

MYP TECHNOLOGY YEAR 1

WRITE ON! THE ERGONOMIC PEN PROJECT. [INFORMATION] [MATERIALS]

UNIT QUESTION: HOW DOES ERGONOMICS AFFECT DESIGN?		SIGNIFICANT CONCEPT: PEOPLE DESIGN AND ADAPT THEIR ENVIRONMENTS IN ORDER TO IMPROVE THEIR LIVES.
CONTEXT: ERGONOMICS IS ABOUT 'FIT': THE FIT BETWEEN PEOPLE, THE THINGS THEY DO, THE OBJECTS THEY USE AND THE ENVIRONMENTS THEY LIVE IN. DESIGNING PRODUCTS THAT ARE MORE COMFORTABLE, MEANS PEOPLE CAN DO THINGS MORE QUICKLY AND EASILY, AND THEREFORE MAKE FEWER MISTAKES. WHEN IT COMES TO WRITING, COMFORT IS VERY IMPORTANT!		
TASK: YOUR TASK IS TO DESIGN AND CREATE A PROTOTYPE ERGONOMIC PEN FOR USE BY MIDDLE SCHOOL STUDENTS. YOU WILL NEED TO TAKE INTO ACCOUNT THE ANTHROPOMETRIC DATA OF MIDDLE SCHOOL STUDENTS AND DESIGN ACCORDINGLY.		
INFORMATION: <ul style="list-style-type: none"> - TECHNICAL RESEARCH AND ANALYSIS OF DATA. - COMMUNICATION OF IDEAS THROUGH SKETCHING AND DESIGN CONCEPTS. 		
MATERIALS: <ul style="list-style-type: none"> - SUITABLE MATERIALS FOR PROTOTYPING. (MDF, POLYSTYRENE) - USE OF APPROPRIATE TOOLS AND EQUIPMENT 		
AREAS OF INTERACTION	STUDENT LEARNING EXPECTATIONS (SLEs)	
ATL	THINKING: CREATIVE DESIGN ORGANISATION: PROJECT MANAGEMENT REFLECTION: EVALUATION & TESTING TRANSFER: APPLICATION OF CONCEPTS.	
ENVIRONMENTS	BUILT ENVIRONMENTS: ERGONOMICS IN DESIGN.	
AIMS		OBJECTIVES
<ul style="list-style-type: none"> - USE OF THE DESIGN CYCLE. - UNDERTAKE MEANINGFUL AND RELEVANT RESEARCH. - GAIN EXPERIENCE USING TOOLS & EQUIPMENT. - MANAGE TIME & RESOURCES - CRITICALLY EVALUATE OWN WORK. 		<ul style="list-style-type: none"> - CREATE A DESIGN FOLIO FOLLOWING THE DESIGN CYCLE. - PROVIDE SEVERAL POSSIBLE SOLUTIONS AND JUSTIFY FINAL CHOICE. - CREATE SOLUTION TO APPROPRIATE STANDARD. - TEST & EVALUATE SOLUTION. - JUSTIFY ANY CHANGES. - EVALUATE LEARNING IN TERMS OF AOI.

EXPLAIN IN YOUR OWN WORDS THE TASK THAT YOU HAVE BEEN ASKED TO SOLVE.

WRITE 2 – 3 GUIDING QUESTIONS THAT MIGHT HELP YOU WITH YOUR RESEARCH.

WHAT ARE THE AREAS OF INTERACTION THAT HAVE BEEN HIGHLIGHTED BY YOUR TEACHER FOR THIS DESIGN TASK? HOW MIGHT THEY BEEN INTERPRETED TO HELP YOU UNDERSTAND THE PROBLEM AND HELP YOU WITH YOUR RESEARCH?



DESCRIBE THE DESIGN CYCLE AND HOW WE USE IT TO HELP US IN TECHNOLOGY

WRITE YOUR DESIGN BRIEF.

