Intel® Skills for Innovation

Starter Pack Lessons Catalog

Lesson Summary

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Contents

Intel® Skills for Innovation Starter Pack Lessons Summary

	Subject	Activity Title	Description	Supporting Technology	Mindset	Skillset	Chrome-book
NEW	1 STEM (Biology)	Crop Assassins	Optimized for AIPC Explore plant diseases and use computer vision for disease detection.	Software used: Intel AI Playground, Teachable Machine	Comp. Thinking: Pattern Recognition	AI & Machine Learning: Computer Vision	
NEW	2 STEM (Biology)	ER Triage Assistant	Optimized for AIPC Learn ER triage with ATS and ABCDE, assign case-based triage levels, and use Intel AI Playground to test AI support while exploring data privacy and human responsibility.	Software used: Intel AI Playground	Design Thinking: Empathize	AI & Machine Learning: Natural Language Processing	
NEW	3 STEM (Engineering)	Pixel Perfect	Optimized for AIPC Explore quality control in manufacturing and use computer vision tools to identify visual defects.	Software used: GIMP, Roboflow	Comp. Thinking: Abstraction	AI & Machine Learning: Computer Vision	
	4 Language	AI Roleplaying	Experience game-based learning in creative writing using AI Dungeon to simulate text adventures.	Software used: AI Dungeon	Comp. Thinking: Algorithms	AI & Machine Learning: Natural Language Processing	✓
	5 Language	AI Roleplaying (Chat GPT)	Experience game-based learning in creative writing using ChatGPT to simulate text adventures. Student Facing version available genially version available	Software used: ChatGPT, Canva	Comp. Thinking: Algorithms	AI & Machine Learning: Natural Language Processing	✓
	6 Social Studies	Anatomy of Safety	Learners explore senior fall risks, identify home hazards using 3D simulations, and see how design can improve safety.	Software used: Unity	Design Thinking: Define	Simulation & Modeling: Problem Definition	
	7 STEM (Physics)	Architecture of Wind	Learn how architects test to see if the tall buildings they are designing will be able to withstand strong winds.	Software used: Autodesk CFD 2021, Autodesk Fusion 360	Design Thinking: Test	Programming & Coding: Iterative Refinement	
	8 History	As A Matter of Fake	Learn how to differentiate fake news or deliberate online falsehoods by analyzing texts using natural language processing.	Software used: Python, Jupyter Notebook	Comp. Thinking: Pattern Recognition	AI & Machine Learning: Natural Language Processing	✓
	9 STEM (Math)	Benford's Law	Create a computational experiment using the Monte Carlo Method and Markov Chain to solve complex problems.	Software used: Python, Jupyter Notebook	Comp. Thinking: Abstraction	Data Science: Data Modeling	✓

Subjects: Art | Geography | History | Humanities | Language | STEM

Mindset: Social-Emotional Skills | Computational Thinking | Design Thinking

Skillsets: Programming & Coding | Data Science | Simulation & Modeling | AI & Machine Learning

	Subject	Activity Title	Description	Supporting Technology	Mindset	Skillset	Chrome-book
10	STEM (Math)	Big O Notation	Learn about Big O Notation and how it is used in coding to explain the complexity of an algorithm.	Software used: Python	Comp. Thinking: Algorithms	Programming & Coding: Iterative Refinement	✓
11	Geography	Blueprints for a Green Planet	Topic: Greentech Learners will explore sustainable construction principles and engage in hands-on design challenges using Twinmotion to create eco-friendly buildings, fostering an understanding of sustainable architecture.	Software used: Epic Games, Twinmotion	Design Thinking: Prototype	Simulation & Modeling: Model Development	
12	History	Causes of Genocides	Investigate the causes of genocides through data wrangling to prepare data for trend and correlation analysis.	Software used: Python, Jupyter Notebook	Comp. Thinking: Decomposition	Data Science: Data Wrangling	✓
13	Geography	Clean Water	Investigate the relationship between a lack of access to good sanitation and child mortality using Gapminder.	Software used: Gapminder, Dollarstreet	Design Thinking: Empathize	Data Science: Data Visualization	✓
14	STEM (Physics)	Da Vinci Bridge	Reconstruct the historical Da Vinci Bridge without nails or ropes using laser cutting.	Software used: Inkscape	Design Thinking: Prototype	Simulation & Modeling: Model Development	
15	STEM (Math)	Digital Twins	Topic: Mixed Reality Explore the significance of digital twins in manufacturing by using Simumatik to simulate processes and enhance operational efficiency through predictive maintenance techniques.	Software used: Simumatik	Comp. Thinking: Algorithms	Simulation & Modeling: Model Development	✓
16	STEM (Biology)	Diversity of Flowers	Investigate how diversity enables flowers to adapt to their environment and create a machine learning model to classify irises.	Software used: Python, Jupyter Notebook	Comp. Thinking: Algorithms	AI & Machine Learning: Learning Models	✓
17	Geography	Envisioning Safer Cities	Discover how planners and policymakers can make cities safer through the use of computer vision.	Software used: Python, Jupyter Notebook	Comp. Thinking: Pattern Recognition	AI & Machine Learning: Computer Vision	✓
18	Language	Figuratively Speaking	Identify and analyze figurative language in prose and apply story writing skills using AI Dungeon.	Software used: AI Dungeon	Comp. Thinking: Algorithms	AI & Machine Learning: Natural Language Processing	✓

