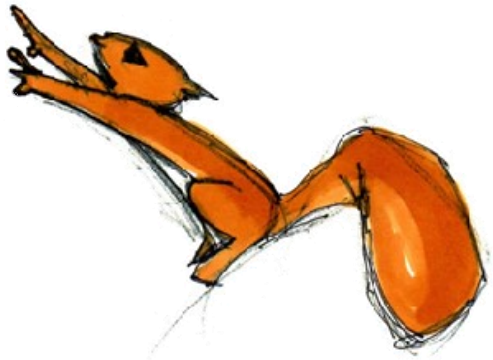
RED SQUIRREL FEEDER BOX

AN INTERDISCIPLINARY STEM UNIT OF WORK FOR S3 BGE



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RED SQUIRREL FEEDER BOX

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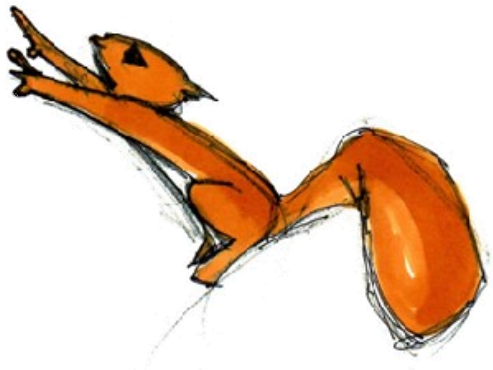
UNIT OVERVIEW



UNIT OVERVIEW

Red Squirrel Feeder Box

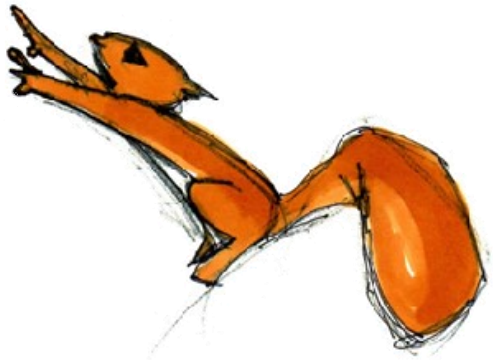
This unit of work is designed to be taught at S3 broad general education (BGE) level over twelve sessions. It will look at red squirrel conservation in the forest whilst simultaneously highlighting the use of timber as a sustainable material which can be used to manufacture feeder boxes for these animals. The unit will explore the issues pertaining to the red squirrels current plight as an endangered native species and look into the methods conservationists are utilising in order to protect the species from extinction. Red squirrel conservation and sustainable forestry have been selected as the foundations of this unit of work in order to inform the learners' of the cyclical nature of the forestry which may hold the key to saving the native red squirrel population from extinction and which simultaneously provides timber which, when managed correctly, provides a sustainable material.

This Interdisciplinary learning (IDL) unit will incorporate learning for sustainability, authentic learning and outdoor learning in an attempt to 'maintain challenge and enjoyment' whilst advocating 'the highest possible expectations of what young people can achieve' (Scottish Government, 2008, p36). Learners will develop 'higher order, critical and holistic thinking skills' and therefore the ability to comprehend 'how ideas and information from relevant disciplines relate to each other and the problem' (Harvie, 2012, p6). IDL opportunities will help to augment the learning and teaching, with particular emphasis on Biology and Geography thus enabling deeper understanding whilst demonstrating to the learners' how these distinct disciplines overlap. The utilisation of real life clients and design challenges will create a unique opportunity to sample authentic learning and it is envisaged this will help foster engagement with the content. The benefits of a circular economy as a way of tackling climate change and introducing learners' to potential future careers in this sector will also be highlighted.

STEM subjects were intentionally selected for IDL as the Government seeks to actively promote and encourage STEM in education. There is a severe shortage of UK based STEM graduates and this needs to be addressed. According to Hickey and Robson, learners' will then be able to use knowledge from across the STEM subjects helping to stimulate innovation and equipping them to make an important contribution to today's economy (Hickey and Robson, 2013). It is intended that this unit will be delivered in an enterprising manner, with learners creating meaningful hand crafted artefacts for the Forestry Commission and the Red Squirrel Survival Trust (RSST). Ambassadors from the S3 BGE will be given the opportunity to represent their peers and present this unit of work to the Merchants of Edinburgh competition.

