

Suggested Dot Points for Teachers - Software

The Ed-Blocs website is <http://www.ed-blocs.com> with quick links and downloads.

Students work individually on a Mac or PC connected to the Internet and login to <http://ed-blocs.com/software>.

The software is intended to be self-paced making it good to allocate as homework as it requires no school resources and no teacher time.

To get individual student report cards they need to be set up in the admin login area. <http://ed-blocs.com/software/administrator/>

If your school already uses Ed-Blocs see your school Ed-Blocs administrator or if they haven't yet, request your school and give the name & email of your proposed school administrator via email to pgkpeter@gmail.com.

Some students are hands-on learners and the hardware allows them to show themselves. If the school has the Ed-blocs hardware, there is an enhanced learning possibility. There is a download student work book and teacher manual on the website for the first five simple lessons for case one. If a school has a full set then students can set up and test each lesson after they have done the exercises. Students love hands on learning.

Suggested Dot Points for Teachers - Hardware

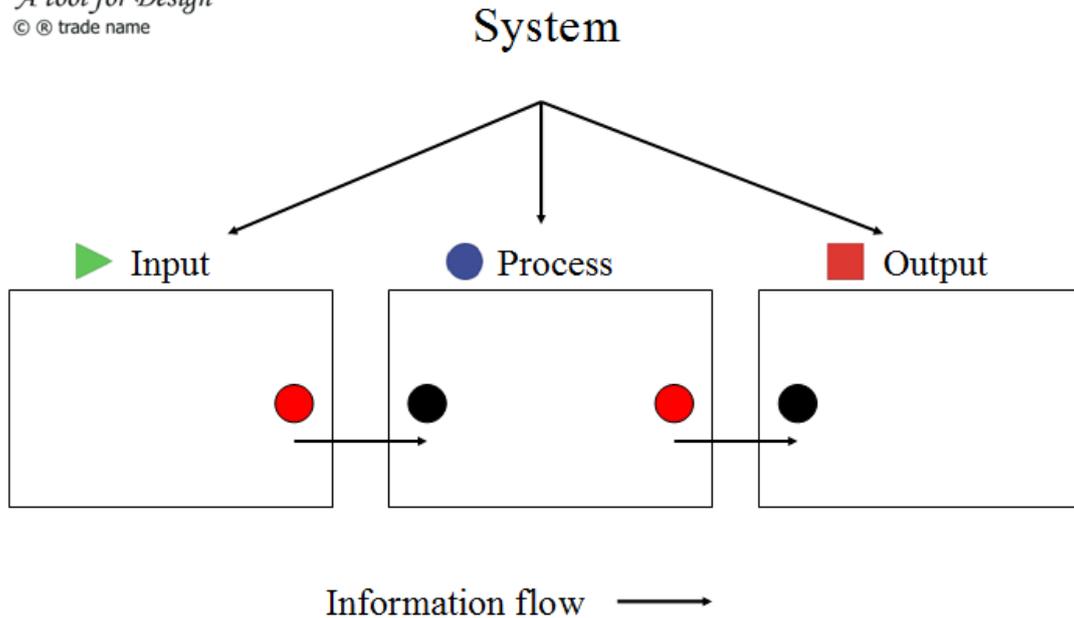
Make a team of six or less, a team of four is ideal.

Give each team one of the following

- 1) Talking stick (wooden spoon) - optional
- 2) Throwing "dice"
- 3) Name Tags (these are included to print on adhesive printing paper)

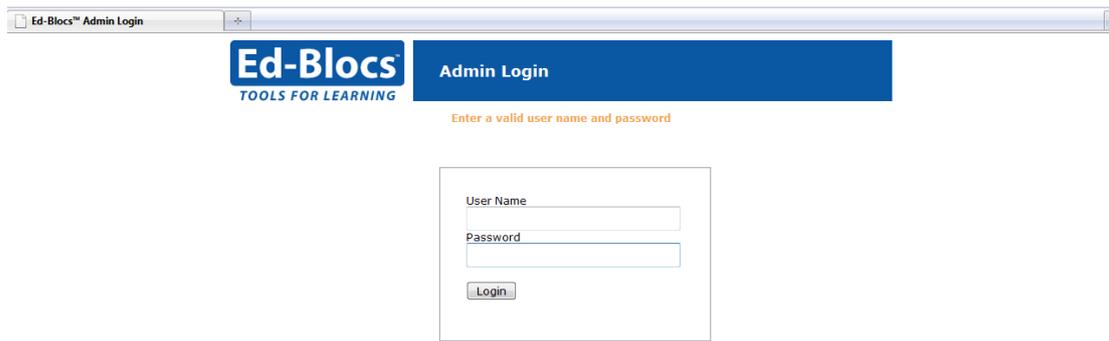
Ed-Bloc Investigation Lesson Structure

- Organisation of roles
The throwing of the dice determines the leader – highest number becomes the leader (only those who haven't been a leader get to roll the dice). The leader takes control of the team and delegates by his/her decision whom does which role (Data Recorder, Handler, Handler's assistant, Card reader, Results presenter). It is the leader's responsibility to ensure everyone has a chance to express their ideas to the team and that only one person speaks at a time by deciding who has the talking stick (wooden spoon).
- Block hands-on investigation - teams explore the Ed-Bloc without the Ed-Blocs information card. Allow students to explore the Ed-Bloc(s) discovering all the combinations available to get it to function. Get groups to explain their findings, then hand out the Ed-Bloc information card.
- When all Ed-Blocs needed for a design challenge has been investigated give the design challenge to the team leader.
- Students must present their hypothesis solution to the teacher using the Ed-Blocs info cards before, bring allowed to test and possibly fix their design.



TEAM / GROUP	ROLES
TEAM LEADER	The leader is chosen by rolling a dice - highest number becomes the leader. Only those who haven't been a leader get to roll the dice. The leader takes control of the team and delegates by his decision who does which role. It is his responsibility to ensure everyone has a chance to express ideas to the team and that only one person speaks at a time - deciding who has the talking stick (wooden spoon).
DATA RECORDER	Records all information / results for the team on this work sheet.
CARD READER	Holds and reads Ed-blocs cards for the team. Note Ed-blocs information cards are not to be used during the teams first attempt. Students are to work as a team to explore its function for themselves.
Ed-blocs HANDLER	Controls all handling and connecting of Ed-blocs for the team.
HANDLER ASSISTANT	Assists and takes directions from the Ed-blocs HANDLER
RESULT PRESENTER and TIME KEEPER	Presents the teams findings and conclusions to the teacher and other teams / students. Advises the team the time left. For example teams are allocated 15 minutes to explore an Ed-blocs, so each 5 minute express to the team 10 minutes to go, 5 minutes to go, etc.

