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Teaching with Differentiation: Students Searching for Joy and Justice

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Teaching with Differentiation: Students Searching for Joy and Justice

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WE, THE UNDERSIGNED MEMBERS OF THE GRADUATE FACULTY OF WESTERN OREGON UNIVERSITY HAVE EXAMINED THE ENCLOSED

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Teaching with Differentiation: Students Searching for Joy and Justice

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Candidate for the degree of : Master of Arts in Teaching: Initial Licensure

and hereby certify that in our opinion it is worthy of acceptance as partial fulfillment of the requirements of this master's degree.

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Abstract

This document is an action research project that studies a teacher's growth to include two years of classes and student teaching from Western Oregon University Master of Arts in Teaching: Initial Licensure program. As a student teacher for high school social studies classes, environmental science classes, and teacher of record for engineering classes, the primary researcher wanted to ensure that he was continually improving his teaching skills and best practices. His experiences in the classroom led him to the questions listed below in his research to improve his teaching for current and future classes. An expanded version of the primary researcher's chapters includes philosophy of education, a literature review, research methods, findings, and conclusions.

Three specific research questions that were analyzed through various data sources included: (1) How and why has my incorporation of differentiation strategies changed since I started teaching last school year, (2) how and why has my use of instructional strategies changed since I started teaching last school year, and (3) how and why has my incorporation of technology changed since I started teaching engineering last school year and social studies and science this year?

Keywords: differentiation, instructional strategies, technology, social studies, science, engineering

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Chapter 1

Introduction

Philosophy of Education

My philosophy of education, shaped by the last forty-five years of life and experience, starts with the assumption that the student is the focus of everything that the teachers, the school, and the broader education community do; it is their raison d'etre. With the student at the center, we can all come together with a common understanding of our roles and goals as we work together towards each individual student's education. High expectations, when coupled with integrity, motivation, and honest effort, can lead to the joy of student success and achievement, while inequity and breaking of trust can lead to disillusionment and injustice. So how does this older, new teacher, find the path to help his students find joy and justice in their educational journey? Well, with due regard to Robert Frost, let me describe the road I've taken.

During my K-12 education history, I went to four schools in two cities/ two school districts. My schools were supportive of me as a youth; my culture and background as American and White, with parents who were blue-collar middle-class, were common amongst my peers and reflected amongst my teachers. I do not recall ever feeling unseen, misunderstood, or overlooked as a student– in fact, I usually felt as though I was praised, noticed, and encouraged by my parents, my teachers, and the school administration. I recall being afraid one time in elementary school because I was worried that I had vandalized the school when I had used a pencil eraser to play tic tac toe on a window during recess (and then lied about it), and I got in a fight in fifth grade with a bully who was picking on my friends, but generally my K-12 experience was nearly idyllic. I was initially motivated by positive teacher attention and would

do the work necessary to get good grades. But I also began to intrinsically value getting good grades for the sake of learning. I participated in extracurricular activities that gave me a voice to change (or at least address) policies that I did not like. I had a group of friends that were supportive. In fact, it was my experiences as a youth in school that led me towards success as an adult and made me return to the classroom after so many years- so I can help students enjoy and benefit from school as I did.

While my youth wasn't idyllic, it wasn't too bad either. School at the time generally mirrored what has been called the factory system or the banking system of education, whereby students were processed from place to place by authoritarian teachers, assigned proficiencies topic by topic, memorized material, and tested to standards – with an apparent goal of satisfactorily achieving the standard with minimal disruption or individual thought. The hierarchy and bureaucracy for this type of education is said to mirror that of a factory, where mindless drones are produced, rather than free-thinkers (Friere, 2018). Like many others before me, I was successful in the factory education system that produced me. My education, or my years spent at school as a youth, along with my upbringing and personal educational ethic, resulted not in an unthinking factory drone or a vessel waiting to be filled with knowledge, but a motivated and inquisitive student for life. I recognize now that not all students in my school, in my hometown, or in the rest of the country had the same experience that I did in school and did not end up with the same result – whereas I was motivated and excited, they were perhaps bored and disenfranchised. And while these point-of-view differences can help us solve problems, it can also foment resentment and dissention amongst students, teachers, and parents. I recognize this difference in point of view, acknowledge the benefits and strengths of the direct instruction

teacher-based system that I grew up with and am moving towards a more inclusive and responsive educational system focused on student inquiry and inclusion.

While not segregated, the schools that I attended were demographically White majority. Through middle school, there were few children who were not White, and while I did not witness any racism or prejudice against them, that does not mean it did not occur, and their recollections would most certainly be different than mine in this regard. I also do not recall any specific inclusive activities or culturally sensitive displays supporting English language learners or non-Whites. An exception was in sixth grade, when a friend of mine, whose family were refugees, discussed what he remembered from escaping Vietnam as part of a social studies segment.

I do remember secondhand instances of racism, or an underlying lack of inclusivity in my K-12 youth. I remember my mom telling me about her Japanese friend who she had growing up – a friend who was forced to relocate to an internment camp when she was very young, and how unjust my mom thought that was. There was still much latent racism directed toward Japanese-Americans in Tacoma, Washington, even in my youth, and in fact all of my grandfather's friends that served in World War II used epithets and slurs when discussing or describing Germans or Japanese people. Similarly, I remember my great grandmother talking about African- Americans people in a very racist way (that did not make any sense to me), but she was a product of another era, and her opinions echoed the post-Reconstruction poor-White sentiment of the South as identified by Du Bois (1910) and Ladson-Billings (2004). During high school, I "discovered" the Chemawa Indian School- a Bureau of Indian Affairs boarding school for Native Americans, just a few miles from my house. I had never met anyone my age who claimed Native American heritage, and while my stepfather was Cherokee, we neither supported, nor impugned, that school. In fact, unlike the current expanded Oregon education requirements, I had only slightly

studied Indigenous history in a US History class. I remember many people in the community speaking in a derogatory way about Hispanics that mirrored the "mundane racism" identified by Garcia, Yosso & Barajas (2012), although I do not recall any level of segregation in schools.

While I do not recall any overt racism or prejudice in schools, I know that my impression may not be everyone's truth – as confirmed by discussions from my recent thirty-year high school reunion. The interesting thing about reunions is that you generally remember people as they were (depending on how close you are on social media), so the stories they tell are your collective memories and may vary widely from your personal recollection. While I did not recall any racism from high school, one classmate who was Black had vivid memories of student (and teacher) racism, while another student, with a similar ethnic background, could recall none. Was there racism in my school? Certainly. Was it readily apparent to all? Perhaps not... Like the parable of the three blind men investigating an elephant and declaring that it is simultaneously like a tree, a rope, or a snake, these memories are often simultaneously collectively right and wrong, and yet, still valuable, as each person's recollection provides an additional element that helps define the experience for all. Today's example of collective recollection could be a Zoom call which is also recorded – everyone has a recollection what they heard and saw, but the recording provides a more complete picture. Similarly, I know that every person in a K-12 education environment has something to offer, they just may need encouragement, scaffolding, or opportunity so that they can contribute. They do not need the barriers imposed by racism or prejudice.

How can I help counter racism and oppression in schools? Oregon public schools are still recovering from the openly or passively oppressive and prejudicial policies and practices in the past. Many of these policies and practices have been identified and modified to make them more

inclusive, but there is still work to be done. When teachers, students, or the community identifies artifacts of that oppressive era of thought and action, they must be marked for removal or modification. There is still inequality – students who are English language learners, for example, may not have sufficient materials to study, or take-home information for their parents that is in their native language. Many physical barriers have been removed for students with physical disabilities or challenges, but they often require greater money and more time to correct, so there are still inequalities – schools are compliant with Americans with Disabilities Act, but a student with a wheelchair may need to go a much greater distance to get from class to class, or go to the bathroom, because of the schools' layout. I believe (and have seen) that there are still instances of overt individual prejudice and racism present today in education and in society, but not the discrimination against an ethnic group arising from the "systems structures, or expectations that have become established within society or an institution" (Oxford, 2022). While I see no evidence of systemic oppression in the schools that I have been in recently, that does not mean that it does not exist (consider the blind men and the elephant parable again). Students today still suffer from micro-aggressions, physical, mental, and emotional abuse, exclusion, and bullying. If there is not systemic racism in the schools that I have seen, there are still artifacts of oppression present in schools– according to Paulo Freire (2018), one person's emotional dependence on another can be a sign of oppression. While not necessarily systemic oppression, I have seen artifacts of segregation or separate but equal policies – such as adverse or derogatory comments made to non-Black students that participated in Black Student Union Clubs, Black Lives Matter rallies, or Black History celebrations. I have seen and heard micro-aggressions or overt racism on the part of individuals against others, and while they are not the fault of the institution, as long as the institution (or their representative, the teacher) address issues as they arise. A school that

tolerates bullying or hazing (say, on sports teams) IS guilty of systemic oppression (but not racism, unless the oppression is race based). The student's self-view can be that they are only an "insert label here" (a thing), rather than a person with knowledge and power (Freire used "peasant" or "student" (2018).

So, if there is not systemic oppression in schools today (or at least not the ones that I have seen), but there are individual prejudices and vestiges of oppression, how do I keep them from encroaching upon the educational environment I will be a part of in the future? One of the first steps must be awareness. Awareness of differences in interpretation and opinion. Awareness of differences in point-of-view. Differences in experience– like the blind man parable mentioned earlier, do our experiences make us see snakes, trees, or ropes, when there are really elephants? And what does this mean for our educational environment? To build tolerance, we must be tolerant, but still aware and vigilant. How do you reconcile this dichotomy? As an educator, you generally want to avoid offending students, but you still need to discuss thorny subjects and maintain discipline. Difficult subjects and topics must be discussed so that students can learn how to address topics and remain respectful, rather than mimic behaviors that are prevalent on social media or entertainment news that are inflammatory, confrontational, or not compassionate. When a teacher observes blatant racism or prejudice on the part of students, staff, parents, or the community at large, I believe they are obligated to identify and discuss it. Difficult or controversial issues should be discussed to the point of improved understanding and sense of community and "critical consciousness" , rather than ignored (hooks, 1994). If the discussions need to occur privately to ensure honesty and participation, then they should, but the topic should be discussed. So, my classroom must be a place where students feel free to honestly discuss topics that may be political, sensitive, or even potentially offensive, so that we can gain a better

collective understanding and empathy. Similarly, when afforded the opportunity to participate in a discussion that can raise my consciousness as a teacher, then I should. And when I can work to engage my students, then I should. Recently, a student seemed despondent, so I asked them what the matter was, and they described a depressive episode and would not guarantee me that they would not hurt themselves. I promptly escorted them to a counselor for more qualified mental health assistance – putting a trusted student in charge until I got back. While walking, I continued to talk to the student and asked if they would mind if I described the issue to the rest of the class. The student seemed relieved and said, "Please do." When I returned to class a few minutes later, I asked the students to stop what they were doing and to listen to me for a few minutes. They did and we discussed suicide, suicide indicators, and how to get mental health help if you need it. I reiterated that student safety was paramount, and when I relayed that I personally knew several people who had committed suicide, several students also volunteered that information. Even though it was out of context, I had that same discussion with the remaining classes I taught, with similar results. Awareness, discussion, and engagement will be my principal tools to discuss difficult topics and counter oppression, if found.

