

School Improvement Plan for Science (September 2021- June 2024)

Overall Objective for 2021-2024:

- To raise awareness among pupils and staff as to the meaning of STEM and of its importance for their life long learning and future careers (especially in relation to Technology and Engineering)
- To build confidence and capacity among the staff and pupils in relation to the teaching and learning of STEM especially the T. and E. of STEM
- To embed the STEM skills among the student body to a very high standard.
- To listen to and follow the voice of the child in a more flexible manner.
- To continue with our plan to ensure that there is breadth, depth and progression in the delivery and attainment of curricular objectives in order to deepen the pupils' knowledge, skills base and understanding of STEM.
- To improve the percentage of pupils scoring above the 50th percentile by 1% year on year from 86% of the student body to 89% from 2021 to 2024

Specific targets: 2021-22– Year 1

- To improve the percentage of pupils scoring above the 50th percentile by 1% from 86% of the school population to 87% by June 2022.
- To provide CPD to staff in order to raise awareness and build understanding as to what is involved in the teaching and learning of STEM
- To embed the scientific skills among the student body on a phased basis.
- To continue to use the school garden as a teaching resource to complete various units of the science curriculum.
- To use assessment to inform pupils and parents as to their progress.
- To give STEM homework in order to extend and challenge the pupils' knowledge of and skills base in STEM

Domain Focus

Domain 2- Learner Experiences - the following Standards are to be focused on:

- Pupils' STEM knowledge, skills and understanding are developed in accordance with the objectives, skills and concepts of the Primary Curriculum
- Pupils reflect on their progress as learners and develop a sense of ownership of and responsibility for their learning
- Pupils contribute their opinions and experiences to class discussion with confidence being respectful of and interested in the opinions of others.

Domain 3- Teachers' Individual Practice - the following Standards are to be focused on:

- The teacher has the requisite subject and pedagogical knowledge in the area of STEM
- The teacher selects and uses planning, preparation and assessment practices that progress pupils learning.
- The teacher engages with pupils' opinions, curiosity and dispositions and modifies their teaching practice to build on and exploit these opportunities

Domain 2- Learner Experiences					
Standard 1: Pupils’ knowledge, skills & understanding of STEM are developed in line with the objectives/ skills/ concepts of the Primary Curriculum					
Objective	SPECIFIC ACTIONS	PERSONNEL	TIMING	INDICATORS	ATTAINED
To provide opportunities to the pupils to develop their awareness, understanding and knowledge of STEM	<ul style="list-style-type: none">When teaching STEM each staff member is to specify<ul style="list-style-type: none">- the area of STEM which is being focussed on- the reason it is being studied-its significance to their daily life and life-long learning-pupils use digital technology to research, develop and deepen their knowledge and understanding of STEMPupils are exposed to a variety of learning experiences in the area of STEM through workshops/Make & Design/Discussion groups/Science Week/use of parents from a STEM background/outside facilitators	<ul style="list-style-type: none">Staff	<ul style="list-style-type: none">Sept– June	<ul style="list-style-type: none">Increased awareness levels among the student body	[]
		<ul style="list-style-type: none">Pupils/teachers	<ul style="list-style-type: none">Ongoing	<ul style="list-style-type: none">Presentations/ project work	[]
		<ul style="list-style-type: none">Ms Kehoe, staff, parents, outside personnel	<ul style="list-style-type: none">Ongoing	<ul style="list-style-type: none">Pupil/teacher feedback	[]
Standard 2: Pupils reflect on their progress as learners and develop a sense of awareness, ownership of and responsibility for their learning					
Action	SPECIFIC ACTIONS	PERSONNEL	TIMING	INDICATORS	ATTAINED
Encourage the child to be an active participant in their own learning	<ul style="list-style-type: none">Clear learning intentions to be set for each STEM lesson that will be shared with the pupils. Use of WALT and WILF for each topic covered. Children to record WALT and WILF in their science copies.Pupils to reflect themselves on how/whether they have achieved the learning outcomesPupils to be given specific directions and encouraged by the teachers as to how they can	<ul style="list-style-type: none">Staff/pupils	<ul style="list-style-type: none">Ongoing	<ul style="list-style-type: none">Fortnightly plans /c. míosula/ STEM copies.	[]
		<ul style="list-style-type: none">Pupils	<ul style="list-style-type: none">Ongoing	<ul style="list-style-type: none">Recorded in copies	[]
		<ul style="list-style-type: none">Staff	<ul style="list-style-type: none">Ongoing		[]

