



SciFest



STEM by Inquiry

Transition Year Module



A Message from the SciFest Team

Dear Transition Year Student,

We hope that you are enjoying TY, trying out new things, new adventures, new interests, making new friends and having a certain amount of freedom to decide for yourself what you want to do. As a TY student you have the opportunity to explore the various career options through work experience, to listen to guest speakers and to learn more about the Leaving Certificate subjects that are available to you in fifth year.

You have already studied some of the STEM (Science, Technology, Engineering, Maths) subjects at Junior Cycle but now you have the option to take one, two or even three of these subjects to Leaving Certificate level. This is something you should really think about. A STEM qualification equips you with a wide range of transferable skills such as problem solving, critical thinking, technological and analytical skills. Studying STEM encourages creativity and innovative thinking and makes you highly employable. But just think, you as a STEM professional, could play a crucial role in addressing and solving many of today's global issues such as climate change, biodiversity loss, sustainability, food insecurity and water scarcity.

At SciFest we would like to invite you ignite your passion for STEM, set your curiosity free and be a part of the biggest second-level STEM fair programme in Ireland. SciFest is not just another competition but a celebration of innovation, creativity and the spirit of discovery. We firmly believe that each and every one of you has the potential to make a difference, to push the boundaries of knowledge, and have a real impact on the world around you. The world needs bright minds like yours and SciFest is the perfect first step towards a bright future in STEM.

Believe in yourself and let this be your year to enter SciFest. We know you can do it and we can't wait to meet you and hear about your amazing project.

Looking forward to seeing you at a SciFest STEM fair,

Kind Regards,

The SciFest Team



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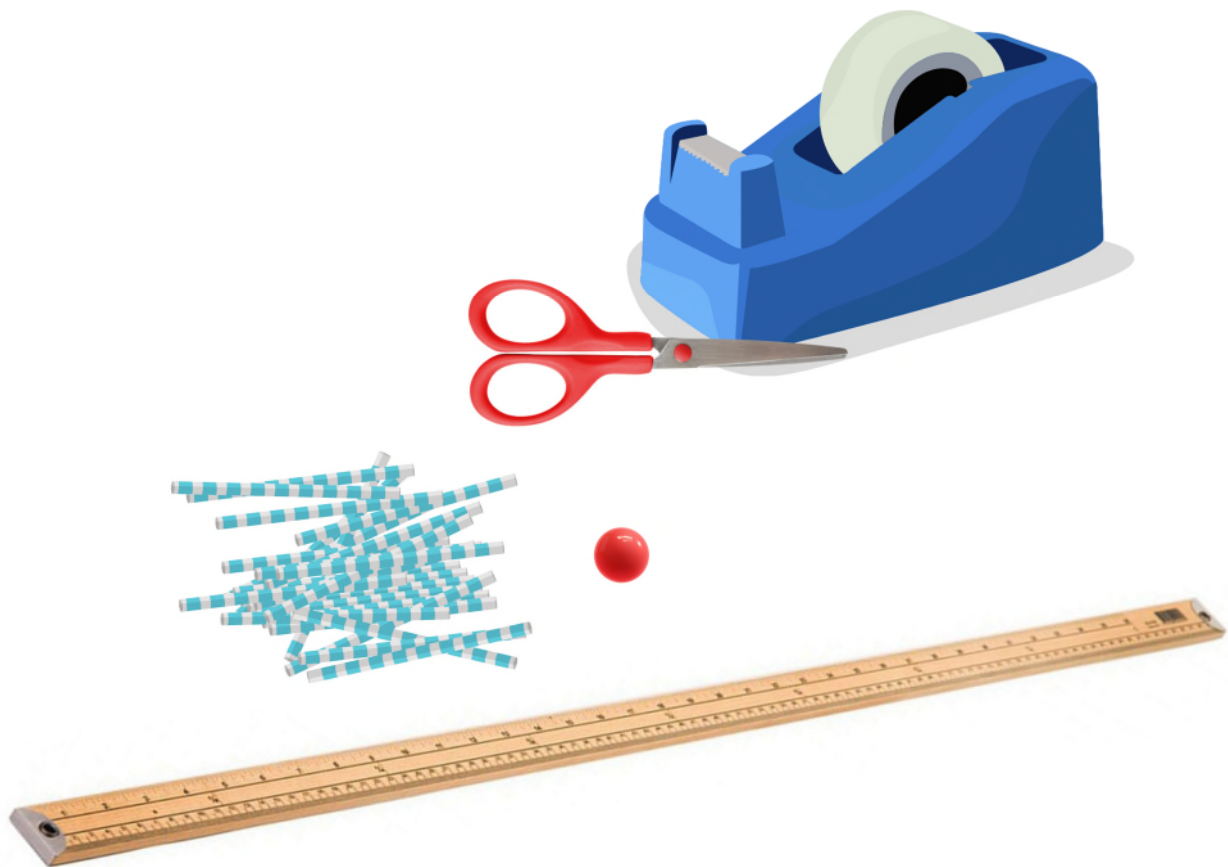
Design and Problem Solving

ACTIVITY 1 Design and Build

Build a structure out of 25 straws and 1 metre of Sellotape to support the weight of a marble at the maximum possible vertical height above the bench.

NOTE

- * The marble may not be sellotaped to the straws.
- * The structure may not be sellotaped to the bench.



Redesign and Reinvent

Have you ever looked at something as simple as a mug and wondered how it could be adapted for a person with a neurological disorder that makes them shake? Maybe you have been on crutches and found it very difficult to lower yourself into a chair or to carry your school bag. Everyday objects often need to be redesigned to make them more user friendly, more cost effective, safer to use or more environmentally friendly, etc.

