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Honors Program

Spring 2021

Girls Computer Science Club

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Nebraska Honors Program

CLC Expanded Learning Opportunity Clubs

Information Sheet

Name of Club: Girls Computer Science Club

Age/Grade Level: Grades 3-5

Number of Attendees: 12-16

Goal of the Club: (learning objectives/outcomes)

To teach girls about STEM and computer science while empowering and building self confidence

Resources: (Information for club provided by)

Code.org, Hour of Code

Content Areas: (check all that apply)

- Arts (Visual, Music, Theater & Performance)
- Literacy
- STEM (Science, Technology, Engineering & Math)
- Social Studies
- Wellness (Physical Education, Health, Nutrition & Character Education)

Outputs or final products: (Does the club have a final product/project to showcase to community?)

Each day students will work on a different project including coding computer games, building structures, making bracelets, and more.

Introducing your Club/Activities:

This club was created to empower young girls to be and do whatever they want. Our goal is to teach girls about computer science to help them become interested in the field and realize they can be computer scientists.

General Directions:

Each club day has an icebreaker and an activity. The icebreaker is usually more fun or focuses on girl empowerment whereas the activity introduces a computer science topic. Along with the icebreaker and activity, at the beginning of the day share the daily affirmation and vocab word.

Tips/Tricks:

Try to develop a big-sibling type relationship with the girls in the club, because it is important for them to feel like they can trust you but also respect you as a club leader.

Lesson Plan Worksheet

DAY 1:

Affirmation of the Day: “I am confident and capable.”

Vocabulary Word of the Day: Computer Science!

- Definition: the study of computers and algorithmic processes, including their principles, their hardware and software designs, their implementation, and their impact on society

Lesson Icebreaker Name: The Name Game

Goal of Icebreaker: This icebreaker should help students and leaders get to know each other and is a fun way for everyone to learn names!

Length of Icebreaker: 15 min

Supplies: N/A

Directions:

- Have everyone stand/sit in a circle.
- Start with yourself: Describe yourself with a positive adjective that starts with the same letter as your first name (ex. Awesome Alex), also come up with a whole-body action/movement to act out your word while saying it.
- Then move onto the next person and have them do the same. The second person must also say their name and adjective and do the corresponding action of the person before them as well as their own. Then the third person should do the same, as well as the name, adjective, and action of the two people before them. This repeats until everyone has had a chance to name every person if they want.
- Transition into activity by having students sit at desks with a partner/group of 3 if there is an uneven amount of students.

Lesson Activity Name: Use Legos to Code!

Goal of Activity: This activity will introduce coding concepts to students in a fun hands-on way. Students should understand the importance of clear instructions while attempting to complete a task. They should be able to connect the idea of giving instructions to a partner with giving instructions to (coding on) a computer.

Length of Activity: 30 min

Supplies:

- A small bag of legos for each pair of students with about 5 legos of different colors in it
- Paper and writing utensils for each student

Directions:

- Students should sit across from their partner (there should be an even number of partner pairs)

- Have everyone put on hand sanitizer and give instructions before passing out lego bags
- Tell students that they will be working with their partner to create a simple lego structure using all of the legos in their bag. They will then need to write instructions on how they created that structure in a way that another group could create the exact same structure using their instructions.
- Assign a partner A and a partner B
 - Partner A will start by building the legos
 - Partner B will write
 - The students will switch roles after the first round of building and instructions
- Partner B will start by writing both partner's names at the top of the paper
- Give students about 5 minutes to create their first structure design, (partner A is handling the legos at this point) leaders should check in with each group and take a picture of the finalized design (include the names of designers in the picture)
- Then instruct students to write detailed instructions on the paper about how to recreate their lego structure. Give students about 5-10 minutes to do this.
- After all the groups are done, have the students disassemble their structures and place the legos back in the bag. Collect the lego bags and instruction papers and trade them between groups (make sure the groups did not see each others' lego structures before hand)
- Now partners should work together to recreate the lego structure of another group using the instructions given.
- After each group is done building they should compare to the correct (original) structure. Use pictures taken earlier if necessary.
- Return the finished structures and instructions back to their original group.
- Have a group discussion about what worked and what didn't
 - What kind of instructions were easier to follow?
 - What words could we use to make instructions more clear?
 - How could the instructions be improved so that both groups can create the same exact structure?
- Using the original legos again, partners should switch roles and create a new structure and set of instructions.
- This time around students should apply what they learned in the first round to make their instructions more clear and easy to follow, allowing for another group to create the exact same structure.
- Repeat the same process and trade legos and instructions after each group is done.
- Talk about how writing instructions for humans might be different and similar to writing instructions for a computer
 - Why is it important to create clear and easy to follow instructions?
 - How can we use what we learned today to create clear instructions for a computer?