LOOKING AT SIMILAR PRODUCTS IS A USEFUL FORM OF RESEARCH. YOU CAN LEARN QUICKLY ABOUT THE DIFFERENT METHODS AND TECHNIQUES USED TO SOLVE A PROBLEM SIMILAR TO YOUR OWN. THIS LEAVES YOU IN A GOOD STARTING POINT TO THINK ABOUT YOUR OWN SOLUTION.

FIND PICTURES OF ERGONOMIC PENS AND OTHER ERGONOMIC PRODUCTS AND ANNOTATE THOROUGHLY.

USE THE INTERNET, MAGAZINES, BOOKS OR PHOTOGRAPH REAL ITEMS.

BE SURE TO REFERENCE WHERE YOU GOT THE IMAGES. (GOOGLE IS NOT A REFERENCE!)

ANNOTATION GUIDE FOR PRODUCT ANALYSIS

DESCRIBE IN TERMS OF FORM, FUNCTION AND AESTHETICS?

WHAT FEATURES DO YOU LIKE/DISLIKE ABOUT THE DESIGN?

WHAT DESIGN IDEAS COULD YOU POSSIBLY USE?

INDICATE THE ERGONOMIC DESIGN?

EXPLIAN IN YOUR OWN WORDS WHAT IS ERGONOMICS AND WHAT IS THE EFFECT UPON HOW WE DEISGN NEW PRODUCTS. GIVE EXAMLES OF GOOD AND BAD ERGONOMIC DESIGN. (NOT PENS!) BE SURE TO REFERENCE YOUR WORK.

ANTHRO·POM·ETRY: THIS IS THE BRANCH OF ERGONOMICS THAT DEALS WITH BODY SHAPE AND SIZE. PEOPLE COME IN ALL SHAPES AND SIZES SO YOU NEED TO TAKE THESE PHYSICAL CHARACTERISTICS INTO ACCOUNT WHENEVER YOU DESIGN ANYTHING THAT SOMEONE WILL USE, FROM SOMETHING AS SIMPLE AS A PENCIL TO SOMETHING AS COMPLEX AS A CAR.

WHAT IS THE ANTHROPOMETRIC DATA THAT MIGHT BE IMPORTANT FOR THE DESIGN PROBLEM?

GATHER AND RECORD THE RELEVANT DATA BELLOW.

CONCLUSION:

WHAT DID YOU LEARN FROM THE ABOVE RESEARCH? HOW WILL THIS EFFECT YOUR DESIGNS?

MATERIAL	PICTURE	PROPERTIES	USES
MDF			
POLYSTYRENE			
SOFTWOOD			
POLLYMORF			

A SPECIFICATION IS A LIST OF KEY POINTS AND/OR CONSTRAINTS THAT DESIGNS MUST TAKE ACCOUNT OF. THE SPECIFICATION CAN BE WRITTEN USING DIFFERENT HEADINGS AS A GUIDE. THIS IS A LIST OF “MUST HAVES” FOR YOUR PROJECT.

ALL YOUR DESIGNS NEED TO BE CHECKED AGAINST THIS LIST.....

USE (WHAT’S IT FOR):

MARKET (WHO IT IS FOR):

SIZE (MAX AND MIN):

MATERIALS AVAILABLE:

COMPONENTS REQUIRED:

TIME TO MAKE:

AESTHETICS (THE LOOKS):

ERGONOMICS (DESIGN FOR USE):

SAFETY:

OTHER:

PRODUCE 3 – 5 DESIGNS FOR YOUR PEN. ONE DESIGN PER PAGE AND MAKE SURE YOU FILL THE WHOLE PAGE. (LARGE, CLEAR DRAWINGS)

SHOW CLEARLY THE DIMENSIONS, ERGONOMICS AND HOW YOU WILL MAKE IT.

EVALUATE EACH DESIGN AGAINST THE DESIGN SPECIFICATION.

ANNOTATION GUIDE FOR PEN DESIGN (NOTES AROUND DESIGNS)

INDICATE THE ERGONOMIC DESIGN FEATURES.

WHAT FEATURES DO YOU LIKE/DISLIKE ABOUT THE DESIGN?