SCAMPER is a technique that was introduced by a teacher, Alex Osborn, in 1953 in his book Applied Imagination. It was later adapted in the 1970s by Bob Eberie to help generate ideas for new products and services by encouraging individuals to think about how they might modify and improve an existing idea.

SCAMPER

S	Substitute	What materials or resources can be substituted or swapped to improve the product or service?
C	Combine	What features, uses or components can you combine to create something new?
A	Adapt	Do you need to change the product/process to adapt it to changing lifestyles?
M	Modify (Minimise/Magnify)	Does it need to be made larger or smaller?
P	Put to another use	Can you put it to another use?
E	Eliminate/Elaborate	Do you need to remove some part or material, or to make one section more detailed or refined?
R	Reverse/Rearrange	What can be rearranged, flipped, or swapped? What would happen if you reversed this process or sequenced things differently?



Applying Scamper

Hannah Nugent and Katie Rattigan, from Loreto Secondary School, St Michael's, Navan, Co. Meath won a Boston Scientific Medical Devices Award for their project 'Stopping the Shake'.

Hannah and Katie redesigned a mug to make it suitable for use by people suffering from Parkinson's disease.

ACTIVITY 2 Redesign a Backpack

The majority of students carry their books and sports gear to school each day in a backpack. These backpacks are often extremely heavy. Often non-environmentally friendly materials such as PVC (polyvinyl chloride) are used in their manufacture. Posture support and sustainability are often overlooked in the design process in favour of appearance.



Your task is to redesign a backpack using SCAMPER that is more ergonomic, functional and stylish, and more sustainable and eco-friendly.

- Copy the table below into your copybook.
- Brainstorm ideas with your team for each letter of SCAMPER, filling out the table as you come up with ideas.
- Evaluate and select your best ideas.
- Use diagrams to present your design or prototype.
- Present your prototype to the class and look for feedback to help you improve your design.

SCAMPER

S	Substitute	
C	Combine	
A	Adapt	
M	Modify (Minimise/Magnify)	
P	Put to another use	
E	Eliminate/Elaborate	
R	Reverse/Rearrange	



Applying Scamper

Thomas Curtin and Dylan Moloney from Desmond College, Newcastle West, Co. Limerick won a Boston Scientific Runner-up Award and the Berlin Long Night of Science Award for their project 'Height Adjustable Crutch'.

Thomas and Dylan redesigned a crutch that would help people with a lower body disability to stand up and sit down more easily.

Don't Believe Everything You Read

When carrying out research, particularly on the Internet, it is essential to check the source to make sure that the information given is not just somebody's opinion. Remember anybody can set up a website so be sure if you are going to quote data that the website is reliable.

Opinion Activity

If you look up the chemical dihydrogen oxide (sometimes called dihydrogen monoxide) on the Internet you will find a number of warnings about its toxicity.

Read the following information carefully and then complete the questionnaire on page 8.



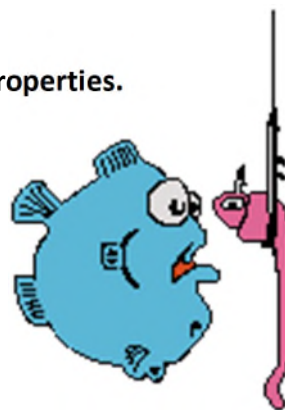
Dihydrogen Oxide

Dihydrogen oxide is colourless, odourless, tasteless, and kills thousands of people every year. Most of these deaths are caused by accidental inhalation of the chemical, but the dangers of dihydrogen oxide do not end there.

Some people wish to ban dihydrogen oxide because of its toxic properties.

Properties of dihydrogen oxide

- Causes excessive sweating and vomiting
- Is a major component of acid rain
- Can cause severe burns in the gaseous state
- Is a primary contributor to erosion
- Prolonged exposure to its solid form causes severe tissue damage
- Can be found as an additive in certain 'junk-foods' and other food products
- May cause electrical failures and decreased effectiveness of brakes
- Has been found in tumours of cancer patients
- Speeds up corrosion and rusting of many metals
- Used in the distribution of pesticides; even after washing, produce can remain contaminated by this chemical



ACTIVITY 3 Questionnaire

STRONGLY AGREE SA	AGREE A	UNDECIDED U	DISAGREE D	STRONGLY DISAGREE SD
------------------------------------	--------------------------	------------------------------	-----------------------------	---------------------------------------

1. Toxic wastes should be disposed of in the country where they originated.
SA A U D SD
2. Cigarette smokers should not be allowed to smoke in any public place.
SA A U D SD
3. No chemical should be put on the market unless it is proven to be 100% safe.
SA A U D SD
4. Animals should not be used in medical research.
SA A U D SD
5. Chemicals are bad for people’s health.
SA A U D SD
6. The cleaning products in my house do not have an impact on the environment.
SA A U D SD
7. Uniforms should be mandatory at all schools.
SA A U D SD
8. Chemicals are toxic to the environment.
SA A U D SD
9. Recycling should be mandatory.
SA A U D SD
10. Dihydrogen oxide should be banned in all public places.
SA A U D SD

(From ‘Recipe for sustainable science’ – The Keystone Center, Colorado)

Scientific Problem Solving

1 **Observe and Question:** Ask yourself, 'Why does/did that happen?'



2 **Research:** Carry out as much background research as possible. This helps you understand what is already known about the topic you have chosen and helps you form your hypothesis. Devising and researching experimental methods, evaluating them, selecting the most appropriate.



3 **Form a Hypothesis:** Defining the problem as a specific question or a statement (hypothesis) that can be tested experimentally.



4 **Investigate:** Design scientifically controlled investigations, which will be a 'fair' test of the hypothesis. Identify variables. You should be able to repeat your investigation a number of times.



