**The Ideal 21st-Century Classroom**

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ITD 645: Computers in Education

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June 19, 2021

**Executive Summary**

Technological advances are rapid and abundant in today’s society. Therefore, it is imperative that we as educators prepare today’s 21st-century learners for their future technological placement. Utilizing the Partnership for 21st-Century Learning framework (P21) and the International Society for Technology in Education (ISTE) technology standards, our goal is to create the ideal 21st-century classroom, where technologies are taught within standards meeting instruction, goals, and objectives. To address these standards and support the Partnership of 21st-century learning, it is critical that classrooms create a conducive learning environment for diversified learners to succeed. Therefore, we are seeking through this grant proposal $20,000 to acquire classroom technologies, furniture, and equipment to create the ideal 21st-century classroom.

Our ideal 21st-century classroom will cater to all learning styles (auditory, visual, and kinesthetic), and it will support all cognitive styles. The classroom will create an environment that promotes critical thinking, communication, collaboration, and creativity, while also considering the emotional intelligences of each student. Additionally, our ideal classroom will support all student learning disabilities as well as physical disabilities. We will create a successful learning environment for students with special needs through the inclusion of technologies, furniture, and equipment.

We will use the requested grant funds to replace the traditional student desk with collaborative whiteboard tables with flexible seating to create this ideal learning environment. In addition, the tables will be wheelchair accessible. We will also replace the traditional whiteboard with an interactive whiteboard that creates a hands-on and in-depth visual learning experience. We will also acquire tablets for each student that allow for individual and group work using various apps that promote creative learning scenarios and the usage of apps for a variety of learning and physical disabilities. After careful research and budgeting, we have comprised the following summary of items that we will acquire if chosen for this grant.

* Apple iPads for all 28 students
* Interactive whiteboard (Smartboard) and ultra-short-throw projector
* 3 collaborate whiteboard tables sets and 28 flexible seating stools
* 32 tablets charging and storage cart
* Clicker - Student Response System for all 28 students
* Headphones for each student
* A variety of software and apps that promote creativity and support learning and physical disabilities

 In conclusion, we are requesting $20,000 in grant funds to create an ideal 21st century classroom to prepare our students for tomorrow’s technological world. We will utilize the funds to acquire technologies, furniture, and equipment that will allow us to cater to a diverse range of learners and meet the ISTE standards and support the P21 framework.