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19	STEM (Chemistry)	Fire Simulator	Generate fire particle simulations using 3D modelling software. Student Facing version available	Software used: Blender 2.8	Design Thinking: Ideate	Simulation & Modeling: Model Development	
20	STEM (Physics)	Gears in Motion	Learn about how gears, as a form of rotary machine mechanics, provides mechanical advantages.	Software used: Autodesk Fusion 360	Comp. Thinking: Decomposition	Simulation & Modeling: Variable Constraining	
21	Economics	Happy Countries	Investigate the factors behind a country's happiness rating through statistical analysis.	Software used: IBM SPSS	Design Thinking: Define	Data Science: Statistical Analysis	
22	STEM (Biology)	Healthy Diet for All	Explore the impact of malnutrition and perform statistical analysis to understand and address the problem of malnutrition in a community.	Software used: Python, Jupyter Notebook	Comp. Thinking: Decomposition	Data Science: Statistical Analysis	✓
23	Geography	Internet of Weather	Create a weather detector using a microcontroller to perform advanced weather analysis.	Software used: Arduino Weather Sensor Set Arduino IDE ThingSpeak	Design Thinking: Test	Data Science: Data Visualization	✓
24	Language	Language of Populism	Learn about features of language used by populist politicians and analyze word length in political speeches.	Software used: Python, Jupyter Notebook	Comp. Thinking: Decomposition	Data Science: Statistical Analysis	✓
25	STEM (Physics)	Mapping Silence	Topic: Greentech Learners will investigate noise monitoring and mitigation through QGIS, mapping sound levels and proposing noise reduction strategies, promoting an understanding of noise pollution's impact on communities and the environment.	Software used: Zero Noise, QGIS	Design Thinking: Ideate	Data Science: Data Visualization	✓
26	STEM (Math)	Mathematics of Pandemics	Experience how data modeling helps researchers better understand virus behavior and the spread of a pandemic.	Software used: Microsoft Excel, GIS	Design Thinking: Define	Data Science: Data Visualization	✓
27	STEM (Physics)	Microcontroller Robot	Learn the basics of robotics and create a functional self-initiated floor cleaner robot.	Software used: Arduino IDE	Design Thinking: Prototype	AI & Machine Learning: Robotics	✓
28	Language	Pathos, Logos, and Ethos	Analyze persuasion techniques used in advertising and create a chatbot that is able to identify instances of pathos, logos and ethos.	Software used: Wit.ai	Comp. Thinking: Algorithms	AI & Machine Learning: Natural Language Processing	✓

	Subject	Activity Title	Description	Supporting Technology	Mindset	Skillset	Chrome -book
29	Language	Pathos, Logos, and Ethos (ChatGPT)	Analyze persuasion techniques used in advertising and create a chatbot that is able to identify instances of pathos, logos and ethos. Student Facing version available genially version available	Software used: ChatGPT, Canva	Comp. Thinking: Algorithms	AI & Machine Learning: Natural Language Processing	✓
30	Geography	Plastic, Plastic, Everywhere	Delve deeper into the problem of microplastics and how computer vision can help in creating solutions.	Software used: Python, Jupyter Notebook	Design Thinking: Test	AI & Machine Learning: Computer Vision	✓
31	Economics	Pollution: Costs & Causes	Examine the effects of pollution on a community using pattern recognition through a GIS.	Software used: QGIS	Comp. Thinking: Pattern Recognition	Data Science: Data Visualization	✓
32	Social Studies	Safe Transit	Investigate and analyze road safety in cities using scatter plots and correlation coefficients.	Software used: Python, Jupyter Notebook	Design Thinking: Empathize	Data Science: Statistical Analysis	✓
33	STEM (Chemistry)	Saucy Viscosity	Students will learn how to generate water simulations through the use of 3D modelling software. Student Facing version available	Software used: Blender 2.8	Comp. Thinking: Decomposition	Simulation & Modeling: Problem Definition	
34	STEM (Math)	Sensing Motion	Learn how computer vision can be used to emulate how a human being perceives motion of an everyday object.	Software used: Yawcam, Camlytics, Jupyter Notebook, Python	Comp. Thinking: Algorithms	AI & Machine Learning: Computer Vision	
35	STEM (Physics)	Static Stress Testing	Learn how to stress test models in simulations and identify the weak points of various models.	Software used: Autodesk Fusion 360	Design Thinking: Test	Simulation & Modeling: Verification & Optimization	
36	Language	Storyboarding with Data	Build a storyboard using data to convey a point of view in an argumentative essay.	Software used: StoryboardThat, Microsoft Excel	Comp. Thinking: Decomposition	Data Science: Data Visualization	✓