VEGETABLE PATCH ALAERT TEACHER'S MANUAL



Ed-Blocs™ Admin Login

Ed-Blocs
TOOLS FOR LEARNING

Admin Login

Enter a valid user name and password

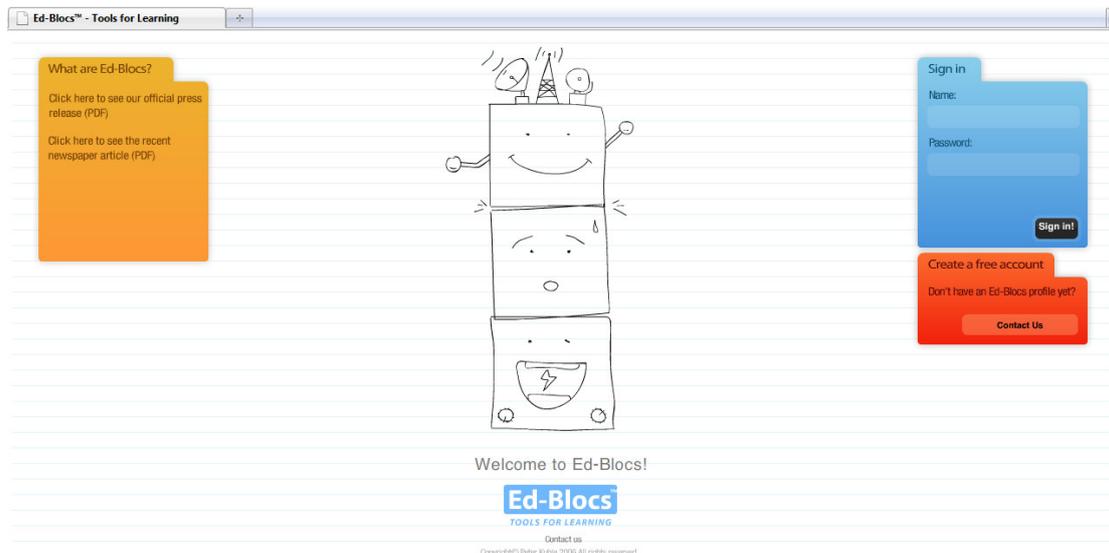
User Name

Password

Login

Admin log in webpage

A school administrator sets up classes and teacher login's
Teachers then create student login's and activate lessons the class see (homework).



Ed-Blocs™ - Tools for Learning

What are Ed-Blocs?
Click here to see our official press release (PDF)
Click here to see the recent newspaper article (PDF)

Sign in
Name:
Password:
Sign in!

Create a free account
Don't have an Ed-Blocs profile yet?
Contact Us

Welcome to Ed-Blocs!

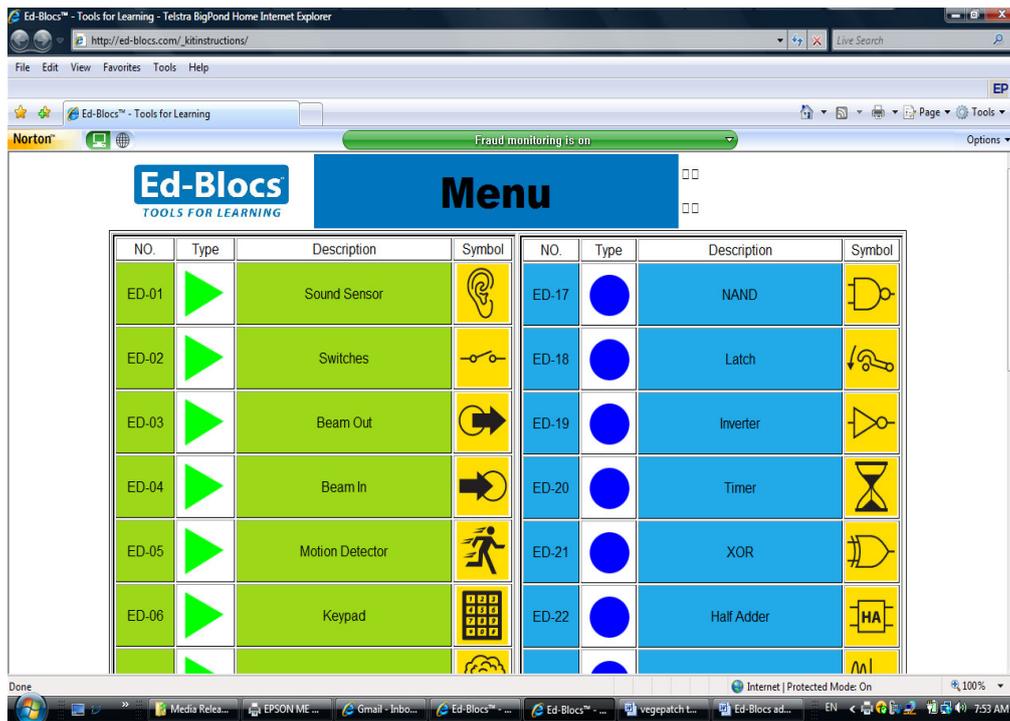
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TOOLS FOR LEARNING

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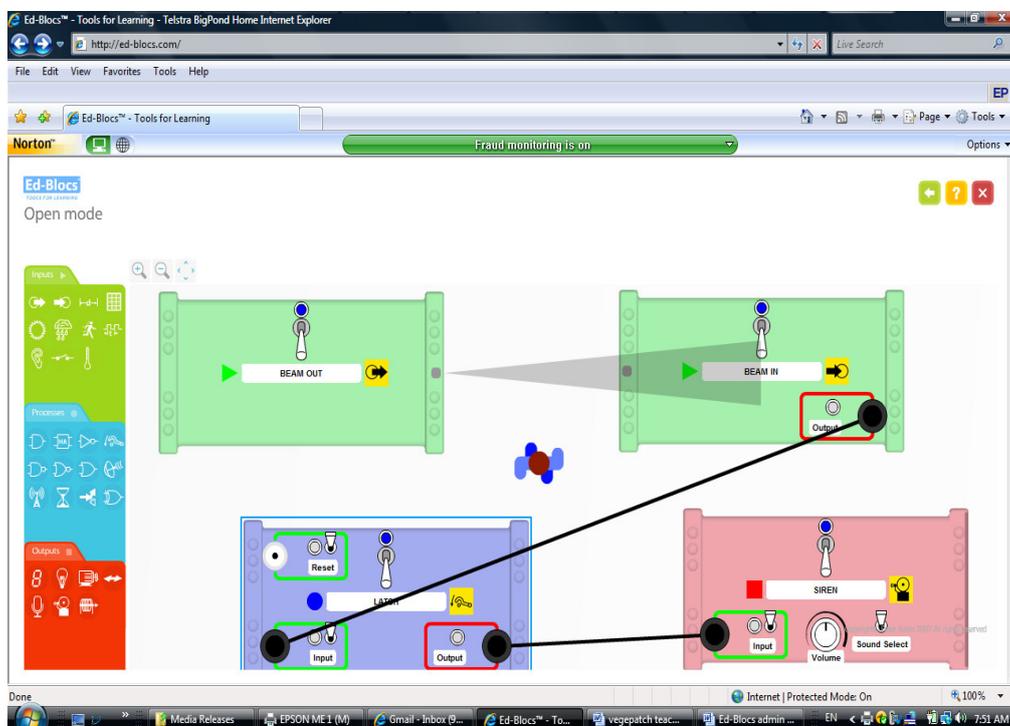
Student's login webpage

Self-paced lessons – no school resources and no teacher time.

VEGETABLE PATCH ALAERT TEACHER'S MANUAL



All 32 Ed-Blocs circuit boards are available as kits so teachers and students can build their real world design challenge solutions and actually use them. The kit info also helps students to understand the components that together achieve each block's unique function.



All Ed-Blocs are simulated and connect in software. Leads delete automatically when not connected to anything and to delete a block left mouse click on it and hit the delete button.

Frequently Asked Questions

What are Ed-Blocs™?

Ed-Blocs are a combination of 32 individually powered electronic building blocks, each with a unique and powerful function. They engage enquiring minds and have a supporting software that requires no school resources and no teacher time.

Are Ed-Blocs™ safe for student use?

Ed-Blocs have been designed for use by primary school students. They are safe, robust and effective at promoting self - logical thinking and team.

What age ranges are Ed-Blocs™ designed for?

The pre-assembled Ed-Blocs hardware is probably be of most benefit to “Middle Phase” students from around Year 4-6. Depending upon the outcomes that you are looking for, they could also benefit student's right up to Year 11 or 12 as the design and assembly notes for building electronics kits of duplicate Ed-Blocs™ are included on the website. So you can learn, design, simulate, prototype here.

