5.4 My Robot Friend

During this 3-hour STEAM program, 3rd graders go through 7 stages to design a robot that understands and responds to human emotions. The project builds emotional awareness as kids learn to identify feelings in others and choose kind ways to respond. The journey begins with an emotion circle and scenario discussions to develop empathy and social awareness. Working in small groups helps students practice empathy and cooperative problem-solving while tackling social challenges together. In the Planning the Robot Response stage, students use IF-THEN logic to code caring responses, which builds both empathy and emotional awareness, regulation and communication. Next, teams build and pilot where the focus is on demonstrating how the robot reacts empathetically to the emotion. The program ends with presentations and a reflection circle to improve communication and self-regulation skills.

Basic Information Sheet

Age group	Student number	Duration	Number of stages and	Subjects connection and relevance
3rd; grade students	Whole class (Groups of 4 students)	3 hours	7 stages	Coding

STEAM Event Summary

SPIRIT Skill Focus

- Creativity
- Emotional awareness regulation and communication
- Empathy

National curriculum Link and Objectives

- Understand basic logic and programming principles (if/then, sequences).
- Develop engineering and design thinking through prototyping.

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Real-world STEAM Connection and Problem definition

Children today are surrounded by smart devices and virtual assistants, yet these technologies often lack emotional understanding. This activity helps students reflect on a real-world issue: “Can a machine be a good friend?” or “What does it take to support someone emotionally?” By imagining and designing a robot that reacts to human emotions, students connect abstract coding concepts with real-life social needs. The challenge here is designing a technological solution to a problem they face everyday: “how to recognize emotions in others and respond kindly”.

Materials at a Glance

- Paper
- Pencils
- coloured markers
- glue
- scissors
- recycled materials for building the robot (cardboard, bottle caps, tubes, etc.)
- Printable “IF–THEN” coding blocks
- Emotion scenario cards

Indoor/Outdoor and Classroom layout

Setting: Indoor
Layout suggestion: Arrange desks in small groups of 4–5 students to encourage collaboration. Provide a central “materials station” with all recycled items and tools. Leave a free area or table at the front of the classroom for students to display or test their robot prototypes. If available, place a poster or screen nearby showing simple examples of robots or facial expressions for inspiration.

Notes on Research-based approach and integration

In this activity, children are encouraged to explore how we communicate emotions - both as humans and through artificial creations. They begin by observing how facial expressions convey feelings in real life, drawing from personal experiences and stories. Then, they apply this knowledge to imagine and design a robot that can express empathy. This process mirrors a basic research cycle: observing emotional cues, defining what makes them effective, hypothesizing how to replicate them in a robot, and testing their ideas through drawing or building. The connection to real life (e.g., how they feel when someone understands them) makes the learning more engaging and meaningful.

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Lesson Flow Overview (linked to details below)

Stage	Title	Brief Description	SPIRIT Skills	Duration	Link to Details
1st	**Introduction and Warm-up Discussion**	Children are invited to reflect on what makes someone a good friend, then imagine if a robot could be a good friend too. They are shown pictures or videos of robots and introduced to the idea of a robot that understands emotions.	• Empathy • Emotional awareness, regulation and communication • Creativity	15 minutes	**STAGE 1 – Introduction and Warm-up Discussion**
2nd	**Group formation and empathy scenario discussion**	After the introductory discussion, students form groups of four. Within each group, students choose or are assigned specific roles (e.g., robot designer, coder, writer, presenter) to ensure shared responsibility and active participation. Then, each group selects or receives an Emotion Scenario Card describing a situation where someone needs empathy. Students read and discuss the scenario, identify the emotional state involved, and begin thinking about how their robot might respond to help.	• Empathy • Emotional awareness, regulation and communication	15-20 minutes	**STAGE 2 – Group formation and empathy scenario discussion**
3rd	**Planning the Robot Response**	Based on the scenario discussed in the previous stage, students work in groups to plan how their robot should respond to different emotional states. Using simple IF–THEN logic, they match feelings with caring, appropriate responses. These ideas will later guide the robot's design and presentation. Example: • IF a classmate is sad → THEN robot offers comforting words and glows soft blue • IF someone is angry → THEN robot plays relaxing sounds • IF a child is afraid → THEN robot says, "You're not alone" and displays a calming animation	• Empathy • Emotional awareness, regulation and communication	15-20 minutes	**STAGE 3 – Planning the Robot Response**
4th	**Designing the Robot**	Each group builds a simple robot prototype using recycled or craft materials. The design should visually and functionally represent the	• Empathy • Emotional	40-45 minutes	**STAGE 4 – Designing the**

