DESIGN KEY CONCEPTS: Communication, Communities, Development and Systems

DESIGN RELATED CONCEPTS: Adaptation, collaboration. ergonmonics. evaluation, form, function, innovation, invention, markets and trends, perspecitve, resources, sustainability

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6	**Unit 1: Gamify It** Students will explore the full design cycle of research, ideation, planning, drafting, creating, and evaluating in order to create an original board game. They will consider function and form (game play and aesthetics). This unit will act as an introduction to the design cycle and safe and effective use of the design lab. Students will develop foundational design skills such as measuring, drawing, cutting. They will use hand tools. This first unit will be completely hands on with no digital tools (although digital tools will be explored later in the year).	KC: Development RC: Form, Adaptation	Personal and cultural expression	Designers develop and adapt the form of products to communicate ideas to a specific audience.	**Factual:** -What are the basic shop safety rules, and why are they important? -What steps do designers follow to plan, create, and test their ideas? **Conceptual** -In what ways does testing a prototype help us improve its function? **Debatable** -Do mistakes teach us more than following the plan perfectly?	Self-management	**Design Skill Focus:** Basics of the Design Cycle Understanding a Target Audience. Rapid Prototyping Prescision and organization in planning **Hands-on Skill Focus:** Free sketching and sketching with rulers, Prototypes & Scale models, Tool skills needed include utiliity knife use, measuring, marking, sawing with the scroll saw and using cordless drills and hot glue.	**Summative Assessment** Presentation of Finished Product (A) Finished Board Game Evaluation (D) **Criteria Assessed:** Ci,Cii,Ciii,Civ Di,Dii,Diii,Div **Assessment Criteria: C, D**
6	**Product Design (Cutting Board) Unit!** Grade 6 Design students will dive into the world of product design by creating their very own kitchen boards. Students will start by exploring various kitchen board designs, analyzing their features, strengths, and weaknesses. This research will set the stage for them to understand the importance of design in expressing personal and cultural identity.As they progress, students will sketch three innovative design ideas, incorporating their knowledge of hard and soft woods. They will then select their best design, create a scale template, and justify their choice, fostering critical thinking and creativity.The hands-on part of the unit will be both fun and educational as students cut, sand, and finish their kitchen boards using safe woodworking techniques. Each student will apply their unique style, resulting in a practical and beautiful product they can be proud of. This unit not only develops technical skills and creativity but also encourages students to think critically about their designs and the impact of their choices. By the end, each student will have a stunning kitchen board that showcases their hard work and innovative spirit.	KC: Communities RC: Resources, Sustainability	Personal and cultural expression Explorations to develop: Ritual and play, Craft, Products	Everyday designed objects relating to food have a deep connection to community and identities through ritual, culture and cuisine.	**Factual** What kind of wood is food safe? How do we use different kinds of saws? What is the difference between Hardwood and Softwood? **Conceptual** How does culture impact design? How do we gather data for precise and relevant design specifications **Debatable** Does form follow function?	**Thinking** **VIII Critical thinking skills** Analysing and evaluating issues and ideas Practise observing carefully in order to recognise problems Gather and organize relevant information to formulate an argument Recognise unstated assumptions and bias Interpret data Evaluate evidence and arguments Draw reasonable conclusions and generalizations Test generalizations and conclusions Evaluate and manage risk Consider ideas from multiple perspectives Propose and evaluate a variety of solutions Identify obstacles and challenges Use models and simulations to explore complex systems and issues Troubleshoot systems and applications	Types of wood, measuring and marking, cutting (saws), finishing (sanding, oiling) Presentation of design ideas, scale drawing (1:2, 1:1), evidence based design specifications. Translation of culture (food prep at home) to designed object. Primary research techniques for design specs and evaluation.	