National Technology Park
Castletroy
Limerick
V94 V500
Ireland

bd.com

Advancing the world of health™

September 2024

Dear Teachers and Students,

We are excited to announce that the BD STEM Stars competition is now open for registration! This is a fantastic opportunity for students to showcase their creativity, innovation, and problem-solving skills in the field of STEM (Science, Technology, Engineering, and Mathematics).

What's New for 2025?
We have introduced several exciting prize categories to recognize and reward outstanding projects:

- **Grand Prize**: Awarded to the project with the most outstanding innovation, creativity, and efficacy. The winning school will receive **€10,000** and the students will share **€2,000**.
- **Product Category**: For projects that create a physical prototype. Winning students will receive up to **€2,000**.
- **Software Category**: For projects that solve problems through code-based solutions. Winning students will receive up to **€2,000**.
- **Research Poster Category**: For students with strong ideas and research. Winning students will receive up to **€1000**.
- **Video Award**: For projects highlighted through creative videos. Winning students will receive up to **€1000**.
- **Demo Award**: For outstanding live demonstrations. Winning students will receive up to **€1000**.

How to Participate

- **Register Your Project:** Use the registration link to sign up your project.
- **Download Your School Pack:** Once registered, download the school pack, which includes templates to guide students in creating their projects.
- **Submit Your Work:** Ensure your project is submitted by the deadline, **January 27th, 2025.**

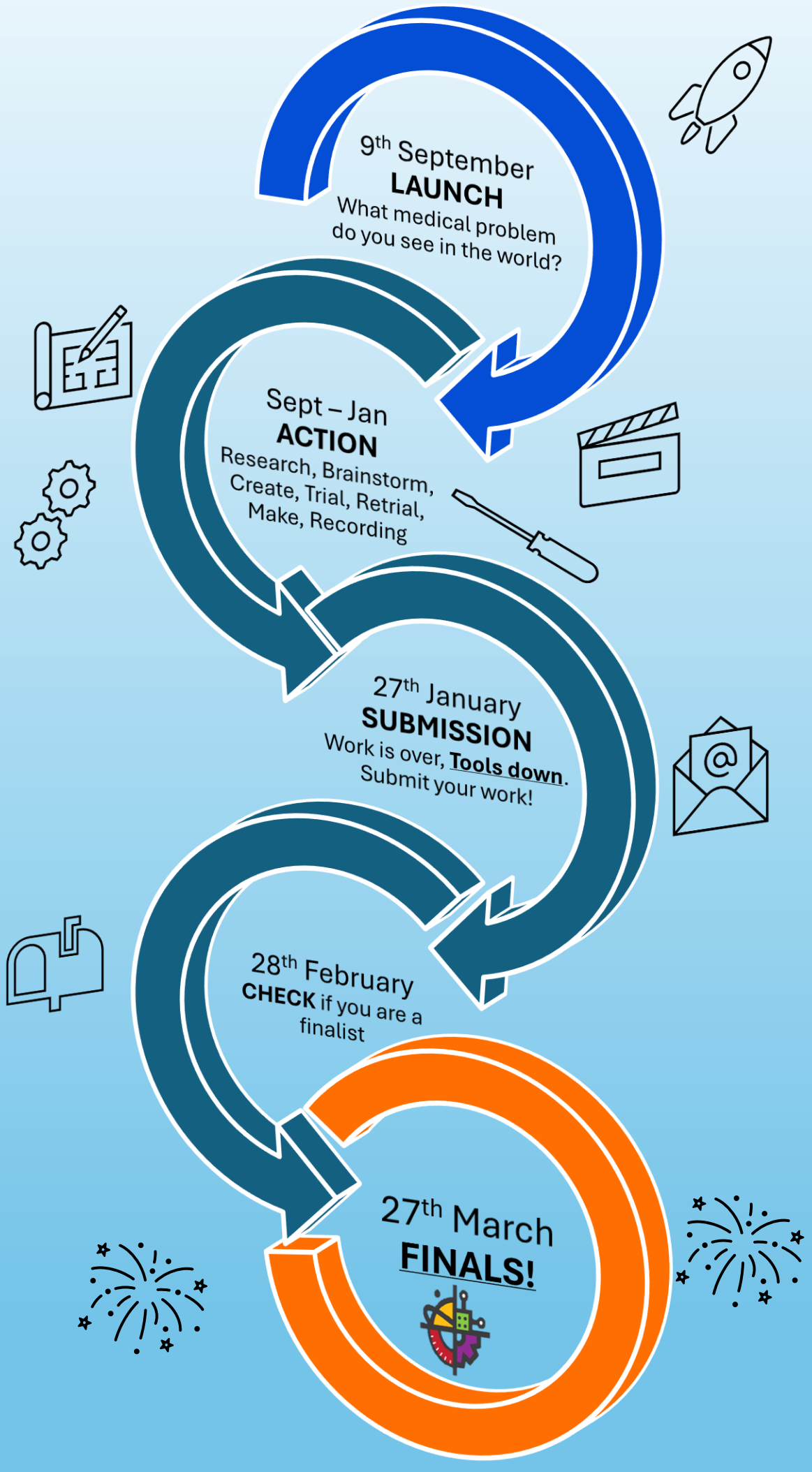
What Are We Looking For?
Do you have a healthcare problem you're passionate about solving? BD seeks creative and innovative solutions to key healthcare challenges. Whether you have a groundbreaking idea, a working prototype, or anything in between, we want to see it!

