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| Subject: DT – Free-standing structures Year: A – Phase 1  NC/PoS:   * Design purposeful, functional, appealing products for themselves and other users based on design criteria * Generate, develop, model and communicate their ideas through discussion and annotated sketches. * Select from tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately. * Select from and use a wide range of materials and components, including construction materials, according to their characteristics * Explore and evaluate a range of existing products * Evaluate their ideas and products against design criteria * Build structures, exploring how they can be made stronger, stiffer and more stable |
| Prior Learning (what pupils already know and can do)   * Know how to use basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card. * Know of different methods of joining card and paper – glue and tape. * Know how to use various construction materials. * Know how to construct, stacking blocks vertically and horizontally, making enclosures and creating spaces. * Know how to join construction pieces together to build and balance. * Know about the needs of different animals from science – food, water, oxygen, shelter. * Children have visited Knowsley Safari Park and have seen the different types of enclosures and have experienced being a visitor - one of the intended users. |
| End points (what pupils MUST know and remember)   * Know how to design a structure and can explain the user and purpose. For example: an animal enclosure for people to visit. * Know how to draw an annotated sketch of their free-standing structure and can label it with materials. * Know how to select from PVA glue, glue sticks and scissors to cut and join materials (card and cardboard). * Know how to name free-standing structures: Eiffel tower (European. More familiar example) and The Burj Khalifa in Dubai (tallest example) * Know how to discuss the different types of animal enclosures – penguins have to have water to swim in and land, lions need high fences so they don’t jump out, giraffes need trees to eat from. * Know if their structure is suitable for the intended user and purpose. They can offer a way to improve their structure with some guidance. * Know how to strengthen a structure using stronger materials, like card instead of paper or lolly pop sticks instead of cardboard. |
| Key Vocabulary  Free-standing structure, framework, strengthen, user, purpose, appeal, evaluate |
| Session 1:  Evaluating existing products   * Discuss definition of a free-standing structure and framework * Look at and research free-standing structures, Eiffel tower and The Burj Khalifa in Dubai (tallest example) * Explore zoo enclosures, link back to Knowsley safari park visit in the autumn term. Consider the user (both visiting user and permanent resident (animal)), purpose and appeal of the enclosures. * Consider the zoo keeper and how they will look after the animals and feed them. * Moral – Discuss the positives and drawbacks of having animals in zoos. * Rule of law – Discuss the rules for keeping animals both at home and at zoos.   Vocab: Free-standing structure, framework, user, purpose, evaluate |
| Session 2:  Practising skills   * Practise assembling, joining and combining materials and components together using a variety of methods – glue, tape, string etc * Explore making their structures more stable and able to withstand greater loads: explore the use of paper vs card vs cardboard vs wood (like lolly pop sticks.) * Know how freestanding structures can be made stronger, stiffer and more stable – fold the card, reinforce with cardboard or lolly pop sticks.   Vocab: Free-standing structure, framework, strengthen |
| Session 3:  Designing   * Create a design criterion that considers the user, purpose and appeal. * Generate ideas based on simple design criteria and their own experiences, explaining what they could make: animal enclosure * Develop, model and communicate their ideas through talking and annotated sketches. * Children receive a message from the zoo requesting the children create a prototype of an animal enclosure for a new animal that is joining the zoo (elephant, penguin, monkey, lion) * Children’s design to be done as an aerial view (geography link)   Vocab: Free-standing structure, framework, strengthen, user, purpose, appeal, evaluate |
| Session 4:  Making – DT consultant to supply high quality materials and support for this session.   * Plan by suggesting what to do next. * Select and use tools, skills and techniques, explaining their choices. * Select new and reclaimed materials and construction kits to build their structures – paper, card, cardboard, lolly-pop sticks, straws etc. (children may choose to use their own resources from home to make their enclosure unique/more suitable) * Use simple finishing techniques suitable for the structure they are creating e.g. the penguin enclosure may have a clear window to look through. * Resilience – during the entire making process, we discuss keeping on trying and never giving up even if the task gets tricky.   Vocab: Free-standing structure, framework, strengthen, user, purpose, appeal |
| Session 5:  Evaluating   * Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria. * Consider if it is appealing. * Honesty – during the evaluation stages discuss being honest with ourselves (self-reflection) and others to ensure we can improve ourselves and our work. * Evaluate: How has the free-standing structure been stabilised? * Functionality: How does the enclosure appeal to the users (animal and zoo visitor)? * Honesty – during the evaluation stages we discuss being honest with ourselves (self-reflection) and others to ensure we can improve ourselves and our work   Vocab: evaluate |
| Future learning this content supports:  LKS2 – Shell structures  UKS2 – Frame structures |