INTERDISCIPLINARY PRACTICES BETWEEN ENGLISH LANGUAGE ARTS AND SOCIAL STUDIES WITH THE USE OF DIRECT GUIDANCE INSTRUCTIONAL METHODOLOGY VERSES MINIMAL GUIDED INSTRUCTION

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by

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Seminar Paper

The attached seminar paper, by Chad A. Steldt entitled, Interdisciplinary Practices between English Language Arts and Social Studies with the use of Direct Guidance Instructional Methodology verses. Minimal Guided Instruction, when completed, is to be submitted to the Graduate Faculty of the University of Wisconsin-Platteville in partial fulfillment of the requirements for the Master of Science in Education Degree, for which three credits shall be allowed, is hereby

Approved _Chadwick Biermeier_____Date: _____December 19, 2019_____

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CHAPTER 1

INTRODUCTION

The abundance of methodologies in public education have been tossed around, revised, renamed, remade time and time again. Some methods have found the trash can for good reasons, and some have withstood the changes of time. The action of this research project looks at a method that has been around since the 1920's, interdisciplinary teaching, but as expected it has changed since its quiet beginnings. In the 1920's, as Applebee, Adler, and Flihan (2007) noted, there was a very progressive approach to learning pedagogy that centered around student learning, rather than teachers teaching. Similarly, today education is focused much on the learner.

The study into interdisciplinary practices will identify methods that positively impact student learning. It will look at English Language Arts (ELA) and Social Studies (SS) as focal points. The research will be applicable to all levels of student learning.

Purpose of Study

The initial reason for undertaking this study was twofold. One, can a small rural school that is higher performing in the state of Wisconsin, benefit from such methodology? Small rural southwestern Wisconsin schools usually have less than 250 learners at the high school level (DPI-WI, 2016). This leads to many constraints, and one of these are the interdisciplinary work between departments. Teachers and students, in such small communities, are often pulled in many directions, leaving minimal time to dive deeper into subject matter, as well as skill sets, that can further improve our school. Second, there is also the fight against the traditional higher

education instruction that often high schools follow. This traditional way of instruction often does not allow enough collaboration to take place for an interdisciplinary research team to be established (Jacob, 2015). Haring and Kelner (2016) found similar circumstances in their research which showed that many times the second and third days of a unit were spent on basic concepts, with a portion of each 47-minute class used to review the prior day's material. This means that students are losing valuable instruction time. An increase of collaboration and a movement away from traditional instruction could allow more progress in learning and improvement in their overall learning skills. Haring and Kelner (2016) further note that deeper and more engaging material finds itself at the end of the period, which is then usually interrupted by the bell. It is then obvious there has to be some improved ways to teach. There has to be more deep and engaging methods to reach students so their skill set is matching their potential.

Statement of Problem

The workings of interdisciplinary definitely is not new, but since 1920's there has been a lot of variances within this teaching method. Sometimes these variances were influenced by independent variables like Common Core Standards or district wide changes. For example, Haring and Kelner (2016) stated that they needed to "make the instructional changes required to raise the bar and close the gap for all students". In the last ten years there has been a resurgent of interdisciplinary work curricula because of these shared values according to Haring and Kelner. The Common Core, that was in much part created because of Bill and Melinda Gates Foundation, with the main goal of raising state standards to better match the standards set by the National Assessment of Educational Progress (NAEP) (Peterson, Barrows, & Gift, 2016). According to the DPI Wisconsin website, the state results from NAEP in 2017 were overall flat

(McCarthy, 2018). This means students in fourth and eighth grade did not see much growth in areas of math and reading compared to the testing results of 2015. Wisconsin State Superintendent of Instruction, Tony Evers said, "Wisconsin's NAEP results, and those of the past decade plus, show how desperate the need is for us to work together to close opportunity gaps for our kids" (2018).

At the same time, 36 other states have improved their NAEP results. The difference with the states that are doing well and not doing well is directly due to the influence of Common Core curriculum (Peterson, Barrows, and Gift, 2016). These results, even though troubling, better opens the door to interdisciplinary works if they can improve results.