About BD STEM Stars
BD STEM Stars aims to inspire and encourage students in the fields of Science, Technology, Engineering, and Maths. Innovators in these areas can make incredible advances in the world of health. BD is committed to supporting programs that foster future talent and is passionate about community-based initiatives like STEM Stars. This competition is open to all secondary schools within the Munster region.

We look forward to seeing your innovative projects and celebrating your achievements at the live final on **March 27th, 2025.** For more details and to register, please visit our website.

Best regards,
STEMStars 2025 Organizing Committee

Your STEM STARS Journey



STEM STARS
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BD

A STEM COMPETITION FOR YOU(TH)

Ignite your Innovation
Unleash Your Creativity
Solve Real Problems

Student prizes across 6 categories.
Best Software, Product, Research Poster, Demo, Video and Grand prize.

Register Today

PROJECT SUBMISSION DEADLINE: STRICTLY JAN 27TH, 2025

BD

Live Finals at BD Research Centre Ireland
Mar 27th, 2025

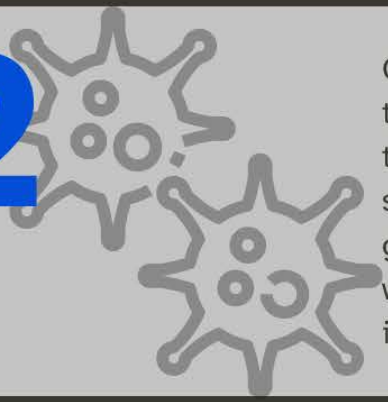
T&Cs apply
www.bd.com/en-uk/about-bd/bd-stem-stars

LIVE FINALS LAB TOURS

LAB 1

We'll briefly discuss Molecular Diagnostics, provide an overview of cytology-based platforms, and explore the Product Lifecycle from launch to finish

LAB 2



Come and experience a talk on that will focus on the biology and hardware side of flow cytometry to give a general overview of what we do and why we do it.

LAB 5

Explore the world of gadgets for medical applications. You can expect to see a mix of mechanics, electronics, and software

