that “standards-based education and differentiated instruction not only can co-exist, but must function together as two sides of the same accountability coin” (p. 235). The authors elaborated four key principles connecting differentiation to outcomes, assessment, evaluation, and robust activities to reinforce “core curriculum content” (p. 236). These are: a) curriculum standards that clearly identify the big picture concepts that students need to understand; b) “purposeful, active, and inquiry-driven teaching and learning activities” to engage students in their own learning; c) demonstrations of student understanding by assessment through a range of methods; and d) responsive teaching that puts the student at the center of the instruction through ongoing progress-monitoring relative to standards (p. 236).

In summary, *what* students learn should adhere to established education standards and policies. *how* students learn can and should vary; there are many paths to knowledge.

Demographic Factors

Even when all of the mechanisms are in place to implement adequately supported and resourced differentiation, demographic factors may impact the effectiveness of the instruction. Ameliorating the effects of learning disabilities on student outcomes is a clear focus of many of the studies in this review, however, barriers such as socioeconomic status, cultural differences, language, race, and absenteeism can all impact student outcomes (Fuchs & Fuchs, 2016; Kupzyk, et al., 2012; Meo, 2008; Young & Luttenegeger, 2014).

Fuchs and Fuchs (2016) reported that poor academic achievement may be highly attributed to poverty and cited a Shumer (2014) report that stated that “21% of children in America live in poverty” (p. 225). Students from low socioeconomic backgrounds may be hungry, inadequately sheltered or clothed, poorly supervised, and have parent(s)/caregiver(s) who are unable to be active participants in these children’s educations. Issues associated with poverty can create significant barriers to a student’s readiness to learn.

Meo (2008) and Young and Luttenegger (2014) outlined some of the cultural obstacles to learning. English language learners may require additional supports to be successful students. Ethnic and racial minorities may not have the background cultural knowledge to be able to understand majority culture references in texts that others may take for granted (Meo, 2008). Fuchs and Fuchs (2016) pointed to the influence of “out-of-school experiences and interests” on students’ ability to access knowledge (p. 225).

In their discussion about frequency of instruction as a factor influencing the effectiveness of differentiated instruction, Kupzyk et al. (2012) noted that the schedule of instruction may be appropriate, but frequent student absenteeism may interrupt the intended flow of information and present obstacles to success.

Demographic risk factors present potential challenges to differentiated instruction designers and need to be accounted for in planning and mitigated wherever possible.

Summary

This review of the literature reveals the challenges inherent in designing and implementing differentiated instruction strategies to improve student outcomes. Models generally follow a preventive approach, like universal design for learning (or other inclusive education or pedagogies), that attempt to limit poor outcomes through holistic curriculum design,

or an intervention approach like Response-to-Intervention that responds to identified needs of students at-risk of academic failure.

Differentiated instruction has demonstrated mixed results at the secondary level, with some evidence supporting improved outcomes for students with disabilities. More specific research is necessary to determine the effectiveness of differentiation at the secondary level. Many factors affect the effectiveness of differentiation and impact its implementation. There is consensus in the literature about the importance of school leadership and administrative support in order for differentiated instruction to have a chance of success in the classroom. Strategies must align with education standards to be effective, and schools need to take demographic factors into account as they develop differentiated instruction programs for their particular populations.

CHAPTER III

METHODS

Design

The study was a quasi-experimental design. The researcher arranged permission from a public high school in the Anne Arundel County Public School district (AACPS) in Maryland to conduct the study using two, grade-10 classes of standard-level English. Both classes were taught by the same instructor. The high school follows a block schedule with classes meeting every other day for 90 minutes. Both classes used for this study met during first period. One class was designated as the control group and did not receive any differentiated instruction beyond the standard lesson plan. The other class was designated as the treatment group and received a redesigned lesson plan that included differentiated instruction. Following the administration of the lessons, the study measured the effects of differentiated instruction on the difference between participants' performance on the essay portion of the AACPS 3rd Quarter English Assessment compared to their performance on the pre-assessment. The dependent variable for the study was the essay score on the AACPS 3rd quarter assessment completed by both the treatment group and the control group. The independent variable for the study was the interactive, differentiated instruction woven into the lesson plan for the treatment group. In order to minimize unintended variables, the researcher never went to the high school and did not meet or interact with the participants. The instructor did not tell the treatment or control groups about the study so as not to influence their behavior.