**Acquisitions and Justifications**

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| **Item** | **Justification** | **Source**  | **Cost** | **Qty** | **Total Cost** |
| **Technology** |
| Interactive Whiteboard Package (includes Smart Board, Ultra short-throw projector, and wireless adapter. | Interactive whiteboards create a hands-on learning environment as students can interact with the lesson plan through a large touch screen. Additionally, Smartboards create in-depth visual presentations that cater to the visual learner. | <https://www.touchboards.com/interactive-whiteboards-1/interactive-whiteboards-packages/#/interactive-whiteboards-1/interactive-whiteboards-packages/brands_starboard/> | $2,053.33 | 1 | $2,053.33 |
| 2020 Apple iPad (10.2-inch, Wi-Fi, 32GB) - Space Gray (8th Generation) - 28 for students and 1 for teacher | iPads allow for mobile learning, creative learning through various learning apps, and students with learning disabilities and physical disabilities to be supported through various apps. The tablet caters to all learning styles, as lessons and apps will allow for visual, audio, and hands-on learning. The iPad has been chosen over the Surface Pro due to cost and over the Chromebook due to the iPad having a tablet first feel vs. a laptop first feel of the Chromebook. Most games and apps will be utilized via touchscreen without a keyboard, which creates a tablet feel. Additionally, the iPad is the industry leader as it was first to market; therefore, developer support is the very best. This allows for a technological advantage.  | [https://www.amazon.com/Apple-iPad-10-2-inch-Wi-Fi-32GB/dp/B08J65DST5/ref=sr\_1\_1\_sspa?dchild=1&keywords=ipad&qid=1623981060&refinements=p\_36%3A-30000&rnid=386442011&sr=8-1-spons&psc=1&spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUFHWEgzWFlaUVJLUU4mZW5jcnlwdGVkSWQ9QTAzOTE2NTAzRTI3UUNOWFJRNjdRJmVuY3J5cHRlZEFkSWQ9QTAyMjg5MTAxUFAyMjNIQVNPMjEyJndpZGdldE5hbWU9c3BfYXRmJmFjdGlvbj1jbGlja1JlZGlyZWN0JmRvTm90TG9nQ2xpY2s9dHJ1ZQ==](https://www.amazon.com/Apple-iPad-10-2-inch-Wi-Fi-32GB/dp/B08J65DST5/ref%3Dsr_1_1_sspa?dchild=1&keywords=ipad&qid=1623981060&refinements=p_36%3A-30000&rnid=386442011&sr=8-1-spons&psc=1&spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUFHWEgzWFlaUVJLUU4mZW5jcnlwdGVkSWQ9QTAzOTE2NTAzRTI3UUNOWFJRNjdRJmVuY3J5cHRlZEFkSWQ9QTAyMjg5MTAxUFAyMjNIQVNPMjEyJndpZGdldE5hbWU9c3BfYXRmJmFjdGlvbj1jbGlja1JlZGlyZWN0JmRvTm90TG9nQ2xpY2s9dHJ1ZQ==) | $299.99 | 29 | $8,699.71 |
| ProCase iPad 10.2 Case 2020 iPad - 28 for students and 1 for teacher | Cases for each iPad is necessary to protect the investment and increase shelf life | [https://www.amazon.com/ProCase-Generation-Stand-Protective-Black/dp/B07XY28FZG/ref=sr\_1\_4?dchild=1&keywords=ipad+covers&qid=1623981203&sr=8-4](https://www.amazon.com/ProCase-Generation-Stand-Protective-Black/dp/B07XY28FZG/ref%3Dsr_1_4?dchild=1&keywords=ipad+covers&qid=1623981203&sr=8-4) | $10.99 | 29 | $318.71 |
| iPad Keyboard Attachment - 28 for students and 1 for teacher | Keyboard attachments allow students to use the tablets in a traditional way and promote learning typing controls and commands. | [https://www.amazon.com/dp/B07S7VPQG6/ref=twister\_B07C9C7N4G?\_encoding=UTF8&psc=1](https://www.amazon.com/dp/B07S7VPQG6/ref%3Dtwister_B07C9C7N4G?_encoding=UTF8&psc=1) | $18.99 | 29 | $550.71 |
| 32 Tablet Charging and Storage Cart | Charging and Storage Cart is required for the usage of the ipads. | <https://www.schooloutlet.com/Oklahoma_Sound_32_Tablet_Charging_and_Storage_Cart_p/okl-tcsc-32.htm?test=true> | $423.85 | 1 | $423.85 |
| Clicker-Student Response System | The Clicker-Student Response System is an interactive remote that allows for students to individually or through group activities participate in quizzes or educational games. The system allows for introverts to have a voice! | <https://www.schooloutfitters.com/catalog/product_info/pfam_id/PFAM31680/products_id/PRO43118> | $46.88 | 28 | $1,312.64 |
| Headphones | Headphones will cater to the auditory learner and will allow for individual learning. | <https://www.dihuni.com/product/lilgadgets-lgut-03-be-untangled-pro-bluetooth-headphones-designed-for-kids-age-4/> | $33.07 | 28 | $925.96 |
| **Furniture** |