5 **Collect Data:** Have a table ready on which to record your data. Data can be quantitative, i.e. numerical data that can be counted or measured in numerical values, or qualitative, i.e. a description in words rather than in numbers. If possible, draw graphs.



6 **Analyse your Data:** Can you identify a pattern or a trend? Do you need to run the investigations again? Do you need to collect more data?



7 **Draw Conclusions:** Does the data you have collected support or disprove your hypothesis?



8 **Evaluate:** Examine your investigations critically and look at their limitations and implications in the context of the original problem and further work. What are the potential sources of error in your investigation?



9 **Present:** Share the details of your project, investigations, findings, and conclusions with the judges, participants, and visitors at the fair. Be prepared to answer questions.

1. The statements below are unscientific. Can you explain why?

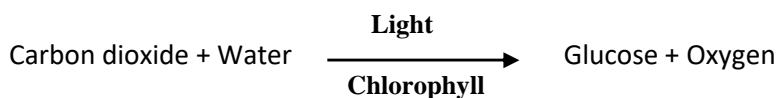
(a) 'My car is very economical to run. I only put €20 worth of petrol in it each week.'

(b) 'Smoking 60 cigarettes a day causes cancer.'

(c) 'Red jelly babies taste better than green ones.'

(d) 'The fresh smell tells you that the disinfectant keeps on killing germs.'

2. The following equation summarises the process of photosynthesis.



Study the above equation, and the diagram below, carefully and answer the following questions.

(i) Name Gas A. _____

(ii) Name Gas B (found in the pond water). _____

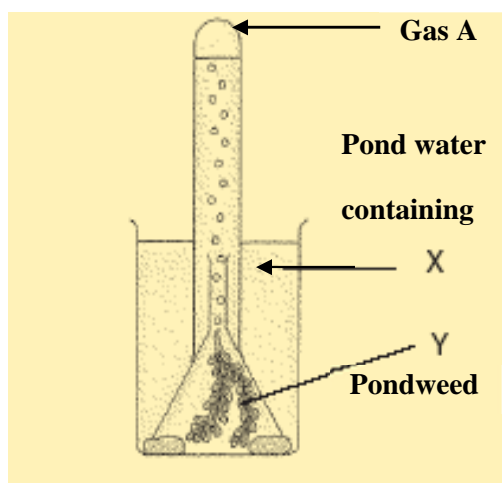
(iii) Name the energy source. _____

(iv) Plants obtain Gas B from the air. Name a process that releases this gas into the air.

(v) What term is used to describe the nutrition of plants? _____

(vi) The apparatus shown may be used to investigate the effect of the environmental factor, light intensity, on the rate of photosynthesis.

(a) Briefly describe how you would measure the rate of photosynthesis if you were carrying out this investigation.



(b) Name the environmental factor that you would vary. _____

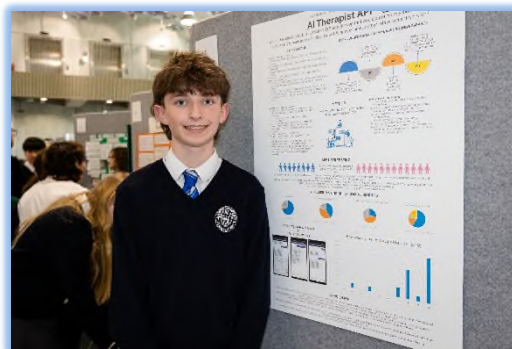
(c) Explain how you would vary the factor that you have named in (b). _____

(d) Other environmental factors should be kept constant during the experiment. Name two of these factors.

Factor 1 _____ Factor 2 _____

Coming up with a Project Idea

The most difficult part of doing a STEM fair project can be coming up with a workable idea. Don't worry – many students have the same problem. The most important thing is to choose a topic that you are interested in and passionate about. Do you spend a lot of time on your computer and have taught yourself to code? Are you interested in sport, dancing, space, robotics or maybe agriculture? Do you worry about climate change? Have you a hobby? It doesn't have to be something that has never been done before, just try to be original in your approach.



So are you ready to turn your passion into an amazing project?

Hints to help you brainstorm and develop an exciting project idea

- Identify your interests. Choose a project idea that genuinely excites you. This is most important. You will then enjoy doing the project and your enthusiasm and passion will impress the judges at the SciFest fair.
- Talk to your parents/guardians, teachers, and friends.
- Consider teaming up with one or two other students with similar interests. Collaboration is important. Members of a team come from different backgrounds and experiences and this means that not only can the work be carried out more efficiently but it can lead to more creative and innovative solutions to problems.
- Check out the Internet and the school library.
- Watch the news, check out a newspaper, a science book or magazine. This can spark ideas for potential projects.
- Think about interesting topics in science class. Do you like physics, chemistry, technology, biology?
- Get a large sheet of paper and brainstorm.
- Make a shortlist of '3 best ideas'.
- Research and brainstorm further.
- Discuss the ideas with your teachers, parents/guardians and friends.

Helpful Hint

Visit the SciFest website for lots of project ideas.

Check that the idea workable

- Make out a list of all the things you will need.
- Are all the investigations safe and are no harmful chemicals required?
- Is there something that can be measured (dependent variable)?
- Is there something that can be changed (independent variable)?
- Can all other variables be controlled?
- Is the equipment available? Is the equipment too costly?

- Can the project be completed in time?
- Are there companies you can contact for information about your topic?
- Is there enough information available?
- Is there a mentor, e.g. someone from a company, a hospital or a third level college who might be a source of information and/or resources?