This raises the main objective of how interdisciplinary teaching can help the state of Wisconsin, especially in rural areas, to improve their standards to better provide some enriched curricula. There is a renewed commitment to provide curriculum at a basic level, but also allow time for differentiated instruction that both higher level learners are challenged while still closing the gap with the lower level learners. As noted by the then State Superintendent Tony Evers, "as our population continues to diversify, we cannot afford to leave large numbers of our students behind their peers and expect the Wisconsin economy to continue without disruption" (2018).

The research study utilized both vertical and horizontal Professional Learning Communities to identify the areas of interest. A vertical professional learning community consists of teachers that are in the same subject department but are at different grade levels. While the horizontal professional learning community consists of teachers at the same grade level but teach different subject matter. Professional learning community (PLC) coordination took place over the course of 24 months, and higher level learners along with average, and low level learners are identified.

Interdisciplinary units often do involve ELA and social studies curricula in the public education system. “It makes a lot more sense to have a partnership with English and social studies. They naturally lend themselves to each other” (Hinton, Suh, Colon-Brown, O’Hearn, 2014). Research proved that units that were designed to improve analytical and comprehension levels in students were successful (Hinton et al. 2014).

The practice of interdisciplinary teaching does have its problems. The method of teaching often lacks direct instruction, and rather relies more on a constructivism approach (Kirschner, Sweller, & Clark, 2006). Even though both of these methodologies, direct versus constructivism, are appropriate at times, it is unclear what methods should be used in an interdisciplinary lesson to render the best results for learning, as well as meet or surpass standards set by Common Core. According to Egan & Schwarts (1979), in *Chunking in Recall of Symbolic Drawings,* and De Groot’s (1978) famous “Chest Master” study, direct instruction provides more long-term memory building blocks which lead to higher level thought. We still need to decide if and when constructivism (minimal instruction) is applicable or possibly beneficial for students.

The goal of the research study is to identify what methods are the most beneficial and successful for student learning at the middle/high school level. The research hypothesis is that student performance levels will improve on standardized and teacher assessments when interdisciplinary units are the driving force behind the curriculum. Furthermore, interdisciplinary pedagogy will increase their skill set in writing and analytical thought which is key to Common Core Standards. The research will foster a greater understanding of how learning happens, rather than how teaching happens.

Significance of the Study

The research will identify how interdisciplinary methodology can be beneficial for education. As students reach middle level and secondary level of school they are presented with more everyday life application, thus the pedagogy has to have a more constructivist approach which is a part of the interdisciplinary teaching model. This means students take a more active role in learning, rather than being passive in learning. Constructivism resembles more real-life characteristics by blending like disciplines and skills. (Klein, 2006). This is not only better for the overall school, but for individual students as well.

Students will be better prepared to meet Common Core State Standards (CCSS) when taught with the interdisciplinary approach. Moreover, students will be more able to utilize innovation, supportive technologies, and practice an inquiry-based approach to learning that will yield a higher order of thinking (Soule & Warrick, 2015). The teacher can benefit from these practices as well.

The teachers have to know what methods work best. The study will help identify the applicable methods that teachers can utilize to better provide learning across subject lines and build a more 21st century education. An evolving curricula helps teachers stay up-to-date with current trends. More attention will have to be given to the effects of teaching practices to achieve common learning goals that are shared by professional learning communities. The habit of consistently looking for ways to improve the academics in school will help enrich a lifelong learner culture. At the same time, the collaboration amongst teaching staff will build unity.

Delimitations of Research

The research that will be reviewed and analyzed will focus on interdisciplinary pedagogy that can be applied to mainly middle and secondary level learning. The research will be done by using mainly online search engines such as: ERIC, Google Scholar, Badgerlink and Ebscohost, and the WI-DPI website. A few historical books will be used as well to give a better understanding of the evolution of this pedagogy as it has reappeared through late history. The key terms that will be used during research will be interdisciplinary units, professional learning communities, vertical and horizontal collaboration, constructivism, project-based learning, Common Core Standards, and co-teaching. The Fennimore ELA and Social Studies Departments will implement interdisciplinary pedagogy into two units over the course of one academic year. One interdisciplinary unit will deal with the Progressive Movement and Theodore Roosevelt. The second interdisciplinary unit will take place during the second semester and will be about the civil rights movement and *Letter from Birmingham*.

