Curriculum Map: Innovation Class

Crawford Central School District

9-12 Grade Elective Class, ½ credit

Course Description: This course is based on the premise "that creative thinking is as vital as math or reading or writing. There's power in problem-solving and experimenting and taking things from questions to ideas to authentic products that you launch to the world. Something happens in students when they define themselves as makers and inventors and creators." This course will use the framework of design thinking, open-source learning, and collaboration through social media "to empower kids to make an impact on the world around them and fully believe in themselves."

At the beginning of each semester, students will be immersed in an introduction to design thinking through completing mini-design challenges in small groups. Students will then engage in self-directed problem-based learning as they complete projects in areas of personal interest. The teacher will serve as a guide to provide framework and scaffolding for student success; students will also obtain outside mentors in their project areas for additional guidance. Students will publicly share their work as part of the design process. In this way, students will develop communication, collaboration, critical and creative thinking skills.

Work cited: Spencer, John; Juliani, A.J.. LAUNCH: Using Design Thinking to Boost Creativity and Bring Out the Maker in Every Student (Kindle Locations 142-143). Dave Burgess Consulting, Inc.. Kindle Edition.

Unit Title: Introduction to Design Thinking

Suggested time frame: 3-4 weeks

Fall Semester: September, Spring Semester, mid-January-mid- February

Standards: 21st Century Learning Outcomes: Creative Thinking, Critical Thinking, Communication and Collaboration

PA Science and Technology and Engineering Education: 3.4.C Technology and Engineering Design, 3.4.D Abilities for a Technological World

Essential Questions: What is design thinking?
What is an innovative thinking?
How can adopting these mindsets help me address challenges, create solutions, and have a positive impact?

Competency	Vocabulary	Strategy	Resource
• The students will be able to: • Use Design Thinking to address a challenge	• Design Thinking	• Guide students through "Wallet Project" (book bag) or "Gift Giving Project (90 min intro to entire process) from d. school	• Stanford's d. school and K12 lab website • "Design Thinking for Educators" Toolkit by IDEO and Riverside School
• Empathize	• Empathy, users, experts, fieldwork, interview		• Launch: Using Design Thinking to Boost

• Define a Design Challenge • Ideate	• Ideate, brainstorm, critique, analyze, fluidity, flexibility	• Provide models of good questions and practice interviews in pairs • Provide observation guides and time for authentic observation • Guided Interpretation: Storytelling, One idea per post-it, Finding Themes, Writing Headlines (Design Thinking for Educators Toolkit) • Dream/Gripe Session (Creativity Challenge #9 from Creative Confidence) • Introduce "How might we…?" question stem, Practice with "bad" statements (including answer, too specific, too narrow, too broad) • Practice creative thinking exercises as bell ringers: Thirty Circles Exercise, Ways to Sit in a Chair, Uses for a Pencil, Whole Brain Game™, etc. • Provide time, materials, and technology for "playing," "tinkering,"	Creativity and Bring Out the Maker in Every Student by John Spencer and A.J. Juliani • Creative Confidence by Tom and David Kelley • Post-Its and Sharpies

• Prototype • Test • Iterate	• Prototype • Criteria, quality, data, user, launch • Revise	and free exchange of ideas • Provide mini-lessons on use of apps and materials relevant to project topic • Encourage use of online resources to aid in technical knowledge needed for prototype creation (YouTube videos, DIY communities) • Provide graphic organizers and scaffolding for written products • Have speed rounds of sharing prototypes and feedback in stations within classroom • Have Launch parties; invites peers, staff, community members to view products and offer feedback (can be online or in person) • Provide pro/con templates, checklists, student-generated rubrics to provide format for organizing feedback	• Prototyping Materials: construction paper, tape, pens, scissors, aluminum foil, rubber band, paper clips, fabric scraps, etc. • Variety of apps, software, equipment and devices for making • "Real world audiences" which could include classmates, staff, business people, community members, experts contacted through social media

• Explain and adopt an innovator's mindset	• Empathetic, problem-finders, risk-takers, networked, observant, creator, resilient, reflective	and assessing strengths and weaknesses • Have students complete written or video reflections on above texts and their own work • Let students design/adapt the layout of the room. Include posters and quotes related to growth and innovators mindset that they select or make • Have bell ringers with quotes or short video clips highlighting characteristics of innovator's mindset and ask students to reflect in writing or through short discussion • Structure assessment to promote risk-taking by 1) Using standards-based assessment with multiple attempts for success and 2) Including risk-taking and reflecting on and	• The Innovator's Mindset by George Couros

		learning from failure as assessment criteria • Include frequent opportunities for team-building, interviewing, story gathering and storytelling within classroom, school, and wider community	