Participants

The study participants consisted of students who were preassigned to two, grade-10 standard-level English classes at a suburban high school with an enrollment of 2,020 students (MSDE, 2018) located in Anne Arundel County, between Baltimore and Annapolis, Maryland.

Participant identities were anonymized for the purpose of this study with the exception of the general demographic make-up of each class as detailed in Table 1. Overall, study participants reflected the demographics of the surrounding community. All study participants were in 10th grade (note: the instructor reported that at least one study participant was repeating 10th grade). In addition to number, gender, and ethnicity of participants in each study group, the table also details students receiving free and reduced meals (FARMS), students with disabilities (SWD) and students with limited English proficiency (LEP).

Table 1

Overview of Participant Demographics by Study Group

Study Group	Total Students	Gender		FARMS		Ethnicity				SWD	Active LEP
		M	F	% Yes	BL/AF AM	White	Multi-Racial	Asian	Hisp.	Yes	
Treatment	17	9	8	47%	5	5	1	1	5	0	1
Control	24	11	13	58%	7	9	2	1	5	0	1

The study groups comprised a general balance of gender representation and racial/ethnic diversity. Of note was the fact that 47% and 58% of the respective Treatment and Control participants were classified as FARMS, which suggested those participants came from lower socioeconomic environments. None of the participants were classified as having disabilities, and only one student per study group had limited English proficiency.

Instrument

Anne Arundel County Public Schools mandates that all high school English classes administer a district-created quarterly assessment (AACPS, 2019). The 3rd Quarter Assessment for English Standard 10 asked students to demonstrate their ability to transfer skills related to characterization in a novel by completing multiple choice and essay responses to excerpts from unfamiliar text. The pre-assessment included an essay response only. For the purposes of this study, only the essay score from the 3rd quarter assessment was analyzed against the essay score from the pre-assessment.

Procedure

The researcher met with the instructor in person three times prior to administering the study to adapt the researcher's initial study design to existing constraints: a) AACPS guiding curriculum and testing requirements, b) high school schedule, c) classroom environment (physical space, available materials/technology), and d) instructor/student needs. The researcher adapted the study to leverage students' prior knowledge and familiar academic tools, embedding differentiated techniques designed to engage participants and develop skills recommended for 21st century learners by integrating elements of the Four Cs: a) creativity, b) critical thinking/problem-solving, c) communication, and d) collaboration. Once the researcher and the instructor agreed on the design's logic and feasibility, the researcher prepared all of the materials required to administer the study and provided pre-study training to the instructor on how to administer the differentiated lesson plan to the treatment group. Additional study components included administering AACPS district-created pre-and post-test instruments to measure results. The instructor scored the assessments and provided the raw scores to the researcher. The scores

were then analyzed and compared to determine the effects of differentiated instruction on student outcomes.

The 3rd quarter instructional unit focused on understanding characterization, character contribution to theme, and character similarities/differences as articulated by the AACPS Department of Academic & Strategic Initiatives for English Standard 10 Overview (Appendix A). William Golding's novel, *Lord of the Flies*, was one of the mechanisms through which students would meet 3rd quarter unit goals. The researcher and the instructor designed the study's differentiated lesson plan to coincide with students beginning their *Lord of the Flies* unit activities.

Lesson Sequence

Prior to the first day of the lesson, the instructor divided the treatment group into three groups (5-6 students per group) with a balance of skills across the groups to maximize engagement in the interactive lesson. Refer to Table 2 for the breakdown of lesson components between the treatment group and the control group.

Table 2

Components of Differentiated Lesson Plan vs Standard Lesson Plan

	Treatment Group	Control Group
Listen to audio of chapter 1, <i>Lord of the Flies</i>	Yes	Yes
Classroom copies of <i>Lord of the Flies</i>	No	Yes. Students could read along with the audio but were not allowed to mark in the text.
PDF copies of chapter 1, <i>Lord of the Flies</i>	Yes. Students actively read along with the audio, stopped and talked, highlighted and made notes in text.	No
Interactive S.T.E.A.L. characterization activity with materials for use at group tables and on Post-it Charts.	Yes. Students worked with their copies of Ch. 1 and the interactive materials at their table groups to identify and show characterization of their assigned character.	No
Thinking Map worksheet	No	Yes
Class Discussion	Yes	Yes
Characterization Reinforcement Worksheet. Transfer Skill.	Yes	Yes
3-2-1 Character Reflection Activity	Yes	No
3 rd Quarter Assessment	Yes	Yes

Lesson Day 1: Treatment Group. Students gathered into assigned table groups and decided their group roles using a familiar group role format:

- 1) Researchers were responsible for leading the effort to identify relevant textual examples.
- 2) Recorders were responsible for writing down group findings and conclusions.
- 3) Reporter was responsible for communications.

