BYJU'S Coding Cup
Teacher Guide

Summary

- Coding skill level: **Beginner**
- Recommended grade level: **Grades 3-12 (U.S.), Years 3-13 (U.K.)**
- Time required: **60 minutes**
- Coding Language: **Tynker Blocks**

Teacher Guide Outline

Welcome!
- Overview

Activity
- Getting Started (5 minutes)
- BYJU'S Coding Cup (55 minutes)
- Extended Activities

Going Beyond an Hour
- Do More With Tynker
- Tynker for Schools

Help

Welcome!

In today's Hour of Code activity, students will learn the basics of how to play the BYJU'S Coding Cup soccer game. They will create their own team and learn how to code the scripts that will control their players.

Students will start out by creating their team. They will need a goalie, a defender, and a striker. Students can choose a team name, create an avatar for each player and customize their team's jersey. Next, students will work through the Basic Training modules where they will learn how the game is played. They will be introduced to important coding concepts as they solve puzzles to learn the details of the programming blocks that control their players' behaviors.

Once they've completed Basic Training, students will be able to edit the basic code to try their own strategies and moves. They can also compete with one another in matches to see who will climb the leaderboard. Students may choose to learn more advanced coding by working through the Strategy Training section where they will learn more advanced coding concepts and blocks to use in the game.

How to Prepare

This activity is designed for self-directed learning. Your role will be to help students individually and facilitate as they complete the activities. The best way to prepare is to:

1. **Familiarize yourself with the material.** After selecting your Tynker lesson (e.g., BYJU'S Coding Cup), read through this teacher guide and complete the activity before assigning it to students. This will allow you to troubleshoot anything in advance and plan for potential questions from your students.
2. **Get students excited about coding.** Inspire students and get them excited for the Hour of Code event.
3. **OPTIONAL: Sign up for a teacher account.** Although an account is NOT required, creating a free teacher account will allow you to access teacher guides, answer keys, and tons of additional resources. You'll also be able to create free accounts for your students, monitor their progress, and see their projects.
4. **Create student accounts.** From your teacher account, you can easily create free student accounts for all your students. This will allow them to save their projects and progress, so they can continue coding when they get home!
5. **OPTIONAL: Print certificates to hand out.** While signed in to your Tynker teacher account, you can print certificates by clicking on a classroom from your teacher dashboard, clicking the "Gradebook" tab, going to "Hour of Code," and clicking the "Print All Certificates" button. This will only print certificates for student accounts assigned to the selected classroom.

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Activity

Overview

Objectives

Students will...

- Demonstrate an understanding of how to complete a BYJU'S Coding Cup soccer match
- Identify the different roles of a goalie, defender, and striker
- Create team Avatars
- Use code blocks to customize players' behaviors

Materials

- Computers, laptops, or Chromebooks (1 per student)

Vocabulary

- **Code:** The language that tells a computer what to do.
- **Sequence:** The order in which steps or events happen.
- **Command:** A specific action or instruction that tells the computer to do something.
- **Conditional logic:** An instruction that checks for a condition and then tells the computer to do something based on the result.
- **Goalie:** In soccer, there is 1 goalie (also known as goalkeeper) per team. The goalie's job is to prevent the other team from scoring. They usually stay close to their own goal.
- **Defender:** A defender is a type of soccer player on the field. The defender's job is to prevent scoring, tackle opponents, and pass upfield.
- **Striker:** A striker is a type of soccer player on the field. The striker's purpose is to kick the ball into the opponent's goal.

U.S. Standards

- **CSTA:** 1B-AP-11, 1B-AP-12, 1B-AP-14, 2-AP-13, 2-AP-16, 2-AP-17, 3A-AP-17, 3A-AP-19, 3B-AP-11
- **CS CA:** 3-5.AP.10, 3-5.AP.13, 3-5.AP.14, 3-5.AP.17, 6-8.AP.13, 6-8.AP.16, 6-8.AP.17, 9-12.AP.12, 9-12.AP.16
- **ISTE**: 1.1.c, 1.4.d, 1.5.c, 1.6.b

U.K. Standards

National Curriculum in England (computing):

- **Key Stage 2 (Years 3-6)**
  - Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
  - Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration

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    - Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact
- **Key Stage 3 (Years 7-9)**
    - Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability
    - Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns
- **Key Stage 4 (Years 10+)**
    - Develop their capability, creativity and knowledge in computer science, digital media and information technology
    - Develop and apply their analytic, problem-solving, design, and computational thinking skills