HOW DOES EACH DESIGN MEET THE SPECIFICATION?

INDICATE MATERIALS, COLOURS, SIZE AND SPECIFIC TOOLS IF NEEDED.

ANNOTATION GUIDE FOR PEN DESIGN (NOTES AROUND DESIGNS)

INDICATE THE ERGONOMIC DESIGN FEATURES.

WHAT FEATURES DO YOU LIKE/DISLIKE ABOUT THE DESIGN?

HOW DOES EACH DESIGN MEET THE SPECIFICATION?

INDICATE MATERIALS, COLOURS, SIZE AND SPECIFIC TOOLS IF NEEDED.

ANNOTATION GUIDE FOR PEN DESIGN (NOTES AROUND DESIGNS)

INDICATE THE ERGONOMIC DESIGN FEATURES.

WHAT FEATURES DO YOU LIKE/DISLIKE ABOUT THE DESIGN?

HOW DOES EACH DESIGN MEET THE SPECIFICATION?

INDICATE MATERIALS, COLOURS, SIZE AND SPECIFIC TOOLS IF NEEDED.

ANNOTATION GUIDE FOR PEN DESIGN (NOTES AROUND DESIGNS)

INDICATE THE ERGONOMIC DESIGN FEATURES.

WHAT FEATURES DO YOU LIKE/DISLIKE ABOUT THE DESIGN?

HOW DOES EACH DESIGN MEET THE SPECIFICATION?

INDICATE MATERIALS, COLOURS, SIZE AND SPECIFIC TOOLS IF NEEDED.

A PRODUCTION PLAN IS A STEP BY STEP GUIDE OF HOW YOU ARE GOING TO MAKE YOUR PRODUCT/SOLUTION. IN THE INVESTIGATE PHASE OF THE DESIGN CYCLE, YOU SHOULD HAVE RESEARCHED INTO THE MATERIALS AND CONSTRUCTION PROCESSES THAT COULD BE USED.

STEP	WHAT TOOLS, EQUIPMENT, MATERIALS WILL YOU NEED?	EXPLAIN THE PROCESS. WHAT WILL YOU DO?	TIME

DURING THE CREATE PHASE OF THE DESIGN CYCLE, YOU MUST KEEP A PROCESS JOURNAL.
YOU SHOULD RECORD WHAT YOU HAVE DONE EACH LESSON AND WHAT YOU WILL DO THE NEXT LESSON.
TAKE PHOTOGRAPHS OF YOUR PROJECT AS IT IS BEING BUILT TO SHOW EACH STEP OF PRODUCTION.
INDICATE PROBLEMS YOU HAVE ENCOUNTERED AND HOW YOU OVERCAME THEM.
JUSTIFY ANY CHANGES TO YOUR DESIGN.

DATE	WHAT WAS ACHIEVED TODAY. WHAT TOOLS, PROCESS, MATERIALS DID YOU USE? WHAT PROBLEMS DID YOU HAVE? HOW DID YOU SOLVE THEM?	WHAT WILL YOU DO NEXT LESSON? WHAT TOOLS OR MATERIAL WILL YOU NEED?

EVALUATION IS PERHAPS THE MOST IMPORTANT PART OF THE DESIGN CYCLE. YOU NEED TO EVALUATE THE FINAL PRODUCT, EVALUATE EACH STAGE OF THE DESIGN CYCLE AND EVALUATE

EVALUATION OF: FINAL PRODUCT

HAVE YOU SOLVED THE PROBLEM?
HOW DID YOU TEST THE PRODUCT?
HOW COULD YOU IMPROVE YOUR DESIGN?

DESIGN IMPROVEMENT SKETCH

DESIGN IMPROVEMENT SKETCH

**EVALUATION OF THE
DESIGN CYCLE:
INVESTIGATION**

HAVE YOU EXPLAINED THE PROBLEM CLEARLY IN THE
DESIGN BRIEF AND SPECIFICATION?
HAVE YOU INVESTIGATED THE PROBLEM THOROUGHLY
USING SEVERAL DIFFERENT SOURCES/METHODS OF
GATHERING INFORMATION?
HAVE YOU DESCRIBED HOW TO EFFECTIVE TEST YOU
SOLUTION?