LAB 8

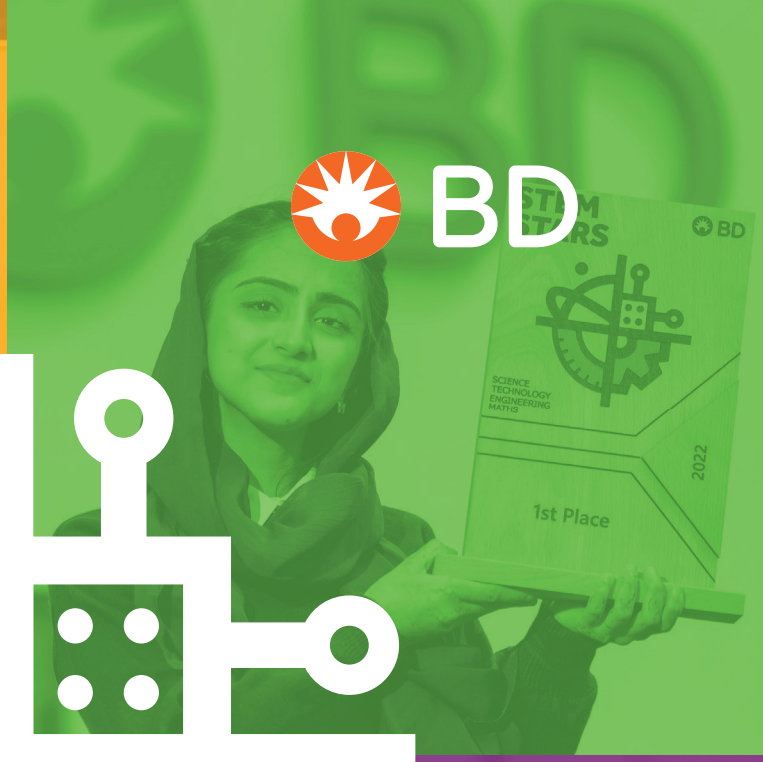
Service Life Testing: Here, we ensure that our products can withstand the test of time. Come and witness automated and semi-automated testing happening right before your eyes

LAB 9

In this lab, we focus on the accuracy of the equipment. We utilize CAD and fixtures to assist us on a daily basis. You'll also get to see 3D printed items and 3D scanners in action

STAY TUNED FOR MORE DETAILS...

BD



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ABOUT BD STEM STARS

BD STEM Stars competition is all about advancing the world of health through STEM. We ask student(s) to tackle a healthcare issue that affects them or members of their community and how they propose to solve it using STEM subjects. Submissions should be original and creative and include:

- **Why they chose the healthcare issue**
- **Background research**
- **Application of STEM subjects in resolving the issue**
- **Prototypes (if applicable)**
- **Final conclusions**
- **Project file capturing the above**
- **3-5 minute video talking about their project. Creating a video is optional for the Research Poster category.**

The Grand Prize winning entry will receive a prize of **€10,000** for their school to use within STEM education - with student prizes of between **€1,000** and **€2,000** for the winners of each category.

WHO IS IT FOR?

Open to schools in the Munster region.
ROI only.

The competition will promote and encourage participation in STEM subjects for children aged between 13-19 years of age.

The competition is open to individual students or a group (max 8).
Max. three entries per school.

WHAT THE TEACHERS SAY...

"Through the boundless potential of STEM Stars, you can unlock innovation, creativity and problem solving in your students. Over a short few years we've seen this competition foster passion in students for STEM subjects. Selfishly, we'd prefer to keep it a secret but it's not fair to keep a lid on a good thing! I would urge you to get your school involved"

DONAL ENRIGHT
DESMOND COLLEGE

"BD STEM Stars was an excellent competition allowing students the opportunity to highlight a health issue of importance to them, Mental Health in our society. Students used their creative skills & knowledge across a range of STEM subject areas including Biology, Physics, Computer Coding, Graphics and Maths. They investigated and developed a very interesting solution through Colour Light Therapy. The students were an absolute pleasure to work with and have bright futures ahead of them."

BERNIE O DRISCOLL
THOMOND COMMUNITY COLLEGE

COMPETITION CATEGORIES

Grand Prize €12,000
For the project with the most outstanding innovation, creativity and efficacy in its design, The Grand Prize will be awarded to a finalist from the Product, Software, and Poster categories.

Product Category €2,000
For those who prefer a hands on approach, the product category encompasses projects which create a physical prototype, including a combination of mechanical and electrical components which may also include an embedded software component. Students should clearly demonstrate what medical issue creates a need for the product and how the need is met by the product design.