Definition of Terms

Professional Learning Community (PLC) – These are teams of teachers that work either on subject curriculum or skill-based learning.

Vertical PLC - A professional learning community within a school that consist of teachers from the same subject department but teach at different grade levels.

Horizontal PLC - A professional learning community within a school that consist of teachers from different subject matter but teach at the same grade level.

Interdisciplinary – a methodology of teaching where a unit is taught across two or more subject classes.

Methodology – Educator's approach to accomplish learning.

Direct Instruction – Direct instruction is a delivery by an educator that is very controlled and follows a sequence. Usually the teacher is in front of the class and using modeling or lecture to present the information.

Constructivism (minimal guided instruction) - Constructivism is the opposite of direct instruction. This way of teaching allows the learner to play or experience with the knowledge, and thus build a better understanding. There is still some direction provided by the educator, but it is minimal compared to direct instruction.

Problem-Centering - Involves enlisting the knowledge and modes of thinking in several disciplines so the learner can apply to real-life problems that require more than one discipline to solve.

Common Core – Common Core are learning benchmarks that public students are assessed on every year.

Bridging Disciplines – Subject matter so broad so that other fields are included during study, such as geography and anthropology.

Common Planning Time (CPT) - Designated time for teachers of different subject matters to work on curriculum.

Chapter Two:

Review of Related Literature

Introduction

The purpose of this literature review is to provide research-based findings identifying how interdisciplinary lessons can improve learning. There is a high demand to improve student learning as proving by the multitude of test scores, especially the National Assessment of Educational Progress (NAEP) (Peterson, Barrows & Gift, 2016). As Soule and Warrick (2015) explain, the answer to a 21st education may be rooted in an interdisciplinary approach.

The literature review that is relevant to incorporating interdisciplinary methods come from an array of different backgrounds. For the purpose of a coherent review the literature will be broken up into history, differences of methods, case studies, team teaching, correlation beyond disciplines, and obstacles to implementation. The literature review will provide a better understanding of possibilities under the interdisciplinary method.

Definition and History of Interdisciplinary

Interdisciplinary teaching is defined in several ways. The variance in definitions is due to the history of the methodology as well as the degree of how in-depth a school takes the practice of interdisciplinary teaching. Interdisciplinary can be dated back to the 1920's, but it fizzled out in part due to "an emphasis on the life problems of adolescents" (Applebee, Adler & Flihan, 2007, p.1003). According to Applebee et al. (2007) interdisciplinary lessons had curriculum structure that "integrate the disciplines, pedagogies, and have activities that engaged students across subject lines" (p.1003). Interdisciplinary practices have progressed since its beginnings. According to Boardman et al. (2015) interdisciplinary lessons now go beyond the normal sharing

of curriculum because students are expected to be at a higher level of knowledge in a 21st century technological world. This means students need to not only know liked material from classes, but more importantly apply strategies, content, perspectives of reading across subject lines. At the same time these lessons need to be rooted in a world of ever advancing technology. More specifically, Boardman et al. identifies these practices lead to a deeper understanding of skills to use in reading, which his research group refers to as Collaborative Strategic Reading (CSR).

The transition to an interdisciplinary methodology has to be done gradually so that the culture of learning can adapt. One of the most difficult issues with this pedagogical change is the role of the teacher-student relationship. The student takes a more active role in problem-solving while the teacher transitions more to a facilitator role under an interdisciplinary lesson (Klein, 2006). This is a transition that needs to be recognized by both the educator and learner so the overall lesson can be successful.

Bear and Skorton (2019) recognized a common problem at the secondary level of learning when transitioning to a more interdisciplinary philosophy. Often more than not, there are little to no interdisciplinary units at the high school level of learning due to the fact that so many teachers are rooted into their "disciplinary silos", curriculum that is separate from other teachers. Bear and Skorton furthered noted in their research that the lack of cross-categorical learning effects future employment. Less than 30% of employers feel like students are being prepared correctly (p.62). There are great teachers within their own areas of study, but these expertise are often not shared with other teachers to build an enriched learning environment. This traditional way of teaching seems outdated in a world that relies on constant communication with each other.