RED SQUIRREL FEEDER BOX

UNIT RATIONALE



UNIT RATIONALE

Red Squirrel Feeder Box

In order to make this unit of work as engaging and realistic as possible a social constructivist methodology to teaching and learning has been adopted. The approach to the unit delivery has been carefully considered in order to impart on the learners the necessary skills for life and work as 'interaction between learner and a more knowledgeable other is an important aspect of scaffolding' (Prichard, 2009, p122).

Learning for sustainability will raise learners' awareness of local and global conservation issues, use of sustainable materials, sustainable forestry management and the need for a Circular Economy.

Authentic learning will be achieved through learners' working on a genuine design brief from 'real life' clients in the Forestry Commission and the RSST. Learners will be tasked with designing and manufacturing a red squirrel feeder box made from sustainable timber. The presentation of this unit at the Merchants of Edinburgh Competition to a panel of experts will teach the learners' how to present their ideas clearly and will raise the profile of STEM within the school and the wider community.

Outdoor learning will take the form of two field trips to a Forestry Commission run woodland. The first trip will introduce the learners' to their real clients and the challenge expected of them. The second trip will see some of the feeder boxes fitted and trees planted. It is envisaged that these trips will consolidate learning for sustainability and authentic learning and help instil the learners' with a sense of achievement and citizenship.

Social Constructivist Methodology

Pritchard notes, 'The context in which learning takes place influences the effectiveness of the learning' (Pritchard, 2009, p26). It is anticipated that the use of real life clients presenting real life challenges to the learners will help achieve a high level of learner engagement. Bruner identifies scaffolding as the teacher acting as facilitator whereby they observe and support learners and where necessary adopt a direct intervention strategy (Bruner, 1977; Smidt, 2011). This unit of work will enable the learners' to work as real life designers, manufacturing authentic and meaningful artefacts for real clients whilst taking inspiration from natural form. Learners will also gain confidence in developing their tool skills. All practical projects should incorporate these factors when they are designed. as they form the basis of how teachers assess and report on learners' performances (Scottish Government, 2011). Scaffolding will be provided through the use of field trips, a detailed design brief, the Nuffield approach whereby The Small Tasks provide the learners' with the skills to undertake The Big Task and where necessary, direct teacher inputs (Barlex, 1998).

Interdisciplinary Learning

The main learning intentions of this unit is to develop learners' un-

UNIT RATIONALE

Red Squirrel Feeder Box

derstanding of sustainability and meeting the design and manufacture challenge of a red squirrel feeder box for The Forestry Commission and RSST. This will be achieved through the interaction of different subject disciplines in order to achieve a common goal. According to Harvie the 'Curriculum for Excellence calls for learning to become more active and for interdisciplinary work to become more frequent in schools' (Harvie, 2012, p2). Therefore this unit of work is designed from the outset to be interdisciplinary with Design and Technology leading supported by the Biology and Geography.

According to the Scottish Government, Interdisciplinary Learning (IDL) has been proven to help increase learners' enthusiasm for content and instil the confidence to undertake challenges. Building the Curriculum 3 promotes IDL and the framework for planning a curriculum in which 'young people can explore areas of interest in depth' and 'can provide opportunities to extend and deepen understanding' (Scottish Government 2008, p36; SEEAG, 2012). Drake also identifies this type of learning as an effective way for learners' to experience real life working scenarios. Learners therefore can work collaboratively with other disciplines, share skills and solve complicated tasks whilst understanding is 'increased by connecting to the real world' (Drake, 1998, pp17-18).

Outdoor Learning

Outdoor learning can bring many benefits to learners' including increasing learners' awareness of the relationship between all the different curriculum areas (Scottish Government, 2010). Teachers, according to the Scottish Government should 'adopt approaches to learning which are active, creative, co-operative and collaborative' with outdoor learning deemed central to achieving this. The view is that these methods of learning are necessary if 'rich and transformative learning experiences relating to sustainability' are to be created (The Scottish Government, 2015, p15).