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		emotional responses defined in the previous stage. Students creatively integrate visual elements (like colours, facial expressions, light signals) to show emotions and empathetic reactions. The robot might include features like: • Interchangeable "faces" showing different emotions • Coloured "emotional lights" (e.g., blue = calm, red = angry) • Movable parts for gestures (e.g., arms to give a hug) • Cardboard buttons or panels labelled with actions • The robot does not need to be functional - it is a prototype that represents empathic responses.	• awareness, regulation and communication • Creativity		Robot
5th	**Rehearsal and Role-play**	In this stage, students rehearse their chosen emotional scenario using the robot they designed. One student plays the role of the child in need, another controls the robot's actions and responses, while the rest of the team supports the scene. The focus is on demonstrating how the robot reacts empathetically to the emotion.	• Empathy • Emotional awareness, regulation and communication	20 minutes	STAGE 5 – Rehearsal and Role-play
6th	**Presentations**	Each group presents their robot to the rest of the class. They explain the emotion scenario they worked on, show how their robot is designed to respond empathetically, and act out the 7scene using their prototype. The class observes and may ask questions or offer feedback.	• Empathy • Emotional awareness, regulation and communication	30 minutes	STAGE 6 – Presentations
7th	**Final Reflection Circle**	After all presentations, the class gathers in a circle to reflect on the activity as a whole. Using emotion cards, question prompts, or sentence starters, students are invited to share what they learned about emotions, empathy, and collaboration. This moment helps consolidate learning and creates space for personal insights and peer connection.	• Empathy • Emotional awareness, regulation and communication	5 minutes	STAGE 7 – Final Reflection Circle

Tips and Tricks for dealing with challenges (for the whole STEAM program)

- Some students might feel frustrated if their robot doesn't work as expected: remind them that trial and error is a key part of real engineering.

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- Celebrate failed attempts as valuable learning experiences.
- Encourage students to test small changes one at a time.
- If a group is stuck, gently ask what they've already tried and what they could try next.
- Teachers should model curiosity and patience, showing that emotions and mistakes are natural parts of invention.

Difficulty level tailoring notes

- **Beginner learners:** For students with emerging emotional vocabulary, offer sentence frames ("When someone is sad, I can…") and model robot responses. Use emoji cards to support understanding.
- **Advanced learners:** Encourage students to recognise more subtle emotional cues and think about how the robot should respond. Make the robot's response more complex and articulate.
- **Expert learners:** Add complexity with mixed-emotion situations (e.g., nervous and excited) or invite them to design a robot that can learn from interactions.

STEAM Program Debriefing and Reflection Questions

- What emotion did your robot respond to best?
- How did your team decide what kindness looks like?
- What did you learn about helping others?
- Can you act like your robot in real life?

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5.4.2. Stage details and Activities Flow

STAGE 1 – Introduction and Warm-up Discussion

How does this develop particular SPIRIT skills

- Develops emotional awareness by linking emotions to real-life and imagined contexts
- Stimulates empathy by asking students to imagine emotional needs in others (including a robot!)
- Promotes creative thinking through the open-ended question

What do we want to achieve regarding SPIRIT skill development (student understanding and/or behaviour)?

- Students begin to articulate qualities of empathy and support
- Students start imagining how emotions could be recognized and responded to
- Students gain curiosity about combining emotions and technology

Academic/Curriculum Objective connection

- Civic education: understanding emotions, relationships
- Science/technology introduction: robots and automation
- Language: expressing feelings and describing behaviours

Materials and tools needed for implementation

- Images or short videos of robots (printed or projected)
- Whiteboard or chart for keywords
- Optional: emotion cards

Preparation notes

- Choose age-appropriate robot visuals (simple design, expressive features if possible). Prepare 1–2 sample definitions of “good friend” to support discussion

Guided Questions

- What makes someone a good friend?
- Could a robot become a good friend? Why or why not?
- How could a robot know how we feel?
- What would you want a robot to do if you were sad or scared?

Stage Debriefing Questions (Optional)

- Did anyone think a robot could show feelings? Why?
- What was the most surprising idea shared in our discussion?

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Tips and Tricks for dealing with stage challenges

- If children struggle to imagine robots as friends, use cartoons or familiar characters (e.g., Baymax, Wall-E)
- Use sentence starters for shy children ("A good friend is someone who...")
- Validate all contributions to encourage imagination

STAGE 2 – Group formation and empathy scenario discussion

How does this develop particular SPIRIT skills

- Students practice identifying and understanding other people's emotions
- They collaborate to imagine supportive, compassionate responses
- They learn to recognize emotional cues and relational needs.

What do we want to achieve regarding SPIRIT skill development (student understanding and/or behaviour)?

