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Differentiated instruction in the secondary social studies classroom

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Differentiated instruction in the secondary social studies classroom

Abstract

As an educator with fifteen years of experience, this author has experienced the frustrations of having to teach a wide range of student abilities at the secondary social studies level. There is a lot of support for differentiated instruction for special education, TAG, and elementary students, but there seems to be questions about the practicality and effectiveness of it in a secondary classroom.

The issues discussed in this paper will focus on the following questions: 1) Does Differentiated Instruction affect student learning? 2) Can Differentiated Instruction be implemented with secondary teachers in a practical way to help student learning and improve teaching without overwhelming the teacher?

DIFFERENTIATED INSTRUCTION IN THE SECONDARY SOCIAL STUDIES
CLASSROOM

Submitted

In Partial Fulfillment

of the Requirements for the Degree

Masters of Arts in Education

Chad A. Christopher

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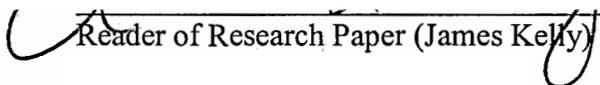
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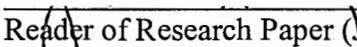
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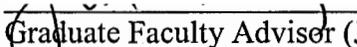
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TABLE OF CONTENTS

Chapter I

Introduction.....	4
Statement of the Problem.....	5
Significance of the Problem.....	5
Definition of Terms.....	7
Organization of the Paper.....	7

Chapter II

Background.....	9
Supporting Findings.....	11

Chapter III

Higher Thinking.....	16
Curriculum Development.....	18
Using Technology.....	20
Challenging Students and Student Choices.....	21
Learning Styles.....	23
Flexible Grouping and Choices.....	25
Peer-Assisted Learning.....	27
Varied Ability Learning.....	29

Chapter IV

Readiness.....	32
Interests.....	36
Learning Profiles.....	40

Chapter V

Ways to Differentiate.....	46
Readiness and Learning Style.....	47
Readiness.....	47
Interest.....	49
Learning Profile.....	49
Learning Profile and Interest.....	50

Chapter VI

Summary.....	52
Implications.....	53
Conclusion.....	55

Appendix	57
----------	----

References	66
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Introduction

For many years schools have developed different ways to help students learn. Throughout time the education system has learned that students come to school from a diverse population equipped with multiple intelligences and a wide range of different learning styles. Consequently, students have also been put into programs such as Talented and Gifted (TAG) and Special Education. In response to the varied behaviors of these students, educators have developed different models of instruction: cooperative learning, direct instruction, inquiry based learning, constructivism and many others. Students today are fully integrated into the classroom and thus the teachers have to instruct all of them at the same time.

The term “differentiated instruction” is being used by educators to communicate the diverse ways that students learn. As an educator with fifteen years of experience, this author has experienced the frustrations of having to teach a wide range of student abilities at the secondary social studies level. For example this author has been exposed to different models such as 4MAT which entails the use of right and left-brain strategies within four distinct phases of the learning cycle: experiencing, conceptualizing, applying and creating. TESA (Teacher Expectation and Student Achievement) is another model designed to modify the way teachers interact with students through heightened awareness of how perceptions affect their expectations. These models showed that even more work needs to be done to help students learn. There is a lot of support for differentiated instruction for special education, TAG, and elementary students, but there seems to be questions about the practicality and effectiveness of it in a secondary classroom.

Statement of Problem

The biggest mistake of past centuries in teaching has been to treat all children as if they were variants of the same individual, and thus to feel justified in teaching them in the same way (Howard Gardner cited in Siegel & Shaughnessy, 1994). There are two reasons to explain this tendency at the secondary level. First, secondary teachers may teach between 100-150 students in a day. To get to know these students and then adjust the instruction to fit individual students can be quite a difficult task. Another reason is that secondary teachers may not have the training to teach an array of different learners. Much of a secondary teacher's training is done in the content area, and thus, he/she gets limited training in differentiated instruction. Teachers need to know how to respond to the burgeoning diversity of contemporary classrooms (Fisher and Rose, 2001; Flem et al., 2000; McCoy and Ketterlin-Geller, 2004; Mulroy and Eddinger, 2003; Sizer, 1999; Tomlinson, 2001b, 2004a). The issues discussed in this paper will focus on the following questions:

- 1) Does Differentiated Instruction affect student learning?
- 2) Can Differentiated Instruction be implemented with secondary teachers in a practical way to help student learning and improve teaching without overwhelming the teacher?

Significance of the Problem

Today, students come from increasing culturally and linguistically diverse backgrounds in which parental expectation and community norms may be at odds with traditional schooling (Lapkoff & Li, 2007). The heterogeneous classroom, as we have known it, provides a learning environment similar to the one where students will one day

work, worship, and live together, while permitting students to achieve educational success on their own terms. That may be more consistent with our nation's democratic goals than traditional classrooms. Thus, the heterogeneous classroom may prepare students more effectively for real-life situations, now and in the future (George, 2005). Society is very diverse and people need to be able to adjust to individual differences.

A survey of high school teachers (Hootstein, 1998) found that 90% felt addressing academic differences is important or very important. Even 10 years ago secondary teachers identified that making certain they deal with the distinctions of their students has to be more of a focus.

The problem is becoming so significant at the secondary level that it is being addressed at the national level by administrators. One of the key reform goals of the National Association for Secondary School Principals (2004) is to ensure that teachers teach in ways that accommodate individual learning differences. Also, middle school critics and advocates advise that "classes should include students of diverse needs, achievement levels, interests and learning styles, and instruction should be differentiated to take advantage of the diversity, not ignore it" (Jackson & Davis, 2000, p. 23).

The issue of differentiated instruction is an important one, given the diversity of the student population, the realization that secondary teachers see there is a problem and the fact that administrators have made it a key reform goal. But is there evidence to prove that differentiated instruction improves student learning, especially in a regular mixed secondary social studies classroom? Also, is it realistic to expect secondary teachers to differentiate for so many different students? This paper will present a review of literature to answer these questions and an array of information about differentiated instruction that

may help secondary teachers understand and develop their own ideas of differentiated instruction.

Definitions of Terms

Many of the terms in this paper will be familiar to the readers, but I would like to clarify some grade levels and the key working term of the paper:

- 1) Differentiated instruction is defined by Tomlinson (2005), a leading expert in this field, as a philosophy of teaching that is based on the premise that students learn best when their teachers accommodate the differences in their readiness levels, interests, and learning profiles.
- 2) Readiness will be referred to in this paper as a student's ability and willingness to move above their current level. Are they prepared to be pushed to a new stage of learning?
- 3) Interests will be defined in terms of what a student likes with task and specific content within a subject area.
- 4) Learning profile refers to a student's preferred mode of learning that can be affected by a number of factors, including learning style, intelligence preference, gender, and culture.

Organization of the Paper

This paper is organized into five chapters. Chapter One introduces the issue, examines the problem and its significance, and offers definitions of terminology used in this paper and other similar literature. Chapter Two examines supporting recommendations made by some of the leading educators and researchers in differentiated instruction. Chapter Three will focus on specific aspects of differentiated

instruction through published research studies with reflections about the quality and problems with the research. Chapter Four is an analysis of the research in the previous mentioned research organized by how it fits into the framework of readiness, student interest, and learning profile and how that research can fit into a secondary social studies classroom. In Chapter Five the author addresses ways that a secondary social studies teacher can fit differentiated instruction into their classroom. Chapter Six concludes the information in this paper and recommendations for further studies.

Chapter II

This chapter will start with background information about differentiated instruction to show the theory and research base behind differentiated instruction. Even though there is no specific beginning point for differentiated instruction there is some fundamental groundwork that is supported by research of some modern educators. Two other models of educating a wide range of learners will be addressed which use aspects of differentiated instruction. The next section will refer to some papers in support of differentiated instruction. These papers are not studies themselves but help to explain the basis for and various aspects of differentiated instruction through research.

Background

There is no official history or discovery of differentiated instruction. As far as here in the United States, it is safe to say that the first teachers who used differentiated instruction were the teachers in the one room schoolhouses. Those teachers often had multiage students in their classrooms and thus had to differentiate their instruction. Teachers made plans based on the students' abilities and needs.

According to the proponents of differentiation, the principles and guidelines are rooted in years of educational theory and research. For example, differentiated instruction adopts the concept of "readiness." That is the difficulty of skills taught should be slightly in advance of the child's current level of mastery. This is grounded in the work of Lev Vygotsky (1978), and the zone of proximal development (ZPD), the range at which learning takes place (Hall, 2002). ZPD is the difference between what a child can do with help and what he or she can do without guidance.

The classroom research, by Fisher et al. (1980), strongly supports the ZPD concept. The researchers found that in classrooms where individuals were performing at a level of about 80% accuracy, students learned more and felt better about themselves and the subject area under study (Hall, 2002).

Other practices, considered central to differentiation, have been validated in the effective teaching research conducted from the mid 1980's to the present. These practices include effective management procedures, grouping students for instruction, and engaging learners (Ellis and Worthington cited in Hall, 2002). Thus differentiated instruction evolved from this groundwork.

There are other forms of teaching that integrate differentiated instruction. One is layered-curriculum where there is a level of basic knowledge or understanding, a level of application or manipulation of the information learned, and finally a level of critical thinking and analysis. The layered-curriculum would resemble a pyramid with a foundation of knowledge supporting application and critical thinking. Layered-curriculum does include one major aspect of differentiated instruction, giving choices to students as they work through the curriculum. If they are at the knowledge level, they are given options regarding their assignments. That applies to the other layers of learning as well. In terms of differentiated instruction, it would be similar to the interest category.