**Summative Assessment:** Students will design and make a wooden cutting or food display board. It should reflect a family food tradition. This could be food for a special festival or meal, a national dish, or family ritual like Friday night pizza and movie. Students must analyse the way the food is prepared or displayed to figure out size and proportipon of the board. They need to research how the board will be cleaned and stored in order to design an functioning board. They use a range of saws to cut out the board. Extention, designd can has a laser cut decoration or form on them. They need to get feedback from home to see if it is succefull (although this is negotiable, because the boards often end up as Christmas and birthday gifts!) **Criteria Assessed:** **Ai,Aii,Aiii,Aiv** **Bi,Bii,Biii,Biv** **Ciii,Civ** **Ci,Cii, FORMATIVE scaffolded** **Div optional, but is a good one for summative becasue they have access to an authentic user.**
6	**Unit 3: Tool Safety video production** This unit has a two-fold focus. As it serves as the launch pad for documantaray skills the students will need for the G6 IDU later. It is also to try raise their awareness of safety and personal responsibility in Design class. Their task is to document the safe use of different power tools in a ≤3min video.Unit 3:	KC: Communication RC: Perspective, ergonomics	Identities and relationships	Even though different culturals have different tolerances of risk, there are common understandings and practices around health and safety	**Factual:** Different tools have different uses and associated risks **Conceptual:** How do I determine the most important aspects of safe tool use and communicate them through an instructional video? **Debatable:** What considerations do I make when choosing to use tools safely	Social	**Design Skill Focus:** Interviewing techniques Practicing Empathy Towards a Community Digital Storytelling Elements **Technology Skill Focus** Digital Camera Usage How to use a Tripod and accessories Sound Capturing Techniques Natural vs Artifical Light and its impacts on Film **Digital Skill Focus**	**Summative Assessment:** Short Film Ai, Aii - tool safety basics Bi, Bii - shot list and script Ci,Cii,Ciii - shooting footage (group) editing (ind) Di,Dii,Diii - reflection on their own video **Assessment Criteria: A,B,C,D**
6	**Unit 4: DocuMantaray IDU Documentaries** **See IDU planner for details**	Communication	Globalisation and Sustainability	Digital storytelling gives students an opportunity to connect to their community and create solutions; empowering them to be global citizens.	**Factual:** What makes an engaging story? **Conceptual:** How can storytelling change the world? **Debatable:** Do documentaries actually create change? Can individuals change the world?		Develop and plan "shot lists." Develop a detailed prodcutction plan for the creation of the Documentary. Understand and Apply technical Skills for making a movie (Filming and Editing). Apply the skills of: On location shooting, B-Roll, and controlled setting talking head style interviews. Learn and apply digital editing skills such as montage styles, L and J cuts, transitionions, and sound normalization. Undertand Digital story telling. Combine imagery and narration to tell a specific story. Subject specific Inquiry Questions: What are the basic technical elements of a documentary? How do you frame a filming angle, shot and background? What techniques are used to film in the field? Animals? Are documentaries biased? Do documentaries take activism far enough?	**Summative Assessment:** Short Film Ai, Aii - Bi, Bii, Biii, Biv - Specifications, Storyboard, shot list, script Ci,Cii,Ciii,Civ - Production schedule? Shooting footage (group) editing (ind) Di,Dii,Diii, Div - audience feedback and impact, reflection on their own video **Assessment Criteria: A,B,C,D**
Gr	**Unit Number and Title**	**Key and Related Concepts**	**Global Context**	**Statement of Inquiry**	**Inquiry Questions**	**Approaches To learning skills taught / learnt / developed in this unit**	**Content (topics / knowledge/ subject specific skills)**	**Summative Assessment and MYP Criteria Assessed**
7	**Unit 1: Stop motion animation:** Designing solutions through personal expression. Students will work through all stages of the Design Cycle with a focus on creating a podcast series, video log, or other blog-style platforms, that expresses something about themselves or their place in the world around them.	KC: Communication, * *For future consideration may shift this to reflect Communities.* RC: Collaboration, perspective	Identities and Relationships	To create in a way that communicates a message or shares a perspective you must first know your own story.	**Factual** What do you value? **Factual** Who do you value? **Conceptual** How can you express your interests while creating a product? **Debatable** How should content creators consider the impact of their messages?	