*Linda O’Reilly, 2016*

**K-3 OVERVIEW**

**APPLIED DESIGN, SKILLS, AND TECHNOLOGY ROADMAP**

This guide presents a suggested overview for K-3 Applied Design, Skills, and Technology implementation in combination with grade-level content from other areas in cross-curricular activities.

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| **BIG IDEAS K-3** |  | **BIG IDEAS K-3** |  | **BIG IDEAS K-3** |
| **Designs grow out of natural curiosity.** |  | **Skills can be developed through play.** |  | **Technologies are tools that extend human capabilities.** |
| **LEARNING STANDARDS****Curricular competencies** |  | **LEARNING STANDARDS****Curricular competencies** |  | **LEARNING STANDARDS****Curricular competencies** |
| *Students are expected to be able to do the following*:Applied DesignIdeating* Identify needs and opportunities for designing, through exploration
* Generate ideas from their experiences and interests
* Add to others’ ideas
* Choose an idea to pursue

Making* Choose tools and materials
* Make a product using known procedures or through modelling of others
* Use trial and error to make changes, solve problems, or incorporate new ideas from self or others

Sharing* Decide on how and with whom to share their product
* Demonstrate their product, tell the story of designing and making their product, and explain how their product contributes to the individual, family, community, and/or environment
* Use personal preferences to evaluate the success of their design solutions
* Reflect on their ability to work effectively both as individuals and collaboratively in a group
 |  | *Students are expected to be able to do the following*:Applied Skills* Use materials, tools, and technologies in a safe manner in both physical and digital environments
* Develop their skills and add new ones through play and collaborative work
 |  | *Students are expected to be able to do the following:*Applied Technologies* Explore the use of simple, available tools and technologies to extend their capabilities
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| LEARNING STANDARDS Content |
| Students are expected to use the learning standards for Curricular Competencies from Applied Design, Skills, and Technologies in combination with grade-level content from other areas of learning in cross-curricular activities to develop foundational mindsets and skills in design thinking and making. |
| **Aim:** * Students will use their imagination and creativity to design and make things in the context of *exploratory and purposeful play.*

**Provide K-3 students with opportunities to**:* Design and make simple to more complex products that solve real problems within a variety of contexts.
* Develop skills, knowledge and understanding of designing and making functional products.
* Develop design ideas by exploring materials through construction and technology.
* Use learning from science and mathematics to help design and make products that work.

**Elaborations (BC Curriculum)*** **Ideating:** forming ideas or concepts
* **Product:** for example, a physical product, a process, a system, a service, or a designed environment
* **Share:** may include showing to others, use by others, giving away, or marketing and selling
* **Technologies:** things that extend human capabilities (e.g., scissors)

**Suggested Design Thinking Pattern*** I have a challenge.
* *How do I approach it?*
* I learned something.
* *How do I interpret it?*
* I see an opportunity.
* *What do I create?*
* I have an idea.
* *How do I build it?*
* I tried something.
* *How do I evolve it?*
 |  | **Technical Knowledge*** Build structures, exploring how they can be made stronger, stiffer and more stable,
* Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

**Safety/Physical Environment****Provide students with opportunities to:*** Explore simple mechanisms and structures using basic tools safely.

**Safety/Digital Environment****Provide students with opportunities to:*** Manage their online information and keep it secure from online risks.
* Create strong passwords.
* Demonstrates safe and responsible use of technology by using appropriate etiquette and Internet safety.
* Demonstrates an understanding of what it means to be a good digital citizen.
* Identify cyber-bullying and discuss the effects of bullying on an individual
 |  | See suggested K-3 Technology and Digital Citizenship Continuum below.  |
| **How to Apply Design Thinking in Class: Step by Step**<http://ww2.kqed.org/mindshift/2013/06/26/how-to-use-design-thinking-in-class-step-by-step/>**Material and Resources**Free Registration/Lots of good ideas and lesson plans<https://www.stem.org.uk/elibrary/collection/2891> |  |  |  |  |