- 4) Re-focuser was responsible for time management and keeping the group on track.

The instructor gave an overview of the activity and table materials. The class began listening to an audio recording of *Lord of the Flies* chapter 1, following along in their printed copies, stopping to discuss and highlight/mark examples of theme, S.T.E.A.L. characterization (Appendix B), etc.

Lesson Day 2: Treatment Group. Students continued listening to chapter 1 and began working on the interactive activity (Appendix B). Using dry erase tables and the S.T.E.A.L. characterization chart to create mind maps with the textual example cards/emojis and other materials, table groups worked together to compose answers to the following questions related to their assigned character (Piggy, Ralph, or Jack):

- 1) What is this character like?
- 2) How do I know?

The instructor shared a model of the S.T.E.A.L. characterization using the character, Simon, as guidance on possible material use and responses.

Lesson Day 3: Treatment Group. Table groups completed their interactive activity and organized their table group characterization responses onto Post-it Charts to share with other table groups and display in the classroom (Appendix B). The instructor graded this as a summative quiz. Students participated in an instructor-guided class discussion (Appendix B). Students then completed the “Character Reinforcement – Students’ Turn to Select a Character” transfer activity worksheet (Appendix B) for homework as a summative assessment grade.

Lesson Day 4: Treatment Group. The instructor provided time for table groups to study each other’s characterization Post-it charts and revise their group charts.

Lesson Day 5: Treatment Group. Students completed the 3rd Quarter Assessment.

Lesson Day 6: Treatment Group. Students completed a 3-2-1 Character Reflection (Appendix B) activity to reinforce lesson objectives.

Lesson Days 1-3: Control Group. The class listened to an audio recording of *Lord of the Flies* chapter 1, following along in their classroom copies, stopping to discuss examples of theme, S.T.E.A.L. characterization, etc. In class, students completed thinking maps about the characters in the novel. Students completed the “Character Reinforcement – Students’ Turn to Select a Character” transfer activity worksheet for homework as a summative assessment grade. Students participated in an instructor-guided class discussion (Appendix B).

Lesson Day 4: Control Group. Students completed the 3rd quarter assessment.

CHAPTER IV

RESULTS

As shown in Table 3, there were 14 participants in the treatment group, and a total of 18 students in the control group. The average pre-assessment score for the treatment group was 0.64 while their average post-assessment score was 4.84. Thus, there was a difference of 4.20 in terms of growth between these assessments for the treatment group. The average pre-assessment score for the control group was 1.78 with an average post-assessment score of 5.14. There was a difference of 3.36 in terms of growth between the assessments for the control group.

Table 3

Assessment and Growth Means for Treatment and Control Groups

Group Name	Number of Participants	Average Pre-Assessment Score	Average Post-Assessment Score	Difference/Growth
Treatment	14	0.64	4.84	4.20
Control	18	1.78	5.14	3.36

Table 4 shows that in this study, there was not a statistically significant difference when comparing the treatment and control groups' growth means. The growth mean for students in the treatment group was 4.20 with a standard deviation of 2.84. The growth mean for students in the control group was 3.36 with a standard deviation of 2.44. The significance level for this t-test analysis was $p > .05$ at .749, and therefore there was a failure to reject the null hypothesis.

Table 4

Independent Groups t-Test Analysis for Treatment and Control Group Growth Means

Group Name	N	Average Growth Score	SD	t	df	p
Treatment	14	4.20	2.84	-.323	30	.749
Control	18	3.36	2.44			

CHAPTER V

DISCUSSION

This study examined if the impact of differentiated instruction in a secondary English class would result in measurable improvement in assessment scores compared to an English class receiving regular instruction. The study design relied on an interactive lesson plan that incorporated multiple points of entry for students with a variety of learning preferences.