When I am a teacher, how can I cultivate joy and justice in my classroom and in my students' lives? Joy and justice may be ephemeral in an academic setting, and certainly are not commonly associated with going to the "factory model" of schools prevalent today (Boggs, 2012). Joy and justice, like beauty, may be in the eye of the beholder; so, a universal prescription to achieve either may be difficult, especially in a multicultural setting where student, parent, and teacher backgrounds, behavior, ethics, and view of the world may differ (Freire, 2018). For my purpose here, I define joy as a general sense of great happiness and satisfaction and justice as a sense of legality, fairness, and moral rightness.

When students can succeed and see a link to their future, they are not bored, so while "joy" might be a stretch, at least they can appreciate the connection of what they are learning to their future or community. High expectations, realistic challenges, ties to the community, and collaborative efforts can lead to academic fulfillment, if not joy. Joy is possible, but often requires meeting or exceeding challenging personal goals that may not be controllable, especially in a competitive environment (e.g., winning the State Science Fair is not up to the student or teacher, but perhaps a student can experience joy through the effort they put into their project and presentation, even if they did not win). So how to bring joy to my students? Treat them with respect, work with them to learn topics that are germane to our personal and collective requirements, challenge them academically but treat them compassionately, and make genuine connections between the subject matter and their lives.

To cultivate justice, every class needs to be a chance to solve problems and discuss current events and topics of the day. Multi-cultural resources need to be used to ensure a larger worldview but need to contain a local/community focus. The classroom needs to be a place of non-retribution and non-attribution, where students can say whatever they want, provided they are respectful and adhere to classroom norms, and no one will hold it against them or blab it all over school. Collaborative discussion groups could be a useful tool to get students to open up and discuss topics that interest them – and while not every class topic lends itself to discussing current events (say, art), there are current events topics connected to any class (take the recent Russian invasion of Ukraine, or the ongoing war on drugs, for example, both of which could be used to highlight topics or media related to a class, including art). My view is not that justice means that we all agree on a course of action (except for the strict legal interpretation of guilty or not guilty which some might still call a miscarriage of justice– OJ Simpson's acquittal, for

instance), but that we can respectfully discuss all sides of an issue, identify problems (not victims), and then work together towards a solution and connect content to students' lives in a meaningful way (Boggs, 2012).

Is there a role for me as a teacher to work with the community to create not just successful learners, but also more *human* human beings? I hope so, if not, then why am I pursuing teaching – just so I can hear myself talk or feel like, in Boggs' words, I am in command or control (2012)? First, what does it mean to be more human? I agree with Wildcat that our knowledge of humanity, of who we are, comes from our relationships– physical, psychological, and even spiritual (Deloria, Jr. & Wildcat, 2001), so to be more human we need to understand our relationships better and understand the way that we live and how it affects those around us. Discussion of an individual student's religion or their spirituality in public school is often omitted, even though students can discuss their beliefs and teachers can discuss religion in general, so we are left to examine their physical and psychological relationships. The point is in the examination – students already examine physical relationships in science (e.g., physics class), but they need to connect what they learn in class to what they see in the world– they need to connect the theory that they learned to the experience that they (or others) have had to give it greater meaning and understanding– again connecting content to students' lives in a meaningful way. Similarly, they should be able to take experiences that they have had and work back to a theory that supports their observation (hooks, 1994). Students simply cannot just be observers, recipients, or victims, they must be participants and need to "accept the responsibility to be a contributing member of society" (Deloria, Jr. & Wildcat, 2001). In my limited recent exposure to public education in my local area, I am encouraged by the communities of interest I have found that are working collaboratively to support students across all bureaucratic boundaries, and

disappointed when I run into roadblocks that claim that we cannot change because they have always done it this way- at least in the mind of the bureaucrat that said “no”. One of the entities I have seen working well is a cross-curricular and cross District and multi-grade level action group of environmental educators that meets quarterly (even through the pandemic) to discuss topics, share ideas, and look for opportunities to support their programs and improve others. One way that I have not seen public education excel in is anything that challenges the status quo, with the most poignant recent example when the veteran foods teacher at a school where I was working could not use the charge card to buy food for class because there was a change in the process/ change in approval chain, because the bureaucrat did not have a sense of urgency and was buttressed by the well-intentioned fiscal policies, that were ultimately not supportive of the school or the academic requirements. The net result was that the teacher used their own funds to procure food supplies, at the direction of school administration, and was reimbursed. Schools working with social support organizations like shelters and food banks or with businesses to increase support and opportunities are great collaborative examples, while an administrator or public official that denies opportunity or support to students because of some outdated policy, like when COVID stay-at-home orders were issued and schools scrambled to get access to learning management systems that should have already been in place to support differentiated learning requirements or adaptive education supports that are not available until the Individual Education Plan or 504 is signed, are disappointing.

Boggs describes bottom-up change occurring when we “discover the power within each of us to change the world by changing ourselves” (2012). So, to lead from the “bottom”, a teacher would need to help students make their own conclusions rather than telling them specifics and providing conclusions for them. I come to teaching from a “top-down” leadership

background in the military, where I was often the one providing guidance and making decisions, but I've always welcomed "bottom-up" refinements. As a teacher I can set the stage for the students by providing information that they can synthesize in a collaborative way, and then allow them to make assertions or conclusions based on the information, the discussion, and their individual culture and background. The interesting aspect of this type of learning is that there may not be a "right or wrong" solution, as the true value is in the analysis and discussion. To be a "bottom up" teacher means that your students are looking for opportunities to address problems that they identify within themselves and their community.

Speaking of community, I have worked for change within the [government] system for most of my adult life, and I still believe that small changes, made locally, can have profound impact, and further influence state and federal policy makers. Boggs writes of community activism based on a matriarchal family model; I disagree. I believe that love and caring are more important than discipline and militarism in developing caring [education] communities and this is not based on gender, but on personal aptitude and philosophy. Similarly, if our government does not support the social responsibility, creativity, and global citizenship that the local education community desires, then we are obligated to try and change it. Part of the community effort needs to work together to change local, state, and federal education policy and administration issues, so the education community is free to be creative, caring, cooperative, and compassionate, without losing sight of the standards, technology, economics, and operating environment they, and the students, are in.

As I work to become a teacher, I am revising my role and method, but my purpose has remained steadfast– to work with students so they learn answers to questions they have about problems they are facing, have faced, or will face. They will make connections between what

they are learning and the community that they are living in. And they will be better equipped to operate in the future that they envision for themselves and our community. Their success is our success, and their failure is my failure.

In my personal K-12 experience there are a handful of teachers that I recall fondly, either for their interest, their compassion, their high expectations of me, or for their support of me. I recall almost none of my teachers from over seven years of college, but that does not mean that they did not make an impact, it just means that while they were important, we did not establish a personal relationship. My goal is to make a personal connection with my students.

I come from a strict authoritarian training background, firmly grounded in the factory education model that Deloria, Jr., Wildcat, and Boggs all describe as failing. As I step into this challenging arena at the start of a potential second career, I expect that while teaching I will have to frequently choose a side in the dichotomy of perpetuating the failing system (that produced me) or teaching in the system, and in the way that I wish I would have been taught, and that I now know is possible. For the exciting classes, even a mediocre teacher can usually keep students engaged, but what of the rest of the material that is important to learn? Some of my favorite teachers when I was growing up, or mentors that were particularly effective when I was in college or in the military, seem to have had several things in common. Despite a mundane topic, they were able to generate interest through a relationship we had developed, they had adequately convinced me that they cared about the topic and that I should too, or they were able to convince me that the topic was of sufficient value that I needed to retain the information presented. One college professor in African Studies, for instance, was speaking about beekeeping in Sudan so passionately that he awakened a nascent interest that I was completely unaware of and made an otherwise pedestrian discussion about post-colonial Africa interesting. Another

long-time high school teacher, who was infamous for her lengthy slide shows, knew so much and was able to transfer it to her students, that I recalled some of the material when I visited Europe over twenty years later. Finally, an officer I used to work with had this knack where he could get students to relive an experience through a debrief and highlight all of the points where decisions were made to have the students evaluate their choices, examine alternatives, and see opportunities from where they had failed, or to see additional paths that could have led to even greater success, despite the physical facts of their situation (they were usually hot, hungry, fatigued, and sleep deprived). In short, I have seen great examples of factory education in the military (a straightforward, occasionally unimaginative task, purpose, method, and endstate), as well as involved community education in the local outdoor education programs (where educators partner with students, businesses, government, and citizens to generate a collaborative inquiry-based approach). I hope to take examples from both and apply them to meet the needs of my students. I have also seen teachers that were ineffective, and I hope to avoid their pitfalls- long periods of direct instruction, lack of engaging teaching strategies, lack of connection to student's life or future, lack of technology integration.

If I was to express my philosophy of education to my students, here is what I would say: The student is the focus of everything that I do as a teacher. I am proud and humbled that I can spend time with you as a teacher. As we work to learn together, we will need to remain agile, flexible, cooperative, and compassionate – our currency is not just the knowledge that you gain, but also the time that we spend working together. As you have high expectations for me, I also have high expectations for you – I expect you to participate in every activity, every day, and do all your assignments; if you cannot, I expect you to tell me.