Outdoor learning according to Higgins and Nicol is grounded in constructivist pedagogy whereby learners are able to consolidate learning and build understanding more effectively outdoors (Higgins and Nicol, 2002). Two field trips are proposed which will help facilitate and inspire collaborative learning, an approach which is recommended by eminent educational theorists such as Bruner and Vygotsky (Bruner, 1977; Vygotsky, 1962).

The first trip will set the scene and introduce the learners to the clients their design brief and their explicit expectations. The learners will be informed about the Red Squirrel, its plight, habitat and discover its way of life in a changing world. Learners will discover how coniferous forests are managed so as to provide a sustainable supply of timber whilst simultaneously providing a habitat on which the red squirrels survival may depend. The second field trip will be carried out at the end of the unit of work and will consolidate all the learning of the unit. The learners will watch as their manufactured

UNIT RATIONALE

Red Squirrel Feeder Box

feeder boxes are attached to the coniferous trees which will give the red squirrels a source of food and instil the learners with a sense of pride, joy and achievement. Learners will also help to plant more trees for the forestry commission, thus doing their part for the circular economy and providing sustainable materials for the future.

Authentic Learning

This unit of work will employ authentic activities and tasks for the learners in accordance with the Wood Commission's quality assurance recommendations which state that 'Education Scotland must work more closely with business organisations and their members to ensure that their work is underpinned by an understanding of industry's needs and expectations' (Scottish Government, 2014, p11).

Building the Curriculum 4 also highlights skills for learning life and work and identifies 'the five core skills of communication, numeracy, problem solving, IT and working with others' (Scottish Government, 2009, p5). This unit of work is designed to fulfil all of these skills in order to prepare learners for future employment.

Petrina in addition to Higgins and Nichol highlight the importance of constructing units of work that are authentic and relatable for the learner in order to impart a sense of ownership, significance and purpose (Petrina, 2009; Higgins and Nichol, 2002). In order to achieve this learners will be working to a real design brief set by real life clients working to real deadlines and will have to present their final work to the Merchants of Edinburgh at a set date.

Learners will have to communicate with their peers in order to engage with the tasks, improve their own working and achieve success (Fox-Turnbull, 2012). Scaffolding will be provided through small tasks as the learners' seek to widen their design understanding and practical ability (Murphy and Hennessy, 1999). The unit will culminate in the big tasks which is the fulfilment of the design brief and the expectations of the clients in the Forestry Commission and the RSST and the presentation to the Merchants of Edinburgh.

Learning for Sustainability

The United Nations 2005 report 'Decade of Education for Sustainable Society' advocates the incorporation of sustainable development into the education system. This helped to facilitate the inclusion of sustainable development as well as outdoor learning and global citizenship into the Curriculum for Excellence (Mula and Tilbury, 2009). This unit of work seeks to deepen learners' awareness and understanding of sustainability through highlighting the Curriculum for Excellences experience and outcomes connected to sustainability and addressing current issues of sustainability including environmental, social and economic concerns.

According to Singleton, the Head (cognitive), Heart (affective) and Hand (Psychomotor) is a 'holistic approach to developing eco-literacy' and should be considered when planning a unit of work as

UNIT RATIONALE

Red Squirrel Feeder Box

it enables learners' to reflect on issues, relate to them and actively participate (Singleton, 2015, p1). It is therefore thought that students should be made aware of species in danger of extinction and be taught why conservation is important.

There is a strong possibility that the next generation of learners will bear witness to the extinction in the wild of several species during their lifetimes. According to the One Planet School Working Groups recommendations 'all learners should have an entitlement to learning for sustainability and as part of this entitlement, outdoor learning should be a regular, progressive curriculum led experience for all learners' (Scottish Government, 2012, p13) This will be achieved by raising learners' awareness of conservation issues, the development of learners' skills for life and work, learning for sustainability an appreciation of how all the different subject areas work together.

Pavlova identifies the crucial role teachers will play in emphasising the necessity of global citizenship and sustainability ideals (Pavlova, 2015). This will be accomplished through imparting upon the learners a sense of responsibility to help ensure the survival of the native red squirrel and simultaneously raising awareness of global issues affecting other species and the environment (The Ellen MacArthur Foundation, 2012).