Getting Started (5 minutes)

1. Introduce your student to the amazing coding adventure that they are about to embark on by watching the trailer to preview the BYJU'S Coding Cup experience. You can use the trailer to give an overview of the different components of the experience and to get to know the students a little.
2. To access the trailer, click the yellow **START** image that looks like this:

3. Key points mentioned in the trailer:
    a. Your virtual soccer team will battle against other teams to win
    b. Choose and customize your team of 3 players
    c. You'll need a goalie, a defender and a striker for a complete team
    d. Control your virtual team with code rather than a game controller
    e. Follow the basic training path to code your players and build a team strategy
    f. Train your team, compete globally, win prizes and let Lionel Messi guide you to be a coding soccer champ!
4. Time permitting, ask students:
    a. Have you watched or played soccer before?
    b. Are you familiar with the terms goalie, defender and striker? What does each position entail?

DIY Module (55 minutes)

Facilitate as students complete **BYJU'S Coding Cup** modules on their own:

Hour of Code
BYJU'S Coding Cup Teacher Guide

Step 1: Log-In

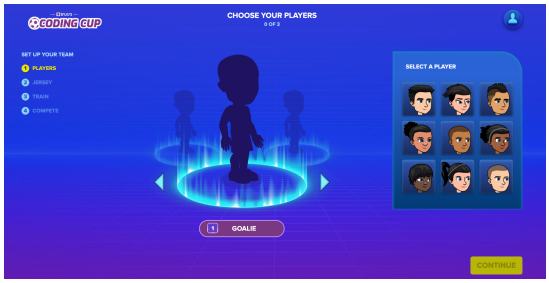
- Ask students to go to this link: https://www.tynker.com/codingcup/
- Next, they'll need to click the **LOG IN** button (located at the top right of the screen) to log in using their Tynker account:

Step 2: Set Up your Team Avatars

- Now it's time for students to create their team! At this step, students will name their team, select players, and design a logo for the team's jersey.
- Name Your Team
  Ask students to take a moment and try to brainstorm a team name. Inform them that they can always change their team name or appearance at any point.

  Are students not sure what to name their team? Ask them to click on the **Magic Wand** to get some suggestions!

- Select Your Players
  Ask students to select an avatar that will serve as each of their 3 team members: a Goalie, a Defender and a Striker.



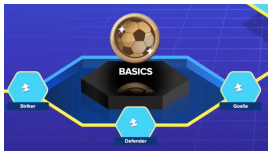
  Inform students that for each player, they can either select a pre-made avatar from the right or click on the paintbrush icon next to the position name to fully customize each player by selecting the skin, nose, eyes, hair and head that they prefer. The magic wand will surprise students with a random combination!
- Design A Jersey
  Make sure students select a top, a bottom, and shoes for their team. Time permitting, ask students to click "Design Your Logo" to draw their own custom logo!
- Logo Designer
  Students can use the basic paint and drawing tools to add a logo.

Optional: Model how to choose a tool from the left and a color from the bottom. There are undo and redo buttons at the top. Make sure students click on **Save** when they have their design.

- NOTE: Limit time spent setting up the team to about 10 minutes. Assure students that they can always come back and change things later including their name, team members and jerseys. It is so important to design a team that they are excited to play with but we want to make sure they have time to go through all the modules.

Step 3: Train Your Players

- Walk through the Basic Training modules with the students, clarifying concepts and helping them with puzzles as needed:



- Here's a list of the modules you'll find:
  BASICS (Bronze)
  1. **The Basics** (Video) - Introduction to BYJU'S Coding Cup Training.
  2. **The Basics** (Concept) - Introduction of using block coding to control players.
  3. **Turn-Based** (Concept) - Introduction of turn-based action.
  4. **Get Moving!** (Puzzle) - Code the striker to move to the ball.
  5. **Shoot It!** (Puzzle) - Code the striker to shoot the ball.
  6. **If and Else** (Concept) - Using conditionals to determine action.
  7. **Make a Decision** (Puzzle) - Code the striker to shoot if they have the ball, else move to the ball.
  (Basics complete for striker)
  8. **Pass It!** (Puzzle) - Code the defender to pass to the nearest teammate.
  9. **Get a Clear Shot** (Puzzle) - Code the defender to check that a kick will reach their nearest teammate. If so then pass to them, else move to center.
  10. **Put It All Together** (Puzzle) - Code the defender to perform code from "Get a Clear Shot" if they have the ball, else move to the ball.
  (Basics complete for defender)
  11. **Directions** (Concept) - Introduction of directions (up, down, left, right, above, below).
  12. **Up and Down** (Puzzle) - Code the goalie to move up if the ball is above or move down if the ball is below.
  13. **Pass Upfield** (Puzzle) - Code the goalie to pass to the nearest teammate if they have the ball, else execute code from "Up and Down".