In our learning environment we will treat each other with dignity and respect. We cannot accept abusive behavior in words or deeds. Our discussions may be non-attribution, and I expect you to abide by that ideal which allows us academic freedom to explore concepts and ideas that may be difficult. We will welcome differing viewpoints, as we welcome different cultures and backgrounds.

We are in this class together and our relationship is based on trust and open communication. What do you want to learn? How do you want this class to help you later in life? How is this class important to you? Take pride in what we do in this class and take pride in what we achieve together.

You are the future. The future of your family, of our community, of our nation, and of our world. What do you want the future to be, and how can we work together in this class to make your future a reality?

But how to get from where I am as a teacher, to where I want to be? How to turn my vision into reality? There are innumerable educational opportunities to examine and improve upon, but to advance I need to define the problem I am trying to solve, beyond just being the teacher that I want to be. I need to research, identify, and study the problem of me; look for educational research that might lend itself to a better understanding of where I am as a teacher, where I want to be, and possible ways to get there. That is the subject of the following literature review.

Chapter 2

Literature Review

Purposes and Objectives for the Literature Review

My purpose in this review of the research was to discover how teachers and researchers have looked at effective teaching and teacher growth in their discipline. In an effort to improve my own teaching and make it align better with the way I wanted to teach, and less in the way that I was shown how to teach, I examined the deliberate ways of instruction where I felt I was the most challenged. First, I searched for research on differentiation (Theme 1) because I wanted to make informed decisions on strategies to provide effective learning opportunities for all my students, not just the ones that talk, think, and act like me. Next, I searched for studies on strategies for effective instruction (Theme 2) because varied instructional techniques may be required to support increased learning and access to education– both for the students, and for me as the teacher. Lastly, because I would be studying my own practice and focusing on these ideas in my endorsement areas, I looked for studies that indicated several methods of technology inclusion that may be effective for me as a teacher of social studies and science (Theme 3).

This literature review addresses my knowledge of these concepts as a foundation for my understanding to set goals and grow in my own teaching. I especially looked for research that described effective strategies for each area and gave examples of how it might work in a classroom. The application of this research was an essential part in building my own knowledge base for this project.

Procedures for the Literature Review

I selected literature for this review based on several specific criteria. Research on effective instruction was included if it contained the following descriptors: differentiation technology, secondary school, high school, equity, and discrimination. This search yielded hundreds of relevant articles. To narrow my findings and make them more specific to this research project, I then focused my review efforts on articles that discussed effective teaching and adult learning. From there, I looked for articles that supported sub-themes that emerged from the major articles in my literature review. These sub-themes are: 1) differentiation, 2) effective instruction strategies and 3) technology use and inclusion for effective teaching in social studies and science. For these sub-sections, I initially searched the EBSCO database for articles that met the keyword criteria listed above, a review of the curricula materials of the Western Oregon University Master of Arts in Teaching program, along with conducting a search for books in the database of the Hamersly Library at Western Oregon University. After finding these books and articles, I hand-searched their reference lists as sources to find additional related articles and books.

To integrate the literature review, I developed a coding protocol and corresponding separation of research into the major themes: differentiation, effective instructional strategies, and effective technology inclusion into social studies and science instruction. I read each article to determine how it fit within these broad thematic categories, and then, through a process of reading and rereading for salient features of each study, I determined the subheadings in the literature review. My intent was to start with a broad treatment of each theme and then to systematically reduce broad understandings of elements to a specific understanding of how these themes are present in research leading to applicable effective instruction techniques that I think I can successfully execute.

Literacy is Core to Learning

Reading and writing are important to all learning for secondary students and should not be excluded because of content area. They should, in fact, be included in most content areas, in various forms, to support the differentiated learning requirements of a diverse student population and the multiple levels of ability amongst the teachers that are working together to teach the students. Through this review effort, I hope to provide insight across populations and content areas to highlight that if the concepts identified apply across varied content areas, literacy applies to students and teachers in all aspects of their time together. This hypothesis is an area that could be studied in greater detail, with an eye toward identifying useful strategies for demographic groups, or with topics, in all areas.

Research Studies

This research study combined strands of complementary research literature, centered on three sub-themes. First, I discuss research on differentiation strategies because each student learns differently and as I strive for equity in education, I need to be able to recognize each student's needs and provide an educational path that they can follow to their success. Second, I consider research on effective instruction strategies because differentiation alone is insufficient, the lessons and instruction need to be provided to the students in an accessible and effective manner by a "village" of teachers. Finally, I looked at research on effective technology inclusion in social studies and/or science because not all technology tools are effective based on the tools, training, and equipment of the teacher and the student, there needs to be a harmony developed so that student and teacher can succeed because of their technology literacy, not in spite of it.

A Review of Research On Differentiation Strategies

Why differentiation? There are many justifications for differentiation as a means to improve student learning, but none struck me as more poignant than a data point from New York highlighted by Kozol where there are over 100,00 minority students that do not make it to graduation, from 9th to 12th grade, largely because of an inability to read and write (2005). McIntosh (1988) and Yosso (2005) highlight the struggles that female and/or minority students face due to racism and sexism. Noguera (2003) states that differentiation is not just for minorities; it is for all students. There are innumerable differentiation strategies available for consideration, but one that seems particularly pertinent to the nature of this review is a writing model called IMSCI (inquiry, model, shared activity, collaboration, and independent work). IMSCI is a process that focuses on writing with a gradual release of responsibility with scaffolding throughout. Teachers using IMSCI can focus less on how to write and focus more instructional time on content: "the IMSCI model makes it much more manageable to *teach* a specific type of writing" and "research has demonstrated that many teachers do not teach writing directly and focus more on product than process" (Read, Landon-Hayes, & Martin-Rivas, 2014). While IMSCI was designed for writing, it can be adapted to any content area that supports inquiry, model, shared activity, collaboration, and independent work – which should be all of them.

For separate content areas and for different teachers, differentiation strategies and emphasis will differ. While applied to a particular content area (in this case, engineering), Meneske, Stump, Krause, and Chi (2013) determined that interactive activities were more effective than constructive, constructive was more effective than active, and active was more effective than passive techniques for effective instruction. The results of this study are called the Interactive, Constructive, Active, and Passive (ICAP) hypothesis using the Differentiated Overt

Learning Activities (DOLA) framework, and indicate that the ICAP hypothesis is an effective instructional differentiation strategy "results suggest that when implemented properly, interactive modes are most effective...for student learning." (Menekse, et al., 2013). Westheimer & Kahne (2004) indicate that differentiation by content is variable, based on the educational goal and focus of the teacher.

When examining differentiation strategies, one must consider alternate demographic populations, to better support an equity view where each student can succeed not in spite of their demographics, but because of them. Differentiation supports a student where they are, with the goal of bringing them along to where the teacher (and the student) wants to be with regards to their education. Similarly, like Lee (2011) claimed, the demographics of the educators [and administrators] cannot be ignored as we examine differentiation for we must "first begin with sustained critical reflection on how we, as teacher educators, situate ourselves as a part of the problems" (Berchini, 2014). So, the educational community includes everyone- school staff, parents, students, volunteers, supporters, and local businesses and residents. Can there really be something for everyone in a student's education? I think so.

A Review of Research On Effective Instruction Strategy

My research interest has revealed that there are innumerable tools and techniques for effective instruction, but there are fewer actual strategies. I postulate that content area literacy, a multidisciplinary approach, and a student-focused effort are important areas for any effective instruction strategy.

Common Core State Standards have gone a long way towards supporting incorporating content area literacy into classes where they apply as an effective instructional strategy through an emphasis on listening, speaking, and writing. Emphasis on academic language serves as a tool

to encourage high expectations in content area literacy. Gottlieb and Ernst-Slavitt state that, "As a result [of inclusion of listening and speaking in Common Core State Standards], dialog and conversation within content area instruction have become venues for elaborating and practicing academic language" (2014). Interesting that literacy extends beyond spoken and written to include digital and visual literacy– which seems to expand the notion of content area literacy. Marker (2001) goes further to state that the social studies curriculum should be infused with a science, technology, and social perspective, thus broadening our understanding of literacy. So, literacy extends beyond reading and writing to understanding.

As a teacher, I often consider classes in isolation, but what if we reversed our thinking and viewed education from the student's perspective? If, as Tomlinson & Moon (2013) claim, teachers met the student where they are– not in their third period class, but the classes they have on Tuesday? Rutledge, Cohen-Vogel, Osborne-Lampkin and Roberts describe effective high schools as ones that seek to be more effective with a student-centered multidisciplinary/ integrated/ and supported approach that addresses academic and social emotional requirements of students (2015).

One research effort highlights how a writing strategy proved successful in a heavily bilingual math class, and the researchers noted how the teacher held high expectations for her students, modeled effective reading strategies for mathematics, used vocabulary in context and "created a culture that valued writing in mathematics." (Chval & Khisty, 2009). This broad effort approach proved effective in an extremely difficult environment with what is often classified as a challenging student demographic and is echoed by Buehl (2011) and Kirschner, Sweller, and Clark (2006). If we are seeking academic honesty in education, then, in addition to content, controversial issues should be discussed, and often in a cross-disciplinary way, to wit, students

should discuss religion in social studies, art, language arts, and science. According to Hess (2005), teachers will choose a way to address controversial topics, based on their political views (either by denial– deny the issue is controversial, because the teacher believes there is a right answer , with a privileged view– agree the issue is controversial, but there is a right answer, by avoidance– agree the issue is controversial, but refuse to discuss, or with balance–agree the issue is controversial and try to fairly present all sides) and should consider a varied and multidisciplinary approach that extend beyond academia. Non-academic articles or sources often provide great fodder for discussion in an array of classrooms or activities, especially if timely and interesting. While such articles may not be peer-reviewed, they retain value as a multidisciplinary tool (or even cross-disciplinary tool) if of broad interest like a discussion on Critical Race Theory rather than a discussion about Black history (King, 2021).

A Review of Research On Effective Technology Inclusion in Social Studies and/or Science

Technology should only increase the efficacy of educational efforts in the classroom, but with their great power comes great responsibility. The students and the teachers must learn how to use the tools of technology to support their learning journey. But it is not the technology itself that leads this journey for they are “used in a social environment and are, therefore, mediated by the dialogues that students have with each other and the teacher.” (National Research Council, 2000). One way to increase this dialogue, is for teachers to incorporate game-based learning or game-based instruction. Numerous studies from Becker (2007), Huizinga, Admiraal, and Akkerman (2009), and Yu, Yu, Fan, & Wang (2014) indicate that students maintain interest and improve learning through gamed-based instruction, and it is suited to engineering, science, and social studies, but may need to be augmented or tempered if using a commercial-off-the-shelf product.