Behavioural and Social Sciences Projects

- Before a behavioural and social sciences project is conducted it is important that the project be reviewed with regards to being ethical.
- If the project involves research on students who are under 18 years of age parental or legal guardian consent is required.
- Many behavioural and social sciences projects use surveys or questionnaires to collect data. These appear easy, but don't be deceived. Questionnaires and surveys require careful design.
- Interview a number of experts in the area you are about to study to get ideas and to identify themes to include in your questionnaire or survey.
- A pilot survey or questionnaire should be carried out.
- A representative sample should always be used.
- To do a good project you will need to go beyond basic statistics, therefore you may need to get help from somebody, e.g. a maths teacher.
- If you have carried out a survey or questionnaire, remember to include a copy in your report book.

Helpful Hint

Keep a project notebook. This is for storing and recording everything about your project.

ACTIVITY 5: A Visit to the SciFest Website

If you have decided that you would like to enter SciFest it makes sense to visit the SciFest website <https://scifest.ie> and to check out the guidelines and resources that are available to help you with your project.

These include:

- Entry Information and Guidelines for Students and Teachers
- Details of awards available
- 'A Guide to Doing a SciFest Project'
- A booklet of SciFest Project Ideas
- Special help with, and examples of, Boston Scientific Medical Devices Award projects and EirGrid Cleaner Climate Award projects
- Numerous help sheets such as 'How to Impress the Judges' and 'Tips for Exhibiting at SciFest'



ACTIVITY 6: Coming up with Your Project Idea

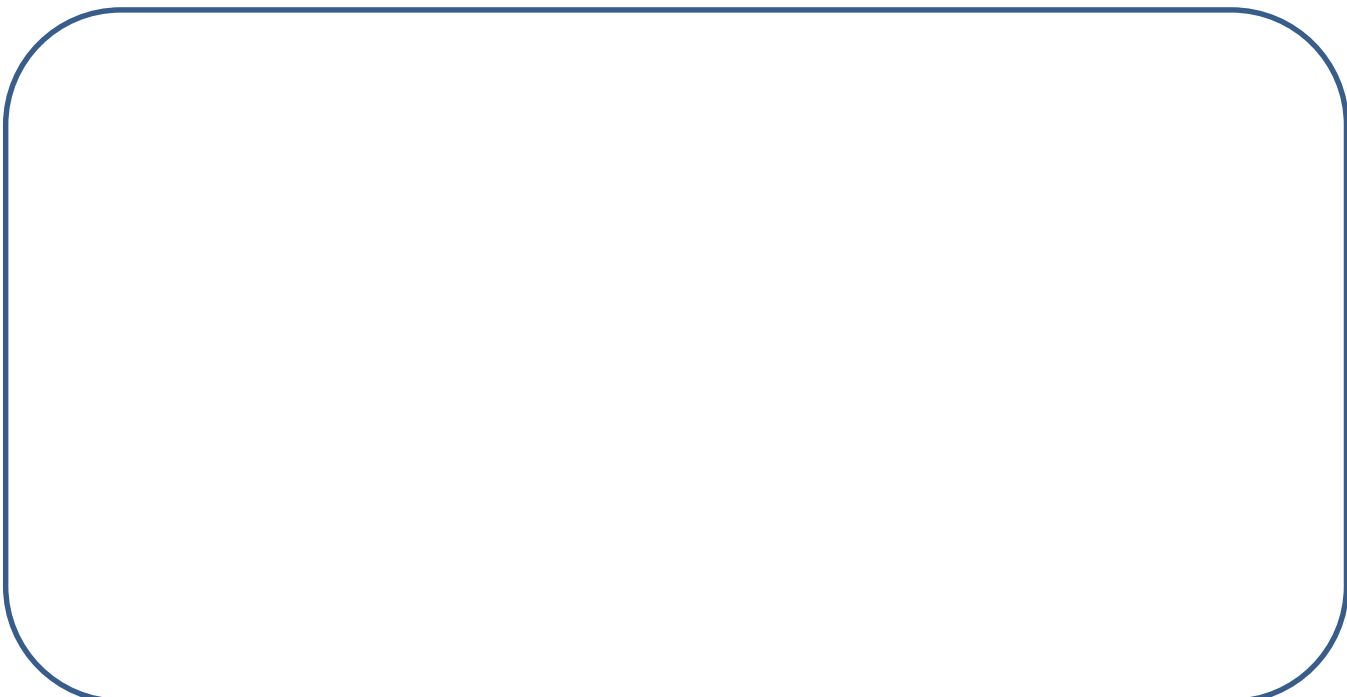
In the box below write down as many interests that you can think of – everyone should write at least three. Brainstorming is a creative process, so there are no right or wrong answers. Allow yourself time to think outside the box, to relax and the ideas will come!



A word cloud of interests including: Agriculture, Robotics, Technology, Medicine, Food Science, Animals, Fashion, Climate, Makeup, Sport, Polution, Dancing, and Plastic Polution.

Brainstorm

From your interests above, work together to write down something you would like to investigate. In the box below, write as many project ideas as you can think of – big or small!



Make a list below of your 3 best ideas.