**Self-management** **III. Organization skills** Managing time and tasks effectively Plan short- and long-term assignments; meet deadlines Bring necessary equipment and supplies to class Select and use technology effectively and productively **IV. Affective skills** Managing state of mind Mindfulness Practise strategies to develop mental focus Practise strategies to overcome distractions Resilience	**Design Focus** Planning both short term and long term goals. Iterations based on Feedback **Hands-on Skills** Photography Videography Storyboarding **Digital Skills** Editing with software Storyboarding	**Summative Assessment:** Creation of a Podcast, VLog, or other blog style communication. As well as a design write-up **Criteria Assessed:** Ai,Aii,Aiii,Aiv Bi,Ai,Aiii,Aiv Ci,Cii,Ciii,Civ Di,Dii,Diii,Div
7	**Unit 2: Wooden Skim BOards**	KC: Communities RC: Resources, Sustainability	Personal and cultural expression Explorations to develop: Ritual and play, Craft, Products	Everyday designed objects relating to food have a deep connection to community and identities through ritual, culture and cuisine.	**Factual** What kind of wood is food safe? How do we use different kinds of saws? What is the difference between Hardwood and Softwood? **Conceptual** How does culture impact design? How do we gather data for precise and relevant design specifications **Debatable** Does form follow function?	**Thinking** **VIII Critical thinking skills** Analysing and evaluating issues and ideas Practise observing carefully in order to recognise problems Gather and organize relevant information to formulate an argument Recognise unstated assumptions and bias Interpret data Evaluate evidence and arguments Draw reasonable conclusions and generalizations Test generalizations and conclusions Evaluate and manage risk Consider ideas from multiple perspectives Propose and evaluate a variety of solutions Identify obstacles and challenges Use models and simulations to explore complex systems and issues Troubleshoot systems and applications	Types of wood, measuring and marking, cutting (saws), finishing (sanding, oiling) Presentation of design ideas, scale drawing (1:2, 1:1), evidence based design specifications. Understanding climatic and oceanic conditions (wind, surf, waves, beach) Primary research techniques for design specs and evaluation.	**Summative Assessment:** **Criteria Assessed:** **Ai,Aii,Aiii,Aiv** **Bi,Bii,Biii,Biv** **Ciii,Civ** **Di,Dii,Diii,Div.** **Ci,Cii, FORMATIVE scaffolded** **Div optional, but is a good one for summative becasue they have access to an authentic user.**
	Unit 3: Sustainabot	KC:	Fairness and	Innovative and robotic systems can be	**Factual**	**Communication**	**Design Focus**	**Summative Assessment:**

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7		Systems RC: Form, Innovation	Development	designed in many forms to promote fairness and improve quality of life for communities around the world.	What are the components of a robot and how they function together as a system? **Conceptual** How can innovation make technology more accessible and fair for diiferent communities? **Debatable** Do robots and automation make society fairer, or do they widen inequality?	I. Research Skills: Investigate robots and machines that address issues of access,equality or human well-being. Apply design thinking to propose technological solution **Collaboration** solve challenges by creating robotic solutions. Plan and manage a prototype. **Thinking Skills** Working in teams to **Self-Management Skils**	Systems Thinking Iterations based on Feedback Testing Methods **Hands-on Skills** Basic robotic systems: Input/outputs, control, actuator, sensors and mechanisms. Introduction to logic and programming. **Digital Skills**	Design and build a Micro:bit-based robot that improves access, inclusion, or quality of life for a specific user or community. **Criteria Assessed:** Ai,Aii,Aiii,Aiv Bi,Aii,Aiii,Aiv Ci,Cii,Ciii,Civ Di,Dii,Diii,Div

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8	**Unit 3: Regenerative design** - upcycling construction materials into structures that regenerate our local eco-system.	KC: Systems RC: Function, Sustainability, collaboration	Globalization and sustainability	Applying regenerative design principals before the consumption of materials may restore aspects of the ecosystem around us.	