

Nearpod to Engage 7<sup>th</sup> Grade Science Students

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## Capstone Project Proposal

### Setting and Context

The setting for my proposed Capstone Project is Teasley Middle School (TMS) seventh-grade science. It is in northern Cherokee County and is one of seven middle schools in Cherokee County. Teasley Middle School was located at 8871 Knox Bridge Hwy and was only seventh and eighth grade. It was built on land donated by Mary Archer Teasley's family. The school was named in honor of her. The current location is 151 Hickory Log Dr. It is about five miles from the original location and now serves sixth-eighth making it the traditional middle school model known by most. The new location opened in 2016 as the first one-to-one school in Cherokee County with every student receiving a computer with Windows operating system. This initiative was started because of TMS being Title One. TMS is the only Title One middle school.

(Cherokee County School District, 2020)

TMS is uniquely placed. It is near downtown Canton but serves a district composed of both suburban and rural areas. (SchoolDigger, 2019) TMS has 1702 students and 109 teachers. Of the 1702 students 54.5% have Free/Reduced lunch. 37.7% of the students are Hispanic, 5.7% American, and 53.2% are white. These are the three main ethnic groups. "Fourteen percent of the school population are students with disabilities and 3% are on a 504 plan. Pyramid of Intervention (POINT) plans have been developed for 19% of the student population as they are on tiers two and three indicating the need for specialized instructional interventions. 17% of TMS' students are in the English as Second or Other Language (ESOL) Program." (Cherokee County School District, 2020) According to the Governor's Office of Student Achievement (Governor's Office of Student Achievement, 2020) TMS 37.6% scored Beginner and 30.1% scored Developing on the Science Milestones. TMS' CCRPI score is 65.2 giving TMS a rating

of D. The scores are not overly surprising given the school demographics and students with disabilities, 16%. TMS has the highest ESOL and SWD percent than any other middle school in Cherokee County. We are benefitted with being a one-to-one school. Each student receives a laptop and can check out a Kajeet if they do not have internet at home. A Kajeet is a mobile hotspot.

TMS' organizational structure includes our principal and three assistant principals. Our principal, Kathi Monti, is in her first year at TMS and her first year being a principal of a school. She served as an assistant principal at ET Booth Middle School before. Because our school is a Title One school, we have an Academic Facilitator and Instructional Lead Specialist. Our seventh grade is composed of two super teams. On one team is two science teachers and on the other is three. This was done to better put students in the right class. Before this, students may be in all advanced or push in due to one schedule need. They would not be crossed teamed. With the new super teams, a student can be advanced in one subject and reg in another. The county has also become a Microsoft Innovating County. The county encourages the use of technology to engage students and purchased Nearpod for all teachers, specifically for Science originally.

Currently TMS and Cherokee County has in place a policy for the Covid-19 Pandemic. It calls or any student who is exposed directly to be quarantined for 14 days and do all work digitally. This has caused many teachers and students issues. Teacher not sure how to best reach the students and engage them and the students not understanding material presented in a normal face-to-face setting. Participation and quality have been concerns voiced at grade level meetings and departmental PLC meetings. Seventh Grade Science teachers need a better method and medium to engage learners who are quarantined and thus forced to become digital learners. This as well as the percent of the TMS population with one or more things that make learning difficult

make a need and problem for Seventh Grade Science. I propose Seventh Grade Science use Nearpod and the tools embedded to create engaging lessons easily to raise achievement levels and formatively assess more frequently. Because of Nearpod having Live and Student Paced, a teacher can do the same thing for both sides easily with few modifications.

### **Problem**

The problem identified that initiated this Capstone Project Proposal for TMS was the under achievement of our Economically Disadvantaged (ED), Students with Disabilities (SWD), and English Learners (EL). The three subgroups identified are part of the TMS School Improvement Plan (SIP). According to the College and Career Ready Performance Index (CCRPI) for TMS the percent of each subgroup scoring below proficient on the GA Milestones for Science are ED - 74.82%, SWD - 89.06%, and ELL - 89.67%. According to Ornstein (2010) “Student characteristics highly correlated with achievement, and the child’s social class accounted for the greatest share of variation in learning.”