Software Category €2,000
For those who think in ones and zeros, the software category deals with solving problems through code based solutions. Students should clearly demonstrate what medical issue creates a need for their solution and include in their submission the overall design of the solution as well as detailing the algorithms, data and user interfaces etc that make up the solution.

Research Poster €1,000
For those that think a picture is worth a 1000 words, the poster category allows students to showcase innovations and potential solutions which will require further work before a prototype can be created. Students should clearly demonstrate what medical issue creates a need for the innovation, the proposed solution design and what future work would be required to bring their design to the next step.

Outstanding Video €1,000
For the creative directors, the video category allows students to highlight their projects prior to the live demonstration. The students' videos will be assessed on the communication skills demonstrated, the clarity with which the information is presented and the overall technical skills demonstrated in the making of the video.

Outstanding Demonstration €1,000
For the eloquent and articulate, the outstanding live demonstration category allows students to showcase their project. Students should seek to engage with the audience, clearly highlighting the medical need and innovative design in the their project and leaving a lasting impression.

HOW TO ENTER

Competition details and timelines can be found on our website: **www.bd.com/en-uk/about-bd/bd-stem-stars**

REGISTER NOW TO GUARANTEE YOUR PLACE

PREVIOUS WINNING PROJECT

Kinsale Community School

Etaoin Healy Bastow & Ronan Hawkins

In the tightest competition to date, Etaoin Healy Bastow and Ronan Hawkins could not be separated, sharing 1st place in the 2024 BD STEM Stars competitions. Their projects, "Wound Protection" and "A Radiology Tool Harnessing Neural Networks for Early Diagnosis from CT scans and MRIs" showcased the diversity of the proposed solutions presented at the STEM Stars showcase.

Inspired by the difficulty faced by a family member in keeping a wound bandaged, Etaoin's proposed solution utilized 3D printing to design a custom cage to cover the wound. This maintained a safe barrier over the wound, aiding in the recovery process.

Ronan's project sought to use neural networks to create a diagnosis tool for radiologists. This would be used by radiologists to more efficiently work through CT and MRI imagery, decreasing time patient waiting times and allowing for earlier diagnosis of potential issues.

HEAR FROM THE RCI TEAM

"I really enjoy seeing what the students come up with when given the opportunity to innovate. They are always so creative and its's a real treat to be a part of the process that allows them to build on their ideas."

SHAUNA HOLDEN
SENIOR SCIENTIST REAGENTS AND ASSAY DEVELOPMENT

"Working in RCI has opened my eyes to the variety of careers in STEM and what I notice is the huge creativity applied in the med-tech space. As a parent it's a privilege to now advocate for STEM subjects at secondary school level. Who knows what stars we'll uncover!"

FIONNAGH TSANG
ENTERPRISE PROJECT MANAGER

Internal Judge:

"STEM Stars shows how bright and hopeful the future can be, that its in the safe hands of the next generation when opportunities are provided to them and creativity is fostered in them".

OWEN O NEILL
ASSOCIATE DIRECTOR
DEVICE AND PRODUCT ENGINEERING
BD RESEARCH CENTRE
IRELAND

"BD RCI is proud to empower Ireland's future innovators by fostering STEM-rich education across the country. This is the most exciting event in BD calendar year; the energy from the students on the day, the quality of their projects, and the teachers who are promoting STEM in the country is fantastic to see."

SEÁN WALL
SENIOR R&D DIRECTOR AND SITE LEAD

PROJECT TEMPLATE

Use the project template to guide you through your submission!

Visit our website to find the submission template which outlines the necessary components to any project submission; highlighting some potential extras that teams can include. This template is an editable PDF that schools must complete as part of their submission.

School Details
Includes team members and school information.

Project Introduction
Introduce your project and the inspiration behind it.

Scope & Project Plan
This is your opportunity to highlight the area of healthcare that your project will impact. Your project has potential to advance the world of health- let us know how. This section has a 1000 word limit.