Another new form of teaching is universal design of learning. This design encourages multiple means of representation, action, expression and engagement. Universal design incorporates the learning profiles part of differentiated instruction. When using universal design, teachers need to design multiple ways of presenting the material, give several ways to use that information for assignments, and provide multiple

options for students to express their learning and engage them in what they are studying. By understanding the students learning profile teachers can assist them with these learning modes.

When looking at all these ideas to help students learn, they all contained similar characteristics. Upon further research those characteristics of learning styles, multiple ways of teaching, and teaching students at the level they are ready to learn led to differentiated instruction. Because of this common link it became the reason for exploring more about differentiated instruction.

Dr. Tomlinson, who has authored numerous publications on differentiated instruction said in a personal correspondence, "The model we now call differentiation is relatively new--at least in this iteration (it was, of course, quite common teaching practice in one room schoolhouses all across the country). For that reason, research on the full model is in the early stages" (Personal Communication, 2008). Thus when looking for research, the author really focused on any study that included any aspect of differentiated instruction. Different aspects found in the research will be applied to developing a secondary social studies unit.

Supporting Findings

Much of the information disseminated about differentiated instruction is communicated through recommendations for implementation. When researching differentiated instruction there were three recent papers that were tied to this model of teaching. Each of those papers referenced other research that had included the importance of different aspects of differentiated instruction. The papers in this chapter are not research themselves but use others' research to validate differentiated instruction.

Rock, Gregg, Ellis and Gable (2008) wrote about how teachers can implement differentiated classroom instruction. When citing research on differentiated instruction, they referred to a study written by Carol Tieso (2005). In that study, Tieso inferred that students with diverse abilities who received the intervention of differentiated instruction experienced significantly higher mathematics achievement than students who did not receive differentiated instruction.

Tieso (2001), also mentioned in Rock et al., conducted a qualitative study of teachers and students. Evidence showed some positive affective outcomes which included level of engagement, motivation and excitement about learning. Motivation and keeping students on task has traditionally been a problem for classroom teachers. Keeping students engaged and excited about learning should lead to more student achievement.

Baumgarnter, Lipowski, and Rush (2003), also cited in Rock et al., studied differentiated approaches that included flexible grouping, student choice of various tasks, increased self-selected reading time, and access to various reading materials. They found improvements in students' instructional reading levels and number of comprehension strategies used, mastery of phonemic and decoding skills, and attitudes toward reading." Reading is an important building block in education and an area of great importance to secondary social studies teachers. Social studies typically involves the reading of stories and information about different aspects of the curriculum. For social studies teachers using differentiated instruction, this could mean better comprehension of the material by the students and thus improve student learning.

Subban (2006) wrote a paper providing research that laid the conceptual framework for differentiated instruction. The framework included Vygotsky's (ZPD), workings of the human brain, learning styles and multiple intelligences. Each of these ideas of learning were cited and laid the foundation in support of differentiated instruction.

Subban's paper also referenced some recent studies including Johnsen (2003), where student teachers were encouraged to differentiate content and process. That study revealed that the use of differentiated techniques proved to be engaging, stimulated student interest, and provided a gratifying experience for the undergraduate teachers. These results give confidence to teachers to incorporate differentiated instruction because not only will the students have a positive experience but also the teacher themselves will enjoy the process.

McAdamis (2001) was also mentioned in the Suppan paper. McAdamis reported significant improvement in test scores of low-scoring students in the Rockwood School District (Missouri) following differentiated instruction. The whole district was involved in the model of differentiating over a five year time period. This study showed the need for teachers at all levels and across curriculums to invest in differentiated instruction for the benefit of all students.

Carol Tomlinson, one of the best known educators in the field of differentiated instruction, wrote a review of literature based on the model of student readiness, interest, and learning profile for a broad range of learners (Tomlinson et al., 2003). In the section about the importance of student readiness the following was cited,

“Current brain research (Howard, 1994; Jensen, 1998; Sousa, 2001; Wolfe, 2001) seems to reach a similar conclusion--which students should work at a level of ‘moderate challenge’ for learning to occur. Further, when students encounter tasks at moderate levels of difficulty, they are also more likely to sustain efforts to learn, even in the face of difficulty, than when tasks are too difficult or underchallenging (Bransford, Brown, & Cocking, 2000; Csikszentmihalyi, Rathunde, & Whalen, 1993; Rohrkemper, 1990)”

The importance and justification of student interest was shown in Tomlinson et al. 2003 which cited the following research by Amabile, 1996; Torrance, 1995. “Modifying instruction to draw on student interest is also supported by theory and research as a means of enhancing, motivation, productivity, and achievement.” For instance, when students are encouraged to select reading material of interest to them, they are more likely to demonstrate substantive engagement and, thus, experience improved reading performance (Carbonaro & Gamoran, 2002).

The student learning profile is also important in differentiated instruction and Tomlinson et.al, supported that with a meta-analysis of research on learning styles. Sullivan (1993) reported that addressing a student's learning style through flexible teaching or counseling results in improved achievement and attitude gains in students from a wide range of cultural groups. Related to intelligence preference--or thinking styles--Sternberg (e.g., 1985, 1996) proposed that individuals have proclivities for one of three modes of thinking: analytical, practical, or creative. Research indicates that learners at primary, middle, and high school levels achieve better when instruction matches their

preference (Sternberg, 1997; Sternberg, Torff, & Grigorenko, 1998). This body of research suggests that there are achievement benefits to addressing intelligence or thinking preference during the learning process, even if a final assessment is not in a learner's preferred mode (Grigorenko & Sternberg, 1997; Saxe, 1990; Sternberg et al., 1998).”

Throughout the paper the research studies discovered by the author were mainly based in an elementary classroom setting. While much of the empirical data is from the lower grades it does have impact for secondary teachers. First, students may have been exposed to differentiated instruction in elementary school and thus will understand how it works. This would in turn help them learn and be successful. Secondly, teachers will know that these differentiated methods or techniques with some adjustments can be effective within a secondary classroom.

Conclusion

In Chapter II, background information and an early foundation for the study of differentiated instruction were identified. Differentiated instruction has a foundation of research in areas such ZPD, multiple intelligence, learning styles, brain based teaching and many more. Many different studies about how effective differentiated instruction can be in a classroom were referenced. Chapter III will look more closely at some of the research associated with differentiated instruction. The next chapter will also identify specific aspects of differentiated instruction that can be used by a classroom teacher to help with student achievement.

Chapter III

Introduction

Chapter III shows research within the field of differentiated instruction that can be used by a teacher to help student achievement. Different techniques used by researchers will be then connected to one of the three aspects of differentiated instruction: readiness, interests, and learning profiles. Research on higher thinking, curriculum development and challenging students will address the significance of readiness in the classroom. The use of technology, student choices, and effects on student learning will also be talked about when referencing student's interests. Finally, aspects of learning profiles which include: learning styles, peer-assisted learning, flexible grouping and variety ability and their impact on student achievement will be addressed. While many of these studies are conducted in an elementary school setting, there are connections to be made with secondary education.

Higher Thinking

Readiness is defined as a student's ability and willingness to move above their current level. Teachers need to be ready to extend their students and one aspect of readiness is to push students above their current level of knowledge and learning. Teachers need to understand student readiness levels and at what level their students are at so they can get them to learn. To get students to achieve, more teachers have to drive them to new areas of their thinking and understanding. This study shows that as long as students strive for higher level of thinking it leads to student achievement.

Keislar and Stern's (1970) research explored the value of teaching different kinds of problem-solving strategies to students at different mental age levels. This study

showed research with talented and gifted students and methods that could be used in differentiated instruction.

During an 8-day instructional program, 82 children in second and third grade with a mean IQ of 123 from a high-socioeconomic-status community in the Los Angeles area were divided equally into three levels of mental age. The students then were divided by strategy, each group having high, medium, and low mental age students.

The strategies were intended to help them to solve identification problems. The single hypothesis group was taught to select and apply one of the rules at random. When it failed, they were to choose another rule. The multiple hypothesis groups were given a more specialized training in identifying rules with the matching strategy.

Three tests were administered to each group: a posttest, a transfer (next day), and a retention (one month later). Each student was in a booth with a set of headphones, a microphone and individual two-choice panel. A slide was shown and the student would be given immediate feedback based on whether they chose the correct answer or not. The results indicated that the higher level students who were taught the multiple hypotheses scored higher compared to the same mental age student who did the single hypothesis. Also, the lower mental age students who had the single hypothesis training scored higher than the same mental age who had been trained in the multiple hypotheses. This indicates that the higher IQ students achieve more with more complex strategies than they do with the simple strategies when problem solving. The transfer and retention are better with those students also.

The study is an older one having been published in 1970, but it does address differentiated instruction for the talented and gifted students. The techniques for testing

the students were valid and were measurable. The results are important because they showed growth not only in a short period of assessment but also with a long range assessment. These findings translate to today because we need to continue to transfer the retention knowledge of TAG students by giving them a complex and higher level curriculum. Giving them a multifaceted curriculum means they will hang on to it longer than just the limited problem solving and curricular problems. This is a conclusion that can carry on for over 30 years.

Curriculum Development

The question of “are students prepared to be pushed to a new stage of learning?” is a part of readiness and is important when a teacher is developing curriculum. The study below looks at how a group of talented and gifted students with a new curriculum and new way of learning compare to other talented gifted students who were taught in a traditional way.

Tyler-Wood, Mortenson, Putney, and Cass (2000) published a study that had three research questions but, the one that had the most effect on differentiated instruction was, “Can a differentiated mathematics and science program housed in the high school environment assist gifted students with their acquisition of higher level mathematics and science curriculum?” That question really seemed to fit into whether differentiated instruction has an affect on student achievement.

Subjects of the research were from mid-size Georgia high schools and were identified based on their: standard intelligence test score, achievement score on the Iowa Basic Skills Test, teacher recommendation, self-evaluation, and academic grades. There

was a control group of 32 students from two similar schools within a 30-mile radius that participated in their regular mathematics and science classes. The experimental group had 32 students who participated in the newly developed integrated mathematics and science curriculum project for Ga-GEMS (Georgia's Project for Gifted Education in Math and Science).

