Technology Curriculum Guide

PreK3

Course Description: In PreK3 at The Academy technology lessons are incorporated into daily lessons given by the teacher, students also use technology independently at times throughout the day as assigned by their teacher. Technology in PreK3 is focused on the use of the Smartboard in the classroom with iPads as a supplement for individual student technology time. Both of these devices allow students to interact with technology which helps to reinforce everyday lessons in the variety of subjects offered in the classroom. Specifically, the Smartboard is used as a "center" each day, usually being used multiple times per day. Interactive programs are used to reinforce mathematical concepts, develop phonics and language skills, read interactive stories, help students identify and interact with 3d shapes, learn their sight words and participate in various educational games led by their teacher.

Goals/Objectives:

At the start of the year goals and guidelines are set up for iPad use in PreK3. The primary goal for students interacting with iPads is that they are able to identify and launch specific apps. That includes having the ability to navigate the iPad, locate the program they have been instructed to use and launch that application as well as being able to use the application successfully on their own.

Instructional Methods/Strategies:

- Design Thinking
- Group analysis, brainstorming, innovation and execution of creative ideas
- Self-learning
- Curiosity as the main driver of learning.
- Gamification
- Learning through play

PreK4

Course Description: In PreK4 at The Academy technology lessons are incorporated into daily lessons given by the teacher, students also use technology independently at times throughout the day as assigned by their teacher. Technology in PreK4 is focused on the use of the Smartboard in the classroom with iPads as a supplement for individual student technology time. Both of these devices allow students to interact with technology which helps to reinforce everyday lessons in the variety of subjects offered in the classroom. Specifically, the Smartboard is used as a "center" each day, usually being used multiple times per day. Interactive programs are used to reinforce mathematical concepts, develop phonics and language skills, read interactive stories, help students identify and interact with 3d shapes, learn their sight words and participate in various educational games led by their teacher.

Goals/Objectives:

At the start of the year goals and guidelines are set up for iPad use in PreK4. The primary goal for students interacting with iPads is that they are able to identify and launch specific apps. That includes having the ability to navigate the iPad, locate the program they have been instructed to use and launch that application as well as being able to use the application successfully on their own.

Instructional Methods/Strategies:

- Design Thinking
- Group analysis, brainstorming, innovation and execution of creative ideas
- Self-learning
- Curiosity as the main driver of learning.
- Gamification
- Learning through play

Kindergarten

Course Description: In Kindergarten, technology use is split between the use of the Smartboard in the classroom and iPads which are used as a supplement for individual student technology time. Both of these devices allow students to interact with technology that helps to reinforce their everyday lessons in the variety of subjects offered in their classroom. The Kindergarten teacher has worked to achieve the technology goals set forth at the beginning of the year through the use of technology devices such as the smart board and ipads, as well as a multitude of educational applications that run on these devices. Students regularly are engaged with Kahoot!, Review Games and Epic! applications. These educational applications are used in both whole group instruction and individual learning environments. Students use iPads to refine their skills in Math and phonics by using these applications as well as practicing their fine motor skills during interactive learning sessions. Students receive lessons on a weekly basis during set times during the school day. iPads are also used during Star assessments, which are used for progress monitoring of student achievement. Assessments are done at three times a year for each student. Students also participate in lessons pertaining to internet safety and how to navigate the trials and tribulations of becoming active participants in the use of technology and the internet.

Goals/Objectives:

- Student learning extends beyond the walls of the classroom
- Prepare students to be responsible, safe and empowered digital citizens
- Enable student curiosity to drive their own learning
- Prepare students technologically to be successful in their future education
- Understand that being safe when they visit websites is similar to stay safe in real life
- Understand what information should be put online vs what information should not be put online

Instructional Methods/Strategies:

- Design Thinking
- Group analysis, brainstorming, innovation and execution of creative ideas
- Self-learning
- Curiosity as the main driver of learning.
- Gamification
- Learning through play