Conclusion

This STEM unit has been planned in accordance with the principles of the CFE in order to raise learners' awareness of sustainable issues through the utilisation of a number of pedagogical approaches, including; Interdisciplinary learning, outdoor learning, authentic learning and learning for sustainability. Through exploring these pedagogical methods it is envisaged that the underlying constructivist approach will enable learners' to ascertain their own understandings and conclusions of sustainability in both local and global contexts.

RED SQUIRREL FEEDER BOX

UNIT EVALUATION

UNIT EVALUATION

Red Squirrel Feeder Box

In order to evaluate the Red Squirrel feeder box as an IDL of work, it was initially envisaged that elements of the unit should be trialled during placements one and two in order to ascertain how effective or indeed practicable the unit would be for real life teaching and learning.

However due to timetabling constraints and a lack of resources, only some elements of this unit were able to be delivered whilst on placement. These elements were taught as part of the Design and Technology Curriculum and not as the interdisciplinary unit first envisaged. Further evaluation therefore has been undertaken by means of consultation with the Forestry Commission, practicing teaching professionals, the learners themselves and my own personal reflection. The unit was also pitched to a multidisciplinary panel of practicing teachers, educational representatives and business who gave their thoughts on the potential viability of the unit and made some helpful recommendations for improvement.

Initially the proposal was for the manufacture of nest boxes with a focus on education for sustainability, field trips and the highlighting of red squirrel conservation but the Forestry commission identified a flaw in the project by stating “there is no real need for nest boxes but there is a requirement for feeder boxes”. Clearly in light of this insight and in order to keep the learning authentic and valuable a decision was made to change the unit to the manufacture of feeder boxes.

Some teachers raised concerns about the field trips, suggesting that too would be difficult to achieve and recommended dropping them entirely from the proposal. It is believed however that this view is misguided and the benefits of outdoor learning far outweigh the difficulties. Another teacher commented “from a teaching point of view I love the outdoor learning element”. This view is supported in policy where it is stated that outdoor learning ‘must not be seen as a ‘bolt-on’ or alternative form of provision but part of an integrated experience’ (Scottish Government, 2009, p22).

The teachers also enquired about the pace and the clarity of the content being pitched to the learners. Fisher identifies the delivery of content as being key to maintaining learners’ interest in a topic. Teachers therefore need to pitch the work at the appropriate level and apply the correct pacing to the delivery of content (Fisher, 2005). The amount of class based research I proposed in terms of learning for sustainability in a local, national and global context was of concern particularly with the unit being designed for an S3 BGE class. Learners’ could potentially be overwhelmed with too much content on too many themes thus diluting the learning and the unit as a whole.

UNIT EVALUATION

Red Squirrel Feeder Box

There were also concerns from the Forestry Commission and teachers that the learners' were being given too much freedom in terms of design for the feeder boxes. Recommendations were made for the design brief and guidance to be thorough enough to ensure the boxes were satisfactory for their intended purpose whilst allowing the learners' the flexibility of personalisation and choice (Petrina, 2007).

Gardner's theory of multiple intelligences ascertains that the various styles in which learners acquire knowledge differs considerably. This unit therefore has tried to take account of this difference and utilises a variety of tasks which incorporate Verbal, Visual, Logical and Kinaesthetic rather than the traditional chalk and talk approach (Gardner, 1993). It is envisaged that the teacher can tailor to suit once they have correctly identified individual learner's requirements and it will enable all learners' to progress as efficiently and effectively as they can whilst simultaneously providing the challenge, enjoyment, depth, choice and flexibility for all concerned (Pritchard, 2009). The unit will also cater for the various learning abilities of the learners' through differentiation by task with extensions progressively increasing in complexity to challenge the more able learners'.

In order to alleviate some of these concerns the unit now has more focus on fewer themes concentrating on material sustainability through the circular economy and on wildlife conservation. The unit has also incorporated group activities in order to scaffold the learners (Fisher, 2005; Bruner 1977).

