

## STEAM Trail

**Class Level:** 1<sup>st</sup> and 2<sup>nd</sup>

This document presents a range of activities and associated resources that could be used for a STEAM trail on the school grounds. Teachers are free to choose the sections from this document that they wish to complete with their class. The child can think about and discuss the answers, draw or write the answers or record their responses using digital technology.

### **Before leaving the classroom**

#### Mystery objects/ Photo orienteering

Before embarking on the STEAM trail, the teacher can ignite pupil curiosity by displaying a range of mystery images. These mystery images can depict close-ups of items, objects or locations on the school grounds taken by the teacher in preparation for the trail. The images can be used to generate discussion as well as developing pupils' skills of observing and predicting whereby pupils examine the close-ups, describe what they see and make predictions about where on the school grounds the images were taken.

Once the class are outdoors, the teacher can encourage pupils to use their observing eyes and record where they think the images were taken by taking notes, making a sketch or drawing a map. At the end of the trail, when the class return indoors, the pupils will present their thoughts on the locations of the mystery images and communicate their reasoning.



## Have you got STEM Eyes?



Go to a destination with a view of the school building and encourage pupils to use their STEM eyes through the use of some of the following suggested questions:

- What shapes can you see?
- How many different colours can you see? Is there a pattern? Explain your answer.
- Estimate how many windows there are on the school building. Check your answer.
- Estimate how many doors open out onto the yard? Check your answer.
- How many corners are there on the school building?
- Did you find any odd/even numbers?
- Does the building have any straight lines or curved lines?
- Can you find any examples of symmetry?
- Are there any windows that are longer/shorter than the rest?
- What materials can you see on the school building? Do the materials feel cold or warm? Rough/smooth? Soft/hard?
- Are the materials waterproof? How do you know?
- Are any of the materials recyclable?
- Can you see any pipes or drains? Count and record how many drains and pipes you can see.
- What materials are the drains and pipes made from? What are they used for?
- What kind of workers were needed to construct this building?
- If you were to make any changes to the building what would they be? Why?

### Estimating and Measuring

In this activity, pupils will be estimating, comparing, measuring and recording lengths on the school grounds using different non-standard units of measurement. Some suitable non-standard units of measurement might include giant steps, jumps and toe-to-heel steps. A sample template for this is provided below.

	From the school gate to the front door	From _____ to _____	From _____ to _____	From _____ to _____
Giant steps	Estimate: Result:	Estimate: Result:	Estimate: Result:	Estimate: Result:
Jumps	Estimate: Result:	Estimate: Result:	Estimate: Result:	Estimate: Result:
Toe-to-heel steps	Estimate: Result:	Estimate: Result:	Estimate: Result:	Estimate: Result:

### Stop and Solve: Listen Up!

This activity is called Listen Up and was featured in STEM Smaointe (see <https://www.pdst.ie/primary/STEM>), an e-bulletin published by PDST Primary STEM team to support teaching and learning in STEM. In this activity, pupils are encouraged to recognise and identify a variety of sounds in their environment. Invite pupils to go on a sound walk, recording the sounds they hear by drawing pictures of the source of the sound and then classifying the sounds as loud or soft.

For an extension of this activity, pupils could also observe, identify, classify and record the sounds they hear in the classroom. A sample recording template for both the outdoor and indoor activities can be found here:

<https://pdst.ie/sites/default/files/1st%20and%202nd%20Class%20-%20Listen%20Up.pdf>

### Observing and Recording: Leaves, Trees and Plants

The following website has some really useful spotting sheets, identification sheets and scavenger hunts that pupils can use when exploring leaves, trees and plants in the local environment: [http://www.treetoolsforschools.org.uk/activitymenu/?cat=tree\\_ticksheets](http://www.treetoolsforschools.org.uk/activitymenu/?cat=tree_ticksheets)

The teacher can choose the appropriate resource depending on the season. In the month of September for example, pupils could use the Autumn Scavenger Hunt page and record how many times they found different items such as a leaf with teeth or tough shiny evergreen leaves. This information could then be used as a follow-up back in the classroom to explore the Mathematics strand of Data.

Some suggested questions:

- Using your leaf and twig identification sheets, what type of tree do you think this is?
- Describe the bark/buds/leaves/flowers.
- What colours do you see on the tree?
- Are the branches rough or smooth?
- Is this a good tree for birds to live in? Why/Why not?
- What shape is the tree? Why do you think the tree is this shape?