First Grade

Course Description: In 1st grade, technology use is split between the use of the Smartboard in the classroom and iPads which are used as a supplement for individual student technology time. Both of these devices allow students to interact with technology that helps to reinforce their everyday lessons in the variety of subjects offered in their classroom. The 1st grade teacher has worked to achieve the technology goals set forth at the beginning of the year through the use of technology devices such as the smart board and ipads, as well as a multitude of educational applications that run on these devices. Students regularly are engaged with Kahoot!, Review Games and Epic! applications. These educational applications are used in both whole group instruction and individual learning environments. Students use iPads to refine their skills in Math and phonics by using these applications as well as practicing their fine motor skills during interactive learning sessions. Students receive lessons on a weekly basis during set times during the school day. iPads are also used during Star assessments, which are used for progress monitoring of student achievement. Assessments are done three times a year for each student. Students also participate in lessons pertaining to internet safety and how to navigate the trials and tribulations of becoming active participants in the use of technology and the internet.

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Instructional Methods/Strategies:

- Design Thinking
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- Self-learning
- Curiosity as the main driver of learning.
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- Learning through play

Second Grade

Course Description: The second grade technology course at The Academy at Ocean Reef incorporates 3D-design/printing, the study of computer components, coding, typing skills, and digital citizenship. The course aligns to Common Core State Standards, and the International Society for Technology in Education's National Education Technology Standards.
second grade students learn the basics of how to create, manipulate, combine, and shape virtual objects in a 3D design space. Ultimately, students print a basic object of their own design using a 3D printer. Students will explore programming through the use of MIT's Scratch Programming language and Code.org's programming courses. During this time, they will be coding their own interactive stories, creating animations, and designing games. Paired with Scratch coding and Code.org, these activities are designed to support familiarity and increase fluency with computational creativity and computational thinking. In particular, the activities worked through during the year encourage exploration of key computational thinking concepts that include the following: sequence, loops, parallelism, events, conditionals, and operators. Students learn key computational thinking practices such as experimenting and iterating, testing and debugging, reusing and remixing, abstracting and modularizing. The digital citizenship component of this course follows Commonsense Media's core concepts of teaching children to think critically, behave safely, and participate responsibly in our digital world.

Goals/Objectives:

- Learning extends beyond the walls of the classroom
- Preparing students to be responsible, safe, and empowered digital citizens
- Enabling student curiosity to drive their own learning
- Age appropriate typing speed and accuracy
- Preparing students technologically to be successful in their future education
- Understanding that being safe when visiting websites is similar to staying safe in real life
- Understanding what information should be put online vs. what information should not be put online

Instructional Methods/Strategies:

- Design Thinking
- Group analysis, brainstorming, innovation, and execution of creative ideas
- Self-learning
- Curiosity as the main driver of learning
- Learning through play

Third Grade

Course Description: The third grade technology course at The Academy at Ocean Reef incorporates 3D-design/printing, the study of computer components, coding, typing skills, and digital citizenship. The course aligns to Common Core State Standards, and the International Society for Technology in Education's National Education Technology Standards. Building on knowledge gained during the previous school year, third grade students learn the basics of how to create, manipulate, combine, and shape virtual objects in a 3D design space. Ultimately, students print a basic object of their own design using a 3D printer. Students will explore programming through the use of MIT's Scratch Programming language and Code.org's programming courses. During this time, they will be coding their own interactive stories, creating animations, and designing games. Paired with Code.org, these activities are designed to support familiarity and increase fluency with computational creativity and computational thinking. In particular, the activities worked through during the year encourage exploration of key computational thinking concepts such as sequences, loops, parallelism, events, conditionals, operators. Students learn key computational thinking practices: experimenting and iterating, testing and debugging, reusing and remixing, abstracting and modularizing. The digital citizenship component of this course follows Commonsense Media's core concepts of teaching children to think critically, behave safely, and participate responsibly in our digital world.