This unit of work was conceptualised as an interdisciplinary STEM unit of work with social constructivism central to the methodology. Therefore an emphasis has been placed on group work and cooperation amongst the learners. Group work can, in itself present some problems for the teacher. Pritchard advocates that effective learning is unlikely to occur unless there is learner engagement in the task. This then poses a problem with group work as confident individuals have a tendency to dominate a group situation which can result in the less confident learners becoming marginalised and then disinterested. In order to minimise the chances of these issues occurring, group responsibilities will be delegated by the teacher and rotated when necessary to ensure that all members are able to participate and contribute equally.

If some learners with strong personalities clash with one another this again can also lead to disengagement and adversely affect learning. With this unit being delivered to an S3 BGE cohort, it is likely that the teacher would have taught most learners' previously and could therefore make a decision on those individuals whose personality's clash, thus avoiding most issues from the beginning.

UNIT EVALUATION

Red Squirrel Feeder Box

Evaluation of this IDL unit of work has highlighted some issues that could rise during the teaching and learning. Issues raised by teaching staff included concerns with the field trips, pace and clarity content, learner differentiation and issues pertaining to co-operative group work. Questions raised by The Forestry Commission related to the appropriateness of nesting boxes and they recommended changing this to feeder boxes. Some of these concerns have been dealt with through making the necessary changes to the unit of work but in some cases issues cannot be avoided. This unit has been specifically designed after taking into account all the feedback and now has the potential to be a realistic IDL unit of work that could be delivered effectively.

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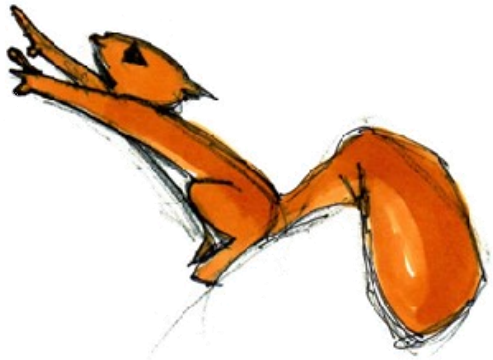
RED SQUIRREL FEEDER BOX

UNIT OUTLINE SESSIONS 1 - 12



SESSION 1

INTRODUCTION TO UNIT

Lesson Aims and Objectives

LESSON AIMS

To develop an understanding of sustainability through exploring the 6R's and wildlife conservation

LESSON OBJECTIVES

By the end of the session the learners should be able to: Identify the advantages of designing for sustainability and demonstrate knowledge of different factors concerning wildlife conservation

Lesson Content

TEACHER INPUTS

Introducing the 6R's activity

PowerPoint on the 6R's highlighting the need for sustainable design - whole class discussion

PowerPoint on the squirrel project so that learners will have some knowledge of the issue before the outdoor learning session next week.

LEARNER ACTIVITIES

Shopping bag comparison and specification. 6R's activity. Party bag activity. Practicalaction.org

These group activities will help to identify learners who cannot work together.

HOMEWORK

Learners will be given an endangered animal to research and then present this issue to the class during session 12

Resources

RESOURCES

Interactive whiteboard and PC

6R's activity x 5 packs of cards to enable groups of 4

PowerPoint on 6R's

PowerPoint presentation on the red squirrel and unit,

Differentiated materials to match the abilities and specific requirements of the learners'

MANAGEMENT

Group work to be closely monitored and will facilitate where appropriate

Timings will be key. Half lesson on 6R's and importance of sustainable design followed by a 5 minute learner web based research activity with whole class discussion with the lesson to be concluded by looking at the red squirrel

Learning Outcomes

TCH 4-02a - I can examine a range of materials, processes or designs in my local community to consider and discuss their environmental, social and economic impact, discussing the possible lifetime cost to the environment in Scotland or beyond.

HWB 4-20a - I am investigating different careers/occupations, ways of working, and learning and training paths. I recognise the relevance of my learning, skills and interests to my future life.

SCN 4-01a - I understand how animal and plant species depend on each other and how living things are adapted for survival.

(**SCN 4-04a, SCN 4-05b**)

SOC 4-08a - I can discuss the sustainability of key natural resources and analyse the possible implications for human activity.