Extension: Pupils could keep a tree journal to observe and record the growth of a tree over time. The following task card, created by the PDST Primary STEM team for a webinar on STEM and the Garden, provides some useful prompts for recording observations on trees:

<https://pdst.ie/sites/default/files/Tree%20Jounal%20Task%20Card.JPG>

### Creative/Open-ended activity

"Beginning the leaf man project" by MRCPLChildrens is licensed under CC BY-SA 2.0

Stimulus: The Leaf Man by Lois Ehlert

This story follows a group of autumn leaves as they are blown by the wind over fields, past orchards and across lakes and rivers. The leaves start out in the shape of a man and take on different configurations as they travel. For this activity, encourage pupils to gather different materials such as twigs, stones and leaves, creating their own illustrations on the ground.

The teacher can choose to take photos to record the pupils' creations.



### **Back in the Class: Follow-up Activities**

- Engage in talk and discussion with the class, reviewing the activities that were completed on the STEAM trail.
- Reflective journalling activities in response to STEAM trail work
- Revisit the mystery images that were examined in advance of the STEM trail and discuss where the pupils think the images came from. Encourage pupils to explain their reasoning and provide evidence using their notes, maps, drawings and/or descriptions.
- If Activity 5 was completed, pupils could share their findings on what they found on their Autumn scavenger hunt with the class. What items were found the most? Were there any items on the scavenger hunt that pupils could not find? Why do you think this is? This data could be represented on a pictogram.
- Images of the Leaf Man creations can be displayed whereby pupils describe the materials that they used.

## Rian ETIEM

### **Leibhéal Ranga:** Rang a haon agus rang a dó

Cuirtear raon gníomhaíochtaí agus acmhainní lena mbaineann i láthair sa doiciméad seo a d'fhéadfaí a úsáid le haghaidh rian ETIEM ar thailte na scoile. Is faoin múinteoir atá sé na codanna den doiciméad sin ar mian leis a dhéanamh lena rang a roghnú. Is féidir leis an leanbh smaoineamh faoi na freagraí agus plé a dhéanamh orthu, agus is féidir leis iad a tharraingt, a scríobh nó iad a thaifeadh trí theicneolaíocht dhigiteach a úsáid.

### **Roimh daoibh an seomra ranga a fhágáil**

#### Rudaí mistéireacha/Treodóireacht grianghraif

Sula dtugtar faoin rian ETIEM, is féidir leis an múinteoir suim na ndaltaí a mhúscailt trí réimse rudaí mistéireacha a thaispeáint. D'fhéadfaí a léiriú sna híomhánna mistéireacha sin ghrianghraif ghar-amhairc d'earraí, de rudaí nó d'áiteanna ar thailte na scoile a thóg an múinteoir chun ullmhú don rian. Is féidir na híomhánna a úsáid chun plé a thosú mar aon le scileanna breathnóireachta agus tuartha na ndaltaí a fhorbairt, mar a ndéanann daltaí na grianghraif ghar-amhairc a scrúdú, cur síos a dhéanamh ar an méid a fheiceann siad agus tuartha a dhéanamh maidir leis an áit ar tógadh na grianghraif.

Agus an rang lasmuigh, is féidir leis an múinteoir na daltaí a spreagadh chun a súile breathnóireachta a úsáid agus taifead a dhéanamh ar an áit a gceapann siad ar tógadh na grianghraif trí nótaí a thógáil, sceitse a dhéanamh nó léarscáil a tharraingt. Ag deireadh an riain, nuair a fhillteann an rang laistigh, cuirfidh na daltaí a gcuid smaointí i láthair maidir le láithreacha na n-íomhánna mistéireacha agus cuirfidh siad a réasúnaíocht in iúl.