| Mobile Collaborative Table w/ whiteboard Tabletop (1-Cog table and 3-crescent tables) | These tables allow teachers to maximize collaboration with flexibility. Each table allows for three students to sit, and three tables are connected with a Cog table, which also allows for seating. Each collaborative table set allows for 12+ students to interact. Additionally, the tables are mobile and may be configured/connected in many ways. Each table is also a dry-erase whiteboard, therefore, allow for individual and group activities promoting hands-on learning and creativity. | <https://www.schooloutfitters.com/catalog/product_info/pfam_id/PFAM52093/products_id/PRO69606?sc_cid=Google_LNT-3CR1CGWB-PK&adtype=pla&kw=&gclid=CjwKCAjwwqaGBhBKEiwAMk-FtBy3n0BjHSwKYUacmWJVX4TZmhgN6sTSaIapz1YWaWV621Mj9ong8RoCN84QAvD_BwE> | $1,193.52 | 3 | $3,580.56 |
| Kids Active Motion Stool - 16" Seat Height | The active Motion Stools are flexible seating that allows students to become active in their setting. Additionally, the seating is easily storable and easy to be moved for more flexible classroom arrangements. | <https://www.schooloutfitters.com/catalog/product_info/pfam_id/PFAM68437/products_id/PRO79263?sc_cid=Google_SPG-NUS400-SO> | $59.88 | 28 | $1,676.64 |
| **Software and Apps** |
| Kahoot! | Kahoot! is a game-based software that allows instructors to engage with students in a fun, friendly way. It can be used to review students' knowledge, give assessments and increase student participation. | <https://kahoot.com/> | $0.00 | 29 | $0.00 |
| Flipgrid | Flipgrid allows for students to create video discussions, which promotes creative communications lanes. | <https://info.flipgrid.com/> | $0.00 | 29 | $0.00 |
| Google Drive / Google Slides | The usage of Google Drive/Google Docs, sheets, and slides allows for students to collaborate with one another using technology. | <https://www.google.com/drive/> | $0.00 | 29 | $0.00 |
| Nearpod | Allows teachers to create interactive lessons for individual and collaborative work. Includes informative assessment and will enable teachers to upload existing materials such as PowerPoints, Google Slides, and YouTube videos. This software allows for both asynchronous and synchronous learning environments. | <https://nearpod.com/> | $0.00 | 29 | $0.00 |
| NVDA Screen Reader | This is a screen reader for individuals with seeing impairments. It can be downloaded and used on the existing desktop stations. | <https://www.nvaccess.org/> | $0.00 | Varies | $0.00 |
| YouTube Kids | YouTube Kids allows teachers to include educational media content in their lesson plans. It also allows for students to research and view media content as part of their research pursuits. This Kids version also keeps our kids safe by not allowing any learners to access inappropriate content not suitable for children. | <https://apps.apple.com/us/app/youtube-kids/id936971630> | $0.00 | 29 | $0.00 |
| Eureka Math | Eureka Math is designed to teach math lessons that construct skills over time. It concentrates on key concepts passed down from one grade to another. The program is also designed to create a flexible environment that allows teachers to access all Eureka Math resources online through lessons, PDFs, and videos. Students are given access to those same files to allow independent thinking that can expand beyond a guided lesson. | <https://greatminds.org/faq/what-is-the-cost-of-membership-and-are-institutional-rates-available> | $90.00 | 5yrs | $450.00 |
| Dictation - Speech to text App | The Dictation App allows students to transfer their speech into text. This may be used by any student or student group and may also be utilized for individuals with physical limitations that do not allow for traditional writing. | <https://apps.apple.com/us/app/dictation-speech-to-text/id1124772331> | $0.00 | 29 | $0.00 |
| SoundingBoard App | The SoundingBoard App turns any iPad into a communication outlet for students who cannot speak or have limited speaking ability. | <https://apps.apple.com/us/app/soundingboard/id390532167> | $0.00 | Varies | $0.00 |
| Omoguru: Dyslexia Friendly Reader | Omoguru is an App that assists Dyslexic students with their reading needs in a fun and enjoyable way. | <https://apps.apple.com/us/app/omoguru/id1371441139> | $0.00 | Varies | $0.00 |
| Apple Accessibility Features | Built-in Accessibility Features of the iPads provide many enhancements to the user experience that allow for students with physical disabilities to succeed. For example, Voice Over, which is an industry-leading screen reader, allows students with vision impairments to hear text and content on the screen. It also allows for auditory learners to listen to the lesson plans as well. | <https://www.apple.com/accessibility/vision/> | $0.00 | N/A | $0.00 |
|  |  |  | **Total:** | **$19,992.11** |