**EVALUATION OF THE
DESIGN CYCLE:
DESIGN**

DID YOU PRODUCE SEVERAL FEASIBLE DESIGNS?
CAN YOU JUSTIFY YOU CHOSEN FINAL DESIGN?
ARE YOUR DESIGNS FULLY ANNOTATED?
ARE THEY OF GOOD QUALITY?

EVALUATION OF THE DESIGN CYCLE: PLAN	DID YOU PRODUCE A DETAILED AND LOGICAL PLAN? DID YOU FOLLOW YOUR PLAN EXACTLY? WHY NOT? DID YOU EVALUATE YOUR PLAN? HOW COULD YOU IMPROVE YOUR PLAN?
EVALUATION OF THE DESIGN CYCLE: CREATE	DID YOU USE THE TOOLS AND EQUIPMENT EFFECTIVELY? WHAT PROBLEMS TO YOU HAVE? HOW DID YOU SOLVE THEM? DID YOU CHANGE YOUR DESIGN? CAN YOU JUSTIFY YOUR CHANGES? DID YOU CREATE A SOLUTION OF APPROPRIATE QUALITY?

AGAINST THE AREAS OF INTERACTION.

	LEVEL 5 - 6	LEVEL 3 - 4	LEVEL 1 - 2
I N V E S T I G A T E	<p>THE STUDENT RECOGNISES AND CAN EXPLAINS THE PROBLEM, RECOGNISING IT'S RELEVANCE.</p> <p>THE STUDENT INVESTIGATES THE PROBLEM THOROUGHLY, EVALUATING INFORMATION FROM APPROPRIATE, ACKNOWLEDGED SOURCES.</p> <p>THE STUDENT DESCRIBES METHODS FOR TESTING TO EVALUATE THE PRODUCT/SOLUTION AGAINST THE DESIGN SPECIFICATION.</p>	<p>THE STUDENT RECOGNISES THE PROBLEM, MENTIONING ITS RELEVANCE.</p> <p>THE STUDENT INVESTIGATES THE PROBLEM, SELECTING INFORMATION FROM SOME ACKNOWLEDGED SOURCES.</p> <p>THE STUDENT CAN DESCRIBE A TEST TO EVALUATE THE PRODUCT/SOLUTION AGAINST THE DESIGN SPECIFICATION.</p>	<p>THE STUDENT STATES THE PROBLEM SOMETIMES INAPPROPRIATELY.</p> <p>THE STUDENT INVESTIGATES THE PROBLEM BY COLLECTING INFORMATION.</p> <p>THE STUDENT LISTS SOME SPECIFICATIONS.</p>
D E S I G N	<p>THE STUDENT GENERATES A RANGE OF FEASIBLE DESIGNS, EACH EVALUATED AGAINST THE DESIGN SPECIFICATION.</p> <p>THE STUDENT JUSTIFIES THE CHOSEN DESIGN AND EVALUATES IT FULLY AND CRITICALLY AGAINST THE DESIGN SPECIFICATION.</p>	<p>THE STUDENT GENERATES A FEW DESIGNS, JUSTIFYING THE CHOICE OF ONE OR TWO DESIGNS AND FULLY EVALUATING THEM AGAINST THE DESIGN SPECIFICATION.</p>	<p>THE STUDENT GENERATES ONE DESIGN, AND MAKES SOME ATTEMPT TO JUSTIFY THIS AGAINST THE DESIGN SPECIFICATION.</p>
P L A N	<p>THE STUDENT PRODUCES A PLAN THAT CONTAINS DETAILED STEPS THAT DESCRIBE THE USE OF RESOURCES AND TIME.</p> <p>THE STUDENT EVALUATES THE PLAN AND JUSTIFIES ANY MODIFICATIONS TO THE DESIGN.</p>	<p>THE STUDENT PRODUCES A PLAN THAT CONTAINS A NUMBER OF SEQUENTIAL STEPS THAT INCLUDE RESOURCES AND TIME.</p> <p>THE STUDENT MAKES SOME ATTEMPT TO EVALUATE THE PLAN.</p>	<p>THE STUDENT PRODUCES A PLAN THAT CONTAINS SOME DETAILS OF THE STEPS AND/OR THE RESOURCES REQUIRED.</p>