What subject/curriculum are the Ed-Blocs™ suited to?

Ed-Blocs™ were designed and refined in Australian schools to suit a curriculum that encourages student design and creativity. This does not restrict them to this curriculum or geographic region. The blocks and activities support any curricula that promotes - team work, project based learning, creativity and design elements. It solidly meets a modern school early entry Technology syllabus and goes on to support any school offering secondary elective electronics.

How does the online software compliment the Ed-Blocs™?

The software has online learning modules which allow full software simulation of all the blocks. This allows for students to test their hypothesis “onscreen” prior to awaiting their turn to try it for real on the blocks. In this way the product use is extended beyond the classroom and to cater for larger classes.

Will there be additional activities and more curriculum mapping carried out?

Ed-Blocs™ is keen to develop and support the work of innovative, forward-thinking educators looking to inspire students to greater creativity and thinking. If schools are going to embrace the product then the development team will work with the schools to create materials suited to the school's program.

Where can I get more information about Ed-Blocs™?

Initially contact Peter Kuhle by email pgkpeter@gmail.com Peter can put you in touch with the person in your region who can best offer you the support that you need to inspire maximum creativity in your students.

Ed-blocs
"A tool for Design"
© ® trade name

Team Leader

Ed-blocs
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Team Leader

Ed-blocs
"A tool for Design"
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Data Recorder

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Data Recorder

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Card Reader

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Card Reader

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Handler

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Handler

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Handler Assistant

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Handler Assistant

Ed-blocs
"A tool for Design"
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Results Presenter
and Time Keeper

Ed-blocs
"A tool for Design"
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Results Presenter
and Time Keeper

ACTIVITY

Activity Name - Veg Patch Alert FEB 2010

Activity Description - In this activity you will continue the journey from “Five Simple Lessons” to build a Vegetable Patch Alert.

Note – for school's who have Ed-Blocs case one hardware, the website download section, has a special student work book and supporting teacher manual for the activity “Five Simple Lessons” to help get started.

Activity Difficulty Level - 3

LESSON 1

Lesson Name - Introducing the double adaptor.

Lesson Short Description - This lesson introduces the double adapter to our system which allows you to deter but also gives you a long term indication that someone lets say a rabbit has visited your vegetable garden.

Lesson Long Description - In this lesson you will use the Beam In/Out Ed-Blocs, the Siren, Light, Latch and Timer Ed-Blocs from all previous lessons and introduce a new device called a double adapter. Using the double adapter, with all the Ed-Blocs you have learned so far, you will be able set up a system which allows you to deter but also gives you a long term indication that someone lets say a rabbit has visited your vegetable garden.

Outcomes

TP 3.1, 4.1, 5.1

Students are taught the unique function of the device – *Double Adaptor*. Students are to investigate this and confirm its function. Students will continue to explore the Beam, Light and Siren Ed-blocs.

TP 3.3, 4.3, 5.3

Students are to incorporate the Ed-blocs into a design challenge they have been set. They are then to test their design and if wrong, investigate, fix and record why. Students must answer questions related to the Ed-blocs and the design challenge.

SYS 3.1, 4.1, 5.1

Students are to identify and explain the logic of the systems they are creating using the terms input, process and output.

INF 3.2, 4.2, 5.2

Students identify the advantages and disadvantages of particular systems and use this information to affect their design.

Overview

VEGETABLE PATCH ALAERT TEACHER'S MANUAL

Please use the "Suggested dot points for teachers" sheet for ways in which to introduce and allow students to investigate selected Ed-blocs.

Students are introduced to the *Double Adaptor* and investigate this device

Students answer questions related to the *Double Adaptor*

Students investigate the design challenge – *To create a neighbourhood friendly alarm that will scare intruders and give a long term indication*

Students answer questions related to the design challenge.

Lesson

Double Adaptor

Introduce the *Double Adaptor*.

The Double Adapter device is a piece of equipment that allows an output to make two outputs, it is not a Ed-Bloc.

Double adaptors are used on the output end only.

The double adaptor is automatically generated when two leads try to connect to one output.

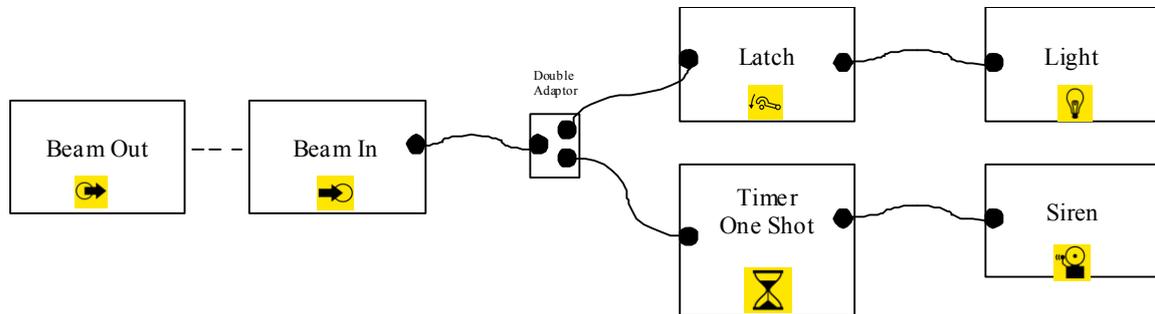
To delete a double adaptor drag it away from being connected to an output, drag leads off so it is not connected to anything and it self destructs.

Double Adaptor student questions

1. How many outputs does the double adaptor have? **2**
2. What does the double adaptor allow the system to do? **Gives you two outputs from one output.**
3. Can a double adaptor be use on inputs? **No, double adaptors are used on the output end only. To bring two different circuits into one input you use a process Ed-Bloc. eg. logic gate say an OR gate.**
4. Is the double adaptor an Ed-Bloc? **No**
5. How do I create a double adaptor in the software? **The double adaptor is automatically generated when two leads try to connect to one output.**
6. How do I delete a double adaptor in the software? **To delete a double adaptor drag it away from being connected to an output, drag leads off so it is not connected to anything and it self destructs.**

VEGETABLE PATCH ALAERT TEACHER'S MANUAL

Design Challenge: To create a Vegetable Patch Alert that will scare rabbits, be neighbourhood friendly and give a long term indication.



Lesson extension - Ask students to design a system that allows them to know an object has been moved in their absence and deter intruders whilst being neighbourhood friendly. Have them discuss what could be a real life use for this design. Add an **"Inverter"** after **"Beam In"** but before **"double adaptor"**.

Design Challenge questions

Question No - 1

Question Text - Why do we need a Timer / Siren combination?

Learning Outcome - 2

Answer Type - Multiple Choice

Answer Text - To let us know when we come home our system was activated and at the same time does annoy the neighbours.

Answer Text - (correct) To deter the rabbit and lets you know your system is being activated now, but at the same time not upset the neighbours by the siren going a long time.

Question No - 2

Question Text - Why do we need a Latch / Light combination?

Learning Outcome - 2

Answer Type - Multiple Choice

Answer Text - (correct) To let us know when we come home our system was activated and at the same time does annoy the neighbours.

Answer Text - Deters the rabbit and lets us know our system is being activated now.

Question No - 3

Question Text - If your away and the system was activated when the rabbit ran in to the garden would you system sound the siren again if later he ran out of the garden?

Learning Outcome - 8

Answer Type - Multiple Choice

Answer Text - no

Answer Text - (correct) Yes

Question No - 4

Question Text - If you were away and come home and saw the light Ed-Bloc activated. How many times has your system been activated?