**Factual Knowledge:** Regenerative design principles extend beyond sustainability to actively restore ecosystems. Different joinery techniques have measurable impacts on the structural integrity of upcycled constructions. Specific local species in our ecosystem require particular habitat structures to thrive. Pollinators like bees, butterflies, bats and birds are fundamental to making a healthy eco system. There is an ecological impact to the surge in building and development in Phuket. **Conceptual Knowledge:** Systems thinking approaches reveal critical interconnections between human design choices and ecological outcomes. Function and form can be reconciled in designs that simultaneously serve human and ecological needs. The concept of waste transforms fundamentally when viewed through a regenerative design lens. Understanding local ecosystems transforms approaches to material selection and design. Temporal scales (thinking long term) significantly influence our understanding of sustainability in design. **Debatable Knowledge:** Regenerative design is economically viable within our current economic system. Building codes should be modified to prioritize regenerative design principles. Ecological regeneration should take priority over human convenience in design decisions. Individual upcycling efforts remain meaningful despite continuing industrial waste at massive scales. Regenerative design represents a fundamental shift in human relationship with nature rather than just another design trend. The responsibility for implementing regenerative design falls primarily on governments rather than corporations or individuals. Ecological regeneration is compatible with maintaining current consumption patterns.	**Affective learning:** Managing state of mind Mindfulness, Perserverence, Emotional Management, self-motivation, resilience **Research Skills:** Information literacy skills Finding, interpreting, judging and creating information	**Criterion A (Process journal):** - finding reliable sources to learn about the chosen species - generating a relevant and useful research plan - documentation of the relevant data that will underpin the design specifications - documentation of the findings from research activities conducted as a class: dismantling pallets (materials research), analysis of materials, site analysis, user-centric design principals. - Choosing relevant existing products for analysis **Criterion B (process journal and on paper)** - Critical thinking skills to make relevant and testable design specifications based on research - Drawing skills: freeform sketches, orthographic drawings (min 3 views) **Criterion C (Practical)** - Organization skill: Writing a construction plan semi-independently - Manual skills with: crow bar, planer thicknesser, clamps, pillar drill, hand drill, scroll saw, compound mitre saw, disk sander, carpenter's glue - Construction skill: measuring, clamping glueing, joinery using pegs, accurate joinery techniques, cutting, sanding, oil finishing - Critical thinking: Trouble shooting **Criterion D:** - Critical thinking: Testing based on design specifications. - Organization: Maintaining a process journal	**Summative Assessment:** Students will build an upcycled wooden structure to support a local species of pollinator. Typical strucures include stingless bee hives, bird houses, bird feeders, butterfly houses, bat houses. **Criteria Assessed:** Ai,Aii,Aiii,Aiv Bi,Aii,Aiii,Aiv Ci,Cii,Ciii,Civ Di,Dii,Diii,Div
8	**Unit 2: Memories of Phuket: CADCAM Cookie Cutter**	KC Development RC Ergonomics, Function	Personal and cultural expression Explorations to develop: Craft, Products, Practice and competency	Designers use ergonomic understanding to develop the functionality of designed objects, and find opportunities to express shared experiences, personal memories, and cultural expression, with technical precision in digital fabrication ensuring both meaningful communication and functional success.	**Factual** What are the key steps involved in creating a cookie cutter using CAD software such as Fusion 360 or OnShape? What are the ergonomic factors to consider to make a usable product? How do different family traditions or memories of Phuket influence the design of a cookie cutter? What are the common techniques used in baking and shaping cookie dough? **Debatable** Is it more important for a cookie cutter to be aesthetically representative of Phuket or to be functional and durable? Should cultural traditions be prioritized over personal memories when designing a customized product? Does the use of CAD software enhance creativity or limit the natural design process when creating tools like cookie cutters? **Conceptual** How can personal memories and cultural traditions influence design choices and innovation? In what ways can technology and craftsmanship be integrated to produce unique household items? What role does critical thinking play in transforming an idea based on heritage or memories into a tangible product?	