Interdisciplinary units can allow teachers to share and work together to improve learning. These units are not an end all though. This method of teaching often lacks direct instruction, and rather relies more on a constructivism approach, also known as problem-based learning (Stentoft, 2017). Even though both of these methodologies, direct vs. constructivism, are appropriate at times, it is unclear what methods should be used in an interdisciplinary lesson to render the best results for learning, as well as meet or surpass standards set by Common Core.

Much of the research completed thus far is dominated by types of interdisciplinary methods, rather than quantitative data or empirical research that proves or disproves this approach of teaching. It is the purpose of this study and these sources to further the idea of interdisciplinary work in schools. Moreover, it is imperative to answer the question of what effects interdisciplinary curriculum has on learning.

Interdisciplinary Methods and Differences

Applebee, Adler, and Flihan (2007) develop the idea that interdisciplinary instruction happens along a continuum. The continuum consists mainly of three categories: correlated, shared, and reconstructed. The goal would be to reach reconstructed, where the interdisciplinary units are fully redesigned and thus go beyond the boundaries of the disciplines. Most schools are at the shared continuum. Applebee et al. (2007) believes this is fine because the interdisciplinary units are still a benefit to both teacher and learner. Though the complication of understanding this continuum may be the reason there is a lack of interdisciplinary curricula.

Nikitina (2006) also divides interdisciplinary curriculum into three categories: contextualizing, conceptualizing, and problem-solving. These three approaches are based on the inquiry that takes place in the classroom. Contextualizing is used if the inquiry is more based in

the humanities. Learning would take place about the culture, history, and/or ideological fabric. A conceptualizing approach would be used when scientific method guides the inquiry. Lastly, when science is applied or product-development is the main mode of inquiry, a problem-based approach is needed. It is important to note that a good teacher could use multiple interdisciplinary strategies and be successful (Nikitina, 2006).

Case Studies, Team Teaching, and Common Planning Time

One of the most intriguing sources was an action research study conducted by Haring and Kelner (2016) on how and why they implemented an interdisciplinary curriculum. The rollout of Common Core State Standards back in 2010 influenced teachers to make curriculum changes to meet the newly cross-categorical standards. According to Common Core Standards students needed to be more prepared for "career, college, and life" no matter where they lived (Peterson et al., 2016). More precisely, the students needed to meet standards in reading, writing, and research (http://www.corestandards.org). Haring and Kelner (2016) believed the only way to move forward with curriculum was through the help of another teacher which led directly to interdisciplinary research. For them the interdisciplinary methodology was full of potential. It created a common language among staff and students. It allowed Kelner to focus on research while Haring improved writing skills. Teachers worked together to scaffold project-based learning so that they could help each other and the students in areas of need. Assessments were improved because common rubrics were used. Students familiarized themselves with criteria that were assessed in ELA and Social Studies. All of this helped facilitate learning on a continuum from 6th to 12th Grade. The further collaboration that Haring and Kelner noted also improved literacy across the board. Their study relates to how positive an interdisciplinary curriculum can

be, but it also recognizes the difficulties associated with such change. Even though common plan time (CPT) is good, it was hard to find time to do in a formal format. This made it imperative to be creative, and sometimes meetings had to be done informally. The main goal in CPT is to get questions answered and goals set for the lesson ahead. As long as this getting done, Haring and Kelner did not care where the CPT was taken place. The interdisciplinary projects were strong approaches to learning, but there was a higher demand to be on time. Lastly, they noted that teachers would have to make team-time planning a priority.