Research & Development
There are many ways to research a project. Show us how you did it and how your project evolved from the initial idea to the final design. Include any background information you collected, and surveys carried out. There is no word limit in this section. Blow us away!

Results & Conclusions
You've put in all the hard work, now show us what it means. What conclusions can you draw from the project? Does it meet the aims you set out in the beginning? Use clear and concise language. Use the appropriate tables, charts or images to convey your data and visualise where applicable. Highlight any changes you would make to the project- scope, data collection, outcome.

The submission template can be found on our website:
www.bd.com/en-uk/about-bd/bd-stem-stars

VIDEO ENTRY TIPS!

Video Length
The video should not exceed 5 minutes in length and the key aspects of your projects should be covered within this timeframe.

Content
Choosing which approach suits your needs best, focus on either demonstrating your solution to the suggested issue or provide details and descriptions that guide the audience on your project journey

Audio-Visual
Use a high-quality microphone if possible and ensure sound levels are consistent across the video presentation. Recording on a new Android or IPhone can produce good results as they tend to have good cameras. Also, a simple tripod goes a long way in recording the video to ensure the clips are steady.

Video Format
Videos should be submitted using a commonly used video format such as MP4, AVI or MOV.

Communication
Endeavour for clear communication, succinct points and consider amplifying your message using charts, photos, graphs or your prototype in action if you have one. Your video should have a logical story with a conclusion that looks to the future.

A video presentation is an opportunity to showcase your ability to navigate and leverage AV equipment, get creative with your story-telling, practice presentation skills and build experience with editing software.


of health
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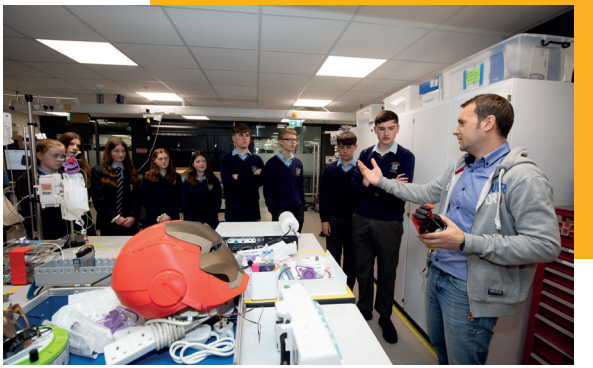
STEM STARS Desmond College
MELA NO MORE
STEM STARS
DESMOND COLLEGE


Coláiste Mhuire
Co-Ed


STEM



WHAT BENEFITS DID STUDENTS GET FROM PARTICIPATING IN STEM STARS?

- Confidence
- Research
- Team Building
- Presentation Skills
- Self Esteem
- Recognition For Their Work
- Extra-curricular Skills Development
- Potential Job Opportunities
- Success Stories
- Communications

WHO ARE BD?

BD is one of the largest global medical technology companies in the world and is advancing the world of health by improving medical discovery, diagnostics and the delivery of care. The company develops innovative technology, services and solutions that help advance both clinical therapy for patients and clinical process for health care providers.

BD has 75,000 employees and a presence in virtually every country around the world to address some of the most challenging global health issues. BD helps customers enhance outcomes, lower costs, increase efficiencies, improve safety and expand access to health care.

www.bd.com

BD RESEARCH CENTRE IRELAND

RCI is a state-of-the-art facility adjacent to the University of Limerick campus. We develop innovative technologies to improve biomedical discovery, clinical diagnosis of disease, and the delivery of care for patients and health care workers.

We currently employ 400 experts in software development, software testing, systems engineering, mechanical and electronic engineering, project management, quality and biosciences including immunology. The diverse, collaborative team brings together people from 27 countries working in multidisciplinary teams to solve problems and advance the world of health.

FREQUENTLY ASKED QUESTIONS

Is there an entry fee?
No. It's completely free to enter.

Can we enter a project previously entered in another competition?
All submitted entries should be original work and previous STEM-Stars competition topics should not be repeated. Your submitted project cannot have placed in a national or international STEM competition.