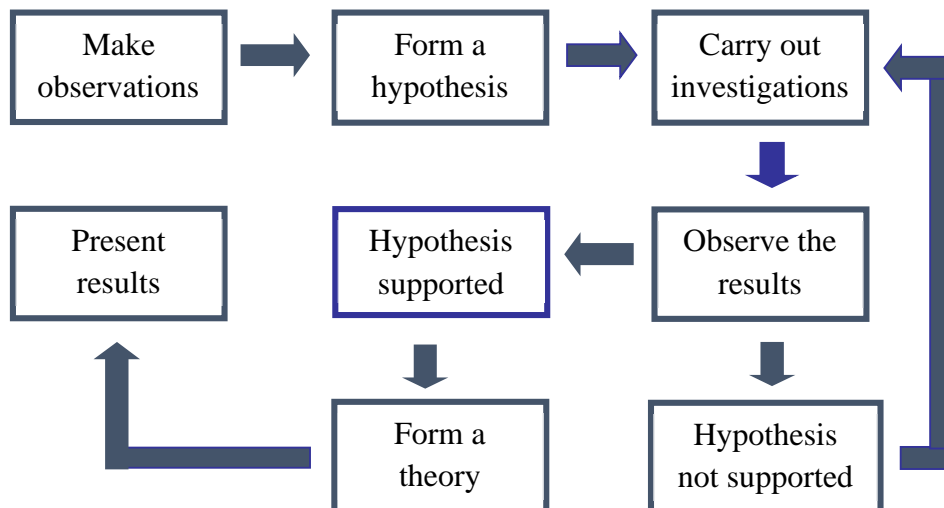
1. _____

2. _____

3. _____

The Scientific Method and Identifying Variables

An approach to scientific investigation, sometimes known as the scientific method, is illustrated in the following diagram.



Investigation Example: To investigate if the temperature of water rises as more calcium chloride is added

Hypothesis: The more calcium chloride added to water the more the temperature increases

Independent variable	Mass of calcium chloride (g)		
Dependent variable	Temperature of water (°C)		
Constants or fixed variables	1. Same volume of water (75 ml) 2. Same time to dissolve (2 min) 3. Constant stirring		
Control (standard of comparison; the control may be a no treatment group)	0 g		
Levels of independent Variable	1 g	2 g	3 g
Replicates – number of times the investigation was repeated for each level of the independent variable	3 trials	3 trials	3 trials

ACTIVITY 8: Identifying the Variables in Your Project

Independent variable			
Dependent variable			
Constants or fixed variables			
Control			
Levels of independent variable			
Replicates – Number of times the investigation was repeated for each level of the independent variable			

Remember the following.

- Log on to <https://scifest.ie>.
- Keep your teacher informed at all times.
- Repeat the investigation a number of times.
- Investigate only one variable.
- Keep all other factors constant.
- Be prepared to change your investigation plan if necessary.
- Ensure that it is a fair test.



REMEMBER TO OBSERVE ALL SAFETY PROCEDURES

ACTIVITY 9: Testing a Hypothesis

Hypothesis: An object that is streamlined will move faster through water than an object that is not streamlined




Materials: Blu-Tack
Tall measuring cylinder
Stopwatch

If you think you require any other materials or equipment, please ask.



1. Use the above materials to test the hypothesis.
2. Before you begin, discuss the hypothesis with the other members of your team.
3. Draw up an investigation plan.
4. Design a table on which to record the data you collect (see sample table below).
5. Remember you may have to modify your plan.
6. Write an account of your investigation into your copybook, explaining your method and describing your results and conclusions.

Data Table

Sample Shapes	Trial 1 Time (s)	Trial 2 Time (s)	Trial 3 Time (s)	Average Time (s)	Distance cm	Speed cm/s
1 						
2 						
3 						

Fair Test and Variables

Fair Test: Have you carried out a fair test?

Independent Variable (The factor or variable that you changed)	Shape
Dependent Variable (What you observed and measured as a result of changing the independent variable)	Time taken to travel distance
Constants or Fixed Variables (What you kept the same)	1. Mass of object 2. Distance/Depth of water 3. Height of drop
Replicates (Number of times you investigated each shape)	Three



Answer the following questions in your copybook

1. Some fish have fusiform (streamlined) bodies, e.g. salmon, while others are laterally compressed (flattened from side to side), e.g. sole. The shape of the fish's body tells us a lot about its lifestyle. Comment on this statement.
2. In what way might the results be useful if you were designing swimwear?
3. What problems did you come across in your investigation and how did you overcome them?

ACTIVITY 10: Research Record

Make sure your research is based on credible sources from established institutions and organisations such as government agencies, reputable research centres and educational institutions. It is advisable, if possible, to cross-reference information from a number of trusted sources.

Source 1: The Internet

The Internet (1)

Author(s):

Date downloaded: _____

Title of article: _____

URL (web address): _____

Write in your own words two things you learned from this source.

1. _____

2. _____

The Internet (2)

Author(s):

Date downloaded: _____

Title of article: _____

URL (web address): _____

Write in your own words two things you learned from this source.

1. _____

2. _____

Source 2 - Book or Periodical

- 1. Author(s): _____
- 2. Date of publication (in brackets): _____
- 3. Book/Article Title: _____
- 4. City where it was published/Name of periodical: _____
- 5. Publishing company/relevant pages: _____

Now rewrite this information in the standard bibliographic format – 1. (2).3.4:5.

Page(s) you used in your research: _____

Write in your own words two things you learned from this source.

1. _____

2. _____

Source 3 – Other

Interview with an expert

Date: _____

Name and title of person you interviewed: _____

Job description: _____

Name of company/university/etc. at which they work: _____

Write in your own words two things you learned from this source.

1. _____

2. _____

ACTIVITY 11: Drawing Up a Project Plan

1: Project Details

Project Title

Category

Please ✓ the relevant boxes

Individual Project Group Project Junior Intermediate Senior

Physical Sciences Life Sciences Technology

Name/s of group member/s (Block Capitals)		Class
1 Group Leader		
2		
3		

What **apparatus and facilities** are needed for your project? Make a list in the box below.

