*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 Design  Ideating   * 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 |
| 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 |