	<p>deepen and extend their knowledge on completion of a topic. Homework to be given.</p> <ul style="list-style-type: none"> Staff to use 5Ws/KWL to elicit the pupils' knowledge of what has been previously learned, retained and will be learned. 	<ul style="list-style-type: none"> Staff/pupils 	<ul style="list-style-type: none"> Ongoing 	<ul style="list-style-type: none"> Planning & Science copies 	
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Standard 3: Pupils experience opportunities to develop and deepen their skills, knowledge and attitudes in relation to STEM

<i>Action</i>	<i>SPECIFIC ACTIONS</i>	<i>PERSONNEL</i>	<i>TIMING</i>	<i>INDICATORS</i>	<i>ATTAINED</i>
Ensure that there is consistency/progression and development of learning objectives	<ul style="list-style-type: none"> Teachers follow the Science Plan as drawn up and agreed on by staff 	<ul style="list-style-type: none"> All staff 	<ul style="list-style-type: none"> Ongoing 	<ul style="list-style-type: none"> Fortnightly plans /cuntais míosula/ copies. 	[]
	<ul style="list-style-type: none"> A uniform approach to be used in all classes when teaching about plants and animals using the agreed format. 			<ul style="list-style-type: none"> Teacher feedback/copies 	[]
Provide opportunities to the pupils to develop and embed their skills in STEM	<ul style="list-style-type: none"> Staff to explicitly name and teach the skill/STEM strand/strand unit that is being taught, the relevance of the subject to the life of the child and to life-long learning. 	<ul style="list-style-type: none"> All staff 	<ul style="list-style-type: none"> Ongoing 	<ul style="list-style-type: none"> Planning, Pupil, explanation and teacher feedback 	[]
	<ul style="list-style-type: none"> Specific lessons to be given over to the teaching of STEM skills. 	<ul style="list-style-type: none"> All staff 	<ul style="list-style-type: none"> Ongoing 	<ul style="list-style-type: none"> Cúntas Míosúil 	[]
	<ul style="list-style-type: none"> The agreed format for the writing up of science experiments to be followed. 	<ul style="list-style-type: none"> All staff 	<ul style="list-style-type: none"> Ongoing 	<ul style="list-style-type: none"> Feedback 	[]
		<ul style="list-style-type: none"> Class teachers 	<ul style="list-style-type: none"> Once per term 	<ul style="list-style-type: none"> Feedback 	[]

	<ul style="list-style-type: none"> • Staff to inform parents monthly as to what is being covered in STEM by email. • Feedback to be given at P/T meetings in relation to STEM skills, knowledge acquisition • To continue to develop the garden and integrate its use as a teaching tool to embed the pupils' knowledge and understanding of 'Bio-Diversity'. • Timetabled sessions in the garden • Outside classroom- teachers are to teach at least one lesson per term outside in the garden. Said lesson is to be noted in the STEM section of their cúntas míosúl. Use of Google Docs to organize sessions. • Aistear Link- During the June theme of Summer/Garden in Junior Infants the 'sand area' group will go outside to work in the garden. • Use of the Mud Kitchen 	<ul style="list-style-type: none"> • Montessori, Class teachers, Ms. Kehoe, Mr. Glynn • Montessori, Class teachers, • Junior Infant teachers & SEN teachers 	<ul style="list-style-type: none"> • Ongoing • June 	<p>Feedback from pupils/parents/Staff</p> <ul style="list-style-type: none"> • Feedback 	[]
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Domain 3- Teachers' Individual Practice

Standard 1: The teacher has the requisite subject and pedagogical knowledge in the area of STEM.