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37	STEM (Science)	Sustainable Fashion	Topic: Greentech Learners will investigate sustainable fashion, create a garment simulation through the use of 3D programs and use different kinds of sustainable fabrics to create an eco-friendly fashion product.	Software used: CLO3D	Design Thinking: Ideate	Simulation & Modeling: Model Development	
38	Language	Uncovering Cyberbullying	Analyze words using natural language processing to gain insights into cyberbullying.	Software used: Python, Jupyter Notebook	Design Thinking: Empathize	AI & Machine Learning: Natural Language Processing	✓
39	Social Studies	Urbanization	Investigate the impact of urbanization and present findings in an interactive 3D space.	Software used: Delightex	Comp. Thinking: Abstraction	Data Science: Data Visualization	✓
40	STEM (Biology)	Cat Anatomy Chronicles: Detect Digestive Features VICTORYXR	Explore the digestive system of cats, identifying key components and functions in the Victory XR Feline Dissection in the "Cat Anatomy Chronicles."	Software used: VXRWeb	Design Thinking: Prototype	Simulation & Modeling: Problem Definition	✓
41	STEM (Biology)	Cat Anatomy Chronicles: Discovering Skeletal Features VICTORYXR	Unearth the framework of mammalian anatomy, in the Victory XR Feline Dissection in the "Cat Anatomy Chronicles."	Software used: VXRWeb	Design Thinking: Prototype	Simulation & Modeling: Problem Definition	✓
42	STEM (Biology)	Cat Anatomy Chronicles: Examine External Features VICTORYXR	Investigate the visible characteristics of feline anatomy in the Victory XR Feline Dissection in the "Cat Anatomy Chronicles."	Software used: VXRWeb	Design Thinking: Prototype	Simulation & Modeling: Problem Definition	✓
43	STEM (Biology)	Cat Anatomy Chronicles: Investigate the Introduction and Tutorial VICTORYXR	Jump in and discover the Introduction and Tutorial of the Victory XR Feline Dissection in the "Cat Anatomy Chronicles."	Software used: VXRWeb	Design Thinking: Prototype	Simulation & Modeling: Problem Definition	✓

	Subject	Activity Title	Description	Supporting Technology	Mindset	Skillset	Chrome-book
44	STEM (Biology)	Cat Anatomy Chronicles: Master the Muscular System VICTORYXR	Delve into the intricacies of feline muscles and movements in the Victory XR Feline Dissection in the "Cat Anatomy Chronicles."	Software used: VXRWeb	Design Thinking: Prototype	Simulation & Modeling: Problem Definition	✓
45	STEM (Biology)	Cat Anatomy Chronicles: Navigate the Central Nervous System VICTORYXR	Journey through cat neurology, understanding the central nervous system through the Victory XR Feline Dissection, in the "Cat Anatomy Chronicles."	Software used: VXRWeb	Design Thinking: Prototype	Simulation & Modeling: Problem Definition	✓
46	STEM (Biology)	Cat Anatomy Chronicles: Reveal the Respiratory System VICTORYXR	Investigate how cats breathe, uncovering the mechanics of the respiratory system in the Victory XR Feline Dissection in the "Cat Anatomy Chronicles."	Software used: VXRWeb	Design Thinking: Prototype	Simulation & Modeling: Problem Definition	✓
47	STEM (Biology)	Cat Anatomy Chronicles: Survey the Circulatory System VICTORYXR	Examine the pathways and components of the feline circulatory system through the Victory XR Feline Dissection, in the "Cat Anatomy Chronicles."	Software used: VXRWeb	Design Thinking: Prototype	Simulation & Modeling: Problem Definition	✓
48	STEM (Biology)	Cat Anatomy Chronicles: Uncover The Urogenital System VICTORYXR	Explore the reproductive and urinary systems of mammals, through the Victory XR Feline Dissection in the "Cat Anatomy Chronicles."	Software used: VXRWeb	Design Thinking: Prototype	Simulation & Modeling: Problem Definition	✓
49	Geography	Human Impact on Climate Change Labster	Learners will apply the concepts of climate change, and how humans affect the environment	Software used: Labster Simulation	Design Thinking: Empathize	Simulation & Modeling: Model Development	✓
50	STEM (Biology)	Human Impacts on The Water Cycle Labster	Learners will reflect on how human activity can impact water storage and how to build a sustainable city.	Software used: Labster Simulation	Design Thinking: Empathize	Simulation & Modeling: Model Development	✓
51	STEM (Chemistry)	The Nitrogen Cycle Labster	Learners will apply the concepts of the nitrogen cycle to balance food production and environmental impact	Software used: Labster Simulation	Comp. Thinking: Pattern Recognition	Simulation & Modeling: Model Development	✓