This capstone will focus on the students in my seventh-grade science classes. My classes consist of a diverse group of students with all subgroups represented in regular and advanced classes. TMS is a one-to-one technology school, so all students have access to a computer and TMS has Kajeets (wireless internet hot spots) for students who do not have internet at home. This capstone will be very beneficial for TMS once completed. The TMS population is 1702 students. 53.6% of the population is ED, 17.5% of the population is SWD, and 26.4% of the population is EL. This capstone will focus on using technology, Nearpod, to engage ED, SWD, and EL students and raise achievement levels. According to Tarbuton (2018) “Technology has been a bridge between engaged students and positive classroom environment.”

### **Connection to Research**

According to Ornstein (2010) “Achievement gaps between Asian and white students compared to Hispanic and black students remain alarmingly high, and by 2015 the latter group of students will represent the majority enrollments.” This gap has only increased in recent years for Title One schools with high minorities in the United States. (Hasan & Li, 2010) TMS and Cherokee County has seen a continuous growth of our minority populations and SWD and it is expected to continue. TMS is also the only Title One school in Cherokee County and has the highest percent of population belonging to ED, SWD, and EL. “It is projected that by 2050, 50 percent of the U.S. school population will be African-American, Hispanic, and Asian students.” (Hansan & Li, 2010) This is alarming because according to Williams (2011) “there continues to be significant achievement gaps” with minorities and those that differ “by socioeconomic status (SES) and race.” There are many excuses that can be made for ED, SWD, and EL students not achieving at the same levels as their peers. Williams (2011) states, “There are many home-based variables that have been studied.” It is important, however, for educators to remember “schools seem to have little effect on reducing social and economic inequality” (Ornstein, 2011).

### **Proposed Solution**

To raise student achievement, I will use Nearpod to focus on the first three levels of Bloom’s Taxonomy and formatively assess students more frequently. By focusing on Bloom’s Taxonomy’s first three cognitive levels students will be able to better apply their knowledge. According to Spence (2019) “as students move to the higher levels of taxonomy, they engage with more complex concepts and demonstrate more challenging skills and abilities that require deeper thinking and learning.” The first three levels are Knowledge, Comprehension, and Application. The SIP goals for TMS are to raise the GA Millstone Scores for ED, SWD, and EL

by 5%. The GA Milestone questions are at a Depth of Knowledge of two and three mostly. Translated to Bloom's Taxonomy this would be Comprehension and Application. Formative assessments will be given more frequently in a single lesson to build confidence in the students. Currently formative assessments are given at most once a day, but typically it is once or twice a week. I have chosen Nearpod because of the tools that it has built in that allow to engage students and assess students formatively many times in a single lesson. For students to achieve they must be engaged and there must be ample assessments for students to self-monitor. According to Jiao (2015) "From one perspective, students benefit from timely and supportive feedback that enables them to evaluate the quality of their own work; from another perspective it requires students' engagement in learning."

### **Connection to Research**

Nearpod was chosen because of the ability to integrate many different forms of content delivery both in a face-to-face classroom as well as a digital classroom. This is important because of the Covid-19 Pandemic and the number of students that are digital fully or only partially because of quarantine. Nearpod was also chosen "to have students learn and manipulate content while allowing teachers to collect data as a quick and seamless part of a lesson." (Dunbar, 2016) It is hugely important for teachers to give formative assessments, but it is also important for it to be timely. According to Hudesman et al. (2013) "that achievement gains generated by using formative assessment across a range of content domains were among the largest ever reported for education interventions. Notably, the largest gains were realized among low achievers." Formative assessments given in a way to get the data back quickly "can guide choice of lessons and learning materials as well as discussions with students or parents. With timely feedback, the teacher can adjust the pace, identify students who need extra support, and

offer enrichment.” (Smith & Mader, 2015) The tools in Nearpod allows the teacher to choose an array of different assessments and allows the teacher to engage students with different online sources easily. “Easy access to online resources on subjects enhances the awareness of learners, motivates them in adopting different e-learning strategies and helps them build higher order thinking and creativity skills while constructing knowledge.” (Jaiswal, 2020) Nearpod will support increasing student achievement by focusing on Bloom’s Taxonomy’s first three levels and formatively assessing frequently with the student able to respond to the feedback for the continuation of the lesson. According to Jaiswal (2020) “With the instant feedback and automatic marking functions, e-assessment programs make it possible to finish the feedback loop with a reasonable time frame.”