<i>Objective</i>	<i>SPECIFIC ACTIONS</i>	<i>PERSONNEL</i>	<i>TIMING</i>	<i>INDICATORS</i>	<i>ATTAINED</i>
To provide opportunities to the staff to develop their skills in STEM and other areas.	<ul style="list-style-type: none"> • PDST and outside facilitators will be sought to up skill teachers in the teaching of STEM skills and in building awareness as to what STEM involves 	<ul style="list-style-type: none"> • Ms. Kehoe/PDST Darren Shiels 	<ul style="list-style-type: none"> • Croke Park hours- Sept/Oct/ Nov. 	<ul style="list-style-type: none"> • Teacher feedback 	[]

To provide CPD possibilities for staff in areas identified by them –Energy/Forces, magnetism electricity/habitats and Mini- beasts.	<ul style="list-style-type: none"> Staff to engage in CPD in relation to Make &Design, Engineering and technology Ms. Kehoe to link in with Dr. Alice D’Arcy and STEAM The current stock of STEM resources will be updated and organized on an annual basis. 	<ul style="list-style-type: none"> Ms. Kehoe/ Relevant experts Ms. Kehoe 	<ul style="list-style-type: none"> Ongoing July 	<ul style="list-style-type: none"> Teacher Feedback Science press/resources used 	[] []
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Standard 2: -The teacher selects and uses planning, preparation and assessment practices that progress pupils learning.

<i>ACTION</i>	<i>SPECIFIC ACTIONS</i>	<i>PERSONNEL</i>	<i>TIMING</i>	<i>INDICATORS</i>	<i>ATTAINED</i>
Preparation, Planning & Reflection	<ul style="list-style-type: none"> Clear learning intentions to be set for each STEM lesson that will be shared with the pupils Use of WALT and WILF in all science topics. These to be written/pasted into the child’s STEM copies Staff to use the STEM Learning Experiences template while planning/reviewing Staff to use the Science Curriculum Strand and Strand Unit and Skills Checklist The cuntas miosul template to record learning objectives taught. All class teachers to teach timetabled, discrete lessons following the school’s Science Plan Teachers teaching the same class level are to collaborate and reflect on their approaches/success when completing their term/weekly/fortnightly planning. 	<ul style="list-style-type: none"> Class teachers Staff at the same class levels 	<ul style="list-style-type: none"> Ongoing Ongoing At the end of each term Ongoing 	<ul style="list-style-type: none"> STEM copies 	[] [] [] []