Who can participate?
STEM Stars, is open to secondary school teachers and students (under the age of 19) who are attending school in the Munster region in the Republic of Ireland.

Are there different categories?
The broad umbrella is health, and your project can cover emergency, preventative, rehabilitative, long-term, hospital, diagnostic, primary, palliative, or homecare. We're also interested in technologies that can improve the quality of life for people with long-term disabilities.

Entries must be placed in 1 of 3 main categories: Product, Software, or Research Poster. Entries into each of these categories are also eligible for the Grand Prize Category.

All entries are also eligible to enter two additional categories: Outstanding Video and Outstanding Demonstration.

Is this for Junior Cert or Leaving Cert cycles?
The competition is open to both Junior Cert and Leaving Cert cycles.

How many entries can my school submit?
Schools may have a maximum of 2 entries within the Research Poster category and a maximum of 2 entries across both the Product and Software Categories.

What resources are available for the competition?
You will find a school pack available for download on the website with lots of helpful notes and guidance.

What are the prizes?
The Grand Prize winning entry will receive a prize of **€10,000** for their school to use within STEM education - with student prizes of between **€1,000** and **€2,000** for the winners of each category.

How are projects judged?
Judging takes place over 2 rounds.
During round 1, all proposals are screened and selected for finals. At this stage, the video plays an important role in imparting the healthcare challenge and how students approached resolving it. During round 2, selected schools are invited to spend the day at BD Research Centre Ireland and demo their projects for our panel of internal judges and associates on site. Final adjudication takes place with awards ceremony on the same day.

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FOR MORE INFORMATION

Email: **STEMStars@bd.com**
www.bd.com/en-uk/about-bd/bd-stem-stars

Alternatively contact your local rep or
dedicated school's point of contact.

National Technology Park,
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BD

Title

School and Authors

School Logo Here

Introductions

What is the problem or unmet need in the medical technology space this project is trying to solve ?

Methods

How did you do your research?

- *Surveys*
- *Scientific literature review*
- *Clinical research*
- *Interviews*
- *Experiments*

Results (1)

Info graphics
Key details
Discussion bullet

Notes :

- *The style of the poster is up for the creative minds……. just bear in mind there are aspects that make posters effective to communicate your work ! Why, What, How, What for.*
- *If you want to use someone else's research or work, make sure to reference it and cite it !*
- *Ensure you setup your poster size/format first and then place content.*
- *Landscape orientation is typical but not mandatory*
- *Size is typically A0 but small formats may work A1, A2*
- *Tip ! Some universities have great guidelines for what makes a great poster. i.e., Keep a white background.*

Results (2)