### **Objectives**

My Capstone Project originated from a need to raise student achievement of ED, SWD, and EL students. The data that I have looked at is these subgroups performance in relation with other subgroups and the goals of the TMS SIP Plan. I believe by using more formative assessments within a lesson, students will be more engaged and as a result achievement will increase. The tool to be used is Nearpod and its cumbersome availability of different programs and activities embedded for formatively assessing students at different intervals. The goals for this Capstone Project are:

- I will use Nearpod three times for direct instruction with three formative assessments by December 17, 2021.
- 80% of ED, SWD, and EL students will receive proficient scores on summative assessments given at the end of the instruction for each direct instruction session.

**PSC Standards**

Through the development and implementation of my Capstone Project at TMS, I will be addressing and strengthen my abilities in relation to the following PSC Instructional Technology Standards:

- PSC 2.1 Content Standards & Student Technology Standards: Candidates model and facilitate the design and implementation of technology-enhanced learning experiences aligned with student content standards and student technology standards.
- PSC 2.7 Assessment: Candidates model and facilitate the effective use of diagnostic, formative, and summative assessments to measure student learning and technology literacy, including the use of digital assessment tools and resources.
- PSC 3.5 Basic Troubleshooting Candidates troubleshoot basic software and hardware problems common in digital learning environments.
- PSC 6.2 Reflection: Candidates regularly evaluate and reflect on their professional practice and dispositions to improve and strengthen their ability to effectively model and facilitate technology-enhanced learning experiences.

**Project Description**

The Capstone Project will occur in the school year 21-22. The project will begin with a training for the teacher to learn how to effectively use Nearpod and the different assessment tools it has. The teacher will then create and utilize Nearpod lessons with three formative assessments embedded within. At the end of the lesson students will take a summative assessment of the whole lesson to see their achievement. The teacher will do three lessons in the same way to view how well the student achievement is for ED, SWD, and EL students. Table 1 below will outline the project activities, objectives and deliverables that synthesize this project.

*Table 1*



Project Item/Activity	Project Objective(s)	Activities/Deliverables
Getting to Know You	80% of ED, SWD, and EL students will receive proficient scores on summative assessments given at the end of the instruction for each direct instruction session.	<ul style="list-style-type: none"> <li>Students will be taught how to use Nearpod. This will ensure results from the Capstone will not be altered by unfamiliarity.</li> </ul>
Survey Students	I will use Nearpod three times for direct instruction with three formative assessments by December 17, 2021.	<ul style="list-style-type: none"> <li>Student data gathered on Microsoft Forms</li> </ul>
Present PowerPoint on Classification	80% of ED, SWD, and EL students will receive proficient scores on summative assessments given at the end of the instruction for each direct instruction session.	<ul style="list-style-type: none"> <li>Students will complete cloze guided notes while going through the PowerPoint</li> </ul>
Nearpod: Dichotomous Keys	80% of ED, SWD, and EL students will receive proficient scores on summative assessments given at the end of the instruction for each direct instruction session.	<ul style="list-style-type: none"> <li>Students will complete cloze guided notes while going through the Nearpod</li> </ul>
Survey Students: PPT vs Nearpod	I will use Nearpod three times for direct instruction with three formative assessments by December 17, 2021.	<ul style="list-style-type: none"> <li>Student data gathered on ways they enjoyed learning the best</li> </ul>
Nearpod: Cell Organelles and their Functions	<p>80% of ED, SWD, and EL students will receive proficient scores on summative assessments given at the end of the instruction for each direct instruction session.</p> <p>I will use Nearpod three times for direct instruction with</p>	<ul style="list-style-type: none"> <li>Students will complete cloze guided notes while going through the Nearpod</li> <li>Students will complete a vocab matching</li> <li>Students will complete a fill in the blank check</li> <li>Students will complete a Climb to the Top race by</li> </ul>