According to Flowers, Mertens, and Mulhall (1999) research-based study in Michigan, interdisciplinary lesson plans were important and successful. The researchers compared 155 schools over a four-year period to quantitatively show if interdisciplinary planning and teaching was successful. A key measuring tool was the Michigan Educational Assessment Program (MEAP). The MEAP was giving every year to seventh graders. The data revealed that schools that had interdisciplinary lessons outperformed the schools that did not (Flowers et al., 1999). They also used qualitative data to explain any effects on teachers. Flowers et al. (1999) noted that teachers with common planning time (CPT) and teachers that were teaming with other teachers on lesson plans reported an overall growth in confidence. This directly influenced them to communicate with parents more often, and to have a more positive outlook on their school environment.

Team teaching can have a positive effect on learning when used within the interdisciplinary methodology. Team teaching can also go awry as well. The causes of both the good and bad is noted by the following sources.

The main pitfalls of team teaching according to Carolyn Haynes (2002) in her book, *Innovations in Interdisciplinary Teaching*, is the lack of understanding by the teacher to fully

integrate disciplines. This could be said about all teaching methods, but the demand is much greater when team teaching because the balance of learning skills versus knowledge in the subject matter.

Boyer and Bishop (2004), in their qualitative research study of three middle schools concluded that team teaching and integration of disciplines led to a more positive learning culture. Notable improvements that students felt were tolerance, collaboration skills, voice, and empowerment of learning. A unique part to the Boyer and Bishop study is that the learning environment of these middle school students were not regulated to just one grade, but rather from 6^{th} to 8^{th} grade. In the middle schools that were studied there were 6^{th} graders learning with 8^{th} graders. A minor group of students in this study did identify that team teaching interdisciplinary unit had its loopholes and downfalls to personal growth. For example, an 8th grader noted that he was only allowed ten minutes to actually do the experiment right since he was working in teams. Another felt that more emphasis needed to be on structured learning rather than problem-solving. Overall though the research by Boyer and Bishop showed that majority of the kids had personal growth and improved skills in collaboration.

Correlation: Beyond Disciplines

Youngblood researched (2007) how to make anthropology and geography interdisciplinary. Her research led to several truths. Disciplines were not created to be separate, but rather to be shared with other disciplines. By developing an interdisciplinary curriculum, learners are more involved in problem-oriented critical thinking focused on the process more than the strict discipline in of itself. Thus, these skills are bridging across domains (Youngblood, 2007). These are skills that are used throughout learning and not just one domain.

According to Hinton, Suh, Colon-Brown, and O'Hearn (2014) English Language Arts (ELA) and History interdisciplinary units are effective but preparation is key. Hinton et al. (2014) outlined three major steps for success: 1. contextualization, 2. need to nurture historical empathy, and 3. promote pairing historical nonfiction with historical fiction. The ELA and social studies teachers reported the strengths of interdisciplinary unit "rest with collaboration because the social studies teacher can contextualize, build historical background, while the ELA teachers focus on elements of literature" (p.23). Both sets of teachers improve reading and writing in this manner. Hinton et al. (2014) says historical empathy builds off of contextualizing. Endacott and Brooks (2013) define historical empathy as "the process of students' cognitive and affective engagement with historical figures to better understand and contextualize their lived experiences, decisions, or actions" (p.41). Students were more able to collaborate and speak about the readings that were shared in ELA and social studies by building this knowledge. Hinton et al. (2014) noted this specifically when students used *The Book Thief,* a World War II book. Students were more able to relate and explain why the characters acted in the ways they did. Lastly, the purpose to join nonfiction with historical fiction was "it enhanced students' understanding of historical fiction as a piece of literature as historical arguments of the past" (Hinton et al. 2014, p.25).

Obstacles of Interdisciplinary Curriculum

A common struggle in implementing interdisciplinary methodology is the dilemma of direct vs. constructivist approaches to delivering classroom lessons. According to Kirschner, Sweller, & Clark (2006) minimal guided techniques are ineffective in the long-run due to the lack of long-term memory practices. On the other hand, direct instructional methods yield better

long-term memory which is essential when using problem-solving skills. Problem-solving cannot take place if the building blocks of long-term memory are not practice. Kirschner et al. (2006) argue that problem-solving is dependent upon extensive experiences stored in long-term memory, and the learner draws from that memory to apply to the correct problem. This creates a problem for current professional teachers that believe in a constructivist approach. Most interdisciplinary lessons plans are rooted in minimal guidance or constructivist approach (Soule & Warrick, 2015). This means most teachers are practicing the skill of problem-solving before the student may have the knowledge or long-term memory to effectively find solutions. This would render the interdisciplinary lessons ineffective.