- Students develop their ability to take others' perspectives
- They become more comfortable naming and recognizing emotions
- They discover there are different ways to support someone in need
- They build teamwork and respectful listening within small groups.

Academic/Curriculum Objective connection

- Civic and emotional education
- Strengthening emotional vocabulary and empathy
- Supporting cooperative work and social-emotional learning.

Materials and tools needed for implementation

- Printed or handwritten Emotion Scenario Cards (1 per group)
- Blank paper or sketch sheets for notes or early ideas (optional)
- Poster paper or flipchart for collective sharing (optional).

Preparation notes

- Prepare age-appropriate scenario cards in advance
- Organize the space for group work (e.g., desk islands or floor space)
- Clarify group roles and expectations with short descriptions/examples.

Guided Questions

- How do you think the person in this situation feels?
- Has something like this ever happened to you or a friend?
- What could we do to help them feel better?
- How might a kind and empathetic robot respond in this case?

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Stage Debriefing Questions (Optional)

- Which scenario made you think the most?
- What feelings did this discussion bring up for you?

Tips and Tricks for dealing with stage challenges

- If children have trouble choosing roles, suggest short role descriptions or let them rotate
- Offer sentence starters to help groups communicate ("I think that...", "Maybe we could...")
- For unclear situations, read them aloud or provide a quick example to support comprehension.

STAGE 3 – Planning the Robot Response

How does this develop particular SPIRIT skills

- Children explore how to respond sensitively and appropriately to others' emotions
- They practice imagining what kind of support someone in distress might need
- They create caring and meaningful responses through structured logic.

What do we want to achieve regarding SPIRIT skill development (student understanding and/or behaviour)?

- Students learn to match emotions with helpful behaviours
- Students develop greater awareness of how words, tone, and gestures can support others
- Students connect abstract emotional knowledge with concrete actions
- Students gain confidence in expressing empathy in clear, structured ways.

Academic/Curriculum Objective connection

- Introduction to logical thinking and decision making (IF–THEN structure)
- Social and emotional learning (SEL)
- Oral and written communication.

Materials and tools needed for implementation

- Emotion Scenario Card (from previous stage)
- IF–THEN planning worksheet or blank paper
- Pens, markers, optional logic flow templates

Preparation notes

- Prepare a few examples of IF–THEN statements to model for the class
- Encourage diversity in responses (emotions can have more than one possible supportive action)
- Reinforce that all ideas are welcome, as long as they show care and understanding.

Guided Questions

- What would a caring friend do in this situation?
- How could your robot show kindness or support?
- What could help this person feel better, safer, or calmer?
- What would YOU want someone to do if you felt this way?

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Stage Debriefing Questions (Optional)

- Did you find some emotions harder to respond to than others?
- How did your group decide on the best robot action for each feeling?

Tips and Tricks for dealing with stage challenges

- Some children may suggest “funny” or silly robot responses - guide them to think about the needs of the person in the scenario
- Offer emotion word banks and example responses for students who struggle with vocabulary
- Support students in combining kindness with creativity - there is no one right answer.

STAGE 4 – Designing the Robot

How does this develop particular SPIRIT skills

- Students embody empathy through creative design
- They think carefully about how to visually represent care, comfort, and emotional support
- They practice perspective-taking, imagining how someone might feel when seeing or interacting with their robot.

What do we want to achieve regarding SPIRIT skill development (student understanding and/or behaviour)?

- Students will be able to represent emotional responses through design choices
- They learn how to express empathy using visual and physical elements
- They will better understand how emotional cues can be communicated non-verbally
- They practice teamwork, negotiation, and listening during construction.

Academic/Curriculum Objective connection

- Basic design thinking and prototyping
- Emotional literacy through physical and visual representation
- Art and creativity integration with SEL.

Materials and tools needed for implementation

- Recycled items (e.g., boxes, tubes, caps, fabrics)
- Scissors, tape, glue, string, paper
- Markers, pens, coloured paper
- (Optional) LEDs, stickers, sound cards, etc.

Preparation notes

- Prepare a “materials table” where each group can collect supplies
- Display examples or inspiration images of simple robot prototypes
- Remind students that the purpose is to express emotions, not to make a high-tech machine.

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Guided Questions

- How does your robot show empathy?
- Which part of your design represents how the robot supports someone?
- What colours, shapes, or movements help show how your robot feels?
- How do the robot's features reflect your IF–THEN plan?

Stage Debriefing Questions (Optional)

- What emotion was the hardest to represent physically?
- Did everyone in the group contribute something to the robot's design?

Tips and Tricks for dealing with stage challenges

- Some groups might struggle with agreeing on a design - remind them to refer to their IF–THEN plan for guidance
- Offer sentence starters like: "Our robot helps by..." or "We chose this face/light because..."
- Emphasize function over perfection - the robot doesn't need to "work," it needs to express empathy.