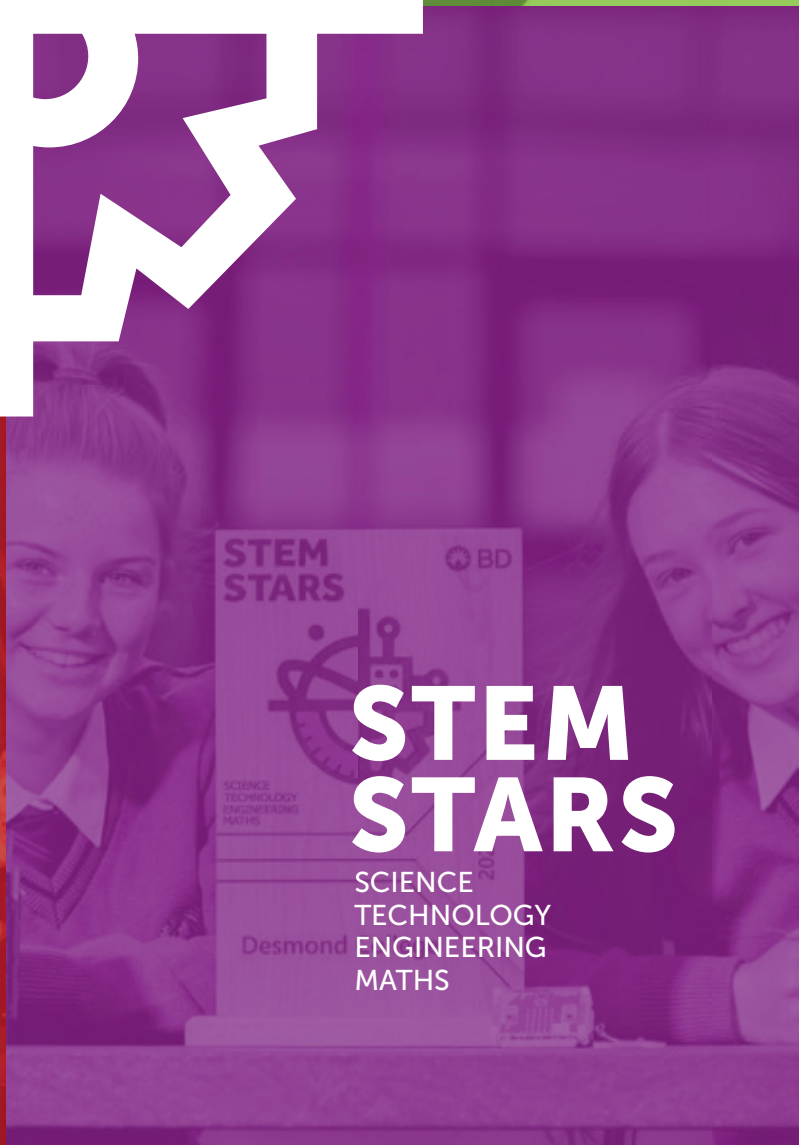
Info graphics
Key details
Discussion bullet

Conclusions

Conclusion Bullet One
Conclusion Bullet Two

References

BD



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Submission Template

Category

What category is this project being submitted to?

Product ☐

Software ☐

Research Poster ☐

If submitting a project in Poster Research, are you electing to submit a video for the video prize category?

Yes ☐

No ☐

*Max of 8 students per team

Student Name	School Year

School Name	School Address
County	Eircode

Project Name	
Teacher's Name	Insert Primary Contact if other
Email Address	Phone Number

Are there other submissions from your school? Yes ☐ No ☐

Is this the first year your school has submitted a project? Yes ☐ No ☐

Has this project previously won in any national or international STEM competitions? Yes ☐ No ☐

Project Introduction

All projects should complete this section.

POINTERS

- What inspired this project? Is it a personal interest or something that affects your family or community?
- If there were other ideas, why did you choose this one? What is the justification for your choice? Is it novel, is it improving an existing solution or something else?

*Up to 1000 words

Section A- Software and Product ONLY

If submitting a Research Poster, move to section B, page 9

Scope & Project Plan

Defining your scope helps set boundaries, goals and deadlines without delay or overwork.

POINTERS

- How do you see this idea being applied to the medical device industry or areas of healthcare? Defining your project scope isn't a one-person job. You should align with important stakeholders and ensure the team is all on the same page. What do you hope to achieve at the end of the project?
- Work Plan: What is your project plan.eg. interviews, data analysis, writing code, 3-d print components, build a prototype, do user research etc.
- Define your problem statement or challenge.

*Up to 1000 words

Research & Development

You've identified your problem statement, its now time for research and development.

POINTERS

Knowledge Gathering

- Reference your reading materials
- Did you complete surveys, what was the sample size?
- Did you conduct interviews with any subject matter experts?
- Is there anything similar to your idea already available?
- Will you use quantitative (numbers & statistics) or qualitative (words & meanings) methods?
- Consider interviewing medical experts or teachers in your school.
- Any claims made in the video or project submission should be referenced in this section.

Evolution of the project

- What was your starting hypothesis?
- Were there many iterations?
- Were there any failures?
- Aim for clear visualisation of your process
- Graphs, flowcharts, wireframes, illustrations or similar that demonstrate the development of your idea

Research & Development

Supplementary files that support your research & development can be submitted with the completed submission template.