As stated in Chapter IV, study results were determined using descriptive statistics in the form of growth means to determine any change in scores from the pre- to post-assessment. Analysis of the results of an independent t-test conducted to determine statistically significant differences indicated that the study failed to reject the null hypothesis. In other words, even though the treatment group growth mean scores improved slightly from the pre- to post-assessment, the difference was not determined to be significant. Several limitations, outlined in this chapter, may have contributed to the result.

Additionally, reflection on the overall experience of executing the study suggests the presence of similar concerns, as stated in the literature in Chapter II, about factors affecting implementation of differentiated instruction.

Implication of Results

The results suggest that it may be possible to improve outcomes for secondary students with differentiated instruction. The effect measured is not statistically significant enough to draw any larger implications for policy or practice at this time without further research.

An effect of the study that was not measured was an increased sense of student engagement, as described to the researcher by the instructor. Increased interest in lessons may improve classroom climate and lead to greater academic engagement.

Theoretical Consequences

This study measured the effect of one differentiated lesson design using an existing district-wide assessment instrument. Differentiation is one component of educational theory and represents a wide range of methods and techniques for increasing access to knowledge for diverse learners. The results of this study and the experiences of the study participants contribute to the body of knowledge related to differentiation as a pedagogical approach.

Threats to Validity

Several factors in study design, implementation, and execution threatened the validity of the study, both internally and externally. These limitations in design and process detract from the research goal of examining the potential for differentiation to become a substantive educational tool and would need to be addressed to improve the trustworthiness and generalizability of any subsequent studies.

Internal Threats to Validity

Conflicts to continuity.

Repeated schedule interruptions disrupted continuity of lessons and student learning. Even with careful collaboration with the classroom instructor, scheduling conflicts impacted the execution of the study which was intended to run on two to three consecutive lesson days. After unanticipated midterm assessment requirements, conferences, student absences, and snow days, the study ended up taking six days over the course of several weeks. This nonconsecutive sequence, combined with the instructor's decision to eliminate one important component of the study plan in response to these scheduling difficulties, diminished students' ability to stay engaged with the process and learning objectives.

Assumptions.

After several meetings with the classroom instructor to collaborate on the lesson design, the researcher assumed that the instructor understood the purpose and flow of the study enough to adapt effectively as conditions changed. However, in a good faith effort to meet all department expectations and conduct the study, the instructor rearranged or deleted several components of the study that were intended to create continuity and build student skills. The researcher assumed instructor/student familiarity with existing classroom resources and did not provide explicit training in the use of these resources in the study. Because the instructor had not used the white board surface group tables previously, and students did not understand what speech box and thought bubble graphics represented, students did not have full advantage of adapting familiar tools to a new application. Ultimately, the changes did not impact the overall intent and goals of the study, but they may have impacted the results.

Instructor Training.

Conversations during study planning were insufficient preparation for the instructor to internalize differentiated instruction techniques. It is incumbent on the researcher to train/model techniques used in the study, and where possible, in the actual study space. The researcher/trainer should provide clear rationale to connect techniques to learning objectives and study goals.

External Threats to Validity**Situational factors.**

The study was conducted during first period classes. The instructor reported that first period had a higher rate of tardiness and absence than the other periods in the school day. Students arriving late for the start of the day impacted how the study progressed. This effect may not be generalizable to other time periods.

Pre- and post-test effects.

The study used a hybrid design model that relied on existing district pre- and post-test assessments that measure transfer skills. Replicating the study outside of the district would require redesign of the pre- and post-test measurement instrument and is therefore not generalizable as a stand-alone study.

Sample feature.

In the treatment group, eight students received a '0' score on the pretest. Study results were calculated using scores for students with both pre and posttest score data. Because the study results represent only half of the treatment group, there may have been an effect that was not measured, and therefore, the results may not be generalizable.

Connections to Previous Studies and Existing Literature

Whether applied as a preventive strategy (Universal Design for Learning), or in response to identified areas of academic weakness (Response-to-Intervention), differentiated instruction can be a valuable tool to strengthen core academic programs (Jones, Yssel, & Grant, 2012).