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52	STEM (Physics)	The Photoelectric Effect Labster	Learners will apply the concept of the photoelectric effect to power up an old farm with the use of solar panels	Software used: Labster Simulation	Comp. Thinking: Decomposition	Data Science: Modeling	✓
53	STEM (Biology)	Accelerating Cancer Research Lenovo	Learners will explore PyMOL to visualize and analyze mutated protein structures, and understand how supercomputers accelerate cancer research.	Software used: PyMOL	Comp. Thinking: Algorithms	Simulation & Modeling: Model Development	✓
54	Earth Science / Geography	Smart Sustainable Cities Lenovo	Learners will explore how smart cities function through the use of edge computing and the Internet of Things (IoT), and then apply these concepts to design their own smart sustainable homes.	Software used: SketchUp	Design Thinking: Ideate	Simulation & Modeling: Model Development	✓
55	STEM (Math)	Data in the Rider's Seat Lenovo	Learners will explore how data-driven approaches enable informed decision-making, allowing Ducati engineers to enhance bike performance during races.	Software used: Google Collab	Comp. Thinking: Algorithms	Data Science: Data Visualization	✓
56	STEM (Engineering Design)	Designed for Speed Lenovo	Learners will explore Ducati's design principles, utilize Fusion 360 to reimagine a sports bike, and propose innovative redesigns grounded in performance and aesthetic enhancements.	Software used: Autodesk Fusion 360	Design Thinking: Ideate	Simulation & Modeling: Model Development	✓
57	STEM (Physics)	Riding the Virtual Wind Lenovo	Students will delve into the world of bike design and aerodynamics, conducting wind simulations on a Ducati model in SimScale, and proposing design modifications based on simulation results.	Software used: Figma, Sim Scale	Design Thinking: Ideate	Simulation & Modeling: Verification and Optimization	✓
58	Social Studies	Echoes of the Past: Speech Dissected DELL Technologies	Using NLP tools such as word frequency and spectrograms, learners will analyze emotion, energy, and rhetoric to better understand persuasive communication.	Software used: Audacity, OpenVINO, Google Colab	Design Thinking: Empathize	AI & Machine Learning: Natural Language Processing	✓

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59	STEM (Science)	Brick Farm	Students will build a virtual 'Brick Farm' in LEGO Fortnite Odyssey to explore sustainable farming by maximizing yield while minimizing resources. Along the way, they'll apply creative problem-solving to balance food production with environmental care	Software used: LEGO Fortnite Odyssey	Design Thinking: Prototype	Simulation & Modeling: Model Development	✓
60	Engineering, Social Studies	Inclusive Island	Construct a restaurant within LEGO Fortnite Odyssey with principles of inclusive design in mind. They will use design thinking to improve the accessibility of the structures for all people.	Software used: LEGO Fortnite Odyssey	Design Thinking: Prototype	Simulation & Modeling: Model Development	✓
61	Computer Science	Decision Tree	This lesson introduces Supervised Decision Trees and their AI applications, with hands-on practice using Fable robots, VR, and 3D-printed objects. Learners will connect theory to practice by exploring real-world problem-solving through interactive activities.	Software used: Fable Blockly, TinkerCad, CraftWarePro	Comp. Thinking: Abstraction	AI & Machine Learning: Learning models	
62	Computer Science	SVM	In this lesson, students explore Supervised Support Vector Machines (SVM)—how they work and their role in AI—through STEAM activities using robots, VR, and 3D-printed objects to practice supervised sorting.	Software used: Fable Blockly	Comp. Thinking: Abstraction	AI & Machine Learning: Learning models	
63	STEM (Math)	Optimize, Design, and Minimize	Learners will use Linear Programming to optimize the number of boxes cut from a sheet, and apply derivatives to maximize box volumes, enhancing efficiency and reducing waste in packaging design.	Software used: Jupyter Notebook	Design Thinking: Empathize	Programming & Coding: Problem Solving	
64	STEM (Biology)	Factors That Affect Mitosis	Investigate the effect of lectin on mitosis rate by preparing microscope slides of onion root cross-section with an immersive and interactive activity lab experience through Virtual Reality (VR) and PC-based virtual laboratories.	Software used: VR Lab Academy	Comp. Thinking: Pattern Recognition	Simulation & Modeling: Model Development	✓

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NEW	1 STEM (Science)	Alchemy of Sound	Optimized for AIPC Experiment with sound waves and create Foley effects, then record, edit, and mix audio with Audacity's AI tools to produce an immersive soundtrack.	Software used: Audacity, OpenVINO	Comp. Thinking: Decomposition	Simulation & Modeling: Model Development	
NEW	2 Geography	Palette of the Planet	Optimized for AIPC Use AI powered Photoshop features to edit images and create a poster that serves as a call to action against climate change.	Software used: Adobe Photoshop, OpenVINO	Design Thinking: Define	Simulation & Modeling: Problem Definition	
NEW	3 STEM (Science)	Save the Astronaut	Optimized for AIPC Use AI tools in Audacity with Intel OpenVINO to transcribe and translate astronaut messages, then apply computational thinking to create a clear Mission Control response.	Software used: Audacity, OpenVINO	Comp. Thinking: Abstraction	AI & Machine Learning: Natural Language Processing	
NEW	4 Language Arts	Story Sculptors	Optimized for AIPC Explore creative writing, then bring it to life using 3D modeling in Blender and AI-generated textures from Dream Textures.	Software used: GIMP, Intel OpenVINO	Design Thinking: Ideate	Simulation & Modeling: Model Development	
	5 STEM (Physics)	3D Repair	Explore how physics can be applied to 3D models which are printed to repair broken parts in simple machines. genially version available	Software used: Autodesk Fusion 360	Design Thinking: Prototype	Simulation & Modeling: Model Development	
	6 STEM (Biology)	Beef or Beans	Harness the power of data visualization to meet the world's growing needs for food. Student Facing version available	Software used: Python, Jupyter Notebook	Design Thinking: Define	Data Science: Data Visualization	✓
	7 Social Studies	Better Sensing Makes Good Sense	Explore how mobile apps can be designed to help translate images to speech to aid the visually impaired.	Software used: Thunkable	Design Thinking: Prototype	Programming & Coding: Problem Solving	✓