C R E A T E	<p>THE STUDENT USES APPROPRIATE TECHNIQUES AND EQUIPMENT WITH APPROPRIATE SKILL.</p> <p>THE STUDENT FOLLOWS THE PLAN AND OUTLINES ANY MODIFICATIONS MADE, RESULTING IN A PRODUCT/SOLUTION OF BEST POSSIBLE QUALITY USING THE RESOURCES AVAILABLE.</p>	<p>THE STUDENT USES APPROPRIATE TECHNIQUES AND EQUIPMENT.</p> <p>THE STUDENT FOLLOWS THE PLAN AND MENTIONS ANY MODIFICATIONS MADE, RESULTING IN A REASONABLE PRODUCT/SOLUTION.</p>	<p>THE STUDENT CONSIDERS THE PLAN AND CREATES AT LEAST PART OF A PRODUCT/SOLUTION.</p>
E V A L U A T E	<p>THE STUDENT INVESTIGATES THE PRODUCT/SOLUTION IN AN OBJECTIVE MANNER USING THE RESULTS FROM TESTING, AND THE VIEWS OF THE INTENDED USERS.</p> <p>THE STUDENT EVALUATES HIS OR HER OWN PERFORMANCE AT EACH STAGE OF THE DESIGN CYCLE AND SUGGESTS IMPROVEMENTS.</p> <p>THE STUDENT EXAMINES AND RECORDS THE IMPACT OF THE PRODUCT/SOLUTION ON LIFE, SOCIETY AND/OR THE ENVIRONMENT.</p>	<p>THE STUDENT INVESTIGATES THE PRODUCT/SOLUTION AND HIS OR HER OWN PERFORMANCE AND SUGGESTS WAYS IN WHICH THESE COULD BE IMPROVED.</p> <p>THE STUDENT TESTS THE PRODUCT/SOLUTION AGAINST THE DESIGN SPECIFICATION.</p>	<p>THE STUDENT EVALUATES THE PRODUCT/SOLUTION OR HIS OR HER OWN PERFORMANCE.</p> <p>THE STUDENT MAKES SOME EFFORT TO TEST THEIR PRODUCT/SOLUTION.</p>
A T T I T U D E	<p>MY CONDUCT IN A WORKSHOP ENVIRONMENT IS EXEMPLARY.</p> <p>I HAVE WORKED WITH A CONSISTENTLY POSITIVE ATTITUDE</p> <p>I CAN HIGHLIGHT MANY LEARNER PROFILE ATTRIBUTES I HAVE EXHIBITED</p> <p>MY OVERALL EFFORT AND WORK ETHIC HAS BEEN EXCELLENT.</p>	<p>I ALWAYS CONDUCT MYSELF IN A RESPONSIBLE MANNER IN THE WORKSHOP</p> <p>I HAVE WORKED WITH A GENERALLY POSITIVE ATTITUDE</p> <p>I CAN HIGHLIGHT SEVERAL LEARNER PROFILE ATTRIBUTES I HAVE EXHIBITED</p> <p>MY OVERALL EFFORT AND WORK ETHIC HAS BEEN GOOD.</p>	<p>I MOSTLY CONDUCT MYSELF IN A RESPONSIBLE MANNER IN THE WORKSHOP</p> <p>I HAVE WORKED WITH A REASONABLY POSITIVE ATTITUDE</p> <p>I CAN HIGHLIGHT FEW LEARNER PROFILE ATTRIBUTES I HAVE EXHIBITED</p> <p>I COULD IMPROVE MY OVERALL EFFORT AND WORK ETHIC.</p>