STAGE 5 – Rehearsal and Role-play

How does this develop particular SPIRIT skills

- Students simulate real-life situations where empathy is needed
- They must recognize and respond to emotional cues
- They practice offering support and comfort using their robot as a tool.

What do we want to achieve regarding SPIRIT skill development (student understanding and/or behaviour)?

- Students will demonstrate their understanding of emotional needs through acting and interaction
- They will apply their robot design to support someone empathetically
- Students gain confidence in expressing and responding to emotions in a safe setting.

Academic/Curriculum Objective connection

- Drama and role-play for emotional literacy
- Application of design thinking to real-life scenarios
- Reinforcement of IF–THEN logic through live demonstration.

Materials and tools needed for implementation

- Robot prototype
- Emotion scenario card
- (Optional) simple props or costume pieces to support role-play

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Preparation notes

- Remind students that role-play is about trying out ideas, not about acting perfectly
- Encourage kindness and sensitivity during scenes
- Support shy students by allowing them to choose less exposed roles (e.g., narrator or robot operator).

Guided Questions

- ow does your robot help the person in this situation?
- How did it feel to act out that emotion?
- What did you notice about your partner's reaction?
- Did the robot do something that would actually help in real life?

Stage Debriefing Questions (Optional)

- Was the robot's response clear to the audience?
- How did your team work together to bring empathy to life?

Tips and Tricks for dealing with stage challenges

- Some students may feel embarrassed – create a warm, encouraging environment
- Keep scenes short and focused to maintain engagement
- If needed, model a simple role-play first with the whole class.

STAGE 6 – Presentations

How does this develop particular SPIRIT skills

- Encourages articulation of emotional understanding
- Promotes appreciation of others' perspectives and creative solutions.

What do we want to achieve regarding SPIRIT skill development (student understanding and/or behaviour)?

- Students will articulate their understanding of empathy in their own words
- They will observe and learn from peers' interpretations of emotional needs
- They will strengthen confidence in presenting ideas and listening actively.

Academic/Curriculum Objective connection

- Oral presentation and storytelling skills
- Design thinking communication
- Social-emotional learning and reflective practice.

Materials and tools needed for implementation

- Robot prototype
- Scenario card
- Any visual aids or drawings the team prepared

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Preparation notes

- Give each group a set amount of time and a simple structure (e.g., 1 min scenario, 1 min robot, 1–2 min demo)
- Coach students on how to listen respectfully and ask meaningful questions
- Encourage applause and positive comments after each presentation.

Guided Questions

- What made your robot a good friend in this situation?
- How does your robot show it understands emotions?
- Did anything surprise you about how your group worked together?
- What would you add or change if you could improve your robot?

Stage Debriefing Questions (Optional)

- Which robot responses felt the most comforting or useful?
- What did you notice about how different groups approached the same emotion?

Tips and Tricks for dealing with stage challenges

- Support shy students by letting them share smaller parts of the presentation
- If a group is struggling, help them prepare a script or key points
- Keep presentations on time to allow all groups to present.

STAGE 7 – Final Reflection Circle

How does this develop particular SPIRIT skills

- Encourages students to connect with each other's reflections
- Builds emotional vocabulary and reflective capacity
- Fosters active listening and shared understanding.

What do we want to achieve regarding SPIRIT skill development (student understanding and/or behaviour)?

- Students recognize different emotional experiences and responses
- They reflect on how empathy can take different forms
- They become more comfortable talking about emotions in a group setting.

Academic/Curriculum Objective connection

- Supports oral expression and group discussion
- Promotes critical thinking and emotional literacy
- Connects SEL with communication outcomes.

Materials and tools needed for implementation

- Emotion cards (or simple emojis)
- Scenario cards from earlier stages
- Optional: sentence starters like "I learned that...", "I felt proud when...", "I noticed that..."

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Preparation notes

- Set up a calm and welcoming space for sharing
- Remind students about respectful listening and no interruptions
- Have optional prompts available for shy students.

Guided Questions

- What was one emotion your group worked with today?
- How did your robot show empathy?
- What did you learn about helping others through this activity?
- Was there a moment today when you felt really connected to someone else?
- What surprised you about how empathy can look or feel?

Stage Debriefing Questions (Optional)

- How would you feel if your robot helped you in real life?
- Did this activity make you think differently about friendship or emotions?

Tips and Tricks for dealing with stage challenges

- Let students pass if they don’t want to speak
- Use visual aids to support fewer verbal children
- Reinforce that all answers are welcome and valued
- Keep it brief and gentle to maintain a positive tone.

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