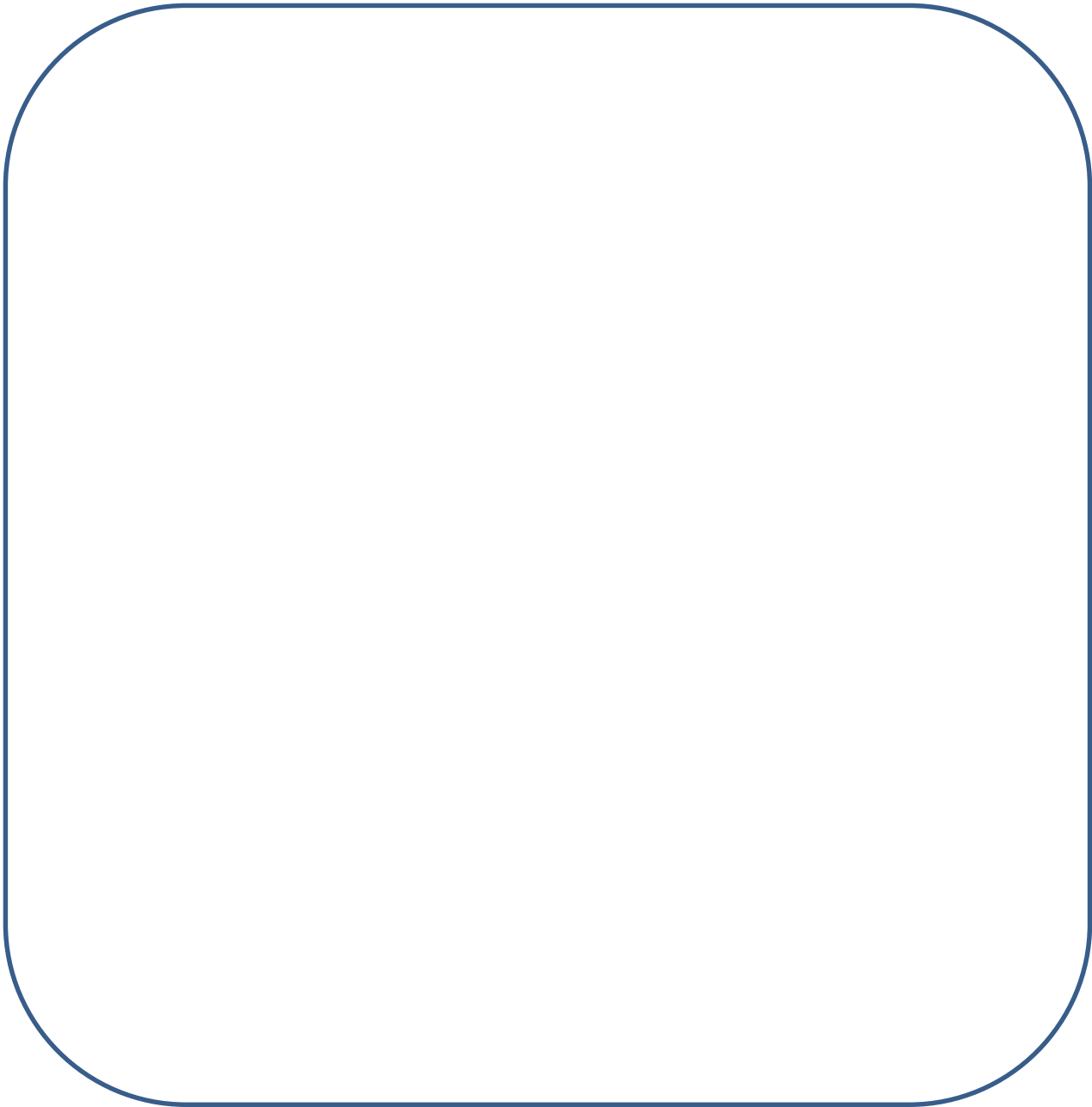
- Use the space below to make a list of the steps you need to follow to carry out your investigation.
- You should carry out a trial investigation.
- Expect the unexpected and be prepared to make the necessary changes.



- Draw a diagram of the apparatus you intend to set up.



- Design a table in the space below on which to record the data you collect. Have this table ready before you carry out your investigation.



REMEMBER TO BE SAFE

From planning and carrying out your investigation to data collection and analysis you must make sure that every step you take is safe. This guideline is not only to protect you but also others around you. If you have any doubts or concerns you should consult your teacher, parent or mentor.

ACTIVITY 12: Your Project Timetable

Important Dates

Date of SciFest fair:

Closing date for receipt of completed entry forms online at <https://scifest.ie>:

	Task	Date Due	Accomplished
1.	Visit the SciFest website https://scifest.ie and review entry guidelines		
2.	Project selection and background research		
3.	Hypothesis		
4.	Investigation design		
5.	List of equipment and materials		
6.	Risk assessment		
7.	Participation consent and media release forms	Student 1	
		Student 2	
		Student 3	
8.	Entry forms		
9.	Sample data table		
10.	Investigation and data collection		
11.	Data analysis and results		
12.	Project report book completed		
13.	Poster designed		
14.	Report book and poster reviewed by parent, guardian, teacher, peer.....		
15.	Practise presentation		
16.	SciFest fair		

Presenting Your Project at a SciFest STEM Fair

To present your project at a SciFest fair you need to have:

1. Project Report Book
2. Visual Display
3. Oral Presentation



1. Project Report Book

Your Project Report Book should be no more than 50 pages; this does not include any appendices. (The 50 is a maximum number of pages; your project may require fewer pages.)

Type up your report in font 12 pt or 14 pt. Using a larger font does not look well, means there is very little information on each page and the judge has to turn over page after page to read your report.