Conclusion of the day:

Objective and Learning Outcomes:

At the end of the day students should begin to feel comfortable with the structure and routine of the club as well as club leaders and peers. Students should begin to be excited about coding and know how to work together to give clear concise instructions. This skill will be built upon in later lessons.

Parts of day that worked:

The students were able to write out their own instructions to their Lego creations and work well with their partner. They got along and felt comfortable with the Icebreaker activity and getting to know the members of the group.

Parts of the day that did not work:

The students wanted to tell the other groups how to correctly build their Lego structure rather than following the written directions and needed to be reminded of the purpose of the activity.

DAY 2:

Affirmation of the Day: “I believe in my own abilities to solve hard problems.”

Vocabulary Word of the Day: Algorithm

- Definition: a specific procedure (set of instructions) for solving a well-defined computational problem that can be achieved by a computer

Lesson Icebreaker Name: Partner Pair Hunt

Goal of Icebreaker: This icebreaker is a fun and silly way to establish bonding and teamwork while trying to solve a problem. At the end of this icebreaker, students should feel accomplished and appreciated, as they help each other to accomplish a common goal.

Length of Icebreaker: 10-15 min

Supplies:

- Pieces of paper onto which you have written well-known partners
- Safety pins/tape

- Write up your pieces of paper in advance, choosing well-known partners that will be recognized by the children. Each part of the partner pair should be on a separate piece of paper so you should have enough for each student to have one. For example:
 - Bacon and Eggs
 - Spongebob and Patrick
 - Peanut butter and jelly
 - Salt and pepper
 - Barbie and Ken
 - Anna and Elsa (from Frozen)
 - Lilo and Stitch
 - Mickey and Minnie Mouse

Directions:

- Before starting the icebreaker, pin/tape a name to each student's back.
- At your signal, the children mingle with each other (try to stay 6ft apart), asking questions about themselves which can only be answered by a "yes" or "no" in an attempt to figure out who they are.
- Examples-
 - "Am I alive?"
 - "Am I from a movie?"
 - "Am I a person?"
- The person they are talking to can only answer with a yes or no, and cannot tell them who they are
- While trying to guess who they are, the students should also be looking out for their possible partner.
- If the kids need some help guessing who they are, leaders can give them a couple of clues along the way
- Let the children know their goal is to help everyone find their partners without explicitly telling each other who their character is or who their partner might be

Lesson Activity Name: The Ball Challenge!

Goal of Activity: This activity will help students to learn how to work as a team and will allow them to think more deeply and creatively. Being able to work successfully in a team will help students to gain leadership skills and learn how to compromise. At the end of this activity students should feel empowered and like they can achieve anything they put their mind to. They should also understand how this problem-solving activity relates to algorithms.