Subjects: Art | Geography | History | Humanities | Language | STEM

Mindset: Social -Emotional Skills | Computational Thinking | Design Thinking

Skillsets: Programming & Coding | Data Science | Simulation & Modeling | AI & Machine Learning

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8	Geography	Climate Anomalies	Analyze the impact of climate change through the use of GIS.	Software used: QGIS	Design Thinking: Empathize	Simulation & Modeling: Variable Constraining	✓
9	Language	Coding Macbeth	Create a chatbot which is able to respond in the way Lady Macbeth does.	Software used: Pencilcode	Comp. Thinking: Abstraction	AI & Machine Learning: Natural Language Processing	✓
10	STEM (Biology)	CoralVerse VR	Topic: Mixed Reality Use virtual reality to explore the importance of coral reefs, their symbiotic relationships, and ecosystem resilience. Learners will design and present immersive reef tours to build environmental awareness through interactive learning.	Software used: Delightex	Design Thinking: Empathize	Simulation & Modeling: Model Development	
11	STEM (Biology)	Eyes on Wildlife	Create a motion detection algorithm using a webcam and learn how it can be applied to wildlife conservation. Student Facing version available	Software used: Python, Jupyter Notebook	Comp. Thinking: Pattern Recognition	AI & Machine Learning: Computer Vision	
12	STEM (Physics)	Giants in the Sky	Topic: Mixed Reality Dive into the physics of skyscraper design using Blender. Learners will create and test virtual models, understanding principles of gravity, wind resistance, and structural integrity.	Software used: Blender	Design Thinking: Prototype	Simulation & Modeling: Model Development	✓
13	History	History and Uses of Democracy	Explore how democracy has evolved since ancient times and uncover insights from data derived from the United Kingdom EU referendum results.	Software used: Python, Jupyter Notebook	Design Thinking: Empathize	Data Science: Data Wrangling	✓
14	Social Studies	Income Gap	Use statistical analysis to explore income inequality in a population.	Software used: Python, Jupyter Notebook	Design Thinking: Empathize	Data Science: Statistical Analysis	✓
15	STEM (Chemistry)	Investigating Wildfires	Investigate the conditions that lead to wildfires and use GIS to identify patterns in the location of wildfires in Indonesia.	Software used: Web-based GIS (Global Forest Watch)	Comp. Thinking: Pattern Recognition	Data Science: Data Visualization	✓

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16	Geography	Mapping Foot to Food	Learn how urban planners use variable constraining to reduce food deserts and improve access to farmers' markets using maps.	Software used: QGIS	Design Thinking: Define	Simulation & Modeling: Variable Constraining	✓
17	Language	Mining Words	Explore how people leave behind a digital footprint through text mining using Python programming.	Software used: Python, Jupyter Notebook	Comp. Thinking: Abstraction	Data Science: Data Modeling	✓
18	STEM (Biology)	Motion Behavior Robotics	Create step-by-step motion instructions for robots in real time physics simulations.	Software used: Steam, Xemo Software	Comp. Thinking: Algorithms	AI & Machine Learning: Robotics	
19	STEM (Physics)	Rapid Prototyping	Apply the concept of center of gravity to create a useful tool using 3D modelling software and a 3D printer.	Software used: Autodesk Fusion 360, 3D Printer	Design Thinking: Prototype	Simulation & Modeling: Model Development	
20	Geography	Rising Sea	Learn about the threat of forced migration from rising sea levels due to climate change and visualize areas at risk.	Software used: QGIS	Design Thinking: Empathize	Data Science: Data Visualization	✓
21	Language	Robotic Conversations	Create a chatbot capable of identifying simple, compound, and complex sentences.	Software used: Wit.ai	Comp. Thinking: Algorithms	AI & Machine Learning: Natural Language Processing	✓
22	STEM (Physics)	Robotic Simulation	Explore how robotic simulations can be designed in virtual environments to reduce the cost of prototyping.	Software used: Webots	Comp. Thinking: Algorithms	AI & Machine Learning: Robotics	
23	STEM (Physics)	Roller Coaster Physics	Create simulations of roller coasters within safety limits for G-forces.	Software used: Roller Coaster Tycoon 2	Design Thinking: Prototype	Simulation & Modeling: Model Development	✓
24	STEM (Physics)	Saltwater Circuit	Plan and design a saltwater circuit using Tinkercad to demonstrate how one works.	Software used: TinkerCAD Circuit	Design Thinking: Test	Programming & Coding: Iterative Refinement	✓
25	STEM (Physics)	Solar Installation	Topic: Greentech Learners will explore the science and technology of solar energy to tackle climate change by analyzing suitable locations and simulating solar panel systems.	Software used: Google Sunroof, PVsyst	Comp. Thinking: Abstraction	Simulation & Modeling: Model Development	✓

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Mindset: Social -Emotional Skills | Computational Thinking | Design Thinking

Skillsets: Programming & Coding | Data Science | Simulation & Modeling | AI & Machine Learning