The difference between groups was that the control group stayed with their normal curriculum and the experimental group engaged in hands-on experience created from the math and science teacher's team teaching approach. The experimental curriculum had been developed by ten teachers who spent a year compacting and accelerating the curriculum.

There were two aspects to the study: one quantitative and one qualitative. The qualitative portion is featured in this review. The Science and Mathematics sections of the American College Test (ACT) were administered to both control and Ga-GEMS groups following two years of intervention. The ACT is a reliable test to compare the scores between the control and experimental groups. The results indicated that those students participating in Project Ga-GEMS scored higher than those who were not part of the program. Mean scores ranged between ten to fifteen points higher on each test. Also as a follow up to the ACT, as Ga-GEMS participants' exited high school, the Scholastic Aptitude Test (SAT) scores of Ga-GEMS participants and the control group were compared. The number of students taking the SAT was 28 for each group. Ga-GEMS participants scored on average 24 points higher on the mathematics and 61 points higher on the total score areas for the SAT.

The data supporting differentiated instruction for talented and gifted students is very strong based on this study. There is an obvious correlation between extensive curriculum development and student learning. What aspects of the project made the difference: superior teachers, blocked scheduling, homogeneous grouping, extended laboratory time or integrated curriculum? That is a difficult question to answer unless you remove or change each aspect of the teaching.

Using Technology

Technology is an ever changing aspect of our society. Students are typically at the cutting edge of technology outside the classroom. For these students technology is not something they are afraid of but a normal part of their lives. So technology would be a natural interest to many of these students. The following research shows how and when technology, probably of common interest to students, affects student learning.

Riggs, Thomas, and McHenerey (2007) issued a study on the effectiveness of technology when differentiating instruction. A teacher institute over one summer was used as the basis of the project to train teachers in using technology with differentiating instruction in mathematics, specifically exponents. Teachers learned about lessons for all students that included concrete models, demonstrations, critical thinking experiences, centers that allowed group work, and self pacing. Teachers created power points, games and activities that could be incorporated in their classrooms.

The project was in two middle schools in Southern California. Approximately 36% of the 8,500 students receiving free or reduced lunches and 11% were English learners. Class sizes at the control site and experimental site were between 28 and 32 students and included special education students that were mainstreamed along with

talented and gifted students. Student achievement data was tracked through statewide standardized tests that were given in the spring.

The experimental group schools that had teachers attend the technology institute had results that showed improvement of student scores. There was a control school that had participated in many of the same professional development opportunities but did not attend the summer institute or receive the technology tools. The control site saw a decline in the mean scaled scores in grades six and seven. The differences in the mean scores from the experimental schools to the controls schools were significant $p < .05$.

Even though the study was small, the evidence of the influence of differentiated instruction with technology was strong. There was growth for the students who were exposed to technology but regression for those students whose teachers did not have the access or training in technology. The conclusions and results were broad and did not get into specific details of the growth of the students.

Challenging Students and Student Choices

Challenging students to go beyond their present level of thinking and learning is important when developing readiness. Another item that must be developed within differentiated instruction is interests. There is an understanding that when students come away from their schooling a certain core knowledge and skill level has been developed. In differentiating instruction, that core is taken and expanded to meet the interests of the students. In the following study students were taught the core skill of reading. They were given a choice of reading material but were also challenged to go beyond their current level of reading. The affects this strategy had on student learning will be discussed.

Reis, McCoach, Coyne, Schreiber, Eckert and Gubbins (2007) did an evidence based study in urban elementary schools using planned enrichment strategies to improve reading fluency, comprehension and attitude toward reading. The research was done with 226 elementary students (third through sixth grade) in 2 elementary schools. The control groups worked nonsystematic series of remedial reading activities and practice sessions for the statewide achievement test. The approach for the experimental group was the Schoolwide Enrichment Model in Reading Framework (SEM-R). This approach provides enriched reading experiences by exposing students to challenging self-selected books, differentiated reading instruction, and interest-based choice opportunities in reading. The experimental group students participated in an enrichment program with three components: read-aloud opportunities, differentiated reading instruction, and students had a time to select from a series of enriched reading activities based on their level.

Part of SEM-R is that students self select books that are slightly, to moderately above their current reading level and then get individualized differentiated reading instruction that helps to increase their daily independent reading and to stimulate interest in reading. Another portion of SEM-R is that students have time to select from a series of enriched reading activities based on their interests. These enrichment activities included e-books, children's author's websites, discussion groups, writing activities, creativity training in language arts, learning centers, interest-based projects, reading with a buddy, and book chats.

The experiment which was conducted for 12 weeks resulted in moderate differences between the control group and the experimental group. Reading fluency and positive attitudes towards reading increased the most. Even though the results are not

overwhelming, the findings indicate that students were not adversely affected by using differentiated instruction to help their learning. There are two things from this study that translate well into differentiated instruction. The first one is choice. Choice increases student achievement, is beneficial for the student and helps change attitudes about learning. Students were allowed to choose how they learned, including discussions with peers, technology, and projects. They also had options regarding the content of the books. Another item recommended from the study is to challenge the students. Having students read or learn slightly above their current level is important to developing critical thinking and problem solving skills. Allowing of student choices helps maintain a student's interest and can be implemented in differentiated instruction.

Learning Styles

A student's mode of learning can be affected by many things and one of them is learning style. A learning style is the way that an individual likes to learn. Does that student prefer to work individually or in a group, do they prefer quiet or do they thrive in loud environments? The following study addresses the significance of adjusting curriculum to the student's different learning styles and how that affects how much a student will learn and how it might change their behavior in the classroom.

David Fine's (2003) researched the learning style strengths and preferences of high school students in special education with those in regular education. The research then investigated and analyzed the effects of incremental implementation of specific learning style instructional strategies on the science achievement, attitudes, and behaviors of a subset of special education students. The initial research question was, according to the Learning Style Inventory (LSI) (Dunn, Dunn & Price, 2000) profile, do high school

students in special education have different learning style characteristics from students in regular education?

The sample for this study included 422 students--214 students in regular education and 208 students in special education in grades 9-12 who all took the LSI. The special education sample consisted of male and female students in grades 9-11 who were classified as emotionally disturbed or learning disabled according to their individualized education program (IEP).

After the differences in learning styles were established, the effect of specific instructional approaches and their incremental effects on the achievement, attitudes, and behaviors of students in special education were analyzed. There were seven units taught, each lasting eight days. The units covered topics in modern biology and human systems. The first and last units were taught with traditional methods following a repeated measures design. Units two, three, and four changed the instructional environment with respect to design, light, and sound. Units five and six were taught using teacher- and student-created materials (Fine, 2003).

The results showed in short-term achievement that students in special education made significant gains in mean achievement from pre- to posttest as more Learning Style strategies were incorporated into instruction. According to mean differences between the first and second long-term examination, students' achievement significantly ($p < .05$) improved. As with gains in knowledge, special education students' attitudes improved significantly ($p < .05$) with the implementation of learning style strategies. This study revealed behavioral improvements of the students as each learning style strategy was employed (Fine, 2003).

Flexible Grouping and Choices

Along with giving students choices in their curriculum to increase student achievement his chapter has shown that teaching to student's learning style is important. Learning style can incorporate more than visual, auditory, etc... it can also mean the area of need for a student. An important thing to do as a teacher is not to assign a student to a specific group based on a certain learning style or their skill need. The following research shows what happens to student achievement when students are re-grouped based on changing skill levels and when they are given choices in the curriculum.

Baumgartner, Lipowski, and Rush (2003) studied the increase of reading achievement of Primary and Middle School students through differentiated instruction. The interventions were implemented in two primary classrooms and one middle school classroom in the same school district that served two communities which were primarily middle class. Twenty-five second graders, 27 third graders, and 25 middle school students were given a pre-test. Then they were assigned to a group of four to eight students who shared a similar instructional need. The San Diego Quick Assessment, Nonsense Word Test, running records, strategy checklist, and reading survey were used for the pre and post tests.

Elementary students (2nd and 3rd graders) were given mini lessons on phonics, decoding and reading comprehension. Seventh grade students looked at visualizing, supporting predictions, synthesizing, clarifying, evaluating, skimming and summarizing. In the middle of the implementation process the students were re-tested and then re-assigned using the Nonsense Word Test and running records to a new flexible reading

group based on individual instructional needs as determined by the latest data. In addition to flexible grouping, student choices for getting reading material and choices by students for reading strategies were implemented.

Overall, students in the targeted second, third, and seventh grade classrooms showed an improved attitude toward reading. Second grade improved by 8 %, 3rd Grade increased by 13%, and 7th grade doubled from 16% to 32%. The technique of flexible grouping and student choices in developing curriculum showed strong results when improving student learning. Reading comprehension strategies, the percentage of students who read more than 31 words correctly, and the number of students reading at grade level all increased.

The research could have been stronger if there had been the establishment of a control group. There was no way to compare the experimental group against another group of students taught in a more traditional way. One factor that could not be accounted for was teacher effect. The role of a teacher can have significance in students' learning. The fact there were different teachers involved makes the research less strong. Also the natural effect could be the reason for learning. Natural effect is the idea that students will learn in a classroom naturally no matter the implementation instrument. The researcher also acknowledged that the mini-lesson on decoding, small group instruction, and more library time could possibly have been reasons for student learning. In the big picture, there is good evidence to demonstrate the effectiveness of flexible grouping and student choices for student learning. Since the study used the San Diego Assessment and Nonsense word as a testing instrument that made the results solid.