**Classroom Layout Example**

**Figure 1**



**Figure 2**



**Figure 3**



**Figure 4**



**Sample Lesson**

**Grade Level and Subject**: 2nd-grade Mathematics **Unit**: Eureka Math Module 3

**Instructional Unit Design using the Dynamic Instructional Design (DID) Model**

1. **Student Demographics**
* Number of students: 28
* Gender make-up: 18 males and 10 females
* Ethnic make-up: African American, Caucasian, Hispanic and Asian
* Learning styles/Multiple intelligences listed in order of prevalence: Visual, Kinesthetic, Verbal, Logical, Auditory/Musical, Interpersonal, and Intrapersonal
* Skills students bring into the classroom: Engaging in conversations using Mississippis’ Common Core mathematical theories learned from K-2 to find the sum of the constructed array. Students will have prior knowledge on how to properly construct an array with the help of repeated addition using rows and columns.
1. **Unit Objectives**
* M2.OA.4 Use addition to find the total number of objects arranged in rectangular arrays; write an equation to express the amount.
	+ Given a Nearpod link, the students will successfully recognize the meaning of arrays, rows, columns, and repeated addition equations with 100 percent accuracy.
	+ Given math manipulatives, the students will be able to express different mathematical array equations in a small group setting to create four array questions (problems) with a 50 percent mastery.
	+ Given a Flipgrid link, the students will properly model three examples of an array by recording their understanding of the array theory.
	+ Given a Google slide of Array City, the students will build five models of an array using digital Google Slide tools with 60 percent mastery on their iPads.

1. **Teaching and Learning Strategies**
* **Teaching Strategies**
	+ Direct Instruction: The teacher will present using a Nearpod that includes interactive slides with visuals and audio to help identify the key vocabulary words of the array, rows, columns, and repeated addition equation. The teacher will supply manipulatives to small groups for constructions of arrays.
	+ Informal assessment:
		- The teacher will display interactive slides of arrays while the students identify the repeated addition equation.
		- The teacher will observe students during small group time and purposefully question students to focus the group if necessary.
* **Learning Strategies**
	+ Pattern Maker: Students will use the Nearpod presentation to make conclusions and inferences about the concepts. Students will work independently to identify with 100% accuracy arrays, rows, columns, and repeated addition equations. In groups, students will be able to create four array problems. Students will be provided the presentation and resources needed to link the patterns.
	+ Jigsaw: Students will work in groups of three. Students will use manipulatives and arrange them in the proper patterns. The students will create a FlipGrid that properly models three examples of arrays.
	+ Summative Assessment (Exit Evaluation): The student will build five models of an array given an iPad and be able to identify its constituent parts.
1. **Technology Resources**
* Student iPads, Smartboard, Individual dry erase lapboards, charging cart, software: Nearpod, Google Slides, FligGrid, Siri, YouTube, Eureka Math, Dictation App, SoundingBoard App, Omoguru, NVDA Screen Reader, and Kahoot!
1. **Assessment and revision plan**
* The students will be assessed by completing their end of lesson activity. Students should be able to create 3 out of 5 slides demonstrating an array with rows and columns while including a repeated addition equation for each slide. If less than 50 percent of students don’t master the lesson objectives, the teacher will produce remedial teaching using manipulatives and interactive Youtube videos. Remediation will consist of students arranging different types of arrays with Hershey Chocolate bars.