Unit Title: Innovation Project: Design and Execution

Suggested time frame: 15-16 Weeks

Fall Semester, October-January, Spring Semester mid-February-May

Standards: PA ELA Core Standards: CC.1.4.11–12. V, W Research, CC.1.5.11–12 Speaking and Listening

21st Century Learning Outcomes: Critical Thinking, Creative Thinking, Communication

*Additional standards will be covered but will vary based on student interest

Essential Questions:

What are my strengths and interests?
What problems or issues in my community or larger world are important to me?
What can I do to help solves those problems or address those issues?
How can I design a project/study to address those strengths and interests while having a positive impact on my community?
How can I develop strategies to persevere when faced with road blocks in my work?
How does the audience and purpose influence the format of a product or presentation?
How can I collaborate effectively?
In what ways do outside resources play a role in my learning and innovation?

Competency	Vocabulary	Strategy	Resource
• The students will be able to: • Reflect on strengths, interests, and passions to determine topic for innovation project	• Strengths, values, character strengths	• Complete StrengthsFinder, Values in Action Inventory, and/or similar inventory	• Viacharacter.org, StrengthsFinder 2.0

• Define a design challenge to be the focus of an innovation project • Write, modify and follow a project proposal, including a timeline • Gather relevant information from multiple authoritative print, digital, and human sources, using advanced searches and social media effectively • Assess the strengths and limitations of each source in terms of the task, purpose, and audience	• Design challenge, research questions, innovation • Resources, goal • Digital literacy • Credibility, reliability, relevance, primary source, secondary source, bias, bibliography	• Brainstorm lists of interests and curiosities, use Venn Diagram or tournament brackets to narrow • Analyze exemplary models of design challenges • Peer conference/One-on-one conference with teacher • Provide structured proposal and log sheets with instruction • Mini-lessons on effective search terms and techniques (as relevant to student skill level), including databases • Mini-lessons on appropriate inquiry emails and messages to professionals (as applicable) • Mini-lessons on evaluating websites/sources, use of CRAPP rubric	• Creative Confidence by David and Tom Kelley, "Design Thinking for Educators" Toolkit by IDEO and Riverdale School • Proposal and log sheets (teacher-made), Google Drive/Classroom • Will vary based on project topics • Media center and technology integration specialists

• Reflect on quality of work throughout process and make adjustments to plan as necessary	• Revise, edit, reflect, objective, test, blogging, vlogging	• Weekly checkpoints with written or video reflection and student-teacher conferences • Collaborate with students to develop rubrics based on criteria	• Apps for efficient video sharing and commenting on students' work
• Turn ideas into action to address design challenge	• Brainstorm, Ideate Prototype, creative constraints	• Structured small group brainstorming sessions with creative constraints • Rapid prototyping sessions with feedback • Provide time, materials, support and technology for "playing," "tinkering," and free exchange of ideas	• Post-Its, resources will vary depending on project topics
• Problem-solve through unexpected setbacks	• Growth mindset, flexibility, fluidity	• Create a classroom atmosphere where mistakes and learning from failure are encouraged and celebrated (Teambuilding, Best mistake of the week, Biggest risk of the week, assessment based on risk, process, and	• Ted Talks, podcasts, social media, <u>It's Not How Good You Are, It's How Good You Want to Be</u> by Paul Arden and similar books

• Effectively use social media to promote work • Produce product in media format appropriate to topic and audience	• Layout, visuals, purpose, audience, informal, formal, outline, concept map, storyboard	problem-solving instead of product) • Watch and discuss videos/podcasts of entreupeneurs and creative thinkers telling their stories • Mini-lessons/contests on Twitter and other social media networking • Time for peer teaching on effective promotion on YouTube, Vimeo, etc. • Peer/teacher brainstorming sessions • Mini-lessons in use of most up-to-date apps for multi-media products • View and analyze exemplary products • Construct rubrics for products as a class	• Personal devices with reliable Wi-Fi • Technology integration specialist • Variety of apps, software, and devices for making and editing high-quality digital products
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