Peer- Assisted Learning

As a student makes their way through their educational journey they start to develop a learning profile. A learning profile is developed by the student and includes the ways they prefer to learn. A part of a student's profile of learning is how they work with others. A student can have an inclination to work individually or a preference to work with fellow classmates. When trying to implement differentiated instruction as a teacher, a part of that would be involving peers to help with the instruction. The following study shows how student learning is affected when students are put into groups with their peers and how that might affect student learning.

Mastropiere (et al., 2006) had a strong focus on differentiated instruction. Two hundred thirteen students (109 males; 104 females), of whom 44 were classified with disabilities, participated in the study. The researcher had an objective that stated "to determine, in a randomized field trial, whether this intervention would improve classroom test scores and high-stakes testing." Students were randomly assigned to the experimental or control group condition with a lead teacher teaching at least one experimental and one control group. This made the research stronger because the results could not be skewed based on the teacher.

Of the thirteen classes, five classes were co-taught with a special education teacher and the other eight were taught individually with six being taught by a regular education teacher and two by the special education teacher. When looking at this research, if the results from the regular education classes and the special education classes were separated it would provide more clarity to the effectiveness of differentiated instruction.

In the control condition, materials in the traditional instruction condition consisted of teacher lecture, class notes, laboratory-like class activities, and supplementary textbook materials. Also, the teachers directed all aspects of instruction from daily reviews to presentation of new information while students worked independently on notes, worksheets, and labs. The description above is what is considered a traditional classroom that is teacher led with many aspects of direct instruction.

The experimental condition included curriculum enhancements that taught the "scientific investigation" units of instruction, covering charts and graphs, measurement, independent and dependent variables, and qualitative and quantitative research methods. Instead of individual work time, students had peer-assisted learning. With peer-assisted learning, the teacher selected the groups of students and the material level appropriate for each student. This type of instruction is an example of differentiation.

The students were measured with a pre-and posttest of science content and end of the year high-stakes tests in science. Posttest data for both unit and state high-stakes test were entered into a 2 condition (experimental vs. control) x 2 group (special education vs. general education) ANCOVA. The measurements were sound, especially the state wide high stakes test, and there was evidence of content validity because all students were tested over similar information. The results did show the improvement of the experimental group of students and specifically the students with disabilities compared to the control group.

Overall, the author believes this was commendable research. The procedures and data collection were solid. Yet, the data presented in the research could have been broken down by classes instead of grouping all the students together. Were the results obtained

because the class was co-taught with a regular and special education teacher? Possibly, but based on the study, differentiated instruction does help improve student achievement for both regular and special education students.

Varied Academic Ability

Another aspect of a student's learning profile is their level of knowledge or skill competency within a curriculum. A typical classroom will have these varied ability students who also learn with different styles. The following research shows how on task behavior and academic achievement changed based using differentiated instruction within a varied academic ability classroom.

Ellis D., Ellis K., Huemann and Stolarik (2007) researched how to improve mathematics skills using differentiated instruction. The research used both primary and high school students. The classrooms were composed of varied academic ability where modifications occurred in three areas of instruction: curriculum, strategies, and student work.

The students involved in the research were 26 math students in grades 10-12, seventy-nine math students in kindergarten thru second grade, and 25 teachers. The research model used was action research and was conducted by four teacher researchers at two different sites. One site was at a suburban primary school with one teacher researcher at the kindergarten level and two teacher researchers at the second grade level. The other site was a high school with one teacher researcher teaching high school level mathematics. This research project used a student survey, teacher survey, observation checklist, and pre-test and post-tests. The interventions consisted of cooperative learning

lessons; multiple intelligence- based lessons, student choice of assignments, and differentiated assignments (Ellis D., Ellis K., Huemann and Stolarik, 2007).

When using cooperative learning, students were grouped by mixed ability or similar ability on a given activity for two weeks. For the 10 day session, students were given options on projects having to deal with the curriculum. Multiple intelligence was integrated into the curriculum throughout the project with teachers incorporating visual-spatial intelligence using art work as cross-curricular with math. Bodily-kinesthetic intelligence was a part of the curriculum with the use of manipulatives to teach various math concepts. For the last intervention, the teachers differentiated assignments by creating different levels of assignments: one for low, one for average, and one for above average students. Lower level students were given more information to help answer the question where higher level students were given less information and expected to complete the assignment.

The results of the study were two fold, one using an observation tool and another using pre-test and post-test data. With the observation tool, on task behavior, students needing assistance, and assignments passed were documented. From the pre-observation phase to the post-observation phase, on-task behavior increased from 55 percent to 64 percent. The number of students needing assistance decreased and the amount of students completing assignments satisfactorily increased. The pre- and post-test data scores increased on average from 50% to 85%.

The study did have some flaws that could have helped. There was no control group comparison, and in addition teachers had covered the concepts with the class

between testing. Since the pre-tests focused on concepts that had not been covered it is believed that presenting the material will inevitably lead to student progress.

Conclusion

This chapter displayed research and how that research fit into readiness, interests, and learning profiles in differentiated instruction. The importance of readiness was addressed in the first two studies where talented and gifted students were pushed beyond the normal ways of thinking, studying, and learning. A student's interests and their significance were addressed in studies on technology and student choices. The wide range that makes up a student's learning profile were talked about with studies on learning styles, flexible grouping, peer-assisted, and varied ability learning.. Each of the studies showed growth in student achievement as the methods of differentiated instruction were used. The next chapter will look at each of these studies and apply them to readiness, interests and learning profiles within a differentiated secondary social studies classroom.

Chapter IV

Introduction

Chapter Four will look at the research in each of the different areas of differentiated instruction: readiness, student interest, and student learning profile. Each study will be analyzed, explained how it might translate into the regular secondary social studies classroom and then given an example of how it could be applied to a secondary social studies classroom. There will be a few of the studies that will be referred to more than once in this chapter. These studies included research that touched on more than just one area of differentiated instruction.

Readiness

Readiness is the student's ability and willingness to move above their current level. A number of students who enter a typical secondary social studies classroom have already been identified on the two ends of the spectrum from talented and gifted to special education. How do teachers know about all the rest of the students and how can they find out their abilities and willingness? Because even if they are not identified by previous teachers as TAG or special education there are still different levels of readiness. The research below will indicate examples of why teachers need to know the readiness of their students and how knowing readiness will lead to student achievement.

Keislar and Stern's (1970) research indicated that higher IQ students achieve more, transfer, and retain more information better with complex strategies than they do with the simple strategies when problem solving. By understanding that when secondary social studies teachers have a talented and gifted student (TAG) in the classroom that he/she needs to be challenged more than just by being given a higher level reading

material or additional work. In most social studies curriculum there isn't much in there about how things work or how some problems get solved. A teacher could take this research and differentiate in the classroom for the TAG students and go beyond the normal problem solving questions that are asked in the class. The teacher could ask students to think about how this might work or why it does work. The key part of the research that came out was that the student's transfer and retention is better when they get to implement complex problem solving strategies. Student achievement for the class is reliant on students transferring information and retaining information. The teacher should then provide the opportunities for TAG students to handle some complex situations. In terms of readiness, challenging students to go above their current level will lead to student achievement.

Wood, Mortenson, Putney, Cass (2000) showed a noticeable correlation between extensive cross-curriculum development and student learning. The curriculum development was quite extensive for this study and was designed to facilitate the development and use of higher order thinking skills and incorporate visual and tactile experiences to reinforce concepts and to help students generate basic knowledge of the disciplines of science and mathematics.

The results were extremely positive compared to the control group who were taught the normal curriculum. For secondary social studies this demonstrates the need to use cross curriculum to help raise student achievement. The most natural fit for a cross curriculum development would be with English because of the heavy reliance by social studies on both the reading and writing aspects. Depending on the course and specific

content cross-curriculum could be developed in math, science, business, art, industrial technology and physical education.

The study used team teaching and block scheduling for students and teachers to delve deeper into concepts and ideas associated with the content. Teachers who are in block scheduling and team teaching need also add a deeper look at the curriculum development similar to the one in this study where a year of work was put into building the program of study.

Overall the study demonstrated that by differentiating readiness for students individually with a combination of strong curriculum development that is infused in a cross curriculum setting the results can be quite beneficial. Secondary social studies teachers need to insist on getting opportunities to do team teaching in a cross curriculum so similar results can be achieved.

Reis, McCoach, Coyne, Schreiber, Eckert and Gubbins (2007) had a study where students were challenged and the results of the study did show higher student achievement. First having students read or learn slightly above their current level is important to developing critical thinking and problem solving skills. Social studies teachers can implement the challenging reading along with higher-order thinking questions similar to those in the study.

Since the students were labeled as TAG students with high mental ages they were prepared to be taken to the next level of thinking. This is important not only in the mixed classroom when teaching the TAG and gifted students, but can translate well when working with any level of student because when there is curriculum geared for their level or above they will have gains in student achievement.

These three studies demonstrated that knowing the readiness of the students will help a teacher keep pushing students to go beyond their current level. When differentiating in the classroom, teachers need to know what students already know and in order to do that a teacher must have different tools. One tool that a teacher can use for understanding student's readiness is a pre-assessment. (Appendix B) By doing a pre-assessment of knowledge, teachers can plan curriculum, and design instruction to meet the needs of the total class as well as individuals (Gregory and Chapman, 2007 p. 48). In social studies, because the content is so vast and wide, students can come to the classroom with a real depth of understanding of ideas and concepts or have none at all. (Appendix B).

Another form of readiness that teachers can differentiate by is reading level. Once a student's reading level is known, which can be obtained from a reading teacher or by having the classroom teacher give it themselves, a teacher can group students based on their reading level when possible. It is important for students to read at the appropriate level because comprehension will improve thus leading to higher student achievement. Even though reading levels might not be identified as closely as they are in elementary school, a teacher can work to get students placed in a proper level. When the class is looking at a primary source or specific topic, it would be good at times to differentiate and get those sources to fit the background knowledge and reading level of the students. Both a pre-assessment of knowledge and knowing a student's reading level will help the teacher with readiness by pushing them above their level of skill and understanding.