Learning Outcome - 2

Answer Type - Multiple Choice

VEGETABLE PATCH ALAERT TEACHER'S MANUAL

Answer Text - 2

Answer Text - 5

Answer Text - (correct) at least once.

Answer Text - 10

Question No - 5

Question Text - How many leads were used to create this system in the software?

Learning Outcome - 4

Answer Type - Multiple Choice

Answer Text - 3

Answer Text - 5

Answer Text - (correct) 4

Answer Text - 6

Question No - 6

Question Text - Describe your design and where would you use it.

Answer Type - Written

LESSON 2

Lesson Name - Introducing the Counter Ed-Bloc.

Lesson Short Description - This lesson introduces the Counter Ed-Bloc to our system which allows you to count the number of times the rabbit went through the gate.

Lesson Long Description - In this lesson you will use the Beam In/Out Ed-Blocs, the Siren and Timer Ed-Blocs from all previous lessons and introduce a new output Ed-Bloc called the Counter. Using the Counter Ed-Bloc, with all the Ed-Blocs you have learned so far, you will be able to set up a system on a vegetable garden entrance to count and deter a rabbit.

Outcomes

TP 3.1, 4.1, 5.1

Students are taught the unique function of the Ed-Blocs - Counter. Students are to investigate this and confirm its function. Students will continue to explore the Beam, Siren and Timer Ed-blocs.

TP 3.3, 4.3, 5.3

Students are to incorporate the Ed-blocs into a design challenge they have been set. They are then to test their design and if wrong, investigate, fix and record why. Students must answer questions related to the Ed-blocs and the design challenge.

SYS 3.1, 4.1, 5.1

Students are to identify and explain the logic of the systems they are creating using the terms input, process and output.

INF 3.2, 4.2, 5.2

Students identify the advantages and disadvantages of particular systems and use this information to affect their design.

Overview

Please use the "Suggested dot points for teachers" sheet for ways in which to introduce and allow students to investigate selected Ed-blocs.

Students are introduced to the Counter Ed-Bloc and investigate this device

Students answer questions related to the Counter Ed-Bloc

Students investigate the design challenge – *To count the number of times their system is activated while away.*

Students answer questions related to the design challenge.

VEGETABLE PATCH ALAERT TEACHER'S MANUAL

Counter Ed-Bloc

Introduce the *Counter Ed-Bloc*. The *Counter Ed-Bloc* counts the number of times the input changes. The *Counter Ed-Bloc* registers on the “edge” of the change (pulse).

Counter Ed-Bloc student questions

Question Text - What is the symbol for the Counter Ed-Bloc?

Learning Outcome - 5

Answer Type - Multiple Choice



Answer Text - (correct)

Question No - 2

Question Text - Is the Counter Ed-Bloc an input, process or output Ed-Bloc?

Learning Outcome - 6

Answer Type - Multiple Choice

Answer Text - (correct) output

Answer Text - process

Answer Text - input

Question No - 3

Question Text - If the Counter Ed-Bloc is an output bloc, why does it still need an output socket?

Learning Outcome - 1

Answer Type - Multiple Choice

Answer Text - (correct) To send the signal it reached it's final count. (signal only there briefly).

Answer Text - It is another input for the counter

Answer Text - To reset the counter

Question No - 4

Question Text - What happens when you use the 10 switch?

Learning Outcome - 1

Answer Type - Multiple Choice

Answer Text - (correct) It allows the counter to count to 10, you only see 9.

Answer Text - It allows the counter to count to 10, you only see 5.

Answer Text - It allows the counter to count to 6, you only see 9.

Question No - 5

Question Text - What happens when you use the 6 switch?

Learning Outcome - 1

Answer Type - Multiple Choice

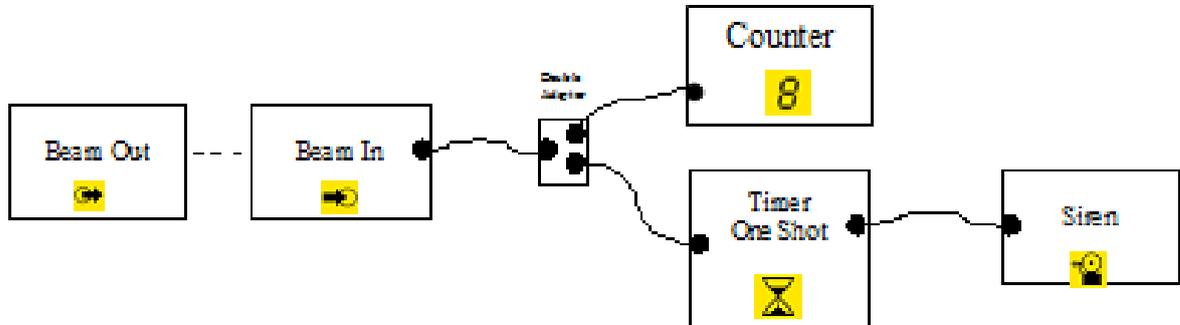
Answer Text - (correct) It allows the counter to count to 6, you only see 5.

Answer Text - It allows the counter to count to 5, you only see 4.

Answer Text - It allows the counter to count to 10, you only see 9.

VEGETABLE PATCH ALAERT TEACHER'S MANUAL

Design Challenge: – To count the number of times their system is activated while away.



Design Challenge questions

Question No - 1

Question Text - If you were away and come home would you know how many times your system has been activated?

Learning Outcome - 2

Answer Type - Multiple Choice

Answer Text - No

Answer Text - (correct) Yes

Question No - 2

Question Text - Would your system protect your vegetable patch if the rabbit dug under the fence?

Learning Outcome - 3

Answer Type - Multiple Choice

Answer Text - (correct) No

Answer Text - Yes

LESSON 3

Lesson Name - More effective detection system – more sensors.

Lesson Short Description - This lesson introduces the OR and Motion Detector Ed-Blocs to your system to make it more effective at detection.

Lesson Long Description - In this lesson you will use the Beam In/Out Ed-Blocs, the Siren, Light, Latch and Timer Ed-Blocs, the double adapter and introduce an OR and Motion Detector Ed-Bloc. Using these new Ed-Blocs in your system you will be able to deter a rabbit entering the vegetable patch from any direction, but not be a neighbourhood nuisance, and have a long term indication.

Outcomes

TP 3.1, 4.1, 5.1

Students are taught the unique function and identifying symbols of the input Ed-Bloc Motion Detector and process Ed-bloc OR. Students are to investigate these Ed-blocs and confirm its function. Students will continue to explore the Beam, Double adaptor, Siren, Light, Timer and Latch Ed-blocs.

TP 3.3, 4.3, 5.3

Students are to incorporate the Ed-blocs into a design challenge they have been set. They are then to test their design and if wrong, investigate, fix and record why. Students must answer questions related to the Ed-blocs and the design challenge.

SYS 3.1, 4.1, 5.1

Students are to identify and explain the logic of the systems they are creating using the terms input, process and output.

INF 3.2, 4.2, 5.2

Students identify the advantages and disadvantages of particular systems and use this information to affect their design.

Overview

Please use the “Suggested dot points for teachers” sheet for ways in which to introduce and allow students to investigate selected Ed-blocs.

Students are introduced to the input Ed-bloc – *Motion Detector* and investigate this Ed-bloc.

Students answer questions related to the *Motion Detector* Ed-bloc.

Students are introduced to the process Ed-bloc – *OR* and investigate this Ed-bloc.

Students answer questions related to the *OR* Ed-bloc.

Students investigate the design challenge – To create a neighbourhood friendly alarm that will scare intruders and give a long term indication. The alarm needs to be able to deter a rabbit entering the vegetable patch from any direction

Students answer questions related to the design challenge.