SESSION 2

OUTDOOR LEARNING

SAVING SCOTLAND'S RED SQUIRRELS

Aims and Objectives

AIMS

To develop an understanding of sustainability through exploring sustainable forestry and red squirrel conservation efforts

OBJECTIVES

By the end of the session the learners should be able to: Identify the advantages of sustainable forestry and demonstrate knowledge of different factors concerning red squirrel conservation and the role they will play in contributing towards this

Lesson Content

TEACHER INPUT

Continuing on from the introduction to the unit the learners will be introduced to their real clients; representatives of the Forestry Commission and the Res Squirrel Survival Trust. Learners will be handed their real design brief and the itinerary for this session.

LEARNER ACTIVITIES

Learners will participate in two workshops with their clients. sustainable forestry to provide a source timer and highlighting the plight of the red squirrel and the need for feeder boxes to help prevent the spread of the pox virus.

PLENARY

The teacher should assist the learners in extracting additional information from the clients by helping to focus the questioning.

Resources

RESOURCES

X20 design briefs which will have been produced by the teacher in consultation with the forestry commission and RSST to ensure correct tolerances for the boxes

MANAGEMENT

Bring some extra food and drinks for learners who forget to do so.

Bus trip to and from forest with clear pick up times arranged

All learners will have submitted their EE2 excursion forms before being allowed to travel.

A health and safety risk assessment will have been conducted with the aid of the forestry commission and RSST. An accessible forest with toilet facilities will be essential as will the ratio of adults to learners.

Learning Outcomes

TCH 4-14c - I can explore the properties and functionality of materials, tools, software or control technology to establish their suitability for a task at home or in the world of work.

HWB 4-20a - I am investigating different careers/occupations, ways of working, and learning and training paths. I am gaining experience that helps me recognise the relevance of my learning, skills and interests to my future life. (**HWB 4-18a**)

SCN 4-01a - I understand how animal and plant species depend on each other and how living things are adapted for survival. (**SCN 4-04a, SCN 4-05b**)

SOC 4-08a - I can discuss the sustainability of key natural resources and analyse the possible implications for human activity.

SESSION 3

ANALYSE THE DESIGN BRIEF - FORMULATE SPECIFICATION

Lesson Aims and Objectives

LESSON AIMS

To develop knowledge of interpreting the requirements of a design brief into a specification.

To develop knowledge of the key factors for designing a product suitable for use as a red squirrel feeder box

LESSON OBJECTIVES

By the end of the session the learners should be able to: Identify the key aspects of design and demonstrate knowledge of the different aspects in relation to designing for a red squirrel. Learners will also be expected to have completed a specification which through whole class discussion

Lesson Content

TEACHER INPUTS

Teacher will take the learners through the clients design brief step by step so that they understand explicitly what is expected of them.

Focus on 6 key aspects of design which are: ergonomics, aesthetics, material, function, safety and sustainability issues. This will be done through discussing each factor using a purpose built squirrel box, bird boxes and a PowerPoint presentation

LEARNER ACTIVITIES

Interactive group work lesson with squirrel feeder box task and map activity

whole class discussion

All learners must write a specification to inform their designs.

Resources

RESOURCES

Interactive whiteboard and PC

Copy of Design Brief on Interactive whiteboard so that key points can be highlighted to the class.

PowerPoint Presentation on Specification.

Purpose built squirrel feeder box and various sized entry holes and wooden squirrels to test the designs. Other animal boxes will also be made available for comparison

MANAGEMENT

This is envisaged to be a highly interactive lesson with the squirrel box and map the focus for the group work. There is also the option for direct teaching if the learners' do not behave as expected.

Learning Outcomes

TCH 4-14a - Showing creativity and innovation, I can design, plan and produce increasingly complex items which satisfy the needs of the user, at home or in the world of work.

MNU 4-10a - I can research, compare and contrast aspects of time and time management as they impact on me.

LIT 4-02a - When I engage with others I can make a relevant contribution, ensure that everyone has an opportunity to contribute and encourage them to take account of others' points of view or alternative solutions. I can respond in ways appropriate to my role, exploring and expanding on contributions to reflect on, clarify or adapt thinking.