Interests

Allowing for student interests within the learning community, ensures that even marginalized students find a place (Lawrence-Brown, 2004 in Subban (2006)). The goal of the classroom teacher is to engage all your students in the learning process and by having them be part of working with the curriculum in areas that they enjoy would be a positive for everyone involved. Most students, even struggling learners, have aptitudes and passions providing an opportunity within the classroom for them to explore and express these interests mitigates against the sense of failure previously experienced by these students (Lawrence-Brown, 2004). So if giving the students choices that they will have a passion about will keep them from failing and not meeting expectations that is something that need to incorporated into every classroom.

Riggs, Thomas, and McHenry (2007) studied the use of technology on student achievement using differentiated instruction with middle school students. The results showed improvement by those students who were exposed to differentiated instruction and technology compared to those who didn't.

Technology has been becoming more and more a part of the classroom on a daily basis. Just in the time the author has been in the classroom there have been switches from film strips and film projectors to Digital Video Discs and downloadable files.

Presentation of information has also progressed from the overhead projector to a projector hanging from the ceiling that is hooked up to computers with animation to help with display of content. This study demonstrated that when the background in differentiated instruction coupled with technology the improvement of student

achievement is there. School districts invest a portion of their budget in technology and they want to see results in student achievement with those dollars.

Technology as a social studies teacher has become a vital part of student success. There is so much visual information being presented to students. In the study, (Riggs et al., 2007) students had internet resources such as graphics, visuals and models to support learning, so in social studies having the ability to show real, color pictures and documents can help student achievement. Teachers who were trained in this study with technology developed PowerPoint presentations. Those presentations were useful in differentiating for small groups and individual students. Social studies teachers usually have a good idea of information presented and for teachers with the technology available already have been developing PowerPoints. Different presentations can be used by different groups based on their level in the classroom and their learning style.

The study really helped make the case for more technology in the classroom. The institute that the teachers attended provided them with laptops, projectors, remote presentation materials and USB storage devices. These are the same things that many teachers would appreciate to have in their classes. The institute was geared for math teachers but many of the things used by those teachers could be put to use by secondary social studies teachers with similar results. In the study, (Riggs et al., 2007) students could choose the form of technology they wanted to use to learn from. Some students prefer the computer where others prefer videos or audio clips to help them learn. It is important to have technology accessible to the students so they can have their choice of learning tool.

Baumgartner, Lipowski, and Rush (2003), performed a study that used student choices that helped lead to an increase of reading achievement of primary and middle school students. Student choices have been gaining more and more momentum with teachers. Today students have so many choices to make outside of the classroom with getting information, entertainment and clothing to just name a few. Within a classroom, the teacher has traditionally had all students doing the same thing. To change the attitude of the students in this study, the teachers gave the students choices in the strategies they used when attacking reading and also choices in what they could read. The important choice from this study to apply to a secondary social studies classroom is the one with the choice of strategy. Giving students a choice of which famous World War II general to write a paper about is typically never difficult for the teachers. Allowing students to present their understanding in a variety of methods is something that is important in differentiated instruction, yet challenging for the teacher.

The study showed the improvement of student motivation and how important that was to student achievement. This is the key to secondary social studies. Teach the proper critical thinking and problem solving skills and then allow students to choose the path they want in order to achieve that learning.

Ellis D., Ellis K., Huemann and Stolarik, (2007) did research using lessons that included, student choice of assignments on differentiated assignments. The demonstrated lessons showed an improvement from a pre-test average score of 50% to an 85% average on the post test.

Another aspect of giving students choices that the study recognized was the increase on task behavior. The results in the study showed that on task behavior increased

by nine percent and off task behavior decreased by three percent. This one translates the most to the classroom teacher. If students are on task more often then it becomes easier for students to learn. This gives the teacher more opportunity to work individually with students who need help rather than having to be concerned with off task behavior.

Student choices on different assignments lead to more on task behavior and thus translate into higher student achievement.

Reis, et al. (2007) studied the use of differentiated reading with challenging self-selected books and using differentiated reading instruction with interest-based choice opportunities in reading. The study also demonstrated the importance of giving students the choice of reading materials not only on topics but on types of reading materials. In the study students were given options of many different types of literary genres including mysteries, poetry, historical and science fiction, biographies, autobiographies and other nonfiction. Social studies teachers can apply this wide range of reading materials in their classrooms. Also, for the teacher based on the study a choice is beneficial not only for student learning but for the student's attitude toward learning.

Implementing strategies challenging students to read above their current level and providing choices in topics and reading types are important aspects of differentiated instruction. These techniques in differentiated instruction have led to student learning and are good examples of readiness and student interests.

These studies indicated the importance of teaching when student's interests are involved. By giving choices it not only led to student achievement but higher motivation for learning and more on task behavior. Within a curriculum finding topics of choice that fit the interest of students is possible. It will take more work and flexibility from the

teacher for choices based on interests to be accomplished. Pre-assessing for interest will help the teacher guide students through exploring a concept and focusing on manageable and personally interesting topics. When differentiating in the classroom it will be important to see where student's interests lie. Students can be grouped together based on a matched curiosity and be given a much more in-depth experience. Appendix C indicates a chance for students to rank their interest of the different topics to be covered and Appendix G allows the student to demonstrate their level of understanding by choosing the topic and type of product they will produce.

Learning Profiles

Knowing how one learns is necessary information if one is to learn throughout life (Gregory and Chapman, 2007 p. 23). Teachers need to help students understand themselves so they can maximize their potential. By the secondary level (7-12), students are starting to understand their strengths and weaknesses about learning styles. Before teachers can teach the curriculum that they are required to teach or have developed, they have to understand to whom we are teaching.

The Mastropiere (et al., 2006) study showed that peer-assisted learning produced evidence that students learned more content not only after the twelve week learning experience but also with end of year high-stake testing. Peer-assisted learning can be described as students learning from other students. Students help each other even though they may not be at the same level. This technique can be a very successful one for secondary social studies teachers to implement. Students can easily put groups together for a given assignment, assigned tasks once they are in the group, and can be held accountable for their own work while in the group (i.e. cooperating learning). Teachers

can put students together for learning content throughout a unit not for just a given lesson. The study was done for inclusion in a middle school science classroom but social studies teachers can do this by developing more hands-on items for the students at different levels and assigning students to a peer group to help them learn.

Fine (2003) looked at the specific learning-style instructional strategies on science achievement, attitudes, and behaviors of a subset of special education students. The study was positive in terms of the changing of learning styles and how that improved the achievement of the special education students. Addressing learning styles of groups of students is an important aspect of differentiated instruction and this research demonstrates that special education student's achievement did improve based on a variance of learning styles.

The learning styles adjusted in the study dealt with setting, sound, lighting and teacher created-learning style resources. In the study students were given a more informal setting to learn difficult material. Things such as carpet, soft chairs and pillows were used. This is an idea that could be implemented by social studies teachers to give students a more relaxed feel to associate with hard to learn information.

Sound and lighting were also adjusted to help students learn who preferred those changes in aspects. Instead of all students hearing all the same material the same way students could use headphones or radios as they studied. The same technique was used with lighting. Lamps, shades and other softer lighting were introduced to the students. Teachers could easily put into practice these ideas for their students.

Teacher-created learning-style resources (flip-charts, task cards, multisensory instructional packages, floor and wall games) were created so the students could teach

themselves the material instead of being teacher directed. Students also made their own resources to help with the learning process. Social studies instructors could allow students to make their own materials and build an array of different resources beyond the normal textbook for learning.

In this study, changing the surroundings as well as introducing some student created and different resources led to student achievement. Secondary social studies teachers need to go beyond traditional means to help students learn and this information is beneficial to implement in the classroom.

Baumgartner, Lipowski, and Rush (2003) studied flexible grouping and how that led to increased student achievement. Flexible grouping is where students are assigned to a group based on an individual learning style or as in this study based on a learning need. Students have been grouped for many years based on level of reading and math. With the flexible grouping students are not always in the same group and with this study they were regrouped based on what skills had been strengthened and which ones that had regressed. For secondary social studies teachers, this is unfamiliar territory. Social studies teachers have a tendency to group students based on the student's academic, social, or demographic characteristics and leave them in those groups for an expanded period of time because of that one attribute. Student's academic, social, and skill sets change throughout a year and it would be naïve of a teacher to pigeon hole a student to a trait because they had that trait earlier in the year. From the study seeing the effectiveness of re-evaluating students in the middle of the implementation was enlightening. Students are constantly changing and thus a teacher's assessment of them needs to change even at the secondary level.

The study demonstrates the importance of just not labeling students to one need and leaving them with the same group the whole time. Taking the time to re-evaluate the skill set of the students and move them around on a regular basis based on their strengths and weaknesses is needed.

In Ellis D., Ellis K., Huemann and Stolarik,(2007) the research using lessons in cooperative learning and multiple intelligences showed a 35 percent improvement from pre-test to post-test. Lessons where students work cooperatively with other students is another way to differentiate by learning styles. Not all students learn at their best independently but need to be part of a group to excel. Teaching lessons including the multiple intelligences as part of the teaching is a way to differentiate also. By teaching that way you are giving all the students, no matter what their learning style, an opportunity to learn. Cooperative learning is a method that many secondary social studies have been trained in. Students who work in cooperative groups do better on tests, especially with regard to reasoning and critical thinking skills than those that do not (Johnson and Johnson, 1989). Even though there might be teachers who have not been trained in teaching multiple intelligences it is important to use it as a tool when differentiated. The evidence for using multiple intelligences in the classroom goes beyond this study. In Campbell (1991) standardized test scores were above state and national averages in all areas. Retention was high on a classroom year-end test of all areas studied during the year.