Lesson

Motion Detector Ed-bloc

Introduce the *Motion Detector Ed-bloc*. The Motion Detector is an input Ed-Bloc that is at the start of a system. This Ed-Bloc is a movement detector and it does this by monitoring the temperature of the room. When a person moves between the sensor and the wall it was monitoring the temperature of the motion detector instantly sees the person's higher body temperature and activates. It looks for the sudden change in temperature either colder or hotter.

Motion Detector Ed-bloc student questions

Question No - 1

Question Text - What is the symbol for the Motion Detector Ed-Bloc?

Learning Outcome - 5

Answer Type - Multiple Choice

Answer Text - (correct) 

Question No - 2

Question Text - What does the Motion Detector detect?

Learning Outcome - 1

Answer Type - Multiple Choice

Answer Text - temperature

Answer Text - light

Answer Text - sound

Answer Text - (correct) movement by seeing a change in heat. It monitors say the heat of a wall and when someone (different temperature) walks between the sensor and that wall it detects a change in temperature and alarms.

Question No - 3

Question Text - What would be a disadvantage of this motion detector?

Learning Outcome - 3

Answer Type - Multiple Choice

Answer Text - (correct) Any sudden change in temperature like the sun breaking through the clouds and quickly changing the wall temperature, would give a false alarm for our system.

Answer Text - night time

Answer Text - winter

VEGETABLE PATCH ALAERT TEACHER'S MANUAL

OR Ed-bloc

Introduce the *OR Ed-bloc*. The *OR Ed-Bloc* is a process Ed-Bloc that is in the middle of a system. If one or both (any) of the inputs are activated then the output will be activated eg. Input A OR Input B will activate it.

OR	B off	B on
A off		
A on		

OR Ed-bloc student questions

Question No - 1

Question Text - What is the symbol for the OR Ed-Bloc?

Learning Outcome - 5

Answer Type - Multiple Choice

Answer Text - (correct) 

Question No - 2

Question Text - How many inputs does the OR Ed-Bloc have?

Learning Outcome - 1

Answer Type - Multiple Choice

Answer Text - 1

Answer Text - (correct) 2

Answer Text - 3

Answer Text - 4

Question No - 3

Question Text - How many inputs must be activated to activate the output?

Learning Outcome - 1

Answer Type - Multiple Choice

Answer Text - 4

Answer Text - 3

Answer Text - 2

Answer Text - (correct) 1

Question No - 4

Question Text - Why is this Ed-Bloc called the OR Ed-Bloc?

Learning Outcome - 1

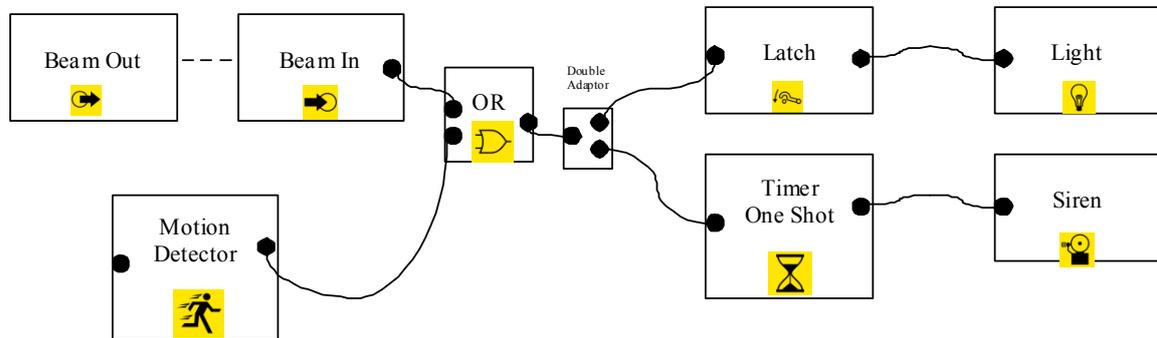
Answer Type - Multiple Choice

Answer Text - As both input A and input B are required to activate it.

Answer Text - (correct) As either or both input A OR input B will activate it.

VEGETABLE PATCH ALAERT TEACHER'S MANUAL

Design Challenge: Be able to deter a rabbit entering the vegetable patch from any direction.



Ask students to design a system that allows them be able to deter a rabbit entering the vegetable patch from any direction Have them discuss what could be a real life use for this design.

Design Challenge questions

Question No - 1

Question Text - Which Ed-Bloc can detect a rabbit moving around the vegetables.

Learning Outcome - 8

Answer Type - Multiple Choice

Answer Text - Beam In/Out

Answer Text - Siren

Answer Text - (correct) Motion Detector

Answer Text - OR

Question No - 2

Question Text - What would happen if a strong wind come along?

Learning Outcome - 3

Answer Type - Multiple Choice

Answer Text - It would help as rabbits don't like the wind.

Answer Text - (correct) Vegetable plants could move activating the motion detector causing a false alarm. (The plants will be at a different temperature to the ground). Therefore the motion detector will only be used in the green house as it is protected from the wind and has shade cloth on the roof to stop the sun producing sudden temperature changes.

Answer Text - Maybe it will rain soon.

Question No - 3

Question Text - What are the input Ed-Blocs in this design?

Learning Outcome - 6

Answer Type - Multiple Choice

Answer Text - Latch and Light Ed-Blocs

Answer Text - Timer and Siren Ed-Blocs

Answer Text - OR and Motion Detector Ed-Blocs

Answer Text - (correct) Motion and Beam In/Out Ed-Blocs

VEGETABLE PATCH ALAERT TEACHER'S MANUAL

Question No - 4

Question Text - What are the output Ed-Blocs in this design?

Learning Outcome - 6

Answer Type - Multiple Choice

Answer Text - Latch and Light Ed-Blocs

Answer Text - Timer and Siren Ed-Blocs

Answer Text - (correct) Siren and Light Ed-Blocs

Answer Text - Motion and Beam In/Out Ed-Blocs

Question No - 5

Question Text - What are the process Ed-Blocs in this design?

Learning Outcome - 6

Answer Type - Multiple Choice

Answer Text - (correct) OR, Latch and Timer Ed-Blocs.

Answer Text - Timer, OR and Siren Ed-Blocs

Answer Text - Latch, OR and Light Ed-Blocs

Answer Text - OR, Motion and Beam In/Out Ed-Blocs

Question No - 6

Question Text - How many leads were used to create this system on the software?

Learning Outcome - 4

Answer Type - Multiple Choice

Answer Text - (correct) 6

Answer Text - 7

Answer Text - 5

Answer Text - 4

Question No - 7

Question Text - What would be a reason to use the Latch / Light instead of a counter?

Learning Outcome - 2

Answer Type - Multiple Choice

Answer Text - Both do same job so it doesn't matter.

Answer Text - The counter has no use in this design.

Answer Text - (correct) A big outside light could be seen from a distance.

Question No - 8

Question Text - Could we have a counter and a Latch / Light?

Learning Outcome - 3

Answer Type - Multiple Choice

Answer Text - No

Answer Text - (correct) Yes, but need another double adaptor.

Question No - 9

Question Text - Describe your design with both a Latch/Light and Counter.

Answer Type - Written

LESSON 4

Lesson Name - To control the flow of information.

Lesson Short Description - This lesson introduces the AND, Pulse and Keypad Ed-Blocs to learn how to 'mute' the siren while you work in your vegetable garden.