**Affective learning:** *Managing state of mind* Perserverence, Resilience **Subject Specific Skills** CADCAM modelling Procedural knowledge (follwoing a tutorial, and a recipe)	**In this project, students create a unique shape for a cookie cutter for their household based on family traditions or memories of Phuket. It should relate to one of these themes:Memories of Phuket: Christmas or Beach or Animals** **Criterion B (process journal and on paper)** - Critical thinking skills to make relevant and testable design specifications based on research - Drawing skills: freeform sketches, orthographic drawings (min 3 views) **Criterion C (Practical)** - Technical skills: Introduction to CADCAM software Fusion 360 or OnShape. - Cooking skills: following a recipe, rolling out dough, baking **Criterion D:** - Critical thinking: Testing based on design specifications.	**Summative Assessment:** Students will create a cookie cutter whcich will be printed on the 3D printer. They will test their cookie cutters by making cookies. **Criteria Assessed:** **Cii,Ciii,Civ** **Di,Dii,Diii,Div**

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8	**Unit 1: IDU Water is Life Infographic**	KC: Communication RC: Sustainability, Form	Fairness and Development (shared IDU Global Context)	Knowledge, gained by evidence analysis, and a voice for change allows us to make a stand for environmental improvment. Design Specific: The Elements of Graphic Design alter our perception and influence how we form knowledge.	**Design specific:** **Factual—** What are the elements of Design? How do anthropometrics and ergonomics influence how we read information? What are the key tools in Adobe Illustrator and Adobe InDesign **Conceptual—** To what extent does culture change how we interpret graphics Design starts with a problem; what am I trying to say? What am I trying to solve? **Debatable—** Can AI generate better imagery, tailored to our needs? Why should we learn graphic design principals when digital solutions like AI, Canva and templates already come prepared?	***Shared across the IDU** **Thinking** **VIII. Critical thinking skills** Analysing and evaluating issues and ideas Practise observing carefully in order to recognise problems Gather and organize relevant information to formulate an argument Interpret data Evaluate evidence and arguments Draw reasonable conclusions and generalizations Test generalizations and conclusions Revise understanding based on new information and evidence Consider ideas from multiple perspectives Develop contrary or opposing arguments Propose and evaluate a variety of solutions Identify obstacles and challenges Use models and simulations to explore complex systems and issues Identify trends and forecast possibilities **IX. Creative thinking skills** **Generating novel ideas and considering new perspectives** Use brainstorming and visual diagrams to generate new ideas and inquiries Consider multiple alternatives, including those that might be unlikely or impossible Create novel solutions to authentic problems Create original works and ideas; use existing works and ideas in new ways Practise flexible thinking — develop multiple opposing, contradictory and complementary arguments Practise visible thinking strategies and techniques **X. Transfer skills** **Utilizing skills and knowledge in multiple contexts** Utilize effective learning strategies in subject groups and disciplines Apply skills and knowledge in unfamiliar situations Inquire in different contexts to gain a different perspective Compare conceptual understanding across multiple subject groups and disciplines Make connections between subject groups and disciplines Combine knowledge, understanding and skills to create products or solutions Transfer current knowledge to learning of new technologies Change the context of an inquiry to gain different perspectives	This design component of the IDU encourages students to creatively communicate their findings. They will develop infographics that synthesize their research, visually representing data and concepts in an engaging manner. This process fosters critical thinking and problem-solving skills as students consider how best to convey complex information to diverse audiences.	**Summative Assessment:** **Students will do research into the elements of design including colour, typography and layout. They U** **Criteria Assessed:** **Ai,Aii,Aiii,Aiv** **Bi,Aii,Aiii,Aiv** **Ci,Cii,Ciii,Civ** **Di,Dii,Diii,Div**