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| **DIGITAL LITERACY CURRICULUM ORGANIZERS****Technology Operations and Concepts**Students demonstrate a sound understanding of technology concepts, systems, and operations | **DIGITAL LITERACY COMPETENCIES** | **INSTRUCTIONAL MATERIALS AND RESOURCES** |
| 1. **Managing and Operation of Digital Devices**
 | **Students in K-2 will be able to:*** Use terminology specific to the iPad
* Identify parts of the iPad
* Turn the iPad on and off
* Use gestures for navigating the iPad
* Open and close apps
* Navigate apps related to curriculum
* Take pictures with the iPad and in apps
* Record voice in apps
* Create, navigate and read electronic books
* Manipulate objects on the interactive Smart Board to demonstrate learning

**Students in Grade 3 will be able to:*** Identify components of, and operate digital devices (iPad, MacBook)
* Explain the differences between hardware, software and applications
* Manipulate objects on an interactive Smart Board to demonstrate learning
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| **DIGITAL LITERACY CURRICULUM ORGANIZERS****Technology Operations And Concepts**Students demonstrate a sound understanding of technology concepts, systems, and operations. | **DIGITAL LITERACY COMPETENCIES** | **SUGGESTED LEARNING OPPORTUNITIES/****INSTRUCTIONAL RESOURCES** |
| 1. **Keyboarding Continuum**
 | **Students in Kindergarten will be able to:*** Pull up a keyboard to type in an app on the iPad
* Identify and use some letters and number keys on the iPad
* Use correct hand position for left and right hand on the iPad
* Use informal keyboarding skills to type letters or words on the iPad

**Students in Grade 1 will be able to:*** Pull up a keyboard to type in an app on the iPad
* Use correct hand position for left and right hand on the iPad
* Identify and use number symbols and punctuation keys on the iPad
* Use space bar, return, delete/backspace keys, shift key on the iPad
* Use informal keyboarding skills to type words, phrases or sentences on the iPad

**Students in Grade 2 will be able to:*** Use correct position for left and right hand on the iPad
* Pull up the keyboard to type in an app on the iPad
* Identify and use shift, caps lock, number and punctuation keys, space bar, return delete/backspace keys on the iPad
* Use informal keyboarding skills to type words, phrases or sentences
* **Students in Grade 3 will be able to:**
* Use correct hand positioning for left and right hand
* Identify and use letter keys with correct fingering technique on Home Row
* Identify and use the space bar, return/enter, and delete/backspace keys, using correct fingering technique
* Use shift and caps lock using correct fingering technique
* Use two hands to demonstrate keyboarding skills to type words and sentences
* Demonstrate proper ergonomics
 | **Kindergarten-Grade 2** * Story Kit App, Drawing Box App

**Grade 3****Ghost Type App:** * Students progress at own rate through the keyboarding program
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| **DIGITAL LITERACY CURRICULUM ORGANIZERS****Content Creation**Students create innovative products and processes using digital resources individually and collaboratively.  | **DIGITAL LITERACY COMPETENCIES** | **SUGGESTED LEARNING OPPORTUNITIES/****INSTRUCTIONAL RESOURCES** |
| 1. **Multimedia and Presentation Tools**

**B. Creativity And Innovation** | **Students in K-2 will be able to:*** Create and format original documents on the iPad
* Select and use drawing and painting tools
* Insert and resize graphics on the iPad
* Create simple and complex presentations with audio on the iPad
* Use storyboard to create a presentation on the iPad
* Create projects related to curriculum on the iPad
* Integrate a variety of apps across curriculum on the iPad
* Use digital media to express thoughts creatively

**Students in Grade 3 will be able to:*** Use word processing application to create and save content
* Use menu/tool bar functions including font, size, style, line spacing/margins, to format, edit, and print a document
* Copy, paste or format images
* Insert and size a graphic in a document
* Use digital media as a learning tool