All of these studies demonstrated the importance of learning profiles when getting student achievement. Peer-assisted learning had students in mixed ability groups by working at their level and their own pace to obtain the objectives. This also provided

students who enjoy working with others an opportunity to gain assistance from a peer. Flexible grouping research showed positive results for student's achievement and how by moving students different times based on their learning profile it will lead to increased learning. Multiple Intelligences has much research in support of its importance in the classroom and these studies showed when it is integrated into the curriculum the strengths of the student that it brings to student achievement. Involving learning styles into the classroom also has a direct relationship with a student's learning profile. Students, given a wealth of means to learn through activities similar to the study helps to define a student's profile and lead to student achievement.

Homogeneous instruction is the most efficient way to teach content (Brimijoin, 2005). In order to form homogeneous instruction teachers need to get students together who are similar in learning profiles. Secondary classroom teachers know the grade level they are teaching. Seventh grade, sophomores, or seniors but besides the grade level do teachers really know the type of students they are getting? Teaching social studies in a secondary classroom teachers are more than likely to get a heterogeneous group of students. Social studies classes are more likely to be heterogeneous because those classes are typically inclusive of all learners thus putting a greater need for the teacher to get to understand the learning profiles. So, one aspect of a pre-assessment should focus on the style of learning of the student (Appendix A). It is important for students to increase their knowledge of themselves and for teachers to help students develop metacognitive skills for self-assessment and learning for life (Gregory and Chapman, 2007 p. 23).

Conclusion

Differentiated instruction employs a philosophy of teaching that is based on the premise that students learn best when their teachers accommodate the differences in their readiness levels, interests, and learning profiles. This chapter used research to fit each of the three areas of emphasis for differentiated instruction and to show student achievement. Readiness was discussed with talented and gifted students and how that translates to the mixed ability classroom. Student interest was referred to in many studies by giving students choices on topics but also choices of means to learn the material. Learning profile research included teaching to specific learning styles and including multiple intelligences in teaching.

The next chapter will give an example of using readiness, student interests and learning profiles to create a secondary social studies unit as an example of differentiated instruction.

Chapter V

Introduction

In this chapter an example of a unit on Ancient Rome will be developed based on the results of the literature review which found research supporting Carol Tomlinson's definition "students learn best when their teachers accommodate the differences in their readiness levels, interests, and learning profiles." Chapter V will take that research and transfer it to curriculum. Tomlinson (2001) identified three elements of curriculum that can be differentiated: content, process, and product. Content refers to what students need to learn: major concepts, principles and skills. Process describes two ways in which content is taught specifically with a wide range of activities or teaching models where students are taught the same material in a variety of ways. Products allow students to demonstrate whether they have learned key concepts and skills of a unit. The purpose of this chapter is to provide a framework for secondary social studies teachers to use to differentiate instruction in their classroom.

Ways to Differentiate

During this section of Chapter V different techniques that can be used by an instructor with examples and ways that differentiated instruction will be implemented. At the beginning of the unit students are given a "Study Guide" (Appendix E) that they must fill out as the class goes through the different areas. No matter what they learn or how they learn it students are responsible for that information. Even though there will be a difference of learning based on readiness, student interests, and learning profiles there does need to be some base line of information that is established that all students need to know.

Readiness and Learning Style

When studying Ancient Rome, the first thing that can be covered is the founding of the city of Rome and with that the legend of Romulus and Remus. Based on the knowledge and learning style pre-assessment, students can be differentiated using readiness and learning profile. Students who know of the legend of Romulus and Remus and who like to read and/or prefer fiction will be given a longer version of the story with related questions. The longer version includes folklore with the inclusion of several of the Roman gods and goddesses. The other group will read from the textbook their version of the story and answer the basic questions from the end of the chapter. Both groups will then watch a YouTube version of the legend created by another class. The students who had the longer version of the legend will then compare the video to what they read. The geography, maps, pictures, and significance of the area can be addressed by the teacher, with all students working on identifying key areas on their map and making their first mark on their timeline. With this first activity the content was differentiated by giving students more in-depth understanding because of their readiness.

Readiness

Taking an already known concept by some students like the idea of a republic and differentiate based on that can be a way to get students moving different ways. Students who demonstrated knowledge of what a republic is based on a pre-assessment will be asked to do a comparison between the Roman Republic and the United States using a Venn diagram that they will be present to the class. Other students will be assigned to answer questions from the textbook worksheet over the Roman Republic. Once the Republic was set up, Rome had a series of wars with Carthage called the Punic Wars. The

instructor can cover the basic ideas and content concerning the three Punic Wars between Rome and Carthage. Students, who according to the pre-assessment indicated a working comprehension of Hannibal, will be asked to compare and contrast, the ancient city of Carthage with the city of Rome, using a compare and contrast matrix (Appendix F). Students making the comparison will be given various websites from the instructor again another example of differentiating the product.

Students can also be reassigned to a different group to study the daily life of living during the Roman Empire based on their reading levels which is tied to readiness. With the help of the language arts teacher and maybe your own reading assessment you can put students into the appropriate level and differentiate the content. The libraries within most schools already have books assigned to a certain level of reading difficulty. I have included an example of a Card Catalog sheet to which teachers might have access (Appendix H). Once students are grouped, teachers can give them a few books to look at to answer some basic questions about Roman living and attain a sense of their understanding of the concept of *Pax Romana* or Roman peace and how they lived because of *Pax Romana*. Examples include descriptions of their homes, buildings that they used, family structure, foods they ate, and things that they did for leisure. Also, students will need to then make any connections between the Roman ways of life to current culture. These groups of students will be assessed not only on their work questions but also on response sheet (Appendix I) that students will use as a basis for discussion over the reading. Each group can be challenged by what they read and type of questions and responses the students form for each other. Switching students around

because of pre-assessment in knowledge, reading levels, and learning styles are good examples of flexible grouping.

Interest

One way that a teacher can differentiate within a unit is just on an interest of a given subject within the curriculum. One aspect from the Roman civilization that can draw a wide range of interest is the gladiator. Based on the interest and knowledge pre-assessment students will be re-grouped and given different requirements. Students who had little or no interest in gladiators will be given a general information packet about the Roman Gladiator to read and answer questions over them and watch a short video clip from the online catalog. Others who indicated a great interest in gladiators will be given websites, books, handouts and video clips to study and write about the different types of gladiators, some real-life accounts, and demonstrate some fighting techniques along with the equipment that were used by these warriors.

Learning Profile

A student's learning profile can be incorporated in differentiated instruction also with an example being for students to create a 3 page biography of a famous Roman leader (Appendix G). With the learning styles pre-assessment as a guide students will be assigned to a group where each member of the group will have a different task. Each group will include a student who indicates an enjoyment or strength in writing about facts. That person will be the reporter. Another member of the group will then be the blogger. The blogger is someone who likes creative writing and can take a few facts and write an original story from the famous person's point of view given some parameters. The final person will be the illustrator, someone who can take an image that they see and

transform that image to an original work. Students will work separately but within the idea of working for a common purpose, and they will have to share information and ideas. Examples of people to use are: Julius Caesar, Hannibal, Augustus, Diocletian, Constantine I, Nero, Tiberius, Mark Anthony plus many more. An activity like this allows students to be in their comfort area of learning style and still work with other styles to accomplish a common project. Students are allowed to form different products and go through a diverse process of learning also.

Learning Profile and Interest

Time throughout the unit will be given to students for the development of a product by each student (Appendix D). The students will be given a choice of which product they must produce by the end of the unit. There needs to be a connection between concept, content and product. As a general rubric for each product 50 percent is allotted for accurate content, 30 percent for connection to the concept selected, and 20 percent for neatness and originality. Also, including the student in the process of developing the rubric for each product helps them with their learning, motivation and quality. An assignment similar to this addresses a couple of aspects of differentiated instruction. First it involves learning profile because a student can use a way that demonstrates their ability to communicate learning in a mode which they feel comfortable with. In addition to a learning profile it gives students a say in the area of interests they enjoy studying. No one student is limited to the same product on the same topic. This assignment allows students the freedom to reveal what they learned using a means they have chosen.

These example activities demonstrate how a secondary social studies teacher can differentiate within a classroom. The activities need to be differentiated based on

readiness, a learning profile and interest. Activities also need to differentiate the ways the information is taught. The unit needs to differentiate the content by giving different areas to study the same material which can be learned from a student's readiness, learning profile and/or interest. That was done in this unit by using reading levels. The process was differentiated with cooperating learning and partner work opportunities, use of technology for learning, individual work and teacher directed teaching. Products were used as an end project along with the biography that helped hit learning profiles and interests.

Chapter VI

Summary

This paper commented on several papers and studies that had direct or indirect implications about differentiated instruction. A number of papers were recommendations made by educators based on observations and other aspects of differentiated instruction that had been proven by research. The findings in these papers were very conclusive and at times compelling even though there was no quantitative research that showed a direct relationship between differentiated instruction and student achievement. The paper then analyzed studies that had research associated with methods used in differentiated instruction. These methods included: flexible grouping, peer-assisted learning, student choices, and curriculum development. There was evidence of student achievement with each of the instruction methods used but there were a few consistent flaws that included lack of control groups and the length of the study also permeated issues that need further study. The fact that there was no true empirical study specifically looking at differentiated instruction in the secondary social studies classroom was a concern.

The different aspects: readiness, interests and learning profiles associated with differentiated instruction by Carol Tomlinson were examined. Each aspect was looked at using research within a differentiated instruction setting. The importance of readiness was demonstrated in a study with higher IQ elementary students who achieved more with additional complex strategies than they did with the simple strategies when problem solving. Also another study referring to readiness showed a noticeable correlation between extensive cross-curriculum development and student learning. Interests were addressed in a middle school study about technology that showed improvement by those

students who were exposed to differentiated instruction and technology compared to those who didn't have the same opportunities. The importance of addressing learning profiles was confirmed with a study using special education students and when their learning styles were addressed it led to improved achievement. Other studies which implemented methods that crossed over the different aspects, showed improvement in student achievement and attitudes.