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9	**Unit 1: Paddle Making project**	KC: Development RC: Ergonomics, Evaluation, Function	Scientific and Technical innovation	Development through scientific and technological innovation involves evaluating how ergonomic principles enhance functional design for varied user requirements.	**Factual** What are the densities and mechanical properties of local woods available for our paddles? How long, how far and in what conditions are we paddling in? Which anthropometric data points need to be gathered to make the ideal paddle for my size, shape and style of paddling? **Conceptual** How do different properties of different woods (or other materials) inform our choices of materials to build a kayak paddle? How do different user's needs or skills affect the designer's choice of materials or form? Why do ergonomic needs need to be considered? What ergonomic considerations need to be noted **Debatable** Does technologial progress always mean improvements? Can hand-made paddles perform as well as a factory-made paddle? How does using a hand-made wooden paddle affect the overall paddling / trip experience?	**Self Management:** Managing time and tasks effectively Plan short- and long-term assignments; meet deadlines Create plans for producing complex products Keep an organized and logical system of information files/notebooks. **Managing state of mind:** Practise focus and concentration, **Resilience:** Practise "bouncing back" after adversity, mistakes and failures **Reflection skills:** keep a journal to record progress, what you learned, questions and skills you have gained.	**Design Skill Focus**: Researching existing productsUnderstanding 3D planes Reflecting on individual skills and needs in a paddle Considering different materials' properties Planning and scheduling tasks to build the paddle **Hands-on Skill Focus**: Applying anthropometrics and measuring Making a scale model Cutting/laminating/gluing wood Safe use of hand and power tools for shaping wood Sanding and finishing paddle for testing / use Digital Skills: 3D modeling the paddle and making multi-view drawings	Summative Assessment: Students will design a paddle with their own paddling skills and style in mind to use on the 9 day long G9 kayaking expedition. They will analyze other paddles to determine materials and watch different DIY paddle-building tutorials to make a plan for how to build their paddle. After completing the paddle, students use the paddle kayaking around Phuket, collecting feedback from other students and staff on the expedition. They analyze the feedback and evaluate their paddle after the trip. Criteria Assessed: Ai,Aii,Aiii,Aiv Bi,Bii,Biii,Biv Ci,Cii,Ciii,Civ Di,Dii,Diii,Div.
9	**Unit 2: Get Your Motor Running**	KC: Development RC: Innovation, Invention, evaluation	Scientific and Technical innovation	Iterative development leads to more effective engineering solutions.	**Factual** What engineering challenges exist in my chosen category? Which engineering concepts, and principles of physics are most involved in the design of my vehicle? How have others solved similar problems? How can I use software to model and test my ideas before building my vehicle? How will I test whether my solution is effective? How do I access and cite vibe coding to program my vehicle? **Conceptual** How can programmable technology enhance the performance and capabilities of mechanical systems? How can we innovate beyond existing designs to create superior autonomous vehicles? How can innovation in vehicle design solve real-world engineering challenges? **Debatable** What makes a vehicle design successful in extreme conditions? How do design constraints drive innovation in vehicle engineering?	**Thinking** **IX. Creative thinking skills** Generating novel ideas and considering new perspectives Use brainstorming and visual diagrams to generate new ideas and inquiries Consider multiple alternatives, including those that might be unlikely or impossible Create novel solutions to authentic problems Design improvements to existing machines, media and technologies Design new machines, media and technologies Apply existing knowledge to generate new ideas, products or processes Create original works and ideas; use existing works and ideas in new ways Practise flexible thinking — develop multiple opposing, contradictory and complementary Practise visible thinking strategies and techniques	In this unit students will be challenged to design, build and test vehicle that is powered by an electric motor. Students will design and build a vehicle that solves a specific challenge (speed, strength, underwater navigation, etc.). Students will research how engineers solve these problems, then innovate—create something new or better—to make their vehicle succeed. **Design Skill Focus:** Mechanical and electionic components and their application Conceptual development / sketching skills Evaluation and testing through destructive and field testing. **Hands-on Skill Focus:** Building circuits Rapid Prototyping Assembling components using hand tools. **Digital Skills:** CAD Design	Criteria Assessed: Ai,Aii,Aiii,Aiv Bi,Bii,Biii,Biv Ci,Cii,Ciii,Civ Di,Dii,Diii,Div.