The Project Report Book should contain:

a) Cover/Title Page

This gives the project title, the name/s of the student/s and the name of the school.

b) Contents Page

c) Meet the Team (optional)

This section contains three or four lines of information about each team member and their contribution to the project. (A photograph of the team adds a nice touch.)

d) Summary/Abstract

The summary/abstract is a short description of what your STEM project is about. It should be no more than 250 words or 1,800 characters and should highlight the main points of your project. The abstract should allow judges and visitors to the fair to quickly determine the nature and scope of your project.

e) Introduction

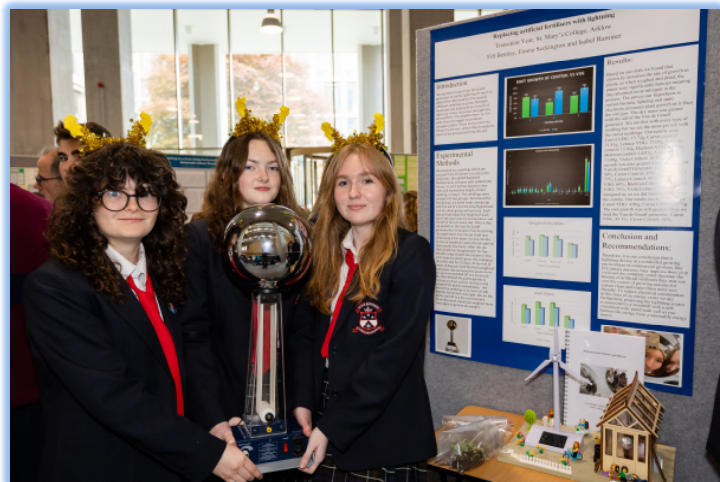
The introduction contains a brief statement of your hypothesis and refers to the research you carried out to develop the hypothesis. It explains why you chose this particular topic and what you hoped to achieve. You should briefly mention any investigations, surveys, etc. you carried out.

f) Background Research

Background research includes a reference to what is already known about the topic and investigations that have already been carried out. It sets the scene for the project and links it to the “real world”. **It should be no longer than 5 pages and should not consist of big chunks of information downloaded from the Internet.** Additional information can be included in the appendices. Everything should be written in your own words. Check that the websites you are using are reliable and write down every reference for the ‘References’ section.

g) Investigation Methods

These are the investigations that you have designed and carried out. They should be written up in the same format as the investigations you do in science class. Even if you carried out a survey you still have to describe the method, e.g. how many students were involved, how did you source the sample, how did you carry out a pilot survey, etc.



h) Results

Results should be clear and presented in a table when possible. Graphs or bar charts produced using a spreadsheet or other appropriate software should also be included. Try to do a statistical analysis if you have done a survey.

i) Conclusions and Recommendations

The conclusions summarise what you discovered based on the data you have collected. You should restate the hypothesis and indicate whether your results support the hypothesis. The conclusions also include possible sources of error and a brief description of how your work could be extended and improved.

j) Acknowledgements

Your project is meant to be your own work but you are allowed to have some help. The acknowledgments section consists of a short paragraph giving the names of people who helped you and how they helped.

k) Appendices

This section contains material such as extra tables of results and copies of any letters and emails you sent or received.

l) References

This is a list of all the books, journals, websites, etc. that you used. Remember to write them down as you go along.

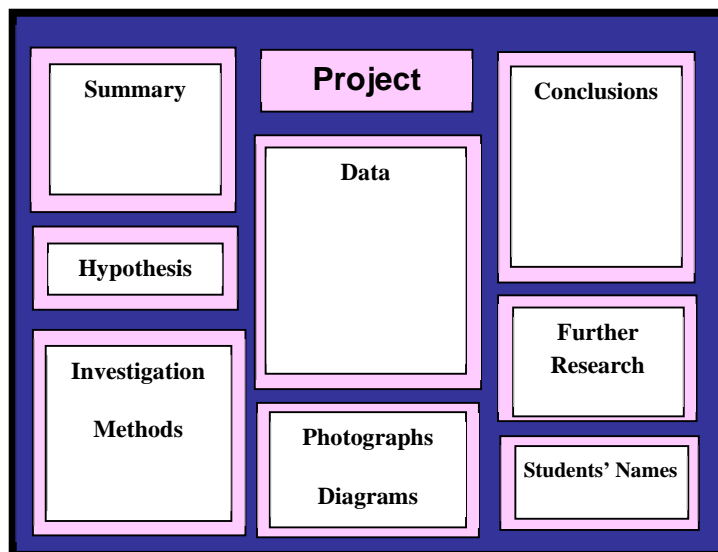
Remember to check the grammar and spelling, to get somebody else – parent, teacher, guardian, relation – to read your report book, and to save it on your computer.

2. Visual Display

As well as writing your results in a report book you also have to set up a visual display or poster. Before you decide what to include in your display check out the size and shape of the display board that is available where you are going to present your project.

Remember

- You cannot include everything in the display. Keep it simple and easy to read.
- Good design should attract viewers' attention to your project and then guide their understanding of the information you wish to convey.
- Make a checklist of the points you want to cover in your display and double-check that you present each.
- Use a font that is easy to read from a distance.
- Decide on a style and stick to it. Too much variation will make your poster seem untidy.
- Use your imagination to make your poster eye-catching. Include photographs.
- Judges will notice if a display has grammar and spelling mistakes. Get people to proofread your work.
- Make sure all your pieces are cut out with straight lines (use a ruler) as this will make your presentation look more polished and professional.



Visual Display

Remember to check the grammar and spelling

3. Oral Presentation

Now that you have completed your project you need to spend some time improving your presentation skills. It is natural to feel nervous so it is very important to be prepared. It is important to capture the interest of the judges at the beginning of your presentation. Start by explaining how you came up with the idea and how excited you are about the project. Briefly describe the investigations you carried out, your



results and conclusions. Compare your results to what is already known about the topic and suggest what you would like to do next. Expect to be interrupted by the judges with questions like:

- What was your role?
- What worked?
- What didn't work?
- How much help did you receive from others?
- What would be your next step?
- What problems did you encounter and how did you overcome them?