**Students in Grades 2-3 will be able to:*** Create original digital works as a means of expression
* Use design elements to enhance the communication of ideas in creative ways
* Apply existing knowledge to generate new ideas, products or processes using digital technology
 | **Kindergarten****Screen Chomp App**: * *All About Me Activity*-Students illustrate likes and dislikes

**Story Kit App**: * *Letter sounds, Earth Book Activity*-Students create an electronic book on the iPadincluding pictures, text and audio
* See Appendix A for curriculum related skill based apps

**Grade 1****Drawing Box App:** * *Pattern Pictures Activity*-Students create patterns using drawing tools

**Story Buddy App:** * Suggested Topics: *All About Me, Signs of Fall, Shapes Around the Classroom, Fairy Tale, Animal Habitats*-Students create an electronic book on the iPad including drawing pictures and writing text
* See Appendix A for curriculum related skill based apps

**Grade 2****Pic Collage App:** * *Theme of the Year Activity*-Students create an image collage

**Story Buddy App:** * Suggested Topics: *Rules For School, Jobs At School, Creative Writing Stories-*Students create an electronic book on the iPad including camera pictures, text, and speech

**Idea Sketch:** * Students plan and create a storyboard

**Story Patch App:** * Students create and write stories using pictures and text

**Keynote App:** * *My Heritage Project*-Students create a slide presentation about a topic of interest including text, pictures, transitions and audio
* See Appendix A for curriculum related skill based apps

**Grade 3** *(Inclusive of Multimedia and Creativity and Innovation)***Idea Sketch/Brainstorm App:** * Students outline ideas for writing drafts

**Pic Collage App**: * Students take photographs of various emotions and explain feelings

**Be Funky App:** * Students learn basic photo editing techniques and insert pictures into projects

**iMovie App:** * *The Year in Review* *Activity*-Students create a movie trailer about a topic of interest
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| **DIGITAL LITERACY CURRICULUM ORGANIZERS****My Online Connections**Students explore the concept that people can connect, share, communicate and collaborate with others through the Internet. | **DIGITAL LITERACY COMPETENCIES** | **SUGGESTED LEARNING OPPORTUNITIES/****INSTRUCTIONAL RESOURCES** |
| 1. **Communication and Collaboration**
 | **Students in K-2 will be able to:*** Recognize how they are connected to different people and places, in-person and on the Internet
* Communicate with others using digital tools with adult supervision
* Identify and apply cooperative group rules to effectively collaborate in a classroom learning project

**Students in Grade 3 will be able to:*** Communicate digitally with others by selecting and using a variety of appropriate communication tools (under teacher supervision)
* Participate in communication at a distance with others of different cultures or geographic areas to gain different perspectives of topics
* Create projects that use text and various technologies (e.g. drawing program, presentation software) to communicate and exchange ideas
* Communicate information and ideas effectively to multiple audiences using a variety of media and formats
 | **Kindergarten-Grade 3****Resource:** <https://www.commonsensemedia.org/educators/lesson/my-online-community-k-2>**Suggested Activities:*** Purpose of the Internet
* Circles of Connection
* Online Community Maps
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| **DIGITAL LITERACY CURRICULUM ORGANIZERS****Digital Citizenship**Students understand safe, legal and responsible use of technology and information*.* They are able to manage risks (e.g. cyberbullying) online, as well as problematic content (e.g. violence), and to avoid and limit these risks. | **DIGITAL LITERACY COMPETENCIES** | **SUGGESTED LEARNING OPPORTUNITIES/****INSTRUCTIONAL RESOURCES** |
| 1. **Staying Safe Online**
2. **Legal and Ethical Aspects**
3. **Creative Credit and Copyright**
 | **Students in K-2 will be able to:** * Identify and articulate school rules for the use of digital tools
* Explain ways to responsibly handle requests from websites that ask for private information
* Identify and discuss ways to stay safe on the Intern
* Demonstrate how to create strong, secure passwords