Chapter five addressed a basic seventh grade social studies unit on Ancient Rome and provided a framework for implementing differentiated instruction within a classroom. Examples of how to provide opportunities for learning based on readiness using pre-assessment, along with a student's reading level and then offering enrichment materials to extend knowledge were described. How to integrate different learning styles within a unit were introduced with the biography assignment. Students were assigned a famous Roman and then given the task of reporting, blogging, or illustrating about that person. Student interests were addressed with the "product" assignment. The product must be chosen off of a list of thirty items. The item created must demonstrate an understanding of a concept and/or content related to the unit.

Implications

There are three implications regarding differentiated instruction in secondary social studies: 1) do a qualitative study that utilizes aspects of differentiated instruction similar to the one in chapter five, 2) train younger teachers on the aspects of differentiated instruction, 3) take your time when implementing differentiated instruction.

Researchers should use a combination of many of the characteristics of differentiated instruction discussed in this paper to design a unit and do proper

assessment. It is suggested that the researchers use a control group that does not receive the aspects of differentiated instruction, but rather a deviation from the characteristics. For example, the control group might be taught with no choices on products and all students completing the same assignments. All the students in the control group are taught the same material whether they know the unit information or not. The textbook and handouts would all be the same reading and readiness level. Both groups should have similar student population characteristics in terms of race, gender, TAG and special education and would be taught by the same teacher at the same time. Also, a study needs to be done over a long period of time so differentiated instruction is not just implemented for a unit or part of a year but throughout a school year to really see the long term affect of the differentiated instruction. A final assessment will determine which group learned more of the goals and objectives.

Another implication is to train younger teachers on the aspects of differentiated instruction. Future teachers have an particularly need for these tools so they can implement them into their classrooms as soon as they get their own students. Pre-service teachers, especially at the secondary level, leave teacher education programs prepared to make modifications for TAG and special education students. There is more to helping students learn than giving the talented student more or harder work to do and the slower learners less or easier work to complete instruction. Differentiated instruction is going beyond those basics to understanding previous learned information, learning styles and implementing options. Having pre-service teachers with this capability and knowledge to make even more adjustments to classroom instruction will improve their student's learning immediately.

When classroom teachers read about, learn, or research a new way of doing things, there is a tendency to change everything they are doing immediately. Many teachers jump totally into this new way of teaching and change all aspects of their teaching. Traditional classroom teachers need to take their time when trying to implement differentiated instruction. To get started a teacher should choose just one lesson, maybe a reading activity or a product, to get this new technology process implemented. Just going to a product listing for one assignment does not make someone a differentiated instructor. There are many aspects to a teacher's differentiated instruction approach that must be considered these have been discussed but include: flexible grouping, reading level assignments, and some instruction that has different levels of content. After completing a few lessons the next step would be going to a unit. The one presented in this paper is not completely differentiated because there were aspects where all students did the same things at the same time. It is a process that takes time and as educators that is usually the biggest consideration to overcome.

Conclusion

At the beginning of this paper there were two questions posed: Does Differentiated Instruction affect student learning? Can Differentiated Instruction be implemented with secondary teachers in a practical way to help student learning and improve teaching without overwhelming the teacher? The answer to the first question is yes but not a resounding one. There was very little evidence to support a direct correlation between differentiated instruction and improved student achievement. Not because the tools involved in the method of instruction didn't improve student achievement but because there was trouble finding studies that specifically took all aspects of differentiated

instruction readiness, learning profiles and interests into consideration. There are many pieces that fit into the differentiated puzzle. Being able to analyze many of those pieces working together for long periods of time would help determine the answer.

Can Differentiated Instruction be implemented with secondary teachers in a practical way to help student learning and improve teaching without overwhelming the teacher? Yes, but it can be very overwhelming with the preparation of materials for the students. Finding the appropriate sources, accommodations, and activities for secondary teachers could be a daunting task. Secondary teachers are often not trained to make several modifications on a daily basis. Students usually have to adjust to the teacher; the teacher does not adjust to them. TAG and special education students have been identified for many years to fit a differentiated learning model but for the author, there are numerous students who don't fit into those labels who need some differentiated instruction to help them learn. With differentiated instruction a student can demonstrate his/her learning in a variety of ways, not just the same strategy that everyone else does.

Learning Style Inventory

Circle Either Yes or No

- | | | |
|---|-----|----|
| 1. I study best when it is quiet | YES | NO |
| 2. I am able to ignore the noise
of other people talking while I am working. | YES | NO |
| 3. I like to work at a table or desk. | YES | NO |
| 4. I like to work on the floor. | YES | NO |
| 5. I like to work by myself | YES | NO |
| 6. I like to work in pairs or in groups | YES | NO |
| 7. When given assignments I like to
have exact steps on how to complete it. | YES | NO |
| 8. I like to learn by moving and doing. | YES | NO |
| 9. Sometimes I get frustrated with my
work and do not finish it. | YES | NO |

Circle the one that best describes you:

- | | | |
|---|-----------------|---------------|
| 10. I learn best by: | 10. Tinkering | Thinking |
| 11. One of my strengths is: | 11. Planning | Passion |
| 12. I have trouble with people who are: | 12. Messy | Neat Freaks |
| 13. I am usually: | 13. Quiet | Talkative |
| 14. I base decisions on: | 14. Feelings | Facts |
| 15. When remembering things I remember | 15. Names/Info | Faces/Clothes |
| 16. With my feelings I usually: | 16. Keep inside | Talk out |
| 17. I am better at: | 17. Writing | Drawing |
| 18. I like to: | 18. Read Books | Watch TV |
| 19. I prefer: | 19. Fact | Fiction |

Appendix B

Pre-Assessment Knowledge over Ancient Rome

Tell me what you know about the Following:

1. What country is Rome in?
2. Who were the gladiators and what was their purpose?
3. Who was Julius Caesar?
4. What things in our country and culture came from the Romans?
5. Identify or define the following:

Romulus and Remus-

Etruscans-

Augustus-

Republic-

Pax Romana-

Hannibal-

Appendix C

Interests about Ancient Rome

These are some of the topics we will be studying in our unit on Ancient Rome. We want to know what you are interested in. Number your choices from 1 to 8. Make sure that 1 is your favorite and 8 is your least favorite.

_____ geography

_____ government

_____ agriculture (food)

_____ architecture (buildings)

_____ music and art

_____ religion and sports

_____ daily life (living in the city, school etc..)

_____ entertainment (gladiators, games etc...)

_____ other (please specify)

Appendix D

Content and Products: Ancient Rome

Matching “Concepts, Content” and “Products”

1. Choose one of the concepts addressed in the unit.
2. Start with the content you enjoyed.
3. Choose a product to show your understanding of content.

Concepts:

Building
Living
Falling

Content:

Etruscans
Gladiators
Roman Republic (Government)
Roman Empire (Expansion and Fall)
Architecture
Daily Life (Music, Art, Food etc...)
Others.....

Products to choose from:

Advertisement (Magazine/
Commercial)
Board Game
Book Jacket
Bulletin Board
Card Game
Cartoon
Comic Strip
Crossword Puzzle
Debate
Diary/Journal Entries
Drawing
Editorial
Essay
Fairy Tale of Historical Fiction
Illustrated Story
Letter
Map (with captions)
Model
Pamphlet
Painting
Play or Skit
Poster
PowerPoint
Puppet Show
Short Story
Song Lyrics (Sing it!!)
Web Page
***or something on your own

Appendix E

Study Guide

Be able to explain these terms:

Triumvirate

Consuls

Republic

Omens

Triumph

Be able to describe these groups or places

Publicans

Legionaries

Patricians

Circus Maximus

Coliseum

Tribunes

Plebeians

Constantinople

Carthage

Gladiators

Be able to portray the significance of these people

Romulus

Remus

Hannibal

Julius Caesar

Mark Antony

Augustus

Constantine I

Be able to give details of:

The structure of the Roman Republic,

Story of Romulus and Remus,

The Roman Gladiator

Punic Wars

Pax Romana

Write about the concepts of building, living and falling of the Roman Civilization.

Appendix F

Compare and Contrast Carthage and Rome

<u>Characteristics</u>	<u>Rome</u>	<u>Carthage</u>
<u>Geography</u>		
<u>People</u>		
<u>Economy</u>		
<u>Military</u>		
<u>Government</u>		
<u>Areas Conquered</u>		
<u>Leaders</u>		
<u>Describe Area Today</u>		

Similarities-

Differences-

Appendix G

Biography

You have been selected to develop a 3 page spread for a person of your choice in the "Time" Magazine "Person of Year" edition. You are on a team of three people who have been placed on your team based on their skill and talent. Each person will have a responsibility to present your person of choice to the rest of the class. Here are the three responsibilities:

Reporter: The reporter will write about the whole of the person the group has been assigned to. This should include the timeline of their life, accomplishments, events and other important facts that are associated with your person. (Requirements: must be one full page double spaced 12 point font, spelling, punctuation, and grammar needs to be acceptable. If possible include small picture can be included.)

Blogger: The blogger's responsibility is to take a handful of events from this person's life and tell us what they would have said in a "blog" form. You will need to communicate with the reporter and illustrator to make sure the times in the life you are "blogging" about are included in the report and possibly the illustration. (Requirements: must be one full page, fit the personality of the biography, be placed and time realistic.)

Illustrator: The illustrator will work with the reporter and blogger to develop an image to portray your person in a scene in their life. You can take a famous picture of them and recreate it. (Requirements: must take up a whole 8x11 page, can be sketched or illustrated with colors. You must have the proper setting and time quality for your person.)