<p>Assessing & Measuring improvements over the coming three years</p>	<ul style="list-style-type: none"> • Time to be given once per term for staff to reflect on how the teaching /learning in a specific STEM topic went • All 2nd, 4th and 6th class teachers to use the Irish Primary Science Achievement Tests (IPSA-T) Results to be collated and fed back to staff. • Use of pupil profiles to track improvements over the years. • Six pupils to be tracked. Uniform approach to tracking our children by staff using the Teacher Observation of Scientific Skills checklist template. • STEM copies to be passed on at the end of the year • Teachers to identify exceptionally able pupils or pupils with a passion/flair for science. List to be given to Ms. Kehoe in June • Parents to be referred to CTY –Ms. Kehoe • These pupils to be encouraged to join the After School STEM Club. Scholarships to be given to deserving pupils. 	<ul style="list-style-type: none"> • Teachers of 2nd/4th/6th & Ms. Kehoe • Class teachers • Class teachers <p>Class teachers</p> <p>Ms Kehoe</p> <p>Ms Kehoe</p>	<ul style="list-style-type: none"> • Once per term at a staff meeting • May of each year • Ongoing <p>June</p> <p>Ongoing</p>	<ul style="list-style-type: none"> • IPSA-T results and Pupil profiles • Pupil profiles • Progress of tracker pupils over time • Fortnightly plans /cuntais míosula/copies. • Teacher feedback • Assessment outcomes of 	<p>[]</p> <p>[]</p> <p>[]</p> <p>[]</p> <p>[]</p>
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				those involved • Feedback from staff/pupils/parent	
Standard 3: The teacher selects and uses teaching approaches appropriate to the learning objective and to pupils' learning needs.					
<i>ACTION</i>	<i>SPECIFIC ACTIONS</i>	<i>PERSONNEL</i>	<i>TIMING</i>	<i>INDICATORS</i>	<i>ATTAINED</i>
To ensure that there is consistency/progression and development of learning objectives	<ul style="list-style-type: none"> Teachers to follow the School plan for STEM 	<ul style="list-style-type: none"> Class teachers 	<ul style="list-style-type: none"> Ongoing 	<ul style="list-style-type: none"> Pupils' copies 	[]
	<ul style="list-style-type: none"> Staff to ensure that a differentiated approach is employed to take account of the various needs/levels within the class 	<ul style="list-style-type: none"> All staff 	<ul style="list-style-type: none"> Ongoing 	<ul style="list-style-type: none"> Pupil feedback 	[]
	<ul style="list-style-type: none"> Teachers to use WALT & WILF 				[]
	<ul style="list-style-type: none"> Staff to use 5Ws/KWL and QAR to elicit the pupils' knowledge of what has been previously learned and retained. 	<ul style="list-style-type: none"> All staff 	<ul style="list-style-type: none"> Ongoing 	<ul style="list-style-type: none"> Teacher feedback 	[]
	<ul style="list-style-type: none"> The agreed format for the writing up of science experiments to be followed 	<ul style="list-style-type: none"> All staff 	<ul style="list-style-type: none"> Ongoing 	<ul style="list-style-type: none"> Pupils' copies 	[]
	<ul style="list-style-type: none"> Staff to build banks of scientific vocabulary in relation to specific science topics. These to be put up on a Science Word Wall. 	<ul style="list-style-type: none"> Class teachers 	<ul style="list-style-type: none"> Ongoing 	<ul style="list-style-type: none"> Science Folder on Google Drive 	[]
	<ul style="list-style-type: none"> Staff to build up a bank of lesson plans in relation to specific strand units and share them in the Drive. 	<ul style="list-style-type: none"> Class teachers ISM Member 	<ul style="list-style-type: none"> Once per term 	<ul style="list-style-type: none"> Teacher feedback 	[]
		<ul style="list-style-type: none"> All staff 	<ul style="list-style-type: none"> Ongoing 		[]

	<ul style="list-style-type: none"> • Staff to use the Jigsaw Approach at least once per term in relation to the teaching of a specific topic. This to be noted on the cúntas míosúil. • The topics in 'Wild Things At School' are to be covered in each level • Croke Park hours used for teachers to familiarise themselves with useful apps/PDST website etc. Staff to share at staff meetings. 	<ul style="list-style-type: none"> • All staff 	<ul style="list-style-type: none"> • Ongoing 	<ul style="list-style-type: none"> • Planning/ Cúntaisí míosúla • Staff feedback 	
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Monitoring/Review:

- Cuntais Miosúla will be used to note specific strand units/learning objectives and specific activities being covered.
- Use of pupil/parent questionnaires/ focus groups to ascertain opinions/feedback/attitudes on STEM initiatives.-
- Use of KWL to establish a baseline against which to measure progress.
- Use of the Irish Primary Science Achievement Tests (IPSA-T) to monitor and ascertain progress. Results will be analysed to inform ongoing planning.
- Use of Science copies of all pupils from 1st class up to be retained and passed on from year to year. The copies of six children will continue to be tracked.
- Use of Harold's Cross Google Drive to share all useful lessons, experiments and resources.
- Use will be made of Information evenings/Parent-Teacher Meetings, school website and monthly newsletters to inform parents of all initiatives being implemented/ to ask for support/volunteers and to provide feedback on outcomes.
- Results of standardised test to be communicated at year end and at parent -teacher meetings.
- Teacher observation will be used in monitoring and providing feedback in relation to all science initiatives. Key observations will be noted and discussed regularly at whole staff level at staff meetings/Croke Park Hours/ISM/Team Planning sessions etc.
- Continuing professional development will be sought and staff will be encouraged to attend CPD in an effort to further develop knowledge and skills and to keep abreast of best practice.
- School garden plan to be used to monitor the use of the school garden as a resource.
- Maintenance of school garden to be monitored by all teachers, Ms. Kehoe and Mr. Glynn
- Use of the outdoor classroom and 'Wild At School' book to be noted in Cuntas Miosula.
- List of science resources to be checked or amended and passed out to all staff members.
- Success of Science Week to be reviewed by staff.