Cell phones are an example of pervasive technology in America and around the world, and while numerous studies indicate that they provide an excellent capability to augment and improve instruction, there are also many that highlight the common problems they pose for teachers and students– that of distraction and interference. How to change the use of these powerful tools to enhance education, rather than hinder it?

Finally, the thread across all technology research seemed to coalesce around the ideas that for technology to be successfully integrated into classes for education, then the teacher needs to be proficient in its use, and the technology needs to serve a specific purpose, not just be brought in; in short the technology should not fit "the same instructional strategies, educators should be thinking critically about they will deliver instruction differently using the opportunities afforded by...[the] technologies"(Fritschi & Wolf, 2012).

Summary

The literature reviewed here indicates that differentiation, instructional strategies, and technology use can be used harmonically by educators in furtherance of the educational goals of their students. Many aspects of student learning hold that literacy is core to success, and the integration of literacy across disciplines and differentiation techniques have been studied in a variety of ways, the integration across schools, from a students' perspective, have not been extensively studied, particularly in terms of how teachers and schools incorporate effective instruction across their content, at the student level. Teachers could be working with other teachers, in other content areas, on teaching the students holistically, but they are often focused only on their class. Professional learning communities are focused on content areas, but shouldn't they also cross-connect with functional pillars of differentiation, learning strategies and technology, by student?

Chapter 3

Research Methods

Research Methods

The methods of inquiry for this study focused on the principles and practices of action research, using self-study aligned with professional teacher standards, teacher artifacts, external observations from supervisors, and anonymous feedback from students as a means of data collection. I will begin with a review of action research principles to establish the foundation for this study's method of inquiry. Second, I will review the choices and purposes of data collection that helped to highlight my instruction and means for searching for improvement. Third, I will detail my context for the study, methods of data collection protocols, maintaining credibility and trustworthiness of the data, and acknowledge my limitations as a researcher. Finally, I will present the procedures used for studying my practice, while providing data and analysis that speaks to adaptations and adjustments made to my instruction as I implanted this study.

Research Questions

My focus for this research was improving my use of effective differentiation strategies and integrating technologies into my engineering, science, and social studies classes. Specifically, I examined the existing strategies and techniques employed by my cooperating teachers in their original course content, compared them to my recollection, research, and study, developed and planned solutions that felt authentic for me, and tested them in the milieu of the classrooms in which I was assigned. This focus aligned with the following Interstate New Teachers Assessment and Support Consortium (InTASC) Standards for teacher professional development, including InTASC Standards 2 (Learner Differences), 7 (Planning for Instruction), 8 (Instructional Strategies), and 10 (Leadership and Collaboration). Additionally, I considered

how studying my own practice in line with InTASC Standards could improve my own instruction and therefore, student learning. My purpose of this study was to be an effective and engaging teacher, focused on student success and preparing them for life. The research question (s) for this study were:

1. How and why has my incorporation of differentiation strategies changed since I started teaching last school year? By examining this question, I hope to learn to recognize effective differentiation strategies and apply them correctly for each student, with the understanding that there will not be a single correct answer every time, but more likely a range of applicable tools that students can access as they need additional scaffolding. Examining the utility of the various differentiation and scaffolding strategies employed should help me to develop more universally available learning materials and lesson plans. Data gathered from a focus on this question was used to test how effective my scaffolding and differentiation strategies were initially and how they were modified to become more effective.

2. How and why has my use of instructional strategies changed since I started teaching last school year? By examining this question, I hope to learn to recognize effective cross-curricular and authentic instructional strategies for me. By examining the various instructional strategies I employed, I should be able to reflect and identify those that felt the best given the students and the content. Data gathered from a focus on this question was used to test how effective my instructional strategies were initially and how they were modified to become more effective.

3. How and why has my incorporation of technology changed since I started teaching engineering last school year and social studies and science this year? By examining this question, I hope to learn to recognize effective inclusions of technology across the three content areas.

Examining the utility of the various technologies employed should help me to identify more universally applicable technologies, types of students that benefit from certain technologies, and be able to integrate technology more effectively into learning materials and lesson plans. Data gathered from a focus on this question was used to test how effectively I integrated technology into my classes initially and how I made changes to become more effective.

InTASC Standards

InTASC Standards are instructional support tools to aid new teachers (and guide teacher preparation/ professional development programs) and increase the level of student learning in U.S. classrooms. There are ten standards, each requiring teachers to be proficient in techniques and demonstrate essential knowledge to meet the goals of the standards. The InTASC Standards relate to the following topics: subject matter, student learning, diverse learners, instructional strategies, student and group motivation and behavior, communication, planning instruction, assessment, reflection and professional development, and finally collaboration, ethics, and relationships. Standards, particularly these InTASC standards, are important to education because they apply to all teachers, all content areas, and all grade levels. These standards help ensure resourcing (time, people, and money) for education requirements and help ensure accuracy, relevancy, and effectiveness of the teaching for the students. These standards form the basis for external observations I have received as a teacher and a student teacher. For this action research project, I have decided to focus on the following InTASC standards: 2 (Learner Differences- The teacher uses understanding of individual differences and diverse cultures and communities to ensure inclusive learning environments that enable each learner to meet high standards.), 7 (Planning for Instruction- The teacher plans instruction that supports every student in meeting rigorous learning goals by drawing upon knowledge of content areas, curriculum,

cross-disciplinary skills, and pedagogy, as well as knowledge of learners and the community context.), 8 (Instructional Strategies- The teacher understands and uses a variety of instructional strategies to encourage learners to develop deep understanding of content areas and their connections, and to build skills to apply knowledge in meaningful ways.), and 10 (Leadership and Collaboration- - The teacher seeks appropriate leadership roles and opportunities to take responsibility for student learning, to collaborate with learners, families, colleagues, other school professionals, and community members to ensure learner growth, and to advance the profession.).

Methods and Procedures

Because my purpose was to describe my own teaching practice as well as how I use data to improve my own practice in line with the InTASC professional standards, it was important to choose a method that could account for both what the standards are for teachers and how I was paying attention to my own practice through data collection to improve it. Accordingly, this study was designed as an action research study.

Action research in education is simply a process for examining problems, identifying potential solutions, testing those solutions, and evaluating the results. In this case, the problem I am trying to solve is me, my teaching, my inculcation of effective instructional strategies, and my effective use of technology. This research is based on inquiry, follows a common procedure, and follows predetermined steps to complete the research. This will eventually lead to the evaluation and identification of actionable steps that I can incorporate into my teaching and in the classroom. These steps, in general, are: (1) identify and ask a specific question or problem, (2) plan ways to answer that question, (3) test the plan that developed (4) collect data on the test that you conducted to answer the question/ solve the problem, and (5) determine if your methods

and strategies solved the problem and answered the question. By doing this type of research, I will engage in the process myself and gather data as I go along.

Action research begins with a question, a problem statement. The main inquiry begins with me as I look at my own teaching methods, strategies, and techniques and ask how I can improve on my practice as a teacher. And what does "improve" mean? What are the indicators of a success and are they student-focused or teacher-focused? How do you determine where you want to improve, where you're being effective? It continues through research and data collection of elements designed to answer the central question of my research, and as I am the subject of the research, the focus remains how to personally improve my teaching. What is the data that supports this analysis, how do I get it, how do I evaluate it, and what does it all mean? Once I have the data, did I address the problem, solve the question, or do additional opportunities or questions need to be answered?

As a teacher candidate, this cyclical and iterative process adds value as it will improve how I think about my teaching and how I am incorporating what I have learned into the classroom to benefit students.

Data Collection

The basic steps in action research are 1) identify a topic or issue to study, 2) collect data related to the chosen topic or issue, 3) analyze and interpret the collected data, and 4) carry out action planning, which represents the application of the action research results. Data collection in an action research project typically is related to the topic or issues, and the data sets collected will provide answers pertinent to the research questions. As Padak and Padak observe, "Any information that can help you answer your questions is data" (1994) and so I will consider many different sources. Therefore, I used a variety of data collection tools related to my topic to ensure

the validity of my results. Furthermore, I adhered to the following four characteristics in determining the data I would collect for my study: 1) anonymity of students, 2) comparison in data collection was built in so that the results could be judged against themselves both before and after the intervention period, 3) aspects of performance to be examined were identified prior to data collection so that the information was relevant and connected to the research questions, and 4) a variety of data was collected so that different aspects of the topic could be brought to light (Padak and Padak, 1994). Finally, because I was studying my own practice while I was in the middle of said practice, I acknowledge the "spiraling nature" of data collection in action research (Padak and Padak, 1994). By focusing on data in connection to my research questions, my attention turned to other pieces of data that emerged in relation to my questions. These emergent data pieces were included as part of the study as they had relevance to my research questions.

Because of the focus of my three research questions– differentiation, successful strategies for me, and technology integration– I chose to collect and observe data about how my teaching was in practice was connecting with what I had planned, and what was observed. The types of data I collected are described in greater detail next, but broadly they are self-generated and external.

Self-generated data: Formal Lesson Plans, Reflections, Learning Management System

My first set of data is self-generated. It consists of all the items that are artifacts from my teaching over the last year and specifically includes any lesson plans, or more generically, any lesson planning, current and past course data on the learning management system, and personal reflections and recollections about more effective and less effective strategies employed or observed by me in a classroom.

Regarding my first research question, lesson planning notes help highlight the maturation and evolution of differentiation strategies employed by me, while reflections help identify individual strategies and activities, and provide insight as to why those strategies might have been particularly successful (or unsuccessful as the case may be). Analysis of learning management system data provides additional information about student engagement and supports trend identification across multiple terms, multiple class sections, and even a deep analysis of a particular student. Through reflection I have found that comparing between iterations of the same class material is particularly useful. An examination of why one period (versus another), while intended to be the same, was quite different in student outcome, and are those differences because of minor changes in planning or execution due to formative assessments I made in earlier classes, or are they because of differences in individual students? Over time, reflection over lesson planning and student activity on the learning management system have proven to be invaluable tools to examine all educational strategies, but this reflection is time sensitive. I have noticed that reasons for successes or failures fade and tend to generalize if I do not capture that reflection quickly– usually that day. Written notes and technology tend to aid in reflection, and that reflection is used in further planning for future lessons and activities.