Length of Activity: 30min

Supplies:

- Two small balls (paper balls will be fine too) and two buckets or plastic cups
- Optional: Plastic spoons, plastic forks, or napkins

Directions:

- Split the students into groups of three or four and give each group a ball
- Their aim is to get the ball across the room and into the bucket or the cup in a creative way.
- They can not simply pick up the ball and walk across the room and put inside the bucket or just throw the ball, it must be making contact with something at all times.
- Students' feet cannot move if they are touching the ball.
- The team that can complete the task first wins.
- Wrap up the day with a discussion on the importance of teamwork and the lessons each group learned during the game.
 - Example Questions:
 - What were some challenges of working in a team?
 - How were you and your team able to work together to be successful?
 - What were the benefits of working in a team?
- If there is extra time, scramble the groups again and give them two minutes to develop a new “strategy” before playing the game again OR have the students use a challenge item (fork, spoon, or napkin) to do the activity again
- Discuss how it was important to figure out what they were doing ahead of time, how does this relate to a computer algorithm?

Conclusion of the day:

Objective and Learning Outcomes:

At the end of the club, students should feel comfortable with the group. They should understand the idea of the algorithm and how to find a specific solution to a problem by planning ahead. They will work on this concept of problem solving throughout the club as well as collaborating with others. Students will understand how this relates to programming and computer science and feel capable of learning more in the weeks to come.

Parts of day that worked:

Students understood the idea of an algorithm and how to come up with a specific plan in order to solve a complicated problem. They worked well with their teams and were able to solve the challenge by working together.

Parts of the day that did not work:

The students had a harder time with the partner pair hunt and not telling each other what was taped to their backs. They needed to be reminded not to spoil but to ask yes or no questions in order to figure it out.

DAY 3:

Affirmation of the Day: “I can do challenging things. I can work well with others.”

Vocabulary Word of the Day: Programming

- Definition: the process of writing instructions that get executed by computers; the instructions (known as code) are written in a language that the computer can understand and use to perform a task or solve a problem

Lesson Icebreaker Name: What If?

Goal of Icebreaker: At the end of this icebreaker students should feel empowered to handle different situations and stand up for themselves and others. Students should also continue to form a bond with club leaders and peers while learning tools for different scenarios.

Length of Icebreaker: 15min

Supplies:

- Different “What if” situations written or typed on slips of paper
- Bucket/hat to draw papers from

Directions:

- Have students sit in a circle and let them know that they will each have a chance to draw a situation from the bucket in the middle and then will share what they would do if they were in that same situation
- After a student draws a situation and shares what they would do open the floor up for discussion, remember to remind students that we all need to respect each others opinions and most importantly be kind
 - Other students can share if they agree and why OR what they might have done differently
 - Make sure to facilitate and monitor the conversation
- After one situation has been discussed transition to the next by having the next student draw a new situation and share their thoughts, continue until everyone has had a chance to go
- What If.... (examples)
 - You are on the playground and someone tells you that you “run like a girl”?
 - Somebody tells you that you can’t do computer coding?
 - You notice a friend getting bullied?

- Someone you don't know asks you to go with them?
- Need help in a class?
- You are asked to do something you don't want to do?
- You are feeling really sad one day?
- A friend is struggling to get their homework done?
- Someone tells you that you can't do your dream career?
- You got a perfect score on a test but your friend didn't do as well?
- Someone asks you a question that you are uncomfortable answering?
- You are bored and looking for something fun to do?
- Your friend says something mean about you behind your back?
- You and a friend grow apart or lose touch?

Lesson Activity Name: Towers

Goal of Activity: This is a fun challenge where students can learn teamwork, collaboration, and leadership skills. In order to be successful students will need to work together to complete the challenge. Being part of a team helps students form strengthened bonds and trust with their peers. By the end of this activity all students should feel accomplished and like they can trust and rely on their team.