This study contrasted with two previous studies of general secondary populations (Mastropieri et al., 2006; Richards & Omdal, 2007) described in Chapter II which suggested that differentiated instruction can close achievement gaps between high- and low-level learners, especially by improving outcomes for lower level learners. While this study did suggest that student interest in academic lessons improved, more research is needed at the secondary level to measure the impact of differentiation on student outcomes.

As stated in Chapter II, and as evidenced in this study, successful differentiation faces challenges in implementation. It is incumbent on the researcher to never assume that teachers know how to differentiate. Any valid study design must include training and mentorship. Prewet

et al. (2012), Jones et al. (2012), Kupzyk, et al., (2012), Owen (2012), and Richards and Omdal (2007) all discussed the importance of providing sufficient professional development, effective appropriation of resources, and dedicated time for classroom teachers to implement differentiated instruction successfully.

In addition to robust teacher training, Prewett et al. (2012) and Owen (2012) stressed the importance of administrators and leaders promoting and establishing an appropriate supportive climate for integrating differentiated instruction in the school curriculum. One of the ways administrators could support teachers is by minimizing disruptions to classroom instruction time.

Differentiated instruction can be a powerful tool to improve inclusivity for increasingly diverse student populations. The participants in this study generally came from a lower socioeconomic background. Even though the instructor was frustrated by chronic absenteeism, she empathized with the fact that many of the study participants faced family challenges outside of the classroom that affected their readiness to learn first thing in the morning. This aligns with the environmental factors that Fuchs and Fuchs (2016) suggested might impact students' ability to access knowledge. Students from low socioeconomic backgrounds may experience poor academic achievement due to factors related to poverty. Kupzyk et al. (2012) pointed out how absenteeism could be an obstacle to success by disrupting the flow of information and decreasing the effectiveness of differentiated instruction.

Recommendations for Future Research

Future research on the impact of differentiated instruction on secondary academic outcomes would benefit from a long-term, larger scale study that designs a grade-level curriculum interwoven with differentiated techniques, and includes robust professional development, strong administrative support, and dedicated resources. By its nature, differentiation encompasses a

range of techniques that impact other factors that have been shown to have a positive effect on learner outcomes, such as: a) classroom climate, b) student attitudes, c) engagement and motivation, d) grade level, and e) the effectiveness of group vs individual instruction. Future research can study any of these specific variables to build a body of evidence for how and where differentiation improves learners' educational experience and outcomes.

Summary and Conclusions

The instructor who administered the study was motivated to participate in the study by a desire to shift how she interacts with her students in order to increase student engagement and foster a more positive classroom climate. She described grappling with chronic absenteeism, perceived apathy, and disengagement in her students. The instructor reported that once groups settled into the study activity, they were engaged and interested. This experience reflects how differentiation can contribute to improving learner attitudes.

The researcher bears the responsibility of assuring that the study design is unambiguous so that individuals administering the study understand what elements are critical to the design and where there is flexibility in implementation. It is imperative for the researcher to carefully articulate all aspects of the study to minimize differences in knowledge and experience that may exist between study participants and administrators.

Differentiated instruction has the potential to transform the mundane worksheet and assessment driven classroom into a vibrant community of engaged learners. With intentional preparation and professional development, educators can apply these multi-faceted learning strategies to leverage student strengths while addressing student weaknesses. The more diverse opportunities there are for learners to interact with content and process, the more they can develop a range of skills that they can apply/transfer to real world experiences.

As society moves more toward a future of automation and artificial intelligence, differentiated instruction can play a key role in 21st century education by offering dynamic and engaging opportunities for education leaders to weave the Four Cs into pedagogy and curricula. With or without a direct correlation to improved academic outcomes, differentiation provides a flexible framework for educators to reshape classroom environments toward building students' critical thinking, collaboration, communication, and creative skills.

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Appendix A

Guiding Curriculum

Anne Arundel County Public Schools Department of Academics & Strategic Initiatives

English Standard 10 Semester 2 Quarter 3

Essential Question: Can progress be made without conflict?

Overview

In literature, conflict is an integral part of the plot of a story. In this unit students will examine whether or not conflict plays an important role in moving groups to resolution by reading and analyzing texts, engaging in thoughtful discussion, and collaborating in a variety of student-centered activities that help them discuss this question. Students will continually ask the following questions as they progress through the strands in this unit. Does conflict help both parties better understand their goals or future plans? Did conflict help both parties better understand their goals or fine tune their plans? Can true progress be made without conflict?