While not sequential, according to my data, my research questions tend to be related– effective differentiation strategies are often reflective of effective instructional techniques, and may incorporate, or at least encourage the use of integrated technologies. By reviewing external data, I can determine if my reasoning is circular, if it is effective, and if supports student success, joy, and justice.

External data: Observation Commentary, Student Formative Feedback

I may often be my harshest critic of my own teaching and I may also be operating in an echo-chamber where my interpretations of what I see and hear in the classroom can be uniformly incorrect, so best is to seek and review occasional external feedback. Lesson planning is an excellent example where professional learning communities can collaborate on curriculum development and support lesson plan and specific tool and activity development. I have seen the opportunity for this in social studies where there are many teachers in a content area, but less so in environmental science or engineering where there are few teachers available. This is where working with teacher mentors, supervisors, and cooperating (or co) teachers can provide specific guidance and their observations can help correctly interpret the feedback that is available as it relates to my teaching.

For differentiation and differentiation strategies, I have made and continue to modify lesson planning based on feedback and input I receive from others, additional information that I learned in pedagogy courses, professional development activities that I have been involved in, and formative assessments I have of a students' ability to receive, process, and act on the information that I have curated for them. Not all differentiation strategies are successful every time, for each student; if they were then teaching would be more like a recipe, instead of a process of planning, execution, assessment, and reflection. A teacher, especially a newer teacher, has less experience and may not recognize opportunities to alter strategies when they are no longer working (or are less effective), but a more experienced teacher or supervisor should be able to offer alternate strategies and considerations. This type of exposure and feedback is a gift to a new teacher, and should be received not as a condemnation, but as an expression of support, even though it can feel severe.

Differentiation, strategies, and technologies are all components of instruction, and if student success is the goal, then the student is the customer, and they should have voice in claims of whether my teaching is successful. Not every class may be perfectly synchronized and executed, but the opportunities to help students succeed should be. This is not an example of me advocating for students to give likes or stars to classes or teachers, but rather for a student reflection on the efficacy of that teacher helping them learn and the class for supporting their academic goals and needs. When I have received feedback like this, it has been at least as valuable, and perhaps more so, than any other self-reflection or external feedback that I have received.

This external student feedback is, perhaps, the only way to effectively measure how effective your instructional planning, strategies, and technological integration were. Great planning may not survive past the distraction of the day, the technological glitch, or the strategies that you conceived, and a quick formative assessment can tell you if your efforts are succeeding, or if you need to adjust and reteach a portion of the content that students have not connected with.

Context of the Study

I have had the opportunity to long-term substitute teach (on an emergency license) and student-teach in a large High School in the Willamette Valley of Oregon. This is also the high school that I graduated from back in 1989. The community is suburban, and the school district hosts six mainstream high schools, with an additional alternative high school and a Career Technical Education (CTE) Center. The school received a huge extension bond to be able to put the student population in permanent facilities, rather than the temporary trailers they had been in for the last ten years and built a new wing and an additional building. Class sizes are large with

30-40 students per class, but attendance rates take that daily number down to about 24-27 students per class. I teach engineering in the new building, science in the new wing, and taught social studies in the old part of the school. I am simultaneously part of the CTE professional learning community (PLC), the social studies PLC, and the science PLC. I teach six sections of engineering, so the CTE PLC is my main one. There is monthly PLC time for our school, with additional time available as required to support integration and training. I student teach during my prep time. Because I am an employee, I also have access to one of the teacher mentors at my school (there are 3) and they have been invaluable in helping with grading, understanding the learning management system (Canvas), and helping with resource development.

There are approximately 2,415 total enrolled students in this school. 67% of those students are Hispanic, 21% are White, 5% are Pacific Islander, 3% are multiracial, 2% are Asian, and 1% are Black. 69% of the students are English language learners (ELLs), and 79% of the students qualify for free or reduced lunch. The school has an 84% on-time graduation rate. The median class size in core classes is 25. The school has 100 teachers, 39 instructional assistants, 8 counselors, 3 graduation mentors, and 4 behavior specialists, as well as office and custodial staff. The cafeteria is run by a large contractor. There is one principal and five assistant principals (one of whom is my school supervisor). There are quarterly professional development periods, staff meetings, and other regular meetings (I am on the school's leadership team and the security team).

We teach on a block schedule with alternating A and B days- with four periods each day. I have three engineering classes each day and student teach environmental science or social studies on either day. I also have an advisory period on Wednesdays. I have 25-42 students in each engineering class, and 25-35 students in social studies and environmental science. Each

period has its own student dynamics and challenges, but overall, the students in my engineering and social studies classes are eager to learn. Students in the environmental science class, however, see the class as a graduation requirement or a credit recovery class and are not very interactive, although they will do the work that is assigned to them. Because of COVID, most of the students are only just now getting to know each other (if they did not attend the same elementary or middle school), even though they may have other classes together.

In my specific classes I have about 15 students on IEPs with specific needs. I have 22 students with 504 plans, some medical. And I have 125 students who are ELLs (including post monitored). I also have 8 students who are TAG students. I have 166 students in my assigned classes, 25 students in my advisory class, 73 in the classes I student teach in, 23 students in the activity period I host, and 10 students in the clubs that I advise.

Participants

Because this study was designed using an action research approach, the main participant in the study is myself, as the teacher. As my learning progressed throughout my teacher education and student teaching program, I became interested in several ideas that would help me to improve my instruction. Ultimately, I decided to focus on the main research areas outlined in my research question. To lend credibility to the results I will share from my self-study of my practice, it is important to describe my role in the classroom where I teach. In this section I will focus on describing my own classroom and my role as the teacher.

For the purposes of this study, I have been long-term substitute teaching in engineering since March of 2021. I started student teaching environmental science and freshman social studies with the beginning of the 2021-2022 school year while simultaneously teaching engineering. While student teaching, I mostly focused on student relationships during the first

term, although several times I taught cooperating teacher content, as well as content that I developed. Because the school also employed me, I had several opportunities to substitute teach in other classes- other social studies classes, a math class, other science classes, and even a Spanish class. I am also the club advisor for two clubs– the Math, Engineering, Science Achievement (MESA) Club and the Model United Nations, and I run an afterschool activity called the Maker Space. As this study focuses on strategies for differentiation, effective instructional strategies, and technology inclusion in lessons, all my time teaching (and advising and activity) is considered for this study, irrespective of whether I was under the auspices of a cooperating teacher or operating on my own.

There was initially an issue with my placement at this school as I was seeking a dual endorsement for social studies and science, with an ESOL endorsement, while I was teaching engineering. Upon further review, however, the WOU MAT program decided that since Oregon's science education standards include engineering under the Next Generation Science Standards, that my teaching time in the engineering classes could be included for consideration under the program. That said, there was an incredible amount of work to be done, in all classes, including my own at WOU.

Coming in to teaching last year, armed only with my own experiences, and the beginnings of my teaching repertoire from WOU, I developed a course schedule and began developing content. I did not develop formal lesson plans; I was simply trying to get the students back in their seats and get them to learn about the systems and techniques they had only seen remotely while in comprehensive distance learning because of COVID. By the end of the year, I had ironed out the online learning management system (Canvas) as a tool and developed several literacy and inquiry tools that I continue to use today but have refined them over the course of

the year. At the end of the year, I had to pack up my room so that it could be moved to the new building over the summer. Also, over the summer I continued to have epiphanies during the various WOU classes and ideas that I wanted to try to improve student success and increase their excitement about the course, the content, and their own learning. As school began in the Fall, I had the opportunity to substitute long-term again in engineering, and after consulting with WOU advisors, I accepted through November, and then again for the remainder of the year. Part of this acceptance involved setting up the new, approximately 2500 square foot classroom, and outfitting it with furnishings, unpacking all of the materials from the other room, setting up the Maker Space tools and equipment, ordering $250,000 worth of new equipment for the room, and planning and spending the annual budget for the subject area.

Student teaching while teaching a full course load has been exciting, exhausting, and frustrating all at the same time. Exciting when I can transfer a skill or activity between students, classes, or courses, or when I can develop rapport with a student in one class and use it to his advantage in another. Exhausting when my life catches up with my studies, my job, and my student teaching and frustrating when the students and I do not seem to connect on material. This term there has been high-highs and low-lows in all areas, but progress continues across all fronts, perhaps especially in the classroom. I continue to identify undiagnosed student needs through observation, formative assessments desk side or during projects, or through discussion.

How I Studied My Teaching

My self-generated data comes from what I have done or observed. For the engineer classes I tried to schedule and plan weeks in advance, occasionally generating lesson plans, but most commonly just developing unit plans and assignments on the learning management system (Canvas), that I backed up with lecture, discussion, and project time. I actively monitored

progress on projects and often extended them so that students could finish if there was an equipment limitation that prohibited their on-time completion – a technique that also served students in need of differentiation or accommodation. I reviewed files and notes from last year and modified them for this year's classes. I took pictures of effective tools I saw in other classes or something that came up during WOU classes and implemented them in my classroom- if they were effective, I took my own pictures or made notes on the electronic noteboard. I made notes and reviewed them before and after lessons, and if the lesson was repeated in other sections, I would modify the pacing or scaffolding based on response to the presentation of the material, the discussion we had, or something else that required change. After one reflection, I went and had an in-depth discussion with our English language development and Spanish teachers and developed sentence examples and sentence frames for each of the literacy activity submissions and noticed a significant increase in the rate of participation and completion. I recently noticed an issue with a mathematics computation assumption I had made and stopped lesson progress so that we could refresh on a math skill that most students have forgotten (fractions). Student teaching has specifically exposed me to tools that I had heard of, but not really used. My social studies cooperative teacher used Google classroom to good effect (I had never really seen it used before), while the cooperating teacher in science uses Edpuzzles frequently, and the students that have high absenteeism are still able to complete their work. My exposure to these tools, and others, have increased my ability to successfully incorporate technology.

My external data comes from direct observations from my cooperating teachers, WOU supervisor, school supervisor, school department head, other teachers, parents, and students. With varying degrees of fidelity and attention to detail, all have provided useful feedback and guidance. Even a student acting out or falling asleep is telling me something, I just need to listen.