Lesson Long Description - In this lesson you will use the Pulse, AND, Siren and Keypad Ed-Blocs. Using these three new Ed-Blocs in a system you will be able control the flow of information to 'mute' your alert

Outcomes

TP 3.1, 4.1, 5.1

Students are taught the unique function and identifying symbols of the input Ed-blocs the Pulse & Keypad and the process Ed-bloc AND. Students are to investigate these Ed-blocs and confirm their function. Students will continue to explore the Siren Ed-bloc.

TP 3.3, 4.3, 5.3

Students are to incorporate the Ed-blocs into a design challenge they have been set. They are then to test their design and if wrong, investigate, fix and record why. Students must answer questions related to the Ed-blocs and the design challenge.

SYS 3.1, 4.1, 5.1

Students are to identify and explain the logic of the systems they are creating using the terms input, process and output.

INF 3.2, 4.2, 5.2

Students identify the advantages and disadvantages of particular systems and use this information to affect their design.

Overview

Please use the "Suggested dot points for teachers" sheet for ways in which to introduce and allow students to investigate selected Ed-blocs.

Students are introduced to the input Ed-bloc – *Pulse* and investigate this Ed-bloc.

Students answer questions related to the *Pulse* Ed-bloc.

Students are introduced to the input Ed-bloc – *Keypad* and investigate this Ed-bloc.

Students answer questions related to the *Keypad* Ed-bloc.

Students are introduced to the process Ed-bloc – *AND* and investigate this Ed-bloc.

Students answer questions related to the *AND* Ed-bloc.

Students investigate the design challenge – To mute the siren.

Students answer questions related to the design challenge.

Lesson

Pulse Ed-bloc

Introduce the *Pulse Ed-bloc* The *Pulse Ed-Bloc* is an input bloc that produces a regular series of on, then off pulses at one-second intervals. The pattern is on for 0.5 second, then off for 0.5 second.

Pulse Ed-bloc student questions

Question No - 1

Question Text - What is the symbol for the Pulse Ed-Bloc?

Learning Outcome - 5

Answer Type - Multiple Choice

Answer Text - (correct)



Question No - 2

Question Text - Is the Pulse Ed-Bloc an input, process or output Ed-Bloc?

Learning Outcome - 6

Answer Type - Multiple Choice

Answer Text - process

Answer Text - output

Answer Text - (correct) input

Question No - 3

Question Text - What does the Pulse Ed-Bloc do?

Learning Outcome - 1

Answer Type - Multiple Choice

Answer Text - pulse randomly

Answer Text - pulse irregularly

Answer Text - (correct) pulse regularly

Answer Text - pulse occasionally

Question No - 4

Question Text - How regularly does it pulse?

Learning Outcome - 1

Answer Type - Multiple Choice

Answer Text - every minute

Answer Text - (correct) every second

Answer Text - every two seconds

Answer Text - every three seconds

VEGETABLE PATCH ALAERT TEACHER'S MANUAL

Keypad Ed-bloc

Introduce the *Keypad Ed-bloc* The Keypad is an input Ed-Bloc that is at the start of a system. The keypad is a pad with numbers 0-9. It allows a pin number to be entered to activate it or deactivate it. It has a set code of 1234.

Keypad Ed-bloc student questions

Question No - 1

Question Text - What is the symbol for the Keypad Ed-Bloc?

Learning Outcome - 5

Answer Type - Multiple Choice

Answer Text - (correct) 

Question No - 2

Question Text - How is the Keypad activated?

Learning Outcome - 1

Answer Type - Multiple Choice

Answer Text - pressing 4321

Answer Text - pressing 2345

Answer Text - (correct) pressing 1234

Question No - 3

Question Text - How do we deactivate the Keypad Ed-Bloc?

Learning Outcome - 1

Answer Type - Multiple Choice

Answer Text - pressing 4321

Answer Text - pressing 2345

Answer Text - (correct) pressing 1234

Question No - 4

Question Text - Is the Ed-Bloc Keypad a input, process or output?

Learning Outcome - 6

Answer Type - Multiple Choice

Answer Text - (correct) input

Answer Text - output

Answer Text - process

Question No - 5

Question Text - What is an advantage of a keypad?

Learning Outcome - 3

Answer Type - Multiple Choice

Answer Text - (correct) you don't have to carry a key just remember it.

Answer Text - You could forget the code.

Answer Text - Someone could see you type in the numbers.

Question No - 6

Question Text - How do we know the keypad is activated?

Learning Outcome - 1

Answer Type - Multiple Choice

Answer Text - (correct) Both other answers.

Answer Text - it makes a noise at the end.

Answer Text - the red light is on.

VEGETABLE PATCH ALAERT TEACHER'S MANUAL

AND Ed-bloc

Introduce the *AND Ed-bloc* The AND Ed-Bloc is a process Ed-Bloc that is in the middle of a system. You need all inputs to be activated to activate the output of an AND Ed-Bloc e.g. Input A **AND** Input B need to be activated.

AND	B off	B on
A off		
A on		

AND Ed-bloc student questions

Question No - 1

Question Text - What is the symbol for the AND Ed-Bloc?

Learning Outcome - 5

Answer Type - Multiple Choice

Answer Text - (correct) 

Question No - 2

Question Text - Is the AND Ed-Bloc an input, process or output?

Learning Outcome - 6

Answer Type - Multiple Choice

Answer Text - input

Answer Text - output

Answer Text - (correct) process

Question No - 3

Question Text - How is the AND Ed-Bloc activated?

Learning Outcome - 1

Answer Type - Multiple Choice

Answer Text - By only one input being activated

Answer Text - (correct) By all inputs being activated at same time

Answer Text - By no inputs being activated

Question No - 4

Question Text - Can the AND Ed-Bloc be activated with only one input?

Learning Outcome - 1

Answer Type - Multiple Choice

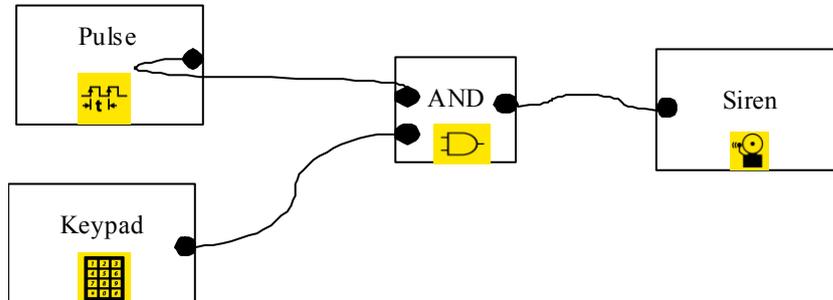
Answer Text - Yes

Answer Text - (correct) No

VEGETABLE PATCH ALAERT TEACHER'S MANUAL

Design Challenge: To control the flow of information.

Design Challenge Description - Design a system to control the flow of information to mute the siren when you are working in the vegetable patch.



Design Challenge questions

Question No - 1

Question Text - When would you need to control the information flow?

Learning Outcome - 2

Answer Type - Multiple Choice

Answer Text - (correct) When we are not interested in the state of a sensor as another processes is happening (modern computer information control and processing)

Answer Text - It wouldn't matter that your alert was going off when you worked in your garden.

Question No - 2

Question Text - Could someone stand at the keypad, have as many attempts as needed to finally guess the code, and stop the flow of information?

Learning Outcome - 3

Answer Type - Multiple Choice

Answer Text - (correct) yes

Answer Text - no

LESSON 5

Lesson Name - Keypad Watch

Lesson Short Description - How can we stop a person from standing at the keypad and have as much time as needed to guess the code and turn the system off?

Lesson Long Description - Using the following Ed-Blocs: Beam In, Beam Out, Motion Detector, Keypad, And, OR and Siren you need to stop a person from being able to stand and having multiple attempts at guessing the keypad code and being able to turn the Vegetable Patch Alert off.