**Example Lesson Action Plan**

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| **Subject**: 2nd grade Math | **Standards**: M2.OA.4 |
| **Unit**: Eureka Math Module 3 | **Lesson**: Composing arrays using rows and columns |
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| **Ready the Learner** | **Objective(s)** |
| Warm-up using Nearpod to assess student’s prior knowledge:* Students will be shown pictures of different array formations, rows, columns, and repeated addition examples

 1. What do you notice about these pictures?2. What do we call vertical lines?3. What do we call horizontal lines?4. What type of equation do we use to add up an array? | * Given a Nearpod link, the students will successfully recognize the meaning of arrays, rows, columns, and repeated addition equations with 100 percent accuracy.
* Given math manipulatives, the students will express different mathematical array equations in a small group setting to create four array questions (problems) with a 50 percent mastery.
* Given a Flipgrid link, the students will properly model three examples of an array by recording their understanding of the array theory.
* Given a Google slide of Array City, the students will build five models of an array using digital Google Slide tools with 60 percent mastery on their iPads.

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| **Prepare the Lesson** |
| **Prepare the Classroom*** Separate larger connected student tables into smaller tables with three students per table
* Ensure Smartboard, iPads, printer, and charging stations are on and functioning properly.
* Create Nearpod interactive and have students complete interactive questions
* Apportion manipulatives equally amongst the groups
* Check internet/Wi-Fi status to ensure viability for lesson presentation and classroom participation

**Learning Plan*** Pattern Maker: Students will participate in a Nearpod interactive presentation independently. The student will have to identify and visually recognize an array, row, column, and repeated addition equation. The students will then separate into groups of three, collaborate, and create four array problems. The students will use the presentation and previously created array problems.
* Direct Instruction: The teacher will use a Nearpod interactive presentation to guide students through the concepts of arrays, rows, columns, and repeated addition equations.
* Initial Formative assessment: Once students have completed the Nearpod interactive presentation questions, students will take a formative assessment using the manipulatives to arrange them into the following: an array, row, and column.
* Jigsaw: Students in groups of 3 will work with manipulatives. Students will get sufficient manipulatives to create one array at a time. The teacher will check the final product each time to check learning comprehension. The groups will present each array product to the teacher. The teacher will check learning by observing each group and guide the group if needed.
* Final Formative assessment (Exit evaluation): Students will create an Array City building five times using iPads. Students will need to identify a column, row, and repeated addition equation once their buildings are completed. Students with the alternate lesson or enhanced lesson will explain their comprehension and/or findings to the teacher.
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| **Check for Success** |
|  ***Nearpod section**** Students must master 100 percent accuracy when identifying arrays, rows, columns, and repeated addition equations in the Nearpod slides.
	+ **Group Work:**
		- Students must master a 50 percent mastery when expressing different mathematical array equations in a small group setting while using manipulatives (square tiles)
	+ **Flipgrid:**
		- Students must properly model three examples of an array by recording their understanding of the array theory.
	+ **Formative (Array City Slides):**
		- Students will build five models of an array using digital Google Slide tools with 60 percent mastery on their 5 slides of Array City buildings.
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| **Accommodations** |
| * Provided alternative assessment assignments, ELL and dyslexic students will have extended time and multiple submission chances to complete their tasks using alternative formats. Talk-to-text and translation software make note-taking more accessible, efficient, and more usable for these students. The Nearpod presentation also makes the usable lesson outside of the classroom for extra/extended content exposure.
* Students that are hearing and/or visually impaired will benefit from dictation and other accommodating technologies to enhance class participation and mastering the learning objectives.
* Gifted students will be given the enhanced assignment as an in-class activity to complete following the standard class assignment.
* Student groups will use whiteboard tables to collaborate to identify, discuss, and brainstorm the key concepts from the lesson. Students will produce a final product following their collaborations.
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| **Teacher Prompts** |
|  **Nearpod:*** Remind students how to get to the Nearpod website and type in their class code.
* Review vocabulary math words: array, row, column, and repeated addition equation. The teacher will provide images after reviewing the meanings.
	+ **Group Work:**
		- Remind students of the differences between rows and columns.
		- Review how to construct an array using the rows and columns. Then, use that array to construct a repeated addition equation.
	+ **Google Slides:**
		- Remind students that this activity will be done independently. They will use all the information reviewed to digitally form array equations.
		- Review how to go over Google slide tools.
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