Honest feedback from students usually comes only when there is a certain level of rapport and trust. The same can be said for supervisors, cooperating teachers, and parents. The entire community needs to agree that everyone is doing their best, at that time, and work together to find areas where we can work together to achieve student success, with the understanding that not all success looks the same. One student, who is planning to drop out in a few years, has different academic goals and needs than the student who is planning to become a doctor, yet both deserve a chance to achieve success. I may never determine a student's barrier to success if they do not trust me and I may never trust a supervisor that I perceive does not have my best interests at heart. And without trust it is difficult to receive well-intentioned feedback, it may simply be dismissed as critique.

The real challenge with external data is interpreting it if it is not explicit or if it lacks sufficient quantitative elements to make useful rather than simply anecdotal. Does my inability to connect with one student on a lesson constitute a failure on my part, or is that simply a day when the student was not able to learn or preoccupied? So, the formative assessment here could tell me that there is a requirement to reteach them when they are able to receive the information, not necessarily that the lesson was ineffective. Additionally, can I identify trends across days, lessons, or student populations as I consider reteaching? The decisions help determine the ultimate utility of the research. Contradictory observations can be common, based on what criteria the observer is using, so I have explicitly asked observers to comment on desired data elements, to wit, my differentiation strategies, instructional strategies, and integration of technology.

During a recent engineering activity, I discovered that the main impediment to learning had nothing to do with content area, it was due to a fundamental assumption I had made (about

pre-existing/ background knowledge in math) that proved to be false. Students could measure, but they did not understand fractions! Recognition dawned on me following a parent teacher conference when the parent told me that the student was having trouble in math, and when I examined his grades and scores in that subject, I saw that he was. I then added a math assessment and saw that students had not made the leap from math theory to math practical application, a problem that I am sure reflects some of the difficulties I have seen in in science and engineering, but now that I know I can more effectively differentiate for and scaffold. It just never occurred to me that the students would not know how to add fractions in high school, and leads me to wonder what else I am assuming that is making it difficult for students to learn (and what else should become a pre-assessment)?

So, what have I learned through examining my teaching for the last year? Are my techniques and procedures effective for most students, or just a few? Am I successfully integrating technology into lessons and activities? Are the snapshots and vignettes of my work from the recent past indicative of where I am now as a teacher, and is that where I want to be? If teaching is a path, is the “you are here” star on that map the place where I want to be, or am I simply on the journey? In this chapter I discussed the research and the methods and in the next I will examine the data and the meaning.

Chapter 4

Presentation and Discussion of Findings

Preparation

As discussed previously, my data collection focused on qualitative research conducted on my own teaching practices and the evolution of those practices during the 2020-2022 school years as part of my long-term substitute high school teaching job and my Western Oregon University (WOU) graduate practicum at the same placement.

The research questions I asked were:

1. How and why has my incorporation of differentiation strategies changed since I started teaching last school year?
2. How and why has my use of instructional strategies changed since I started teaching last school year?
3. How and why has my incorporation of technology changed since I started teaching engineering last school year and social studies and science this year?

I used these research questions as I studied the artifacts of my teaching that were either self-generated (including my lesson plans, personal reflections, and learning management system records) or external (based on observation commentary and student formative feedback), and includes official observations conducted by my Western Oregon University supervisor and coordinating teachers whose classrooms in which I was student teaching. Table 1 (Braun and Clarke, 2006) explains how I conducted my research.

Table 1

Data Analysis Steps

Phase 1. Familiarize myself with data	Interviews and focus group session transcribed via transcription service Send interviewees individual transcripts for them to check for accuracy and note additional information they desire to add Read transcripts against audio recording for orthographic accuracy Begin digital diary of thoughts concerning themes and any "surprises" of information
Phase 2. Generate initial codes	Organize date into meaningful groups with research questions in mind Manually code with notes in transcribed text Begin digital code book, collating data within groups Code for all potential themes Note tensions & inconsistencies of codes in digital diary
Phase 3. Search for themes	Organize codes into potential themes using digital table Note thoughts on relationships between the emerging themes in digital diary Note any potential sub-themes in digital diary Add a miscellaneous section in digital code diary for any seemingly unrelated code
Phase 4.	Revise table of potential themes, considering internal homogeneity and external heterogeneity

Review themes	Read collated data extracts for each theme, checking for coherent pattern For extracts with no coherent pattern, re-examine theme and related coded data for sub-theme or renaming of theme For themes where coherent pattern exists, examine for individual theme validity in relation to entire data. Examine transcripts for any missed data extracts needing coded for theme Re-read entire transcripts for any new themes that may have been missed Stop when no more substantial and relevant themes emerge Examine how themes fit together in relation to research questions and note thoughts and considerations in digital journal Create thematic map
Phase 5. Define & name themes	Adjust digital table of them to organize collated data extracts within each theme for consistency Identify relative narrative for each theme in the digital diary Write a detailed analysis for each theme, to include individual relevance and how that relates to overall analysis and answers the questions of this research Examine written analysis for any excessive overlapping of themes Examine each theme for any sub-themes needing to be identified and explained For each theme, describe scope and content in no more than two sentences, adding potential names to each theme
Phase 6.	Write an analysis within and across themes

Write the thematic report	Assure there is written evidence within each theme with related data extracts Choose vivid and relevant extract examples for each point of evidence in answering research questions Create analytic narrative that incorporates evidential answers to each research question

Data Analysis of Research Question 1

How and why has my incorporation of differentiation strategies changed since I started teaching last school year?

To answer this question, I needed to reflect upon the artifacts I generated and review what I had done in order to compare my starting point with my current location with regards to differentiation strategies. I know from my review of my initial learning management materials from the period that differentiation was not specifically included in tasks and assignments, but that certain strategies were mentioned as a part of classroom norms and expectations. In fact, during the early period of the engineering classes back in March 2021 and again in September of 2021, I asked if anyone spoke another language at home, and when most of the students indicated that they did, I related to them that, sadly, I did not. I welcomed their answers in whatever language was most comfortable for them and indicated that I would use the translation features available on our computer workstations. We then went through an example where I translated the welcome note to Spanish (the dominant language in the class) and then back to English. Most students indicated that they knew this tool was available but admitted that they had not used it often. After a few more classes at WOU, I discovered that there was a talk-to-text tool resident on the machines that could aid students in determining meaning of words, if they

were unfamiliar with them, and I added this to lesson planning as well (see Figure 1). While I still write unfamiliar words on the wall, I remind students that they can check unfamiliar terms as we move through material together, or if the list is long, I include it on Canvas (See Figures 2 and 3).

Figure 1

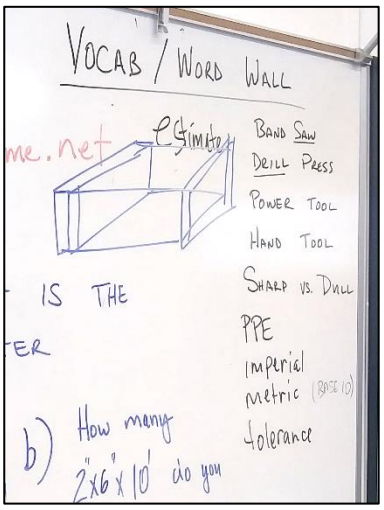
Differentiation within Lesson Plan

How have you addressed the needs of diverse learners? (Ex: IEPs, 504s, linguistic & cultural diversity, students without prerequisite knowledge, etc.) For students on IEP/504 electronic notes are provided with any class problems worked out step-by-step and students are offered additional time to submit assignments or documentation. Linguistic learners were presented a short vocabulary list to cover new vocabulary within the class in Lessons 1-2, written submissions will be accepted in a mixture of English and most fluent language depending on the level of language comprehension. ESOL sheltered strategies are highlighted/ italicized throughout the lesson. Students without prerequisite knowledge will be given a background sheet or practice problems (as appropriate) to gain that prerequisite knowledge or a differentiated assessment method. TAG students will have the opportunity to challenge problems and for further exploration in the lab setting. Scaffolded/ differentiated instruction included in Lesson 1 on graphic organizer (GO) for slide deck lecture/ incorporation into ISN, slide and GO availability on Canvas, paired reading activities to aid comprehension during lecture and activities. This preparatory lab worksheet and guidance incorporates the use of familiar language and sufficient pictures to support visual learners.

Note. Differentiation statement from lesson plan from environmental science class taught by author.

Figure 2

Sample Whiteboard Word Wall



Note. Word listing from an engineering class.

Figure 3

Electronics Vocabulary Listing in Canvas

Term	Definition
Computer	
Input	
Processing	
Storage	
Output	
Sensor	
Code	
Binary	
Solder	
Flux	
LED	
Resistor	
Capacitor	
Motor	
Lamp	
Switch	
Potentiometer	
Generator	
Power grid	
BTU	
Electrons	
Neutrons	

Note. Students were to record their definition of these words and submit them on Canvas.

My recollection and data are all well and good, but what did my supervisors and students have to say about my efforts at differentiation?

School supervisor indicated that my engagement with individuals and groups was effective in the class he observed (see Figure 4). I was appreciative of his observation but felt that there was a certain population of students that I was not connecting with. I discussed with my first year's instructional mentor and she provided some additional scaffolding tools and ideas.

Figure 4

Comment from School Supervisor

- You move about the room and engage every student group with questions about their thinking and their process. This gives them an opportunity to think critically and reflect upon their work in the moment.

Note. From an observation on 11/03/2021 in an engineering class.

I also had a discussion with several Spanish language and English language development teachers at my school to see if they had methods that might help me be more effective in connecting with students who are Hispanic. Their simple recommendations included using more handouts, continuing the use of a word wall and sentence frames, and continuing to provide materials on the learning management system so that students could engage when it was best for them to do so.