Congratulations! At this point, students have earned their first Certificate!

Step 4: Practice Match

- Now that your students completed Basic Training, they're ready to play a practice match!

- Make sure students look at each player's code (goalie, defender, striker) so they can remind themselves what the player is going to do. That way your students will be able to look for those behaviors when they view the Practice Match.
- Here are a few other things to notice when the match is being played:
    - Turns - A game will be 90 turns. The turns tick by in the middle of the scoreboard at the top.
    - Numbers - Each player is marked by the number above their head.
    - Action blocks - On each turn, the action block executed by each of the players will show up above their head. This can be used to help understand how the code is working.

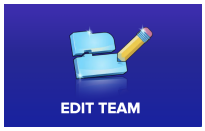
Step 5: View Leaderboard

- If we go back to the home screen, students can view the leaderboard to see other teams that are competing.

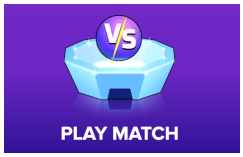
- For each team on the leaderboard, the following information is visible: team name, user name, number of wins, winning percentage, accomplishment level, and ranking score.
- Students can also click a team to see a list of their recent matches!

Step 6: Train on Your Own

- Students have everything they need to play and compete in the BYJU'S Coding Cup games! They can continue experimenting with their code by clicking EDIT Team from the home screen:



- Students can also click on PLAY MATCH from the home screen in order to play more matches to test their code.



Step 7: Finish Training

- Time permitting, ask students to complete the Strategy Training modules to learn advanced strategies and earn a second certificate!

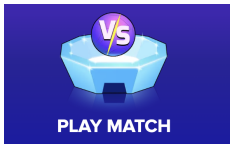
- Here's a list of the modules you'll find:
  1. **Strategies** (Concept) - Introduction to advanced skills tackling, sprinting and distance check.
  2. **Find Your Shot** (Puzzle) - Code the striker to kick towards the goal if they have the ball and the kick can reach, else move up to get a clear shot. If they don't have the ball, move to the ball.
  3. **Get Open** (Puzzle) - Code the striker to move to an open position if any teammate has the ball.
  4. **Sprinting** (Concept) - Introduction to sprinting and checking to see if a player can sprint.
  5. **Hustle** (Puzzle) - Code the striker to sprint to the ball rather than move to the ball when they are able to sprint.
  6. **Tackling** (Concept) - Introduction to tackling and checking to see if the player can tackle.
  7. **Steal It!** (Puzzle) - Code the defender to tackle if they are able, else move to the ball.
  8. **Tackle Time** (Puzzle) - Code the defender to combine the new tackling skill with their previous code that works to get the ball to their nearest teammate when they have it.
  9. **Targets** (Concept) - Introduction to value blocks that allow you to refer to a specific teammate or opponent.
  10. **Pass to Striker** (Puzzle) - Code the defender so that when they pass, they are passing to the striker.
  11. **Expressions** (Concept) - Introduction to expressions that use value blocks and complex conditions to gain more precise control over player actions.
  12. **Defend the Goal!** (Puzzle) - Code the goalie to sprint to the ball if within 3 tiles and able to sprint.
  13. **Stay and Defend** (Puzzle) - Code the goalie to move to the team goal if no other conditions apply so that they don't stray too far.
  14. **Player Skills** (Concept) - Introduction to skills, skill points, and assign initial values to players.

  Congratulations! At this point, students have earned their second Certificate.

Extended Activities

Play and Evaluate Matches

- By completing the Strategy Training modules, your students have learned advanced strategies for controlling their players! Let's put their knowledge to the test as they implement these new skills and see how their new team performs in a game situation.
- Ask students to go to their dashboard and then click on the Play Match icon:



- We suggest having students observe 1-3 matches. Encourage students to carefully watch the player's behavior to evaluate what seems to be working well or not working.