Outcomes

TP 3.1, 4.1, 5.1

Students will continue to explore Ed-blocs they have learnt in previous lessons.

TP 3.3, 4.3, 5.3

Students are to incorporate the Ed-blocs into a design challenge they have been set. They are then to test their design and if wrong, investigate, fix and record why. Students must answer questions related to the Ed-blocs and the design challenge.

SYS 3.1, 4.1, 5.1

Students are to identify and explain the logic of the systems they are creating using the terms input, process and output.

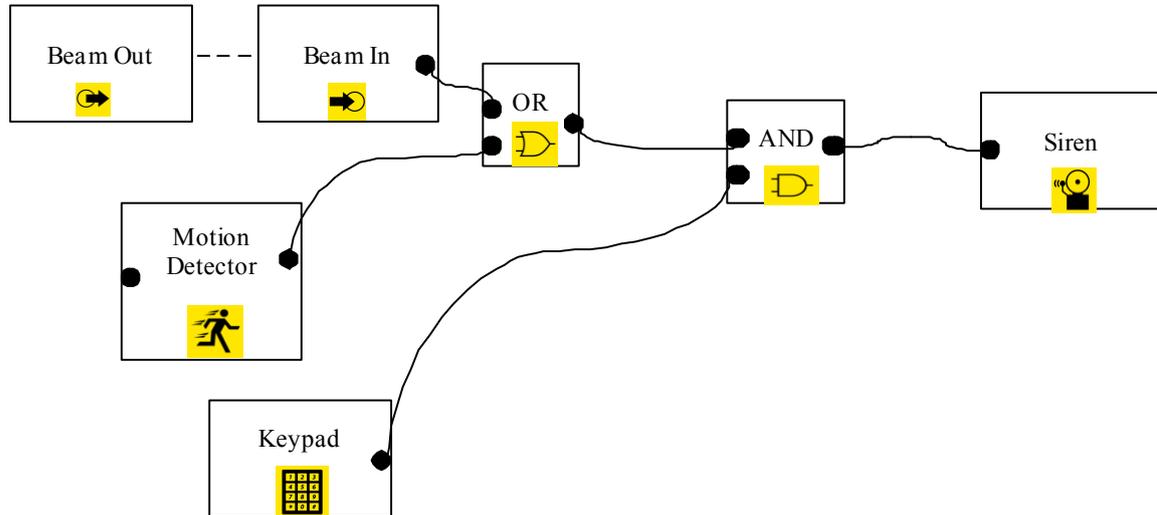
INF 3.2, 4.2, 5.2

Students identify the advantages and disadvantages of particular systems and use this information to affect their design.

VEGETABLE PATCH ALAERT TEACHER'S MANUAL

Design Challenge Name - Keypad Watch

Design Challenge Description - How can we stop someone from standing at the keypad and have as much time as needed to guess the code and turn the system off?



Design Challenge questions

Question No - 1

Question Text - How did you protect the keypad? By monitoring the keypad area with the....

Learning Outcome - 8

Answer Type - Multiple Choice

Answer Text - OR Ed-Bloc

Answer Text - Siren Ed-Bloc

Answer Text - (correct) Motion Detector Ed-Bloc.

Question No - 2

Question Text - Can you enter the keypad code so that the alert does go off at all?

Learning Outcome - 3

Answer Type - Multiple Choice

Answer Text - Yes

Answer Text - (correct) No, I will have to pass through the motion detector's area to reach the keypad, the alert will go off straight away when I have entered all four digits then it will deactivate.

Question No - 3

Question Text - Can you activate your system by entering the keypad code and leave before the system activates?

Learning Outcome - 3

Answer Type - Multiple Choice

Answer Text - Yes

Answer Text - (correct) No, I will have to be in the motion detector's area to enter the pin number in to the keypad, the alert will go off straight away when I move to leave.

LESSON 6

Lesson Name - Delay Entry using feedback to capture, delay, then release.

Lesson Short Description - How can we delay the Vegetable Patch Alert activating to give us time to enter the keypad code to deactivate the system?

Lesson Long Description - Your challenge is to develop your system so you can get in and turn the Vegetable Patch Alert off if before the siren is activated.

Outcomes

TP 3.1, 4.1, 5.1

Students will continue to explore Ed-blocs they have learnt in previous lessons.

TP 3.3, 4.3, 5.3

Students are to incorporate the Ed-blocs into a design challenge they have been set. They are then to test their design and if wrong, investigate, fix and record why. Students must answer questions related to the Ed-blocs and the design challenge.

SYS 3.1, 4.1, 5.1

Students are to identify and explain the logic of the systems they are creating using the terms input, process and output.

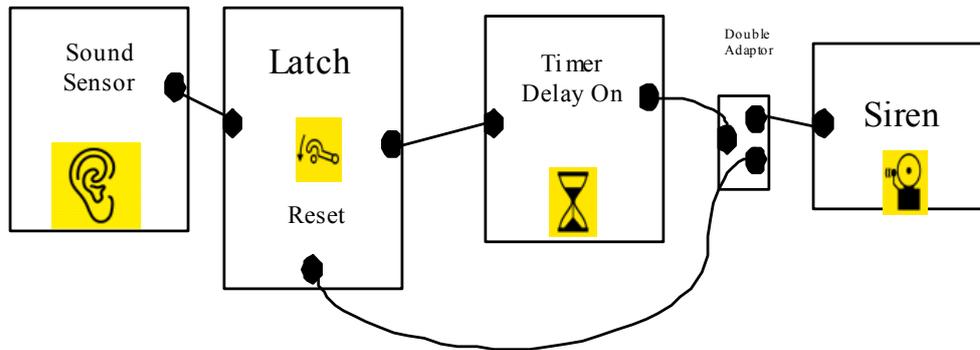
INF 3.2, 4.2, 5.2

Students identify the advantages and disadvantages of particular systems and use this information to affect their design.

VEGETABLE PATCH ALAERT TEACHER'S MANUAL

Design Challenge Name - Delay Entry using feedback to capture, delay, then release.

Design Challenge Description - Using a Latch to capture information, for example when the sound sensor is activated, delay the information flow with a Timer (delay on mode), then release and pass on the information with feedback from the Timer's output to the Latch reset input. Siren connected also to the Timer's output with a double adaptor.



Design Challenge questions

Question No - 1

Question Text - What is the Latch Ed-Bloc doing in this design?

Learning Outcome - 8

Answer Type - Multiple Choice

Answer Text - Delays the flow of information

Answer Text - Stops the flow of information

Answer Text - (correct) Captures and holds information until reset by Timer

Question No - 2

Question Text - What is the Timer Ed-Bloc doing in this design?

Learning Outcome - 8

Answer Type - Multiple Choice

Answer Text - Captures and holds information until reset by Latch

Answer Text - Stops the flow of information

Answer Text - (correct) Delays the flow of information

Question No - 3

Question Text - Are there more leads or Ed-Blocs in this design on the software?

Learning Outcome - 4

Answer Type - Multiple Choice

Answer Text - Ed blocs

Answer Text - Leads

Answer Text - (correct) the same

Question No - 4

Question Text - Where is the electrical feedback from and to where?

Learning Outcome - 9

Answer Type - Multiple Choice

Answer Text - Latch to the Timer

Answer Text - Siren to sensor

Answer Text - (correct) Timer output to Latch reset input

VEGETABLE PATCH ALAERT TEACHER'S MANUAL

Question No - 5

Question Text - Where is the audio feedback from and to where?

Learning Outcome - 9

Answer Type - Multiple Choice

Answer Text - Timer output to Latch reset input

Answer Text - Latch to the Timer

Answer Text - (correct) Siren to Sound Sensor

LESSON 7

Lesson Name - Delay Exit – Stop the flow of information for a given time.