*No word limit

Results & Conclusions

POINTERS

- Did you complete what you set out to do in the project plan?
- Appropriate analysis and clear visualization of the results
- Would you do anything differently if starting again? What further steps could be taken to develop your project?
- What is the overall conclusion?
- Any relevant information not included in the video

*Up to 1000 words

Reference List
*No word limit

Checklist for Software & Product submissions

- [ ] **Completed submission template**
  - [ ] School Details
  - [ ] Project Introduction
  - [ ] Scope & Project Plan
  - [ ] Research & Development
  - [ ] Results & Conclusions
- [ ] **Supplementary information**
- [ ] **Video (5 mins max) in appropriate file format**

Section B- Research Poster ONLY

If submitting Software or a Product, move to section A, page 3

Poster Abstract: An abstract is a concise summary of your research project.

POINTERS

A general guide to an abstract is as follows:

- Title: A clear and descriptive title that reflects the content of the poster.
- Introduction/Background:A brief overview of the research problem or question, providing context for the study.
- Objectives: The main goals or hypotheses of the research.
- Methods: A summary of the methodology used in the research, including any experimental procedures, data collection, or analysis techniques.
- Results: A brief presentation of the key findings, even if they are preliminary.
- Conclusion: A summary of the implications or significance of the results, and how they contribute to the field.
- Future work: How would you pursue this work in the future?

*300 words (including title).

Scope & Project Plan

Defining your scope helps set boundaries, goals and deadlines without delay or overwork.

POINTERS

- How do you see this idea being applied to the medical device industry or areas of healthcare? Defining your project scope isn't a one-person job. What do you hope to achieve at the end of the project?

- Define your problem statement or challenge.

*Up to 1000 words

Research & Development

You've identified your problem statement, its now time for research and development.

POINTERS

Knowledge Gathering

- Reference your reading materials
- Did you complete surveys, what was the sample size?
- Did you conduct interviews with any subject matter experts?
- Is there anything similar to your idea already available?
- Will you use quantitative (numbers & statistics) or qualitative (words & meanings) methods?
- Any claims made in the research poster or video should be referenced in this section.

Evolution of the project

- What was your starting hypothesis?
- Did your hypothesis change? How and why?
- Aim for clear visualisation of your process
- Graphs, flowcharts, wireframes, illustrations or similar that demonstrate the development of your idea

Research & Development

Supplementary files that support your research & development can be submitted with the completed submission template.

*No word limit

Reference List

*No word limit

Checklist for Research Poster

- [ ] **Completed submission template**
  - [ ] School Details
  - [ ] Project Introduction
  - [ ] Scope & Project Plan
  - [ ] Research & Development
  - [ ] Completed Research Poster Template
- [ ] **Supplementary information where applicable**
- [ ] **Video (5 mins max) in appropriate file format.**
  (Optional extra for Research Poster category)

Video Submission

Your video presentation should tell your story from inspiration to completion and should be balanced with the right amount of information.

This is a guide outlining the video requirements for your BD STEM Stars project:

Video Length	The video should not exceed 5 minutes in length and the key aspects of your projects should be covered within this time frame. Exceeding the allotted time will incur marking penalties.
Content	Choosing which approach suits your needs best, focus on either demonstrating your solution to the suggested issue or provide details and descriptions that guide the audience on your project journey.
Audio-Visual	Use a high-quality microphone if possible and ensure sound levels are consistent across the video presentation. Recording on a new Android or IPhone can produce good results as they tend to have good cameras. Also, a simple tripod goes a long way in recording the video to ensure the clips are steady.
Video Format	Videos should be submitted using a commonly used video format such as MP4, AVI or MOV.
Communication	Endeavour for clear communication, succinct points and consider amplifying your message using charts, photos, graphs or your prototype in action if you have one. Your video should have a logical story with a conclusion that looks to the future.

Additional Extras

These may help towards the communication of your project to the judging panel either on the day or in the submission.	✓ Posters ✓ Gantt chart/ Timeline ✓ Wireframes / flowcharts/ illustrations