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26	Geography	Terrain Visualization	Generate 3D city models using GIS software to better understand how city planners use data for planning.	Software used: Blender 2.8	Design Thinking: Prototype	Data Science: Data Visualization	
27	Social Studies	Time to Log Out	Combat cyberaddiction by developing a program that can measure how long someone spends in front of a computer.	Software used: Python, Jupyter Notebook	Comp. Thinking: Pattern Recognition	AI & Machine Learning: Computer Vision	
28	Social Studies	Virtual Tourism	Create a virtual reality tour of a local attraction using an online 3D creation tool.	Software used: Delightex	Comp. Thinking: Abstraction	Simulation & Modeling: Model Development	✓
29	Social Science	Visualizing the Gap	Topic: Mixed Reality Explore gender equality through data-driven 3D visualizations and immersive storytelling using SketchUp to foster awareness and advocacy.	Software used: SketchUp	Design Thinking: Empathize	Data Science: Statistical Analysis	✓
30	STEM (Math)	Volume Challenge	Create a virtual game that tests the concept of surface area and volume of 3D figures.	Software used: Delightex	Design Thinking: Ideate	Simulation & Modeling: Problem Definition	✓
31	STEM (Biology)	Water Pollution	Investigate the effects of water pollution and propose solutions using Scratch to demonstrate your ideas.	Software used: Scratch	Comp. Thinking: Decomposition	Data Science: Data Modeling	✓
32	STEM (Physics)	Wrecking Ball Physics	Investigate how energy is conserved using 3D Rigidbody simulations of wrecking balls.	Software used: Blender 2.8	Design Thinking: Test	Simulation & Modeling: Problem Definition	
33	Language	Writing Braille	Learn to translate written language to Braille which can be etched in wood using a laser cutter.	Software used: Inkscape	Design Thinking: Empathize	Simulation & Modeling: Model Development	
34	STEM (Physics)	Rube Goldberg Machines: Lesson 01 Inclined Plane EPIC GAMES	In this hands-on culinary exploration, uncover the secrets of physics and simple machines - Inclined Planes - by using Unreal Engine to develop prototypes and models.	Software used: Unreal Engine	Design Thinking: Prototype	Simulation & Modeling: Model Development	

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35	STEM (Physics)	Rube Goldberg Machines: Lesson 02 Levers	Engage your students in an immersive journey through the use of Levers with an interactive 3D kitchen theme exploration.	Software used: Unreal Engine	Design Thinking: Prototype	Simulation & Modeling: Model Development	
36	STEM (Physics)	Rube Goldberg Machines: Lesson 03 Wedges	Transform traditional classroom learning into an unforgettable experience as students understand about Wedges in an interactive 3D kitchen theme.	Software used: Unreal Engine	Design Thinking: Prototype	Simulation & Modeling: Model Development	
37	STEM (Physics)	Rube Goldberg Machines: Lesson 04 Wheel & Axel	Inspire curiosity and critical thinking as students delve into the intricate mechanics of Wheels & Axels, applying theoretical knowledge to practical, real-world scenarios by using Unreal Engine.	Software used: Unreal Engine	Design Thinking: Prototype	Simulation & Modeling: Model Development	
38	STEM (Physics)	Rube Goldberg Machines: Lesson 05 Pulleys	Foster a collaborative environment where students collaborate and innovate, refining their understanding of Pulleys by using Unreal Engine through hands-on experimentation in the kitchen theme.	Software used: Unreal Engine	Design Thinking: Prototype	Simulation & Modeling: Model Development	
39	STEM (Physics)	Rube Goldberg Machines: Lesson 06 Screws	Elevate your educational approach by merging technology with culinary arts, igniting a passion for physics and simple machines by using Unreal Engine to develop prototypes and models.	Software used: Unreal Engine	Design Thinking: Prototype	Simulation & Modeling: Model Development	
40	Geography & Social Studies	Tackling Climate Change	This lesson introduces climate and sustainability through LEGO Fortnite Odyssey, where students tackle real-world challenges in a virtual island environment.	Software used: LEGO Fortnite Odyssey	Design Thinking: Prototype	Simulation & Modeling: Model Development	
41	Geography	Fortnite Storm Shields	Build a planned coastal community in Fortnite Creative and retrofit solutions to protect residents, engaging in creative problem-solving and engineering	Software used: Fortnite Creative	Design Thinking: Ideate	Simulation & Modeling: Problem Definition	

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Mindset: Social -Emotional Skills | Computational Thinking | Design Thinking

Skillsets: Programming & Coding | Data Science | Simulation & Modeling | AI & Machine Learning