Discussion

Ask students:

- What's something you know about soccer that you'd like to share?
- What are some strategies you experimented with today?
- What's your team name?
- Do you have a favorite soccer team?
- If you could play any position on a soccer team, which one would you be and why?
- Do you have any coding-related questions from today?

Going Beyond an Hour

If your students enjoyed an Hour of Code, they're sure to enjoy the rest of what Tynker has to offer! Tynker offers a complete premium solution for schools to teach computer science. Over 400 hours of lessons are available to take K-8 students from block coding to advanced text coding. We offer tons of resources for teachers, including comprehensive guides, free webinars, and a forum to connect with other educators.

More Hour of Code Activities

Tynker offers many other tutorials for the Hour of Code, including STEM Hour of Code lessons that you can integrate into the subjects you already teach. Check out the main Tynker Hour of Code page to see all the tutorials!

Do More with Tynker

With Tynker, kids don't just acquire programming skills--they explore the world of possibilities that coding opens up. Tynker has several interest-driven learning paths that make coding fun, both inside and outside the classroom:

- **Coding and Game Design:** Your students can use Tynker Workshop, a powerful tool for crafting original programs to make games, stories, animations, and other projects. They can even share their work with other kids in the Tynker Community.
- **Robotics:** Tynker integrates with connected toys and Lego WeDo robotics kits so kids can see their code come to life.
- **Minecraft:** Tynker integrates with Minecraft so your students can learn coding through a game they love. Tynker offers skin and texture editing, as well as a custom Mod Workshop that lets kids try their original code in Minecraft.

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Tynker for Schools

Used in over 90,000 schools, our award-winning platform has flexible plans to meet your classroom, school, or district needs. All solutions include:

- Grade-specific courses that teach visual coding, JavaScript, Python, robotics and drones
- A library of NGSS and Common Core compliant STEM courses that are great for project-based learning
- Automatic assessment and mastery charts for whole schools and individual classes and students
- Easy classroom management with Google Classroom and Clever integration
- Professional training, free webinars and other teacher training resources

Need help getting Tynker started at your school? Contact us to learn more about teaching programming at your school with Tynker!

Help

Need help? Below you'll find answers to frequently asked questions about the BYJU'S Coding Cup lesson.

What is Hour of Code?

The Hour of Code is a global learning event in which schools and other organizations set aside an hour to teach coding. No prior coding experience from you or your students is needed! The event is held every December during Computer Science Education Week. You can also organize an Hour of Code year-round. The goal of the Hour of Code is to expand access to computer science education for people of all backgrounds. Learning computer science helps students develop logic and creativity, and prepares them for the changing demands of the 21st century. Tynker has been a leading provider of lessons for the Hour of Code since the event began in 2013. Since then, over 100 million students from 180 countries have finished an Hour of Code.

What is BYJU'S Coding Cup?

BYJU'S Coding Cup is a soccer-themed coding game designed to get kids excited about computer science. Program your virtual soccer team and enter competitions. Shoot, pass, tackle, and score as your team climbs the leaderboard. BYJU'S, a world-leading EdTech company, is an Official Sponsor of the FIFA World Cup Qatar 2022™.

Why is Coding Important?

As the world starts to become more technology oriented, it is vital that the next generation has the necessary skills to succeed in the workplace. As more and more occupations rely on coding,

programming needs to almost be like a second language for these kids. With the immense power of programming and its need in the workforce, today's students need to start learning how to code in several different languages. With your help, we can inspire youth of all ages to learn programming through the exciting lense of soccer.

How can Tynker help me manage my Hour of Code?

Tynker has several free features for registered teachers that will help you manage your Hour of Code. If you set your students up with a Tynker classroom, you will be able to track their progress and print Hour of Code completion certificates for them to keep.

What devices do I need?

- Computers, laptops, or Chromebooks (1 per student) with an internet connection
- If not enough devices are available, students can work in pairs on the same device

What will my students learn?

As your students continue to master programming concepts through the BYJU'S Coding Cup gameplay experience, you'll notice their games will start to evolve and get more strategic. In this process, they'll learn debugging skills, coding concepts, and more.

How can I contact the Tynker support team?

If you have any issues or questions, please send us an email at support@tynker.com.