Lesson Short Description - You need to construct a Vegetable Patch Alert that allows you to exit before your system becomes activate.

Lesson Long Description - In this lesson your challenge is to develop a system to allow you to exit the vegetable patch before your system becomes activate. We will keep the system simple by using just one sensor the Motion detector and just the Siren. Your focus is to do the middle processing bit using the Keypad, Timer (delay off mode) and AND Ed-Blocs.

Outcomes

TP 3.1, 4.1, 5.1

Students will continue to explore Ed-blocs they have learnt in previous lessons.

TP 3.3, 4.3, 5.3

Students are to incorporate the Ed-blocs into a design challenge they have been set. They are then to test their design and if wrong, investigate, fix and record why. Students must answer questions related to the Ed-blocs and the design challenge.

SYS 3.1, 4.1, 5.1

Students are to identify and explain the logic of the systems they are creating using the terms input, process and output.

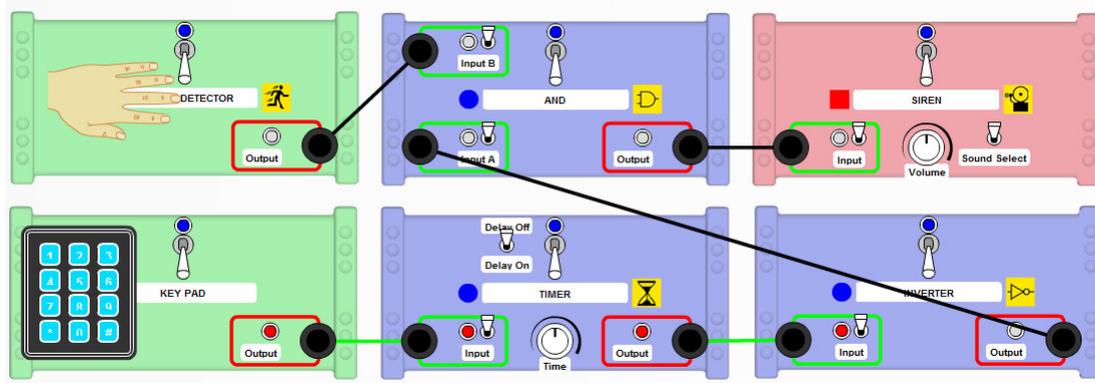
INF 3.2, 4.2, 5.2

Students identify the advantages and disadvantages of particular systems and use this information to affect their design.

VEGETABLE PATCH ALAERT TEACHER'S MANUAL

Design Challenge Name - Delay Exit – Stop the flow of information for a given time.

Design Challenge Description - You need to construct a Vegetable Patch Alert that allows you to activate the alert and leave without it sounding.



Design Challenge questions

Question No - 1

Question Text - What is the need for the delay timer?

Learning Outcome - 8

Answer Type - Multiple Choice

Answer Text - (correct) Provides a delay to exit before the system activates by delaying the flow of information from the keypad.

Answer Text - Provides a delay to exit before the system activates by stopping the flow of information from the keypad.

Question No - 2

Question Text - Is the Keypad activated when the system is deactivated?

Learning Outcome - 8

Answer Type - Multiple Choice

Answer Text - (correct) yes

Answer Text - no

LESSON 8

Lesson Name - Adding more sensors

Lesson Short Description - So now let's build a complete vegetable patch alert with all the features we need. Let's even add some more sensors.

Lesson Long Description - This lesson will allow you to explore the possibilities of adding new input sensor to your system. To add more sensors just use an OR Ed-Bloc. The green house that houses the keypad needs a sensor to detect if someone broke one of it's glass panels, the Sound Sensor detects breaking glass.

Outcomes

TP 3.1, 4.1, 5.1

Students will continue to explore Ed-blocs they have learnt in previous lessons.

TP 3.3, 4.3, 5.3

Students are to incorporate the Ed-blocs into a design challenge they have been set. They are then to test their design and if wrong, investigate, fix and record why. Students must answer questions related to the Ed-blocs and the design challenge.

SYS 3.1, 4.1, 5.1

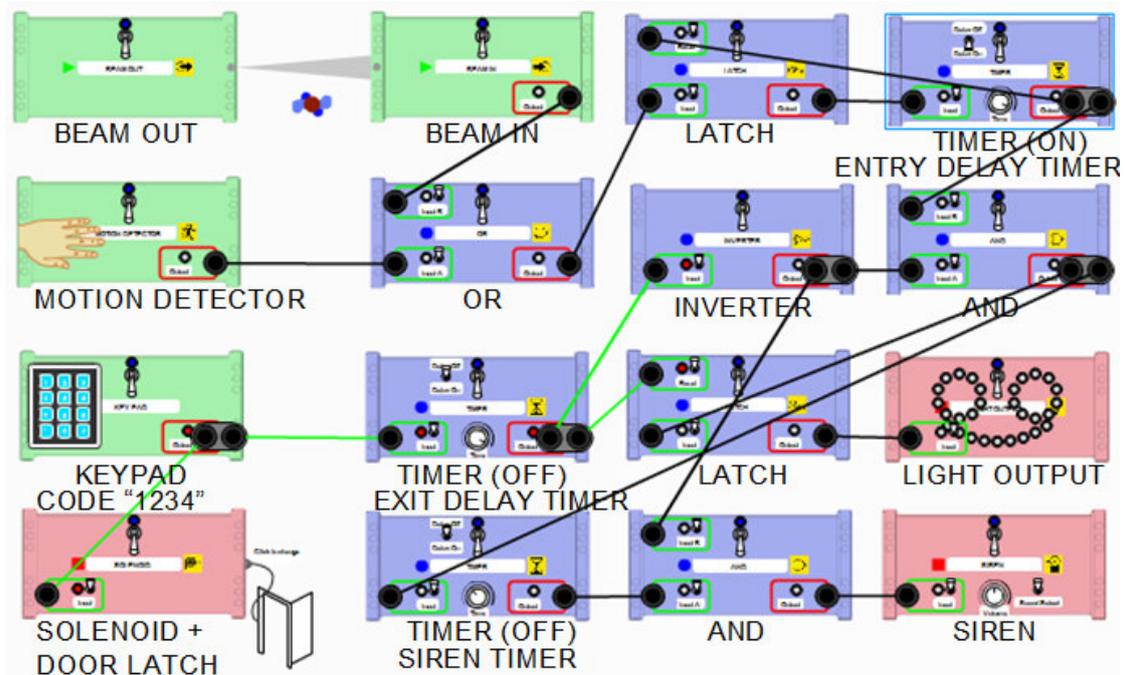
Students are to identify and explain the logic of the systems they are creating using the terms input, process and output.

INF 3.2, 4.2, 5.2

Students identify the advantages and disadvantages of particular systems and use this information to affect their design.

Design Challenge Name - Adding another input sensor

Design Challenge Description - So now let's build a complete vegetable patch alert with all the features we need. Let's even add some more sensors. The green house that houses the keypad needs a sensor to detect if someone broke one of it's glass panels



Design Challenge questions

Question No – 1

Question Text - State the name of each Ed-Bloc or Ed-Blocs combinations and describe the feature and purpose it gives your design.

Lesson extension - try adding the "Solenoid - Door Lock".

Lesson extension - make the Light and Siren immediately reset when Keypad deactivates the system. Maybe you forgot to deactivate the system when you started work in your vegetable garden.

Use the "PrtSc" button on your computer keypad to copy what is on your computer screen, then open a document like Microsoft "Powerpoint" and PASTE it in to show your teacher.