Other Learning Outcomes

(HWB 4-10a, HWB 4-14a)

SESSIONS 4-5

DESIGN FEEDER BOXES

Session Aims and Objectives

Although the design brief and specification restrict the learners in terms of design it is done so in order to ensure the feeder boxes are fit for the purposes intended. Learners will still be able to personalise the design somewhat therefore:

SESSION AIMS

Design a feeder box that fulfils the design brief and specification whilst the learners' put their unique take on their design.

SESSION OBJECTIVES

To develop knowledge of designing to a strict design brief and specification. To fully understand the relationship between all the design factors in order to enable a meaningful feeder box to be manufactured. For learners to work cooperatively on a design whilst meeting a strict deadline

Lesson Content

TEACHER INPUTS

Teacher will place earners in the groups. This will be carefully considered so as to produce the most balanced groups. The performance of the learners in group activities thus far will influence the decision.

Teacher will use the squirrel feeder box example to show that there must be the use of wood in the design but that there is also the option to upcycle jars etc.

Teacher will then sketch some ideas on paper via the visualizer so that the learners can see what is expected of their groups

LEARNER ACTIVITIES

Each learner will design feeder boxes. The members of the group will come to a consensus about the design to carry forward and must have it approved by the teacher

Resources

RESOURCES

Interactive whiteboard and PC. Copy of Design Brief on Interactive whiteboard.

Purpose built squirrel feeder box and various sized wooden squirrels to test with

Pens, pencils, paper, card, scissors, scalpels, PC's

MANAGEMENT

This is envisaged to be a highly interactive series of lessons utilising various design methods

The learners will have some aspects of the design set in stone so that there is no danger of the feeder boxes being unfit for purpose. There is enough flexibility for personalisation and choice

Teacher will scaffold the learners through the group design process through demonstrations and if necessary, direct intervention.

Learning Outcomes

TCH 4-14a - Showing creativity and innovation, I can design, plan and produce increasingly complex items which satisfy the needs of the user, at home or in the world of work.

TCH 4-14d - By examining and discussing the features of everyday products, I am gaining an awareness of the factors influencing design and can evaluate how these products meet the needs of the user.

(TCH 4-02a, TCH 4-13a, TCH 4-14c)

MNU 4-10a - I can research, compare and contrast aspects of time and time management as they impact on me.

Other Learning Outcomes

(LIT 4-02a, HWB 4-10a, HWB 4 -14a)

SESSION 6-10

MANUFACTURE

Lesson Aims and Objectives

SESSION AIMS

To develop an understanding of manufacturing skills and processes.

To develop the learners practical skills for use in life and work

SESSION OBJECTIVES

learners will develop practical psychomotor skills

learners will discover how to read drawings and diagrams, measure and mark out, cut, shape and finish material.

Learners will work effectively alongside peers in a shared workshop environment.

Learners will acquire skills valuable for learning, for life and for the world of work.

Lesson Content

TEACHER INPUTS

For all hand tool and machine process that the learners need to undertake , the teacher will give a whole class demonstration in order to ascertain any potential issues

LEARNER ACTIVITIES

Learners will be marking out, cutting, shaping, drilling, gluing, sanding and finishing

DIFFERENTIATIION

The projects are designed to be achievable by all learners. The more able learners can choose to make the jointing methods more complex. If they wish If any learners still need an extension activity they can assist and give advice to their other group members.

Resources

MATERIALS

20mm thick timber sections that have been dressed and cut to size for the learners. Timber will be cut once the design is approved by the teacher. Glass or plastic jars can be upcycled for use as the feeding hopper

RESOURCES

Wood glue, screws, drill bits, hole saws, pillar drills, coping saws, fret saws, battery drills, smoothing planes, chisels, belt sanders and natural oil finishes

MANAGEMENT

Each group will be responsible for ensuring quality control.

The teacher will supervise in the workshop at all times and ensure all workshop activities comply with BS4163 and the departments risk assessments

Learning Outcomes

TCH 4-13a - I can confidently apply preparation techniques and processes to manufacture items using specialist skills, materials, tools and software in my place of learning, at home or in the world of work.