Data Analysis of Research Question 2

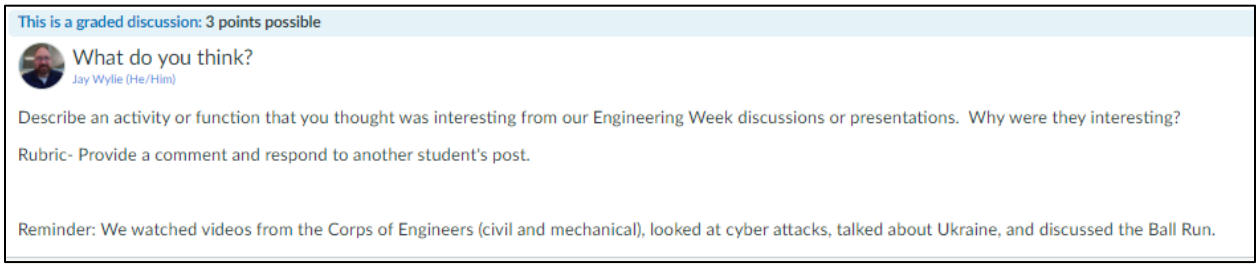
How and why has my use of instructional strategies changed since I started teaching last school year?

When I started teaching in high school last year, most of my instructional strategies were direct instruction, with activities in support. Now my strategy is more student-centered, and

inquiry-based. There are still times when direct instruction is used, but those times are less frequent, shorter when they do occur, and more often include discussion, rather than just presentation. This change is reflected in lesson-planning, but also comes from an increasing ability to read and understand the subtle (and not so subtle) cues from students. When Russia invaded Ukraine, students were distracted and unable to focus on the material in the lesson plan, so I stopped the activities I had planned, and, based on my military background (about twenty-five years of commissioned service) we did about a forty-five-minute discussion on tactical, operational, and strategic military considerations, as well as domestic US policy considerations (like financing and reinstating the draft), and "what if" questions. Many students indicated that it was the highlight of the term, as we talked about stuff they did not know, had never considered, and they felt better knowing- so while I considered it just part of my normal daily interaction about the news, they felt it had tremendous value on their social-emotional well-being. My initial reflection was that I had shorted that day's lesson and would need to cover that missed material on another day. The students, on the other hand, responded positively to the question posed in Figure 5, not with a comment on the loss of instructional time due to the discussion, but rather the gain in additional information.

Figure 5

Student Reflection Question in Canvas

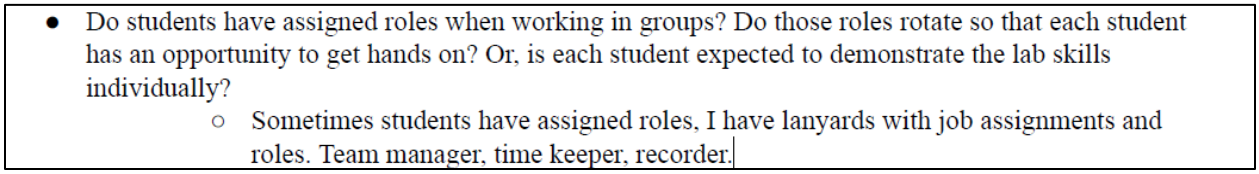


Note. This reflection was posted in Canvas after students spent the week listening to external briefers discuss their work with Boeing, the Army Corps of Engineers, and other industries.

Based on feedback from my school supervisor, I have modified all grouping activities to include position responsibilities, with visible identification tags and job descriptions (see Figure 6). While a scaffolding strategy, this also helps focus group activities and I have found that it helps keep them on task. Initially, I would allow students to self-select positions of responsibility on teams or groups. Now, I choose the team leader, and let them identify the roles of the members of their team. The team leaders are also responsible for determining work scheduling and restroom use for members of their team.

Figure 6

Comment from School Supervisor


- Do students have assigned roles when working in groups? Do those roles rotate so that each student has an opportunity to get hands on? Or, is each student expected to demonstrate the lab skills individually?
    - Sometimes students have assigned roles, I have lanyards with job assignments and roles. Team manager, time keeper, recorder.

Note. From an observation on 11/03/2021 in an engineering class.

I continue to modify lessons and practices based on what I see and hear and based on reflections on methods I have tried. In observations of my cooperating teacher, or other teachers during learning walks, I have observed techniques and strategies, that may not resonate with me, but work for them, or that seem to work for the students. When faced with such strategies, I examine them for elements that might support my teaching style, or that can be modified or included in my practice. To that end, I have increased group/ combined reading, the explicit use of sentence frames, and modeling/ verbalizing my thinking during inquiry activities. Students appear to be responding positively through increased participation and engagement. Figure 7

demonstrates two recent slides from a science lesson that poses a series of questions that the students and I developed after watching a film trailer and (chorally) reading a passage together.

Figure 7

Sample of Group Reading Activity and Graphic Organizer

Note. From an environmental science class. Presented in class and posted on Canvas.

Data Analysis of Research Question 3

How and why has my incorporation of technology changed since I started teaching engineering last school year and social studies and science this year?

As time progresses in the classroom, I have become more and more comfortable with the technology available, which has enabled me to better integrate it into more interesting and engaging lessons and activities in engineering, social studies, and science. That is to say that I am by no means an expert, but I note in reflections that I am gaining proficiency quicker and with less frustration for the daily tools (internet-based applications on student Chromebooks, the classroom's audiovisual display system, and the school's learning management system). There is still appeal for analog tools like whiteboards and post-it notes (see Figure 8), but there are also tools like the one in Figure 9 that I used at the semester that can more rapidly support the aggregation, grading, or formative assessment of data for lesson development, progression, or modification.

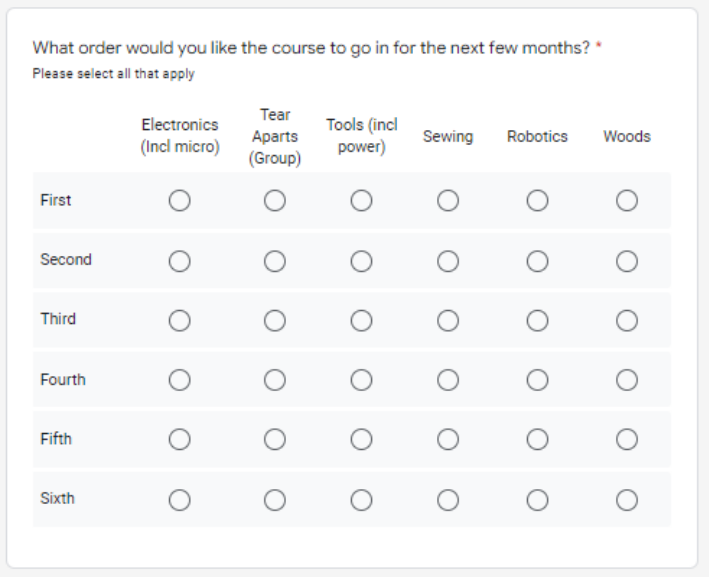
Figure 8

Low Technology Student Feedback Example

Note. Work sample from an engineering classroom whereby students provided commentary and feedback by filling out three Post-It notes and placing them on the wall in the appropriate area.

Figure 9

Electronic Feedback Form in Canvas to Elicit Student Input



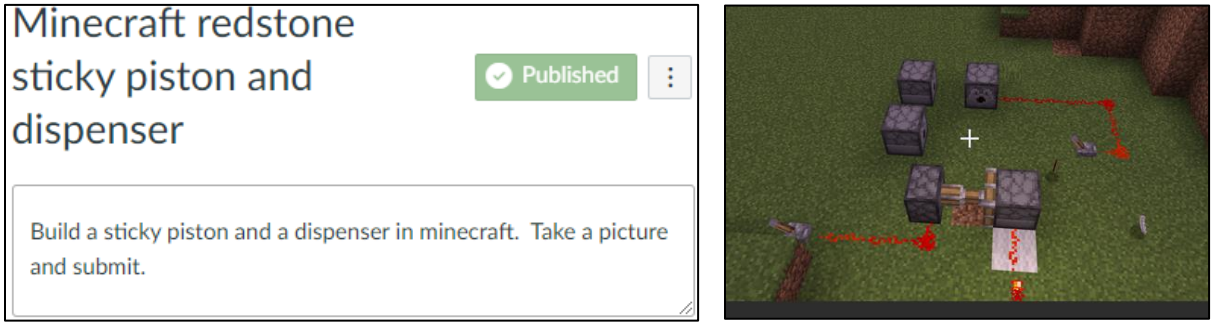
Note. Made by the author using Google Forms.

The challenge of technology inclusion in a classroom has often less to do with the concept of it, but rather the thoughtful integration of useful technologies- useful for the student,

for the teacher, and for the content area. Last term I used a game supported activity for engineering to generate interest (Minecraft) and discuss basic electronics circuits, and while there are similar activities available or possible for social studies and science, they are not appropriate for the content area or grade level of the classes I was teaching in (see Figure 10).

Figure 10

Game Supported Interactive Technology



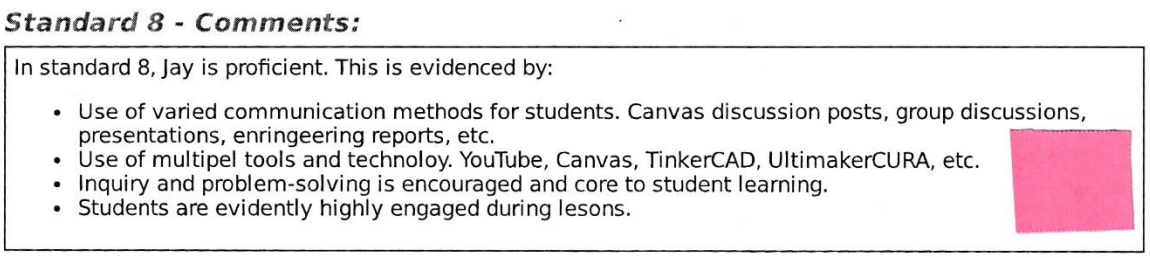
Note. Student assignment built in Canvas. Minecraft Education Edition was available on district supplied Chromebooks, so this assignment was available to all students and was used to help understand circuit design.

There were, however, instances where I was able to connect to background knowledge that several students possessed as it related to biomes- a common Minecraft term that they were familiar with. Technology inclusion in the classroom remains a continual process, not for technology's sake, but for improvement in content, delivery, and student engagement.

During observations by my supervisors and cooperating teachers, they have commented on my effective and appropriate use of technology (see Figure 11), but as a novice teacher, I remain unconvinced of the efficacy of my current practices, as the observed outcomes are different across classes and content areas.