Presentation Tips

- Be involved in, and enthusiastic about, your project.
- Make eye contact with the judges at all times.
- Speak slowly and clearly. Avoid saying things like "er", "um", "like", "you know", etc.
- Practise in front of your friends and get them to ask questions.
- Practise in front of a mirror at home.
- Be polite, neatly dressed and smile.
- If you don't know the answer to a question say so, but give the judges other relevant information.
- If you are involved in a group project remember to give each member of the team a chance to speak.

Plagiarism

What is Plagiarism?

According to the Merriam-Webster Online Dictionary to "plagiarise" means:

1. to steal and pass off (the ideas or words of another) as one's own
2. to use (another's production) without crediting the source
3. to commit literary theft
4. to present as new and original an idea or product derived from an existing source

Changing the words of an original source is not enough to prevent plagiarism. If you have kept the essential idea of an original source, and have not cited it, then no matter how drastically you may have altered its context or presentation, you have still plagiarised.

Recording a Video for SciFest

Helpful advice

- Film yourself in a quiet room where there is lots of light.
- Do not sit with your back to a window or a light source.
- Always film your video horizontally (landscape mode).
- Keep the camera still during filming. If possible, use a tripod.
- Speak slowly and clearly so that the recording is able to pick up every word you say.
- If filming outdoors and there is a lot of background noise maybe consider recording a separate voiceover indoors using your video camera or phone voice recorder and adding it to the video afterwards.
- Avoid long pauses.
- Do not read directly from your report book or your computer screen. You have done the project so just tell it as you would a story!
- View your video after recording to ensure your voice is clear and audible, and that the picture is bright enough.
- Do not include anyone in your video other than you or the other members of your team.



What to include in your video

- Introduce yourself: State your full name and your school.
- Rather than reciting your project title, consider explaining your project in a single sentence.
- Explain your project: Summarize your research into three main points:
 1. What did you do? (You could include a shot of your apparatus or prototype.)
 2. What did you find?
 3. What conclusions did you draw?

***This is your time to shine! Your enthusiasm and personality will go a long way in selling your big idea.
Don't forget to smile!***

NOTE: Do not use any copyrighted material in your film, such as video clips (TV, movies, online videos), images, music, sound recordings, etc., without permission.

Miscellaneous

ACTIVITY 14: Module Evaluation

1. Title of module

<i>STEM by Inquiry</i>

2. What part of the module did you most enjoy?

Why?

3. What part of the module did you find most beneficial?

Why?

4. What part of the module did you least enjoy?

Why?

5. How would you rate your own level of participation during this module?

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Useful Websites

- <https://scifest.ie>
SciFest is the largest second-level STEM fair programme in Ireland. Entry is free and all second-level students are encouraged to participate. The SciFest website offers support to students and teachers with resources such as this TY module and a booklet of sample projects, etc.
 - <http://www.sciencebuddies.org>
On this site you will find hundreds of ideas for science projects along with notes on the scientific method, a teacher's guide to science projects, grading rubrics, an ask the experts section and lots more.
 - <http://www.livescience.com/38126-high-school-science-fair-projects.html>
Live Science reports on the latest discoveries, groundbreaking research and fascinating breakthroughs that impact you and the wider world.
 - <https://www.societyforscience.org/research-at-home/>
Society for Science resources, advice, and stories of inspiration on completing research outside of a traditional laboratory environment.
- <http://www.seai.ie>
The website of the Sustainable Energy Authority of Ireland – includes resources and activities related to the teaching of energy and related topics.
- <https://saltersinstitute.org/programmes/chemistry-club/>
The Salters' Chemistry Club – Handbook Volumes 1 and 2. Hands-on Chemistry designed to make chemistry more exciting and fun.
 - <http://www.esa.int/education>
The European Space Agency (ESA) 'Watching over the Earth' Secondary Level Teacher's Pack (worksheets and teacher's notes).
 - <http://www.bco.ie>
CIT Blackrock Castle Observatory is a science centre and is home to *Cosmos at The Castle*, an award-winning interactive astronomy exhibition which highlights recent scientific discoveries and their implications for life in outer space. Check out the education section of the website for resources and details of school visits and teacher professional development opportunities.
 - <http://www.tryscience.org>
Experience the excitement of contemporary science and technology through online and offline interactivity with science and technology centres worldwide.
 - <http://www.schoolscience.co.uk>
Written for teachers and students of National Curriculum science in the UK, the site covers some biology, chemistry and physics topics and is well illustrated.
 - <https://www.societyforscience.org/research-at-home/>
Society for Science - Resources, advice, and stories of inspiration on completing research outside of a traditional laboratory environment.

- <http://www.science.ie>
Science.ie provides a comprehensive listing of all news articles, events, science features, careers information, scientist profiles and activities relevant to science in Ireland.
- <http://www.ase.org.uk>
Association for Science Education – teachers helping teachers teach science. The ASE is the UK's largest science association dedicated to the teaching of science.
- <http://www.engagingscience.eu/en>
This website is a source of information and discussions on topical scientific issues appropriate to Junior Cycle level.
- <http://www.puzzlemaker.com>
Create puzzles online.
- <http://www.webweaver.nu/clipart>
Free clipart.
- <https://www.canva.com/>
Canva is a free-to-use online graphic design tool. Use it to create social media posts, presentations, posters, videos, logos and more.
- <https://www.kapwing.com>
Kapwing is a free online video editor.



Where Can You Find Information About SciFest?

The best way to find out all about SciFest is to visit the official SciFest website: <https://scifest.ie>.

On the website you will find lots of resources and advice on how to do your project.

You can also

- Like [SciFest on Facebook](#)
- Follow [SciFest on Instagram](#)
- Read [SciFest on ISSUU](#)
- Follow [SciFest on X](#)
- Watch [SciFest on YouTube](#)
- See [SciFest on Flickr](#)

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