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42	STEM (Science & Coding)	Climate Action	Explore climate change, and the benefits of sustainable technologies in combating this issue and reducing greenhouse gas emissions.	Software used: Twin Teacher Platform	Design Thinking: Define	Programming & Coding: Problem Solving	✓
43	STEM (Modeling & Simulation)	Microchip Production Process	Explore microchip production by delving into an Intel Fab, understanding the intricacies of microchip fabrication and the step-by-step process involved.	Software used: PTGui program, Twin Teacher Platform	Comp. Thinking: Decomposition	Simulation & Modeling: Model Development	
44	STEM & Modeling	3D Modeling and Prosthetics	Explore 3D modeling, examining its fundamentals and diverse applications, particularly focusing on the process of 3D printing prosthetics for personalized healthcare solutions.	Software used: LDraw Libraries (LeoCAD), Twin Teacher Platform	Design Thinking: Empathize	Simulation & Modeling: Model Development	
45	Artificial Intelligence	Artificial Intelligence for Assistive Technology	Explore artificial intelligence, examining its potential to enhance the lives of individuals with disabilities by providing personalized support and accessibility solutions.	Software used: Teachable Machine, Twin Teacher Platform	Design Thinking: Empathize	AI & Machine Learning: Computer Vision	
46	STEM & Modeling, History	Innovation in Aviation	Explore aviation pioneers and use biomimicry to design innovative flying machines.	Software used: Roblox Studio, Twin Teacher Platform	Design Thinking: Ideate	Simulation & Modeling: Model Development; Programming & Coding: Problem Solving	✓
47	STEM (Engineering Design)	Laptop of the Future	Explore the Lenovo X1 Fold design process and apply design principles to prototype the laptop of the future.	Software used: Autodesk Fusion 360	Design Thinking: Prototype	Simulation & Modeling: Model Development	✓
48	STEM (Math)	Robot 3D Coordinate	Learn about Cartesian Coordinate types that used in robotics technology by building a simulation of the movement of robot using DobotLab with Virtual Simulation Lab.	Software used: Dobotlab CC	Comp. Thinking: Algorithms	AI & Machine Learning: Robotics	
49	STEM (Science)	Digital Reef Rangers	Students explore coral reefs, their threats, and how technology aids conservation. They join the Reef Census, train an AI model, and propose actions to protect reefs.	Software used: Google Colab	Design Thinking: Empathize	AI & Machine Learning: Computer Vision	✓

	Subject	Activity Title	Description	Supporting Technology	Mindset	Skillset	Chrome-book
50	STEM (Science)	The Leftover Lab DELL Technologies	Learners will explore the issue of food waste, understand the role of AI in addressing it, and use Gemini to create a recipe recommender that suggests creative ways to use leftover food.	Software used: Gemini	Comp. Thinking: Algorithms	Programming & Coding: Iterative Refinement	✓
51	STEM (Physics)	Ambient Scene FlockXR by Flip Computing	Learners will use Flock XR to design and code a 3D ambient scene, adding repetition, glow, and particle effects while exploring 3D modeling, animation, and creative customization.	Software used: Web browser Flock XR	Design Thinking: Prototype	Simulation & Modeling: Model Development	
52	STEM (Physics)	Animated Characters FlockXR by Flip Computing	Learners will use Flock XR to design a 3D environment with sky and terrain, customize a character, and create an animation sequence, applying key concepts of 3D modeling, animation, and sequencing to develop both technical and creative skills.	Software used: Web browser Flock XR	Design Thinking: Prototype	Simulation & Modeling: Model Development	
53	Computer Science	Exploring Circles shape robotics	In this lesson, students integrate real-life situations with math, history, and art to explore Circles. Using robotic tools to create pottery we're turning abstract concepts into tangible results.	Software used: Fable Blockly, Craftware Pro	Comp. Thinking: Decomposition	Programming & Coding: Problem Solving	
54	Computer Science	Inertia shape robotics	Students explore inertia by coding Fable robots and using VR to analyze motion, while designing tools in Tinkercad. This builds physics understanding alongside creativity, coding, and problem-solving skills.	Software used: Fable Blockly, Tinkercad	Design Thinking: Prototype	Programming & Coding: Problem Solving	
55	Engineering Design	Durability by Design acer	Learners will design a ruggedized laptop, drawing inspiration from Acer's ruggedized models, and simulate durability tests to verify that the laptop can endure drops and impacts.	Software used: Autodesk Fusion 360	Design Thinking: Prototype	Simulation & Modeling: Model Development	
56	STEM (Science)	Screen Sense acer	Students explore how prolonged screen time affects health and, inspired by Acer's User Sensing technology, use Python and Jupyter Notebook to create solutions for healthier screen habits. They then design an educational poster to share these best practices.	Software used: Jupyter Notebook, Google Colab, Canva	Design Thinking: Empathize	Programming & Coding: Iterative Refinement	

	Subject	Activity Title	Description	Supporting Technology	Mindset	Skillset	Chrome -book
57	STEM (Physics)	Roller Coaster with VRLab Academy optional task	Create simulations of roller coasters within safety limits for G-forces.	Software used: Roller Coaster Tycoon 2	Design Thinking: Prototype	Simulation & Modeling: Model Development	
58	STEM (Physics)	Saltwater Circuit with VRLab Academy optional task	Plan and design a saltwater circuit using Tinkercad to demonstrate how one works.	Software used: TinkerCAD Circuit	Design Thinking: Test	Programming & Coding: Iterative Refinement	