In Aulls' (2002) research, constructivist approach fared far better than a direct approach. He researched two co-curriculum teachers and found that when used appropriately a more constructivist approach created knowledge that was much deeper in understanding. The teacher that utilized more direct instruction techniques often found himself with students looking to memorize information for a final unit test. This same cohort failed when it came to comprehension of main ideas, and strong note-taking. Aulls (2002) noted education is constructed by the learner, and the learner has to interact, socialize with any knowledge to really understand how to utilize it. Modeling was a key component for all students to come to a better understanding. Furthermore, the research study identified that there were distinctive differences between low-level learners and high-level learners. High-level learners look to improve skill based learning, like note-taking, or comprehension. While low-level learners look to just get by or memorize enough to pass the unit test (Aulls, 2002). This creates demands for a teacher to be

more direct with low-level learners. Thus, as mentioned above, the teacher that had a direct instructional approach often worked through more accommodations so his students would not fail.

Summary

Overall, the principles of interdisciplinary teaching has a long history, but in recent years there has been a revival to use this approach so that learners can be more advanced in knowledge and analytical thought. There are variances in how to deliver interdisciplinary lessons, and how these variances can change the culture of learning. The differences among interdisciplinary lessons all produced positive results, though some of these were qualitative in nature. A key improvement in all interdisciplinary teaching was the team teaching and common planning time that was necessary for such units to be completed correctly. Another step of progress was the evidence that disciplines, like in real life, get blurred, and the learner looks at learning as a whole set of skills, rather than rote memorization of individual classes. Thus, this culture of learning improved learning skills and advanced learners' analytical abilities.

There are obstacles in implementing such curriculum. The obstacles have little to do with the learning, but rather the approach to instruction or delivery. Also, even though there are case studies that support this way of teaching, it is minimal when it comes to quantitative research. Not only is there more research needed between direct instruction verse constructivism, but more quantitative data is needed so that researchers can assess the effects of interdisciplinary practices on learning.

Teaching is teaching, but teaching is not always learning. It is imperative in a world with Common Core and standardized testing that learners experience the most up-to-date

methodologies so that actual learning takes place. Teachers need the evidence that academic research provides to justify implementation. In furthering the research of interdisciplinary teaching, educators, especially in the fields of English and history, will become more knowledgeable about why the integration is necessary in today's world of learning. The research will provide evidence that team teaching curriculum will not only benefit the teachers and the culture of learning, but also it will directly benefit the learners beyond skills based in individual subject matter.

Chapter Three:

Conclusion and Recommendations

The goal of this research seminar paper was to review the effects of the interdisciplinary methodology and its application in school settings. Overall, interdisciplinary units are very beneficial for students and teachers alike. Interdisciplinary teaching establishes several benefits for teachers. They establish common planning time for teachers to work together and set team goals for their students to reach. This has a positive effect on school culture and teacher unity. Furthermore, teachers, by working together, will self-evaluate their practices and through continuous collaboration will improve learning for the students. The students also benefit greatly from interdisciplinary practices. The learner is more capable in reaching Common Core Standards set by the state. Students normalize themselves with common language so reinforcement of ideas and practices are used on lesson plans throughout the school.

Based on the existing literature, the following conclusions were drawn. First, it is imperative that interdisciplinary methodology be used in schools today so that our learners are challenged to problem-solve and use similar skills across all subject matters. This methodology

better simulates real life activities, and the data currently proves that it helps with standardized test scores across the nation. Second, teachers are the ones that can make this instructional approach very successful to meet the needs outlined in Common Core Standards. Teacher teams do not need to reinvent the wheel, rather they need to adapt their curriculum to be overarching to other subject matters. This takes a transition, and as the research case studies described, it may take several years to perfect. It will be a constant work in progress that will have positive effects on the school as a whole. It can be concluded through the research that balance is needed when using problem-based instruction and direct instruction methods. There are studies that prove both methods produce positive results.