Sample Card Catalog Entry

- TITLE:** How would you survive as an ancient Roman? / Anita Ganeri ; illustrated by John James ; created & designed by David Salariya.
- AUTHOR:** Ganeri, Anita, 1961-
- SERIES:** How would you survive?
- PUBLISHED:** New York: F. Watts, 1995.
- DESCRIPTION:** 48 p. : col. ill., col. map ; 30 cm.
- EDITION:** 1st U.S. ed.
- NOTES:** Includes index.
- NOTES:** School Library Journal
- NOTES:** Booklist
- NOTES:** Learn about everyday life in ancient Rome as you travel back to the city of Rome during the time of the Roman Empire.
- NOTES:** Reading grade level: 6.0
- NOTES:** Interest level: 5-8
- NOTES:** Reading grade level: 6.0
- NOTES:** Interest level: 5-8
- SUBJECT:** Rome.
- SUBJECT:** Rome--Social life and customs.
- SUBJECT:** Rome--Civilization.
- ADDED ENTRY:** James, John, 1959- ill.
- ADDED ENTRY:** Salariya, David.

Works Cited

- Amabile, T. (1996). *Creativity in context*. Boulder, CO: Westview Press
- Baugmartner, T., Lipowski, & M., Rush, C. (2003). *Increasing Reading Achievement of Primary and Middle School Students through Differentiated Instruction*. Master of Arts Research Project, Saint Xavier University. (ERIC Document Reproduction Service No. ED 479203)
- Bransford, J., Brown, A., & Cocking, R. (Eds.). (2000). *How people learn: Mind, brain, experience, and school* (Exp. ed.) Washington, DC: National Academy Press.
- Carbonaro, W., & Gamoran, A. (2002). The production of achievement inequality in high school English. *American Educational Research Journal*, 39 (4), 801-807.
- Csikszentmihalyi, M. Rathunde, K., & Whalen, S. (1993). *Talented teenagers: The roots of success and failure*. New York: Cambridge University Press.
- Ellis, D., Ellis, K., Huemann, L., & Stolarik, E. (2007). *Improving Mathematics Skills Using Differentiated Instruction with Primary and High School Students*. Action Research Project. (ERIC Document Reproduction Service No. ED 499581)
- Fischer, K. W., and Rose, L. T. (2001). Webs of skill: How students learn. *Educational Leadership*, 59(3), 6-123.
- Fine, D. (2003). A Sense of Learning Style. *Principal Leadership*, 4 (2), 55-59.
- Fisher, C.W., D.C. Berliner, N.N. Fully, R.S. Marliave, L.S. Cahen, & M. M. Dishaw. (1981). Teaching behaviors, academic learning time and student achievement: An overview. *Journal of Classroom Interaction*, 17 (1), 2-15.
- Flem, A., Moen, T., & Gudmundsdottir, S. (2000). *Towards inclusive schools: a study of how a teacher facilitated differentiated instruction*. Paper presented at the ECER Conference, Edinburgh.
- George, P. (2005). A rationale for differentiating instruction in the regular classroom. *Theory Into Practice*, 44, 185-193.
- Gregory, G., & Chapman, C., (2003). *Differentiated Instructional Strategies: One Size Doesn't Fit All*. Thousand Oaks, CA: Corwin Press.
- Grigorenko, E., & Sternberg, R. (1997). Styles of thinking, abilities, and academic performance. *Exceptional Children*, 63 (3), 295-312.

Hall, T., (2002). Differentiated instruction: effective classroom practices report *National Center on Accessing the General Curriculum*, CAST, U.S. Office of Special Education Programs.

Hootstein, E. (1998). *Differentiation of instructional methodologies in subject-based curricula at the secondary level*. Richmond, VA: Metropolitan Educational Research Consortium. (ERIC Document Reproduction Service No. ED 427 130)

Howard, P. (1994). *An owner's manual for the brain*. Austin, TX: Leornian Press.

Jackson, A., & Davis, G. (2000). *Turning points 2000: Educating adolescents in the 21st Century*. New York: Teachers College Press.

Jensen, E. (1998). *Teaching with the brain in mind*. Alexandria, VA: Association for Supervision and Curriculum Development

Keislar, E., & Stern, C. (1970) Differentiated instruction in problem solving for children of different mental ability levels. *Journal of Educational Psychology*, 61 (6), 445-450.

Johnsen, S. (2003). Adapting instruction with heterogenous groups. *Gifted Child Today*, 26 (3), 5-6.

Lapkoff, S., & Li, R. (2007) Five trends for schools. *Educational Leadership*. 64 (6), 8-15.

Mastropiere, M, Scruggs, T., Norland, J., Berkeley, S., McDuffie, E., Halloran-Tornquist, E., & Connors, N. (2006). Differentiated curriculum enhancement in inclusive middle school science: effects on classroom and high stakes tests. *The Journal of Special Education*, 40 (3), 130-137.

McAdamis, S. (2001). Teachers tailor their instruction to meet a variety of student needs. *Journal of Staff Development*, 22 (2), 1-5.

McCoy, J. D., & Ketterlin-Geller, L. R. (2004). Rethinking instructional delivery for diverse student populations. *Intervention in School and Clinic*, 40(2), 88-95.

Mulroy, H., & Eddinger, K. (2003). *Differentiation and literacy*. Paper presented at the Institute on Inclusive Education, Rochester.

National Association of Secondary School Principals. (2004). *Breaking ranks II: Strategies for leading high school reform*. Reston, VA: author

Reis, S., McCoach, D., Coyne, M., Schreiber, F., Eckert, R., & Gubbins, E. (2007). Using planned enrichment with direct instruction to improve reading fluency, comprehension, and attitude toward reading: An evidence-based study. *The Elementary School Journal*, 108 (1), 4-23.

- Riggs, L., Thomas, S. & McHenry, M. (2007). Differentiating instruction using technology: some positive results in student achievement. *New England Mathematics Journal*, 36 (2), 46-53.
- Rock, M., Gregg, M., Ellis, E., & Gable, R. (2008). REACH:A Framework for Differentiating classroom instruction. *Preventing School Failure*, 52 (2), 31-47.
- Rohrkemper, M. (1990). *Self-regulated learning and academic achievement: A Vygotskian view*. In D. Schunk & B. Zimmerman (Eds.), *Self-regulated learning and academic achievement: Theory, research, and practice* (pp. 143-167). New York: Springer-Verlag.
- Saxe, G. (1990). *Culture and cognitive development: Studies in mathematical understanding*. Hillsdale, NJ: Erlbaum.
- Siegel, J., & Shaughnessy, M. (1994). Educating for understanding. *Phi Delta Kappan*, 75 (7), 563-566.
- Sizer, T. R. (1999). No two are quite alike. *Educational Leadership*, 57(1), 6-11.
- Sousa, D. (2001). *How the brain learns. (2nd ed.)*. Thousand Oaks, CA: Corwin Press.
- Sternberg, R. (1996). *Successful intelligence: How practical and creative intelligence determine success in life*. New York: Plume.
- Sternberg, R. (1997). What does it mean to be smart? *Educational Leadership*, 55(7), 20-24.
- Sternberg, R., Torff, B., & Grigorenko, E. (1998). Teaching triarchically improves student achievement. *Journal of Educational Psychology*, 90 (3), 374-384.
- Subban, P. (2006). Differentiated Instruction: A Research Basis. *International Educational Journal*, 7 (7), 935-947.
- Sullivan, M. (1993). *A meta-analysis of experimental research studies based on the Dunn and Dunn learning styles model and its relationship to academic achievement and performance*. Unpublished doctoral dissertation, St. John's University, Jamaica, NY.
- Tieso, C. (2001). Curriculum: Broad brushstrokes or paint-by-the-numbers? *Teacher Educator*, 36 (3), 199-213
- Tieso, C. (2005). The effects of grouping practices and curricular adjustments on achievement. *Journal for the Education of the Gifted*, 29 (1), 60-89.

- Tomlinson, C. A. (2001a). Differentiated instruction in the regular classroom. *Understanding Our Gifted*, 14 (1), 3-6.
- Tomlinson, C. A. (2001b). *How to differentiate instruction in mixed ability classrooms* (2nd ed.). Alexandria: Association for Supervision and Curriculum Development.
- Tomlinson, C. A., Brighton, C., Hertberg, H., Callahan C., Moon, T., Brimijoin, K., Conover, L., & Reynolds, T., (2003). Differentiating instruction in response to student readiness, interest, and learning profile in academically diverse classrooms. *A Review of Literature Journal for the Education of the Gifted* 27(2/3), 119-145
- Tomlinson, C. A. (2004a). Differentiation in diverse settings. *School Administrator*, 61(7), 28-33.
- Tomlinson, C. A. (2004b). Research evidence for differentiation. *School Administrator*, 61(7), 30.
- Tomlinson, C. A. (2005). Grading and differentiation: Paradox or good practice? *Theory into Practice*, 44(3), 262-269.
- Tomlinson, C. A., & Kalbfleisch, M. L. (1998). Teach me, teach my brain: A call for differentiated classrooms. *Educational Leadership*, 56(3), 52-55.
- Tomlinson, C. A., Moon, T. R., and Callahan, C. M. (1998). How well are we addressing academic diversity in the middle school? *Middle School Journal*, 29 (3), 3-11.
- Torrance, E. (1995). Insights about creativity: Questioned, rejected, ridiculed, ignored. *Educational Psychology Review*, 7 (3), 313-322.
- Tyler-Wood, T., Mortenson, M., Putney, D., and Cass, M. (2000). An effective mathematics and science curriculum option for secondary gifted education. *Roeper Review*, 22 (4), 266-269.
- Vygotsky, L. (1978). *Interaction between learning and development* (pp. 79-91). *In mind in society*. (Trans. M. Cole). Cambridge, MA: Harvard University Press.
- Wolfe, P. (2001). *Brain matters: Translating research into classroom practice*. Alexandria, VA: Association for Supervision and Curriculum Development.