	Subject	Activity Title	Description	Supporting Technology	Mindset	Skillset	Chrome -book
1	Social Studies	Agriculture: Farm to Table	Demonstrate the importance of food production and agriculture in ensuring a sustainable community through game-based learning.	Software used: Minecraft	Comp. Thinking: Algorithms	Simulation & Modeling: Model Development	✓
2	Language	Are You Happy?	Use natural language processing to create a machine that can detect emotion through spoken text. genially version available	Software used: Scratch, Machine Learning for Kids	Design Thinking: Empathize	AI & Machine Learning: Natural Language Processing	✓
3	STEM (Physics)	Catapult Toss	Create a catapult game which uses projectiles with different properties for launches.	Software used: Unity	Design Thinking: Test	Simulation & Modeling: Variable Constraining	
4	Geography	City building for Sustainability	Build a liveable city with the resources provided in this game-based activity.	Software used: The Final Earth Game	Design Thinking: Empathize	Data Science: Statistical Analysis	✓
5	STEM (Math)	Coding Algorithms	Learn about algorithms and how they can be applied to computer programs such as Python.	Software used: Python	Comp. Thinking: Algorithms	Programming & Coding: Problem Solving	✓
6	Geography	Eco Narrative	Topic: Greentech Learners will assess their carbon footprint and use their results to craft a data-driven narrative focusing on sustainable development goals.	Software used: Microsoft Excel, Microsoft Sway	Design Thinking: Ideate	Data Science: Data Visualization	✓
7	Language	Feel, Code, Connect	Topic: Mixed Reality Use digital storytelling and coding to explore empathy in narratives. Engage in a virtual simulation to identify empathetic gaps and create interactive stories that enhance understanding and connection.	Software used: Roblox	Design Thinking: Empathize	Programming & Coding: Iterative Refinement	✓
8	STEM (Biology)	Flora Forensics	Topic: Greentech Learners will explore plant diseases and develop a machine learning model for disease detection.	Software used: Google Teachable Machine	Comp. Thinking: Algorithms	AI & Machine Learning: Learning Models	✓

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9	Language	Green Screen Newscast	Make use of a green screen and fundamental video editing skills to put together an engaging newscast. genially version available	Software used: Sony Vegas	Comp. Thinking: Abstraction	AI & Machine Learning: Computer Vision	✓
10	STEM (Biology)	Invisible Animals	Use computer vision to create a digital octopus that camouflages itself to match its background.	Software used: Python, Jupyter Notebook	Comp. Thinking: Abstraction	AI & Machine Learning: Computer Vision	✓
11	Music	Music Through Coding	Create a music machine by coding a simple score using a coding platform.	Software used: Makecode	Comp. Thinking: Algorithms	Programming & Coding: Teamwork	✓
12	Geography	My 3D Volcano	Have fun demonstrating the various layers of a volcano by creating a 3D model.	Software used: Makers Empire 3D	Design Thinking: Prototype	Simulation & Modeling: Model Development	✓
13	STEM (Physics)	Orbital Simulation	Gather data about Earth and produce an animation demonstrating planetary movements around the sun.	Software used: Scratch	Comp. Thinking: Pattern Recognition	Programming & Coding: Teamwork	✓
14	STEM (Biology)	Plant Food	Create an animated story using block programming to demonstrate the process of photosynthesis.	Software used: Scratch	Comp. Thinking: Algorithms	Programming & Coding: Problem Solving	✓
15	STEM (Math)	Robot Geometry	Learn how to program a virtual robot which can move in different geometrical shapes.	Software used: Robotify	Design Thinking: Test	AI & Machine Learning: Robotics	✓
16	Language	Storytelling with Scratch	Explore how coding can be used to create an animated story. genially version available	Software used: Scratch	Comp. Thinking: Algorithms	Programming & Coding: Problem Solving	✓
17	Language	The ARt of Packaging	Topic: Mixed Reality Showcase the role of interactive packaging in consumer attraction through augmented reality. Learners will transform a cereal box into an engaging AR experience, understanding the impact of design on marketing.	Software used: Adobe Aero Canva	Design Thinking: Prototype	Simulation & Modeling: Model Development	✓

	Subject	Activity Title	Description	Supporting Technology	Mindset	Skillset	Chrome -book
18	STEM (Biology)	VR Science Museum	Create a virtual reality simulation of a science museum featuring the diversity of living things.	Software used: Delightex	Comp. Thinking: Algorithms	Simulation & Modeling: Problem Definition	✓
19	STEM (Biology)	Water Cycle	Demonstrate the water cycle by animating the process using block programming.	Software used: Scratch	Comp. Thinking: Decomposition	Data Science: Data Modeling	✓
20	Humanities	Features of a Friend SKRIWARE	In this task, students reflect on key friend traits, craft friend descriptions, design associated attributes using online 3D tool.	Software used: Skriware Creator	Design Thinking: Empathize	Simulation & Modeling: Model Development	✓
21	STEM (Math)	Learning About Polyhedrons in Tinkercad SKRIWARE	In this activity, the students will independently find different examples of polyhedrons and analyze their properties. For this purpose, they will use the 3D Tinkercad modeling program.	Software used: Tinkercad	Design Thinking: Prototype	Simulation & Modeling: Model Development	✓
22	STEM (Math)	Discover algorithms (SkriKit version) SKRIWARE	Embark on an algorithmic journey! Uncover daily algorithm secrets, enjoy hands-on fun with SkriKit, and craft clear instructions for a dynamic learning experience!	Software used: SkriKit construction kit	Comp. Thinking: Algorithms	Simulation & Modeling: Model Development	✓
23	STEM (Math)	Discover algorithms (Skriware Creator version) SKRIWARE	Embark on an algorithmic journey! Uncover daily algorithm secrets, enjoy hands-on fun with SkriKit, and craft clear instructions for a dynamic learning experience!	Software used: Skriware Creator version	Comp. Thinking: Algorithms	Simulation & Modeling: Model Development	✓