	<p>three formative assessments by December 17, 2021.</p>	<p>answering questions and discussing after each to give instant feedback</p> <ul style="list-style-type: none"> <li>• Students will take a quiz at the end</li> </ul>
Nearpod: Photosynthesis	<p>80% of ED, SWD, and EL students will receive proficient scores on summative assessments given at the end of the instruction for each direct instruction session.</p> <p>I will use Nearpod three times for direct instruction with three formative assessments by December 17, 2021.</p>	<ul style="list-style-type: none"> <li>• Students will complete cloze guided notes while going through the Nearpod</li> <li>• Students will complete a labeling on a plant diagram for the reactants and products</li> <li>• Students will do a vocab matching</li> <li>• Students will do a collaborative board to answer how plants make their food</li> <li>• Students will take a quiz at the end</li> </ul>
Nearpod: Cellular Respiration	<p>80% of ED, SWD, and EL students will receive proficient scores on summative assessments given at the end of the instruction for each direct instruction session.</p> <p>I will use Nearpod three times for direct instruction with three formative assessments by December 17, 2021.</p>	<ul style="list-style-type: none"> <li>• Students will complete cloze guided notes while going through the Nearpod</li> <li>• Students will complete a labeling on a mitochondria picture for the reactants and products of cellular respiration</li> <li>• Students will do a vocab matching</li> <li>• Students will record a Flipgrid to explain how photosynthesis and cellular respiration are related</li> <li>• Students will take a quiz at the end</li> </ul>

**Evaluation Plan**

This capstone project depends on my ability to implement Nearpod and its formative tools to engage students and raise the achievement of ED, SWD, and EL students. The success of the project will be determined by two objectives. First, I will use Nearpod three times for direct instruction with three formative assessments by December 17, 2021. Second, 80% of ED, SWD, and EL students will receive proficient scores on summative assessments given at the end of the instruction for each direct instruction session.

For the first objective, I will record my classroom using the Observation Room at TMS. This is a classroom that has a camera installed to record your class. I will watch this to review my lessons and ensure that the three formative checks were effective. I will also observe the students to gauge a subjective viewpoint of their engagement. The students will also be given two survey questions at the end of each lesson. First, did the checks help you understand what you didn't know? Yes, no, or a little. Second, did you feel this Nearpod helped you stay engaged? Yes, no, or sometimes. I will use the survey results while watching the videos to see where the "a little" and "sometimes" responses occurred mostly during the instruction to guide future activities.

For the second objective students will participate in interviews. I will conduct interviews with students who did not reach the objective and those that did. This information will be used to determine where the gap is and how to adjust going forward. Were there any abnormal circumstances that effected the results is what I hope to discover. The final way to determine if this objective was met is the assessments each student will take at the end of each lesson. This data will tell who scored proficient or 80% or above.

### **Project Timeline**

This Capstone Project will occur during the first semester of the 21-22 school year and conclude by the objective goal date, December 17, 2021. The hours to complete each part of the project are listed in Table 2.

*Table 2*

Month	Project Item/Activity, or Evaluation Item	Hours
August	Create a getting to know your activity in Nearpod. This will be to get to know students but get them familiar with Nearpod before using it in the class for instruction.	2
August	Get to know the students with the Nearpod and go over the results. Students will see how the data is presented and used by comparing themselves to their peers.	5
August	Survey the students to ask what things in the getting to know them Nearpod they liked and didn't like. This will help determine the activities they enjoy and pair with the best for the lesson.	2.5
September	Create a PowerPoint for Classification with cloze notes.	3
September	Create Nearpod for Dichotomous Keys with cloze notes. The Nearpod will have 3 formative checks as activities built in. This will simulate the lessons that will be done for the Capstone.	5
September	Administer a Survey to see which students found more engaging, the PowerPoint or the Nearpod. This data will be used to show students how Nearpod is more fun or engaging.	2
October	Create Cell Organelles Nearpod with matching, fill in the blank and Climb to the Top, and a summative quiz at the end.	10
	This will be the first lesson as part of the objective to be met by Dec. 17, 2021. Lesson will be done in the Observation Room to record the class.	
October	Watch the class recording to observe students and how engaged they are.	8
October	Interview the students to gain insight on how they feel the lesson went. This will find out if they didn't achieve 80% if there was a reason outside of the class or if they did why they feel this worked. Data will be used to inform future lessons.	15
November	Create Photosynthesis Nearpod with draw (labeling a plant diagram), matching, a collaborative board, and a summative quiz at the end.	10
	This will be the second lesson as part of the objective to be met by Dec. 17, 2021. Lesson will be done in the Observation Room to record the class.	