Figure 11

Supervisory Comment on Technology Usage



Standard 8 - Comments:

In standard 8, Jay is proficient. This is evidenced by:

- Use of varied communication methods for students. Canvas discussion posts, group discussions, presentations, enringeering reports, etc.
- Use of multipel tools and technoloy. YouTube, Canvas, TinkerCAD, UltimakerCURA, etc.
- Inquiry and problem-solving is encouraged and core to student learning.
- Students are evidently highly engaged during lesons.

Note. Licensed staff evaluation from school supervisor for Standard 8: Instructional Strategies (which includes the use of technology to support instruction).

Summary

Through this research, my goal was to understand my teaching practices and how they integrate across learning strategies as I have learned the importance of doing so through my review of current literature on the subject. To study my own teaching practices, I used the following questions to inform my qualitative research:

1. How and why has my incorporation of differentiation strategies changed since I started teaching last school year?

2. How and why has my use of instructional strategies changed since I started teaching last school year?

3. How and why has my incorporation of technology changed since I started teaching engineering last school year and social studies and science this year?

I used these research questions as I studied my self-generated data in lesson plans, reflections, and artifacts, as well as external information provided by unofficial and official observations conducted by my supervisors and coordinating teachers, and feedback from colleagues and students. Using all available sources for studying my teaching practice was useful in getting a complete picture of who I am as a teacher today, who I am becoming, and how I am helping my students achieve joy and justice in their education.

The next chapter will expand on this data while presenting the analysis and implications of this data in relation to my research questions. I will also discuss future research opportunities as I continue in professional teaching experience. This research does not end with this paper, as teaching is a journey, not a destination and there remains much to learn and improve upon.

Chapter 5

Discussion and Conclusion

Overview

More than an action research project in support of a graduation requirement, this effort has led me on a journey of reflection and analysis that I have built into my teaching preparation and have built into student activities and assignments as we finish units and ideas and prepare to transition to new ones. With regards to this specific project, supported by my teaching in engineering, science, and social studies, the research questions I asked were:

1. How and why has my incorporation of differentiation strategies changed since I started teaching last school year?

2. How and why has my use of instructional strategies changed since I started teaching last school year?

3. How and why has my incorporation of technology changed since I started teaching engineering last school year and social studies and science this year?

To answer these questions, I studied the artifacts of my teaching that were either self-generated (including my lesson plans, personal reflections, and learning management system records) or external (based on observation commentary and student formative feedback), and includes official observations conducted by my Western Oregon University supervisor, my school supervisor, and coordinating teachers in whose classrooms I was student teaching. These data were presented in detail in chapter 4 but will be analyzed here.

Key Findings

While I did not discover any groundbreaking educational practices, the data suggest that continued data collection, analysis, and reflection on differentiation, teaching strategies, and

technology integration improves the efficacy of teaching, especially for new teachers and teachers transitioning from a previous career/ coming to teaching later in life like I am. The flexibility of an action research project such as this seems to support growth in teacher performance and expectation, which in turn, should support increased student performance and growth. Specifically, the data supports the integration of life experiences that aid in scaffolding and linking technology to lessons, even if the application is not clear, the need to connect it is.

Interpretation of Results

How and why has my incorporation of differentiation strategies changed since I started teaching last school year?

My findings are supported by research in that differentiation is varied for each student and no single effort can meet all students, but the act of continuously adapting efforts can reach students and help them find joy and justice in their education. Self-generated data from lesson plan reflections supports my continued use of an electronic learning management system (Canvas) for cataloging and delivery of class materials as students can access them using their Chromebooks at any time, even if they are not able to (or choose not to) come to class. Students have responded well to this. They can review sentence frames and can check their work with the electronic translation utilities available, if those supports are required. External data sources (surveys from students and comments from cooperating teacher) indicate that differentiation and scaffolding on interactive projects, that support student agency and inquiry, receive the most positive responses to informal queries, surveys, and supervisory commentary. The success of students on assignments and projects seems to support the ICAP hypothesis described earlier by Meneske, Stump, Krause, and Chi (2013).

How and why has my use of instructional strategies changed since I started teaching last school year?

Teaching students appears to be like other professions, where each day is different, but similar, and the teacher develops a toolkit of strategies that often work for students, and they strive to employ them daily in a meaningful way. Not every day may be a rousing success for student or teacher, but in the aggregate, success is achievable. My interpretation thus far indicates that I have many of the correct tools to be successful, I just need more practice so that I can more readily forecast and identify appropriate tools and find new tools when the ones that I possess do not appear to be working. In the military, we often called this the coup d`oeil– the ability to grasp what was happening with only a brief glimpse. I need to continue to work with what I know and adapt to this new environment.

From lesson and lesson plan reflections, and after a discussion with English Language Learner Teachers, I greatly increased the use of handouts during individual and group projects. This use of handouts was perhaps the most surprising to me- students who had something in their hand seemed more likely to do the work, even when the handouts were rudimentary. This scaffolding tool has also led to increased engagement, and when given the choice between an online assignment and a paper one, many students will choose the paper one. When I coupled this with explicit group task instructions (that included lanyards with job names and descriptions- an additional form of handout) and chose the team leader, collaborative group work seemed to function better, and all students contributed more. External feedback from students and supervisory personnel continue to indicate that I am successful in many instructional strategies and have good rapport with students, but I still have students failing all classes, so clearly the data indicates that I am not connecting with all students. Based on my own evidence, where I

determined there was a fundamental gap in connecting math theory to math practical applications (beyond a math class), I will continue to look for opportunities to deliberately connect across content areas. I have begun to address students with continued academic problems with a more holistic approach, as indicated by Rutledge, Cohen-Vogel, Osborne-Lampkin and Roberts (2015), and while our individual relationship has increased, there have been only modest gains in academic grades for those students. Interestingly though, this broader look is being examined by a group of interested teachers that formed the "ninth-grade success team" as a way to increase student performance and is something that is being discussed by the school leadership team to examine school-wide at my placement school.

How and why has my incorporation of technology changed since I started teaching engineering last school year and social studies and science this year?

There is so much technology available. With smartphones, Chromebooks, a dedicated computer lab in my engineering classroom, Wi-Fi throughout the school, innumerable applications and web-based opportunities, and much greater individual student technical knowledge, there is almost no lesson that cannot be augmented by technology or media. The challenge remains in choosing a suitable and appropriate support. Reflection on lesson activities indicate that my choices have supported the learning for most students, but there are still students that do not engage, as evidenced by distraction, poor grades, or absenteeism. Much like traditional scaffolding and differentiation, technology needs to include multiple avenues to access the desired information or knowledge. Commentary from my cooperating teacher, and from teachers that visited my room during a professional development session, indicate that they are impressed by the technology available (and integrated) into the engineering classroom. One caveat with technology, highlighted earlier by Fritschi & Wolf (2012), is that as technology

continues to advance and change, so the teacher must also advance and change their techniques to maintain relevancy and currency. Teaching on outdated software in an engineering class is not useful if the focus is on the tool versus the process and the product, and for technology, the tool can often become the focus. Because of the myriad tools and technology available, and the variability of individual students, I remain unsatisfied with my ability to adequately and accurately forecast technology effectiveness with every student, so I will continue to pursue ways to include and improve technology use in my classrooms.

Limitations of Study

There were two major limitations that impacted this action research project: the first was the COVID-19 pandemic, and the second was the efficiency with which I was able to capture specific anecdotes through journaling and reflection. These limitations that greatly impacted my ability to get the work completed as well as the type of data that was available for the research being done.

The COVID-19 outbreak effectively shut the schools in Oregon down starting in March of 2020 and I began data collection for this study when I was hired in March of 2021. My self-generated data were skewed by the policies and protocols that we had to follow due to health concerns with the pandemic- cohorting, masking, cleaning and class mergers all impacted my ability to collect “normal” data. Many lesson plans and classroom activities that could have directly supported social studies and science data collection were not available because I was only teaching in engineering, so while the data is useful from a differentiation and instructional strategy perspective, there is not a direct linkage to the first set of data that was available.
All of the classes that I taught for my job at the placement school had to include an online component- that is they needed to be able to be remotely accessible. The use of the learning

management system (Canvas) greatly supported this, but as this was my first teaching job, a combined in person and online format was difficult to craft, especially when the original construct was for the classes to be done in a face-to-face environment.

Because I was teaching in three separate subject areas, for eight classes, across four grades, I was unable to generate detailed notes and reflections for each lesson plan. I was able to make general comments, and support with some specificity in certain areas, but on some days, there were only general observations about my performance or the formative assessments for the students. Student teaching during my preparation periods was a great introduction to teaching in social studies and science but were it not for the other six periods in engineering to try additional methods and techniques, I would have been unable to transfer strategies and technologies effectively. And while I was scrambling to meet scheduling requirements and collaborative and administrative requirements, my own notetaking was often the first casualty of time management.

There is also a general limitation of an action research project, it cannot be generalized to anyone other than me. The situation and variables that I described above specific to my situation, as are my questions and findings. So, I am not developing a map for others to follow, I am simply describing my journey, and a reader is only provided an example, not a recipe, for action that only might be replicated in their situation.

Implementation of Findings

As a result of this action research project, I have seen two main areas that will immediately impact my teaching and one area that I desire to do continued research in and see how I can see future growth take place. The two areas that I can see impacting me immediately are intentionally planning (differentiating) for students who are current and post-monitored

English-Language Learners in my lesson plans and incorporating cross-curricular content in my lesson plans to increase instructional relevance and student application. The area that I would like to research more for future growth is in using more inquiry-based learning beyond the engineering classroom. Project-based learning can allow for differentiation in the form of content, process and product, but I did not collect data on the projects that I used in engineering to determine construct and applicability to other content areas- a missed opportunity, for sure, but even with a cursory analysis I can see value and applicability for science and social studies.

As I begin to plan for my next year of teaching, I would like to be more intentional about planning for the culture and heritage of many of the students of the high school where I will work, so that I can better support students who are current and past English language learners. I also know that there must be a better way to integrate technology into the classroom- most students have a phone, yet there are few educational activities tied to curriculum that are supported by that platform- there must be a better way.

Summary

This action research has helped me to understand and appreciate the need for educators to self-assess, to self-reflect, and to collaborate. As such, I am beginning to recognize areas where I am an effective teacher and areas where there is still significant potential for growth. I also recognize that when I can take issues and information to my peers in my professional learning community or share specifics with colleagues in a department meeting or even the lunchroom, then those trusted agents can help me develop and refine solutions as part of a collaborative educational community.

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