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10	**Unit 1: Adornment - Pewter casting** The unit explores how humans have used adornment to enhance, embellish and distinguish the wearer to communicate social, spiritual or cultural status. Students will undertake research and use the knowledge gained from this to inform their own design of body adornment. Ideation and iteration are a key area of focus for this unit. Students will learn the skill of rapid prototyping and casting in silicon and pewter. The unit has a service element and the designed products will potentially be made to raise funds at our Festival of Lights for a school service project.	KC: Communities RC: Form, Markets and trends	Personal and cultural expression	*Process leads to product; the quality of the journey dictates the quality of the product and how well it resonates within a community.* *Purposeful mapping of the sequence of decisions/choices and a willingness to adapt and modify leads to novel solutions to problems.*	**Factual** What are the properties of pewter? Is pewter a sustainable material? **Conceptual** What sort social, spiritual or cultural status does body adornment communicate? What factors are important to design and produce a product we hope to be able to sell? Having investigated how humans use adornment to communicate social, religious or cultural status students will go through a design cycle to solve the problem: How can I make a body adornment that communicates specific ideas and is a desirable product? **Debatable** Is it possible to predict market trends? To what degree of certainty can we be sure of how a community will respond to a product? Is it possible to define subcultures by the way they present themselves?	**Communication** *I. Communication skills* Exchanging thoughts, messages and information effectively through interaction Give and receive meaningful feedback Use intercultural understanding to interpret communication Use a variety of media to communicate with a range of audiences Interpret and use effectively modes of non-verbal communication **Thinking** *IX. Creative thinking skills* Generating novel ideas and considering new perspectives Make unexpected or unusual connections between objects and/or ideas Practise visible thinking strategies and techniques	**Design Skill Focus:** UCD User-Centered Design Market research Conceptual development / sketching skills Communicating ideas in various media **Hands-on Skill Focus:** Sketching Rapid Prototyping Casting Finishing / sanding **Digital Skills:** CAD Design Laser Cutting / 3D printing / CNC milling	**Summative Assessment** Final Portfolio of the Product Design process with all required elements. **Criteria Assessed:** **Ai,Aii,Aiii,Aiv** **Bi,Aii,Aiii,Aiv** **Ci,Cii,Ciii,Civ** **Di,Dii,Diii,Div**
10	**Unit 2: Sustainable Architectural Design:** Students learn about eco-friendly/"green" architectural design and building concepts and technologies. They apply their understandings in the design of a building or space in the Phuket region or UWCT community. Currently the projects are: a Phuket art & design gallery / cafe, a new UWCT mindfullness center, a new UWCT plastics upcycling and injection molding teaching space and production facilitiy, an off-grid single-unit hotel suite for the Playyard.	KC: Systems RC: Sustainability, Resources	Scientific and Technical Innovation	*Development of architectural spaces are constrained by the environmental factors that the geographic location dictates, the resources needed to build and sustain the space (building), and the intended functions of the space which allow users to meet certain needs in the space.*	**Factual** What is Form? Define sustainability, efficiency and renewable. **Conceptual** How does the form that a design takes impact its function? How do sustainable builidng practices influence design? **Debatable** Which is more vital to a design, form or function? Are traditional local designs more efficient than modern designs?	**Communication** *I. Communication skills* Exchanging thoughts, messages and information effectively through interaction Use a variety of media to communicate with a range of audiences Collaborate with peers and experts using a variety of digital environments and media **Self-management** *III. Organization skills* Managing time and tasks effectively Plan short- and long-term assignments; meet deadlines Select and use technology effectively and productively **IV. Affective skills** Managing state of mind Perseverance Demonstrate persistence and perseverance Resilience Practise "bouncing back" after adversity, mistakes and failures	**Design Skill Focus:** UCD User-Centered Design Conceptual development / sketching skills Communicating ideas in various media **Hands-on Skill Focus:** Sketching Model Making **Digital Skills:** CAD Design Laser Cutting / 3D printing / CNC milling	**Summative Assessment** **Final Portfolio of the Architectural Design process with all required elements.** **Criteria Assessed:** **Ai,Aii,Aiii,Aiv** **Bi,Aii,Aiii,Aiv** **Ci,Cii,Ciii,Civ** **Di,Dii,Diii,Div**