HWB 4-16

I am learning to assess and manage risk, to protect myself and others, and to reduce the potential for harm when possible

MNU 4-11a

I can apply my knowledge and understanding of measure to everyday problems and tasks and appreciate the practical importance of accuracy when making calculations. **(MNU 4-10a)**

SESSION 11

OUTDOOR LEARNING

SAVING SCOTLAND'S RED SQUIRRELS

Aims and Objectives

AIMS

To consolidate understanding of sustainability through sustainable forestry and red squirrel conservation.

OBJECTIVES

By the end of the session the learners should be able to appreciate the circular nature of the woodland through helping to plant coniferous trees to replace the harvested ones.

Learners will be able to make the connection between sustainable forestry management and conservation as they witness their feeder boxes fitted by the Forestry Commission and RSST.

Lesson Content

TEACHER INPUT

Teacher will introduce the design groups to the Forestry Commission and the RSST.

LEARNER ACTIVITIES

The learners will pitch their feeder boxes to the clients. (this is done as practice for the Merchants Competition) all feeder boxes brought to the forest will conform to the design brief and specification

Learners will participate in two workshops with their clients. The activities will enable the learners to plant trees and therefore contributing to sustainable material production and each group will witness their feeder boxes mounted in the forest thus helping to conserve the native red squirrel population.

Resources

RESOURCES

Bring all of the manufactured boxes that are within the tolerances permissible by the design brief and specification

MANAGEMENT

Bring some extra food and drinks for learners who forget to do so.

Bus trip to and from forest with clear pick up times arranged

All learners will have submitted their EE2 excursion forms before being allowed to travel.

A health and safety risk assessment will have been conducted with the aid of the forestry commission and RSST. An accessible forest with toilet facilities will be essential as will the ratio of adults to learners.

Learning Outcomes

TCH 4-14c - I can explore the properties and functionality of materials, tools, software or control technology to establish their suitability for a task at home or in the world of work.

HWB 4-20a - I am investigating different careers/occupations, ways of working, and learning and training paths. I am gaining experience that helps me recognise the relevance of my learning, skills and interests to my future life.

(HWB 4-18a)

SCN 4-01a - I understand how animal and plant species depend on each other and how living things are adapted for survival.

(SCN 4-04a, SCN 4-05b)

SOC 4-08a - can discuss the sustainability of key natural resources and analyse the possible implications for human activity.

SESSION 12

PREPARATION FOR MERCHANTS COMPETITION

Lesson Aims and Objectives

LESSON AIMS

For the learners to be able to express their views clearly, and demonstrate a depth of understanding

LESSON OBJECTIVES

By the end of the session the learners should be able to present in a clear expressive manner

Demonstrate a depth of understanding and application of research in their presentations.

Draw on all of the work from this unit as well as the outdoor learning experience and individual research.

Lesson Content

TEACHER INPUTS

The teacher will explain the merchants of Edinburgh competition to the learners'

Teacher and learners' to give constructive feedback on the presentations.

Teacher is to ask for a volunteer from each group to present the unit to a panel of experts at the Merchant hall.

LEARNER ACTIVITIES

Learners will present to the whole class the conservation issue they chose during session 1. Learners are to give constructive feedback on their peers. Presentations

HOMEWORK

The representatives of each group are to prepare a PowerPoint or Prezi presentation on the whole unit.

Resources

RESOURCES

Interactive whiteboard and PC. For presentations

pencils, paper,

MANAGEMENT

This is envisaged to be a highly interactive session with the teacher scaffold the learners through the presentation process and with the constructive feedback

The learners will have been reminded of these presentations throughout the unit of work. Individual presentations are important so that all learners develop the skill.

The merchants competition is after school hours so needs to be on a volunteer basis.

Learning Outcomes

LIT 4-10a - I can communicate in a clear, expressive manner when engaging with others within and beyond my place of learning, and can independently select and organise appropriate resources as required.

HWB 4-12a - Representing my class, school and/or wider community encourages my self-worth and confidence and allows me to contribute to and participate in society.

RED SQUIRREL FEEDER BOX

RESOURCES