## An bhfuil súile ETIM agaibh?

Téigh chuig áit óna bhfuil radharc agaibh ar fhoirgneamh na scoile agus spreag na daltaí a gcuid súile ETIM a úsáid trí roinnt de na ceisteanna molta a leanas a úsáid:

- Cé na cruthanna a fheiceann sibh?
- Cé mhéad dath difriúil a fheiceann sibh? An bhfuil pátrún ann? Mínigh an freagra.
- Déan an líon fuinneog atá ar fhoirgneamh na scoile a mheas. Seiceáil an freagra.
- Déan an líon doras a osclaítear amach ar an gclós a mheas. Seiceáil an freagra.
- Cé mhéad coirnéal atá ar fhoirgneamh na scoile?
- Ar aimsigh sibh aon chorroimhir/ré-uimhir?
- An bhfuil aon línte díreacha nó línte cuartha ar an bhfoirgneamh?
- An bhfuil sibh in ann aon samplaí de shiméadracht a aimsiú?
- An bhfuil aon fhuinneoga ann atá níos faide/níos giorra ná na fuinneoga eile?
- Cé na hábhair a fheiceann sibh ar fhoirgneamh na scoile? An mbraitheann na hábhair fuar nó te? Garbh/mín? Bog/crua?
- An bhfuil na hábhair uiscédhíonach? Cén chaoi a bhfuil a fhios agaibh?
- An bhfuil aon cheann de na hábhair in-athchúrsáilte?
- An bhfeiceann sibh píopaí nó draenacha ar bith? Comhairigí agus taifeadaigí an líon draenacha agus píopaí a fheiceann sibh.
- Cé na hábhair as a bhfuil na draenacha agus píopaí déanta? Cad chuige a n-úsáidfear iad?
- Cén saghas oibrithe a bhí ag teastáil chun an foirgneamh seo a thógáil?
- Dá mbeadh sibh ag athrú an fhoirgnimh, cé na hathruithe a dhéanfadh sibh? Cén fáth?

### Meastachán agus Tomhas

Sa ghníomhaíocht seo, beidh daltaí ag meas, ag déanamh comparáide, ag tomhas agus ag taifeadadh fad ar thailte na scoile le haonaid neamhchaighdeánacha tomhais éagsúla. Ar na haonaid neamhchaighdeánacha tomhais chuí a d'fhéadfaí a úsáid tá céimeanna ollmhóra, léimeanna agus céimeanna laidhre go sáil. Cuirtear teimpléad samplach dó sin ar fáil thíos.

	Ó gheata na scoile go dtí an príomhdhóras	Ó _____ go _____	Ó _____ go _____	Ó _____ go _____
Céimeanna ollmhóra	Meastachán: Toradh:	Meastachán: Toradh:	Meastachán: Toradh:	Meastachán: Toradh:
Léimeanna	Meastachán: Toradh:	Meastachán: Toradh:	Meastachán: Toradh:	Meastachán: Toradh:
Céimeanna laidhre go sáil	Meastachán: Toradh:	Meastachán: Toradh:	Meastachán: Toradh:	Meastachán: Toradh:

### Stop agus Réitigh: Éistigí!

Tugtar Éistigí ar an ngníomhaíocht seo agus bhí sé in STEM Smaointe (féach <https://www.pdst.ie/primary/STEM>), ríomhfheasachán a d'fhoilsigh foireann ETIM Bunscoile SFGM chun tacú leis an teagasc agus foghlaim in ETIM. Sa ghníomhaíocht seo, spreagtar na daltaí chun fuaimeanna éagsúla sa timpeallacht a aithint agus a shainithint. Iarr ar na daltaí dul ar shiúlóid fuaime, ar a ndéanfaidh siad taifeadadh ar na fuaimeanna a chloiseann siad trí phictiúir a tharraingt d'fhoinsé na fuaime agus na fuaimeanna a rangú ansin mar ghlórach nó bog.

Mar shíneadh ar an ngníomhaíocht seo, d'fhéadfadh na daltaí na fuaimeanna a chloiseann siad sa seomra ranga a thabhairt faoi deara, a shainithint, a rangú agus a thaifeadadh freisin. Is féidir teacht ar theimpléad samplach taifeadta do na gníomhaíochtaí



lasmuigh agus laistigh araon anseo:

<https://pdst.ie/sites/default/files/1st%20and%20nd%20Class%20-%20Listen%20Up.pdf>

### **Breathnóireacht agus Taifeadadh: Duilleoga, Crainn agus Plandaí**

Tá roinnt bileoga faire, bileoga aitheantais agus tóraíochtaí taisce atá an-úsáideach agus ar féidir daltaí iad a úsáid agus iad ag fiosrú duilleog, crann agus plandaí sa timpeallacht áitiúil ar an suíomh gréasáin a leanas:

[http://www.treetoolsforschools.org.uk/activitymenu/?cat=tree\\_ticksheets](http://www.treetoolsforschools.org.uk/activitymenu/?cat=tree_ticksheets). Is féidir leis an múinteoir an acmhainn chuí a roghnú ag brath ar an séasúr. I mí Mheán Fómhair mar shampla, d'fhéadfadh daltaí an leathanach Tóraíocht Taisce an Fhómhair a úsáid agus taifead a dhéanamh ar chomh minic agus a tháinig siad ar earraí difriúla ar nós duilleoige le fiacail nó duilleog shíorghlas láidir shnasta. D'fhéadfaí an t-eolas sin a úsáid ina dhiaidh sin sa seomra ranga chun snáithe Sonraí na Matamaitice a fhiosrú.

Roinnt ceisteanna molta:

- Úsáidigí an bhileog aitheantais duilleog agus cipíní, agus abraigí cén saghas crainn é seo meas sibh?
- Déanaigí cur síos ar an gcoirt/na bachlóga/na duilleoga/na bláthanna.
- Cé na dathanna a fheiceann sibh ar an gcrann?
- An bhfuil na craobhacha garbh nó mín?
- An crann maith é seo d'éin a bheith ina gcónaí ann? Cén fáth?
- Cén cruth atá ar an gcrann? Cén fáth a bhfuil an cruth sin air meas tú?

Fairsingiú: D'fhéadfadh daltaí dialann crainn a choinneáil chun breathnú ar fhás an chrainn le himeacht ama agus chun é a thaifeadadh. Tá roinnt leideanna úsáideacha ar an tásc-chárta a leanas, a chruthaigh foireann ETIM Bunscoile SFGM le haghaidh seimineár gréasáin faoi ETIM agus an Gairdín, chun breathnóireachtaí ar chrainn a thaifeadadh:

<https://pdst.ie/sites/default/files/Tree%20Jounal%20Task%20Card.JPG>

## Gníomhaíocht chruthaitheach/Neamhiata

Tá "Beginning the leaf man project" le MRCPLChildrens ceadúnaithe faoi CC BY-SA 2.0

Spreagthach: The Leaf Man le Lois Ehlert

Leanann an scéal seo grúpa duilleoga fómhair agus iad á séideadh ag an ngeoth thar pháirceanna, úllord, lochanna agus aibhneacha. Tosaíonn na duilleoga amach i gcruth fir agus athraíonn an cruth sin agus iad ag taisteal. Don ghníomhaíocht seo, spreag na daltaí le hábhair dhifriúla ar nós cipíní, cloch agus duilleog a bhailiú, chun a gcuid léaráidí féin a chruthú ar an talamh. Is féidir leis an múinteoir grianghraif a thógáil chun saothair na ndaltaí a thaifeadh.



## Ar ais sa Seomra Ranga: Gníomhaíochtaí Leantacha

- Déan comhrá agus plé leis an rang, ag féachaint siar ar na gníomhaíochtaí a rinneadh ar an rian ETIEM.
- Gníomhaíochtaí machnamhacha i ndialann mar fhreagairt ar obair riain ETIEM
- Téigh siar ar na híomhánna mistéireacha a scrúdaíodh roimh an rian ETIM agus pléigh an áit ónar tháinig na híomhánna, dar leis na daltaí. Spreag na daltaí chun a réasúnaíocht a mhíniú agus fianaise a chur ar fáil lena gcuid nótaí, léarscáileanna, líníochtaí agus/nó cur síos.
- Má rinneadh Gníomhaíocht 5, d'fhéadfadh na daltaí a gcuid torthaí maidir leis an méid a d'aimsigh siad ar Thóraíocht Taisce an Fhómhair a roinnt leis an rang. Cé hiad na hearraí is minice a aimsíodh? An raibh aon earraí ar an tóraíocht taisce nach raibh daltaí in ann teacht orthu? Cén fáth ar tharla sé sin dar libh? D'fhéadfaí na sonraí sin a léiriú ar phicteagram.
- Is féidir íomhánna de shaothair an Fhir Duilleog a chur ar taispeáint agus daltaí ag míniú na n-ábhar a d'úsáid siad.