November	Watch the class recording to observe students and how engaged they are.	8
November	Interview the students to gain insight on how they feel the lesson went. This will find out if they didn't achieve 80% if there was a reason outside of the class or if they did why they feel this worked. Data will be used to inform future lessons.	15
November	Create Cellular Respiration Nearpod with draw (labeling a mitochondria diagram), matching, a Flipgrid video, and a summative quiz at the end.	10
	This will be the third and final lesson as part of the objective to be met by Dec. 17, 2021. Lesson will be done in the Observation Room to record the class.	
November	Watch the class recording to observe students and how engaged they are.	8
November	Interview the students to gain insight on how they feel the lesson went. This will find out if they didn't achieve 80% if there was a reason outside of the class or if they did why they feel this worked. Data will be used to inform future lessons.	15
December	Record data, group students based on subgroups and sort to determine the percent of students who reached 80% proficient on all three, two out of three, one out of three, or zero lessons. This will determine if the Nearpod lessons met the second objective.	10
Total Hours		128

### Resources Needed

The resources needed are listed below and are provided to all students at TMS. TMS is a one-to-one school with every student receiving a laptop. Students are aware per the laptop agreement that they should have each day and it should be charged and ready to be used.

- Student issued computer that is charged before class by the student.
- Nearpod uploaded to learning management system, Canvas. Nearpod is an external tool in Canvas and provided by CCSD.
- Microsoft PowerPoint for lesson to compare with Nearpod. This will be created by the teacher.
- Microsoft Forms for Surveys created by the teach and completed by students.

- Microsoft Excel to manage data and compare students results. This will be used for teacher to determine if Objective was met.
- Observation Room to record class. Teacher will reserve for days needed.

### References

- Cherokee County School District. (2020). Teasley Middle School: About Teasley Middle School. <https://www.cherokeek12.net/teasleymys/Content2/teasleymys-about>
- Dunbar, L. (2016) Embedding technology and assessment into the music classroom with Nearpod. *General Music Today*, 29 (3), 33-37.  
<https://doi.org/10.1177/1048371315624734>
- Hansan, Z. & Li, N. (2010). Closing the achievement gap: Strategies for ensuring the success of minority students. *National Teacher Education Journal*, 3 (2), 47-58.  
<http://www.ascd.org/publications/educational-leadership/mar01/vol58/num06/Closing-the-Achievement-Gap.aspx>
- Hudesman, J., Crosby, S., Flugman, B., Issac, S., Everson, H., & Clay, D. (2013). Using formative assessment and metacognition to improve student achievement. *Journal of Developmental Education*, 37 (1), 2-13. <http://www.jstor.org/stable/42775953>
- Jaiswal, P. (2020). Integrating educational technologies to augment learners' academic achievements. *International Journal of Emerging Technologies in Learning*, 15 (2), 145-159. <https://doi.org/10.3991/ijet.v15i02.11809>
- Jiao, H. (2015). Enhancing students' engagement in learning through a formative e-assessment tool that motivates students to take action on feedback. *Australasian Journal of Engineering Education*, 20 (1), 9-18. <https://dx.doi.org/10.7158/D13-002.2015.20.1>.
- Onstein, A. C. (2010). Achievement gaps in education. *Social Science and Public Policy*, 47, 424-429. <https://doi.org/10.1007/s12115-010-9354-y>
- SchoolDigger. (2019, July 26). *Teasley Middle School*.

<https://www.schooldigger.com/go/GA/schools/0111001971/school.aspx#aTest>

Smith, B. & Mader, J. (2016). Using web tools to support learning. *Science Teacher*, 83 (3) 8.

<https://www.questia.com/library/journal/1G1-503309499/science-2-0-april-may-2016-using-web-tools-to-support>

Spence, B. (2019). Using Bloom's Taxonomy matrix to reach higher-level learning objectives. *Radiologic Technology*, 90 (6), 622-624.

<http://www.radiologictechnology.org/content/90/6/622.extract#>

Governor's Office of Student Achievement. (2020). *Georgia School Grades*

*Report: Teasley Middle School.* <https://schoolgrades.georgia.gov/teasley-middle-school>

Tarbutton, T. (2018). Leveraging 21st Century learning and technology to create caring diverse classroom cultures. *Multicultural Education*. 25 (2), 4-6.

<https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=EJ1181567>

Williams, A. (2011). A call for change: Narrowing the achievement gap between white and minority students. *The Clearing House*, 84, 65-71.

<https://doi.org/10.1080/00098655.2010.511308>