In this unit, students will write a full process essay comparing and contrasting two different characters from two different short stories. Students will also engage in Touchstones discussions in an effort to increase their ability to participate in academic discussions in a meaningful way. Students will also read Golding's *Lord of the Flies*. While reading, they will use the critical lenses (psychological, Marxist, archetypal) to analyze the text and gain deeper understanding of the essential questions.

The AACPS Quarterly Assessment will focus on literary analysis, such as character development, complex characterization, or how a character contributes to the development of a theme.

Appendix B

Supporting Materials

Researcher-adapted material for treatment group



Methods of Characterization

STEAL

Authors reveal the traits of their characters through action, dialogue, and direct statements.

- **Speech** (a character's own words)
- **Thoughts** (What a character thinks)
- **Effects on Others** (how other characters in the story feel and interact with a character)
- **Actions** (what a character does)
- **Looks** (how a character looks)

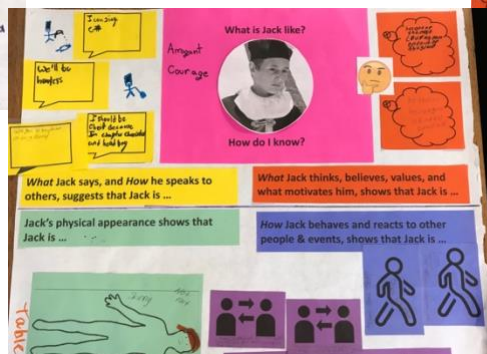
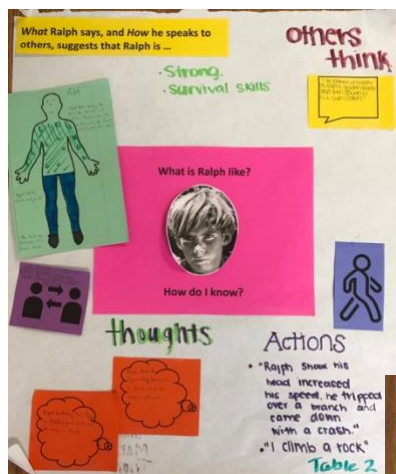
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Researcher-created material for treatment group

Model S.T.E.A.L. characterization activity using the character, Simon, demonstrated how students might use provided interactive materials to engage with and complete the activity. The Simon model simulated dry erase tabletop surfaces available to groups.



Photos of the completed treatment group S.T.E.A.L. characterization Post-it charts.



Researcher-created material for both treatment and control groups

Instructor-guided class discussion questions.

- 1) How does the author use the characters in the novel to build the main ideas/themes?
 - a. How do the characters help me understand the idea of 'Rules and Order' as a main theme in the text?
 - b. How do the characters help me understand the idea of 'Power' as a main theme in the text?
- 2) What do the characters need to accomplish (what is their goal)?
 - a. What are some examples of conflicts that arise between the characters in chapter 1 as they work toward their goal?
 - b. How might these conflicts help the characters make progress toward their goal?
- 3) How can we compare and contrast the characters?
 - a. How are the characters similar?
 - b. How are the characters different?
- 4) How are the characters relatable today? What kinds of people do they remind you of?

Instructor-provided worksheet for use by both treatment and control groups

Name: _____ Class Pd: _____ Date: _____

Characterization Reinforcement – Students' Turn to Select a Character

We've discussed the characterization of people from our reading and now you have an opportunity to characterize someone of your choosing. Turn completed assignment into the turn in bin for your class period.

STEP ONE: Pick a character in one of your favorite movies/tv shows/video games.

STEP TWO: List **six character traits** that this character possess. Think about qualities like leadership, generosity, kindness, courtesy, loving, optimistic, cruel, rude, playful, funny, cunning, intelligent, and malicious.

STEP THREE: Complete the box below explaining how you know that your character has the traits you listed above.

DESCRIPTION	WHAT THE CHARACTER DOES
WHAT THE CHARACTER SAYS/THINKS	WHAT OTHERS DO/SAY/THINK ABOUT THEM

Researcher-created material for treatment group

Name _____

3-2-1 Character Reflection

List 3 character traits of your group's character (character's name _____)

2 textual examples to support your character's traits

1 trait about another group's character (character's name _____)