Based on these conclusions, it is recommended that ELA and social studies teachers look for all avenues to make their classes more interdisciplinary in nature. The common planning time and collaboration proves to have several positive effects. Teachers enjoyed teaming with colleagues. It helped them improve their lessons and provide instruction that produced better results on assessments. The common planning time that interdisciplinary approach provides helps teachers become more confident which helps school culture. These are pieces to the puzzle that need to be carefully considered so that preparation is done correctly.

There needs to be further studies done on the current trends of minimal-guided instruction and problem-based instruction in comparison to direct instruction. Until this is done in full, teachers would be best served to be balanced in their approach to using interdisciplinary methodology.

REFERENCES

Applebee, A.N., Adler, M., and Filhan, S. (2007). Interdisciplinary curricula in middle and high school classrooms: Case Studies of approaches to curriculum and instruction. *American Educational Research Journal, 44* (4), 1002-1039.

Aulls, Mark W. (2002). Contributions of co-occurring forms of classroom discourse and academic activities to curriculum events and instruction. *Journal of Educational Psychology, 94*(3), 520-538. doi: 10.1037//022-0663.94.3.520

Boyer, S., Bishop, P. (2004). Young adolescents voices: students' perspective of interdisciplinary teaming. *Research in Middle Level Education, 28*(1), 1-19. ISSN-1940-4476.

De Groot, Adriaan. (1978). *Thought and choice in chess*. Paris. Mouton Publishers.

Egan, Dennis, & Schwartz, Barry. (1979). Chunking in recall of symbolic drawings. *Memory & Cognition, 7*(2), 149-158.

Endacott, Jason., & Brooks, Sarah. (2013). Updated theoretical and practical model for promoting historical empathy. *Social Studies Research and Practice*. 8(1), 41-58. www.socstrp.org

Flowers, N., Mertens, S.B., & Mulhall P.F. (1999). The impact of teaming: five research-based outcomes of teaming. *Middle School Journal, 31*(2), 57-60.

Haring, Dana. Kelner, Tom. (Dec. 2015). Why we got serious about interdisciplinary teaching. *Educational Leadership, 73*(4), 68-72.

Haynes, Carolyn. (2002). Innovations in interdisciplinary teaching. Westport, CT. Oryx Press.

Hinton, K., Suh, Y., Colon-Brown, L., O'Hearn, M. (2014). Historical fiction in English and social studies classrooms. *English Journal*, 103(3), 22-27.

James Jacob, W. (2015). Interdisciplinary trends in higher education. *Palgrave Communication,* 15001 doi:10.1057/palcomms.2015.1

Kirschner, Paul A., Sweller, John, & Clark, Richard E. (2006). Why minimal guidance during instruction does not work: an analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. *Educational Psychologist, 41*(2), 75-86. doi: 10.1207/s15326985ep4102_1

McCarthy, Tom. (2018, April 10). *2017 naep results flat.* *https://dpi.wi.gov*

Nikitina, Svetlana. (2006). Three strategies for interdisciplinary teaching: contextualizing, conceptualizing, and problem centering. *Journal of Curriculum Studies*, *38*(3), 251-271. doi: 10.1080/00220270500422632

Peterson, Paul E., et al. (2016). After common core, states set rigorous standards: forty-five states raise the student proficiency bar. *Education Next*, *16*(3), 9 - 15.

Soule, H., Warrick, T. (2015). Defining 21st century readiness for all students: what we know and how to get there. *Psychology of Aesthetics, Creativity, and the Arts*, *9*(2), 178-186. doi: 10.1037/aca0000017

Stentoft, Diana. (2017, Feb. 1). From saying to doing interdisciplinary learning: is problem-based learning the answer? *Active Learning in Higher Education*, *18*(1), 51-61. https://doi.org/10.1177%2F1469787417693510

Youngblood, Dawn. (2007). Interdisciplinary studies and the bridging disciplines: a matter of process. *Journal of Research Practice*, *3*(2). http://jrp.icaap.org/index.php/jrp/article/view/104/101