**Students in Grades 3 will be able to:*** Demonstrate compliance with school rules regarding responsible use of technology
* Look for privacy policies and seals of approval when choosing secure sites
* Create secure passwords in order to protect their private information and accounts online
* Recognize SPAM, the forms it takes, and identify strategies for dealing with it
* Protect themselves from online identity theft by thinking critically about the information they share online
* Recognize the Internet as a place to develop relationships but not to reveal private information online
* Realize how media can play a powerful role in shaping ideas about gender roles

**Students in K-2 will be able to:*** Demonstrate an understanding of having ownership over creative work

**Students in Grade 3 will be able to:*** Identify and articulate strategies to protect personal information
* Exhibit legal and ethical behavior when using technology and discuss consequences of misuse
* Realize that the information they share online leaves a digital footprint
* Explain how the digital environment can positively or negatively affect their lives
* Recognize that images can be digitally manipulated for positive purposes or to mislead us

**Students in Grade 3 will be able to:*** Explain how copying the work of others and presenting it as one’s own is called plagiarism
* Use age-appropriate technologies to locate, collect, organize content from media collections for specific research purposes and cites sources
 | **Grade 1** **Resource:**<http://www.commonsensemedia.org/educators/scope-and-sequence>**Suggested Activities:*** Going Places Safely
* Keep it Private

**Grade 2****Resource:**<http://www.commonsensemedia.org/educators/scope-and-sequence>**Suggested Activities:*** Staying Safe Online
* Keep it Private

**Grades 1-2****Resource:**<http://www.commonsensemedia.org/educators/scope-and-sequence>**Suggested Activities:*** Sending Email
* Follow The Digital Trail
* Screen Out The Mean

**Grades 1-3****Resource:**<http://www.commonsensemedia.org/educators/scope-and-sequence>**Suggested Activities:*** My Creative Work

**Grades 2-3*** **Digital Citizenship**

<https://www.commonsensemedia.org/video/educators/digital-citizenship>* **Digital Trail**

<https://www.commonsensemedia.org/videos/follow-the-digital-trail> |

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| **DIGITAL LITERACY CURRICULUM ORGANIZERS****Research Critical Thinking and Decision Making** Students apply digital tools to gather, evaluate, and use information. | **DIGITAL LITERACY COMPETENCIES** | **SUGGESTED LEARNING OPPORTUNITIES/****INSTRUCTIONAL RESOURCES** |
| 1. **Information Literacy and Processing**

**B. Critical Thinking, Problem Solving and Decision Making** | **Students in K-2 will be able to*** Uses the alphabet on a children’s dictionary site to search online
* Generate key words from a posed question for a search
* Use Dropbox to store and retrieve pictures for projects related to curriculum topics

**Students in Grade 3 will be able to:*** Perform basic searches on databases to locate information
* Evaluate teacher-selected or self-selected Internet sites in terms of their usefulness for research
* Use strategies to increase the accuracy of their keyword searches and rate their effectiveness
* Evaluate the validity of Internet content and whether or not sources can be trusted
* Use a digital environment for life long learning

**Students in Grades 2-3 will be able to:*** Use appropriate digital tools to synthesize research information to develop new ideas and/or create new understanding
* Collect and analyze data to identify solutions and make informed decisions
* Identify and analyze the purpose of media messages (to inform, persuade, and entertain)
 | **Kindergarten****Resource:**<https://www.commonsensemedia.org/educators/scope-and-sequence>**Suggested Activities*** ABC Searching on Enchanted Learning

**Grade 1****Resource:**<https://www.commonsensemedia.org/educators/scope-and-sequence>**Suggested Activities:*** Sites I Like
* ABC Searching on Enchanted Learning

**Dropbox App**: * Students will access pictures related to curriculum topics using the Dropbox app

**Grade 2****Resource:**<https://www.commonsensemedia.org/educators/scope-and-sequence>**Suggested Activities*** Using Keywords

**POW Strip Design App:*** Students gather information from teacher assigned websites and saved images from Dropbox app

**Keynote App**: * Students use keyword searches to find pictures using K9 search engine

**Story Buddy App**: * Students use keyword searches with K9 to find pictures and to gather images from Dropbox app
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