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Instructional Methods/Strategies:

- Design Thinking
- Group analysis, brainstorming, innovation, and execution of creative ideas
- Self-learning
- Curiosity as the main driver of learning
- Gamification
- Learning through play

Fourth Grade

Course Description: The fourth grade technology course at The Academy at Ocean Reef incorporates 3D-design/printing, the study of computer components, web page design, robotics, coding, digital portfolio design, and digital citizenship. The course aligns to Common Core State Standards, and the International Society for Technology in Education's National Education Technology Standards. Building on knowledge gained during the previous school year, fourth grade students continue to learn how to create, manipulate, combine, and shape virtual objects in a 3D design space. Ultimately, students print an object of their own design using a 3D printer. Through the use of Google Sites, students will create their own personalized website and use it as a digital portfolio that will showcase their best work throughout the year(s). Building on prior knowledge obtained during previous years, students will continue to explore coding through Scratch Programming and Code.org. During this time, they will be coding their own interactive stories, creating animations, and designing games. Students will learn to code robots, both virtual and real, during the robotics units throughout the year. Paired with Scratch coding and Code.org, these activities are designed to support familiarity and increase fluency with computational creativity and computational thinking. In particular, the activities worked through during the year encourage exploration of key computational thinking concepts: sequence, loops, parallelism, events, conditionals, operators. Students learn key computational thinking practices: experimenting and iterating, testing and debugging, reusing and remixing, abstracting and modularizing. The digital citizenship component of this course follows Commonsense Media's core concepts of teaching children to think critically, behave safely, and participate responsibly in our digital world.

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Instructional Methods/Strategies:

- Design Thinking
- Group analysis, brainstorming, innovation, and execution of creative ideas
- Self-learning
- Curiosity as the main driver of learning
- Gamification
- Learning through play

Fifth Grade

Course Description: The fifth grade technology course at The Academy at Ocean Reef incorporates 3D-design/printing, the study of computer components, web page design, coding, digital portfolio design, and digital citizenship. The course aligns to Common Core State Standards, and the International Society for Technology in Education's National Education Technology Standards. Building on knowledge gained during the previous school year, fifth grade students continue to learn how to create, manipulate, combine, and shape virtual objects in a 3D design space. Ultimately, students print an object of their own design using a 3D printer. Through the use of Google Sites, students will create their own personalized website and use it as a digital portfolio that will showcase their best work throughout the year(s). Building on prior knowledge obtained during previous years, students will continue to explore coding through Scratch Programming and Code.org. During this time, they will be coding their own interactive stories, creating animations, and designing games. Students will learn to code robots, both virtual and real, during the robotics units throughout the year. Paired with Scratch coding and Code.org, these activities are designed to support familiarity and increase fluency with computational creativity and computational thinking. In particular, the activities worked through during the year encourage exploration of key computational thinking concepts: sequence, loops, parallelism, events, conditionals, operators. Students learn key computational thinking practices: experimenting and iterating, testing and debugging, reusing and remixing, abstracting and modularizing. The digital citizenship component of this course follows Commonsense Media's core concepts of teaching children to think critically, behave safely, and participate responsibly in our digital world.

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Instructional Methods/Strategies:

- Design Thinking
- Group analysis, brainstorming, innovation, and execution of creative ideas
- Self-learning
- Curiosity as the main driver of learning
- Gamification
- Learning through play

Sixth Grade

Course Description: The sixth grade technology course at The Academy at Ocean Reef incorporates 3D-design/printing, the study of computer components, web page design, robotics, coding, digital portfolio design, and digital citizenship. The course aligns to Common Core State Standards, and the International Society for Technology in Education's National Education Technology Standards. Building on knowledge gained during the previous school year, sixth grade students learn how to create, manipulate, combine, and shape virtual objects in a 3D design space. Ultimately, students print an object of their own design using a 3D printer. Through the use of Google Sites, students will create their own personalized website and use it as a digital portfolio that will showcase their best work throughout the year(s). Building on prior knowledge obtained during previous years, students will continue to explore coding through Scratch Programming and Code.org. During this time, they will be coding their own interactive stories, creating animations, and designing games. Students will learn to code robots, both virtual and real, during the robotics units throughout the year. Paired with Scratch coding and Code.org, these activities are designed to support familiarity and increase fluency with computational creativity and computational thinking. In particular, the activities worked through during the year encourage exploration of key computational thinking concepts: sequence, loops, parallelism, events, conditionals, operators. Students learn key computational thinking practices: experimenting and iterating, testing and debugging, reusing and remixing, abstracting and modularizing. The digital citizenship component of this course follows Commonsense Media's core concepts of teaching children to think critically, behave safely, and participate responsibly in our digital world.

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Instructional Methods/Strategies:

- Design Thinking (MakeyMakey, Microbit, Mindstorms)
    - Group analysis, brainstorming, innovation, and execution of creative ideas
- Self-learning (3D Design, 3D Printing, Google Sites/Web design, Computer hardware dissection)
    - Curiosity as the main driver of learning
- Gamification (Scratch programming)
    - Learning through play

Seventh Grade

Course Description: The seventh grade technology course at The Academy at Ocean Reef continues exploration of 3D-design/printing, computer components, web page design, robotics, coding, digital portfolio design, and digital citizenship. The course aligns to Common Core State Standards, and the International Society for Technology in Education's National Education Technology Standards. Building on knowledge gained during the previous school year, seventh grade students explore additional aspects of 3D design and printing. Students design and print multiple parts of objects and learn how they come together to form one object. Through the use of Google Sites students will continue their digital portfolio from the previous year and learn how to arrange their portfolio in an organized manner (archive old data, etc.). Building on prior knowledge obtained during previous years,, students will continue to code robots, both virtual and real, during the robotics units throughout the year. Paired with Scratch coding and Code.org, these activities are designed to support familiarity and increase fluency with computational creativity and computational thinking. In particular, the activities worked on during the year encourage exploration of key computational thinking concepts: sequence, loops, parallelism, events, conditionals, operators. Students learn key computational thinking practices: experimenting and iterating, testing and debugging, reusing and remixing, abstracting and modularizing. The digital citizenship component of this course follows Commonsense Media's core concepts of teaching children to think critically, behave safely, and participate responsibly in our digital world.

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Instructional Methods/Strategies:

- Design Thinking (Coderz, MBots)
    - Group analysis, brainstorming, innovation, and execution of creative ideas
- Self-learning (3D Design, 3D Printing, Google Sites/Web design)
    - Curiosity as the main driver of learning
- Gamification (Scratch programming)
    - Learning through play

Eighth Grade

Course Description: The 8th grade technology course at The Academy at Ocean Reef includes advanced lessons in 3D-design/printing, the study of computer components, web page design, robotics, coding, digital portfolio design, and digital citizenship. The course aligns to Common Core State Standards, and the International Society for Technology in Education's National Education Technology Standards. Building on knowledge gained during the previous school year, 8th grade students explore advanced aspects of 3D design and printing. Students explore the design and creation methods of large multi-part objects while learning how to work through the manufacturing process of these designs. Through the use of Google Sites students will continue their digital portfolio from the previous year and learn how to arrange their portfolio in an organized manner (archive old data, etc.) Building on prior knowledge obtained during previous years, students will continue to code robots, both virtual and real, during the robotics units throughout the year. These activities are designed to support familiarity and increase fluency with computational creativity and computational thinking. In particular, the activities worked on during the year encourage exploration of key computational thinking concepts: sequence, loops, parallelism, events, conditionals, operators. Students learn key computational thinking practices: experimenting and iterating, testing and debugging, reusing and remixing, abstracting and modularizing. The digital citizenship component of this course follows Commonsense Media's core concepts of teaching children to think critically, behave safely, and participate responsibly in our digital world.

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- Understanding what information should be put online vs. what information should not be put online

Instructional Methods/Strategies:

- Design Thinking (Coderz, MBots)
    - Group analysis, brainstorming, innovation, and execution of creative ideas
- Self-learning (3D Design, 3D Printing, Google Sites/Web design)
    - Curiosity as the main driver of learning
- Gamification (Scratch, Coding)
    - Learning through play