Length of Activity: 40 min

Supplies:

- Several pieces of paper per student
- Tape
- Popsicle sticks or paper straws
- Paper plates
- Scissors

Directions:

- Split the students into groups of 2-3 depending on the size of the group, have everyone put on hand sanitizer
- Give each group 2 pieces of paper, 1 foot of tape, 4 popsicle sticks, half a paper plate, and 1 pair of scissors
- Give each group a challenge to create the tallest free-standing tower they can using just the materials provided
- Give the students almost the entire time to work on it, but stop them 10 minutes before club/class time is up so you can measure how tall their final result was and take some pictures of their creative towers
 - If students finish early, make new groups and have them try again!
 - Optional: give students more supplies if they run out
- Lastly, help students to clean up their towers and put away supplies

- Have a discussion about how coding is essentially problem solving and that it is important to be able to work in teams

Conclusion of the day:

Objective and Learning Outcomes:

By the end of the club, students will have made the connection from last week's activity about creating a solution to a problem and attempt a similar activity. They will work well with others in their group to generate a solution and have a general understanding of computer science and the concept of programming.

Parts of day that worked:

The students were able to work with their table groups and use their given materials to build the tallest tower they could. They used the materials creatively and got along with their teammates.

Parts of the day that did not work:

The students had a difficult time listening to one another talk about what they would do in a given situation. They often interrupted with their own ideas instead of listening to the student who was prompted to answer.

DAY 4:

Affirmation of the Day: "I can reach my dreams. I believe in myself."

Vocabulary Word of the Day: Binary/Bit

- Definition: computers use binary (the digits 0 and 1) to store data; a binary digit (bit) is the smallest unit of data in computing; it is represented by a 0 or a 1

Lesson Icebreaker Name: 2041 Icebreaker

Goal of Icebreaker: Through pretending and acting, "impossible" goals can begin to seem more achievable. By acting out their dreams, students will be able to envision themselves in the future, achieving the dreams they have today. By the end of this icebreaker, the children should feel empowered and be excited about the things they will achieve in the future.

Length of Icebreaker: 15 min

Supplies:

- Paper and writing utensil for each student

Directions:

- Instruct the children to think of a dream that seems unattainable, but is something they really want to achieve. This can be related to a career they might not typically imagine themselves achieving-- possible within STEM! While they brainstorm, have a leader pass out supplies
- Have the students write down only one of their crazy dreams on the piece of paper they are given
- Once everyone is done writing, have a leader snap their fingers. Tell everyone that the year is now 2041- 20 years have passed, and in that time, every student has accomplished the goal written on their paper!
- Instruct the students to go around the room, introducing themselves to the people they meet as if it's been 20 years since they had last seen them. They may talk about where they now live, what they are doing, and they must tell the other students about the crazy, wild thing they've accomplished
- Give the children 5-7 minutes to go around talking with one another, ensuring that everyone always has someone to talk to
- Have a leader suddenly instruct the students to freeze. Have that leader snap their fingers again, and now the year is 2021 once again
- Invite the students to reflect and discuss the hidden message of this activity. Ask them questions such as:
 - Did your dream feel more realistic before or after participating in this activity?
 - What do you think the purpose of writing down your goal was? (You're more likely to accomplish your goals if you write them down!)
 - What can you take away from this activity? (That you can all accomplish anything, no matter how wild and crazy it may at first seem)
 - Girls can be in STEM

Lesson Activity Name: Bunches of Bits

Goal of Activity: Students should have a basic understanding of binary and how it works. They should be able to identify the significance of a 0 or a 1 as a bit and know how that relates to computers/coding.

Length of Activity: 35 min

Supplies:

- Paper and writing supplies for each student

Directions:

- Start by doing a brief explanation of what binary code is and how it is useful to computers.
- Describe the difference between a 0 and a 1 (it is almost like a light switch which can be turned on or off)
- Hand out supplies to students and have them create 2 half sheets of paper, one with a number 1 written on both sides and the second with a 0 written on both sides.
- Signify that 0 means "No" whereas 1 would mean "Yes"

- Have students stand in a circle with their number cards and begin to ask a series of yes and no questions for them to get used to the concept of binary
 - Do you have a pet?
 - Do you like vanilla better than chocolate?
 - Are you the oldest sibling?
 - Do you like pineapple on pizza?
 - Is Disney better than Pixar?
 - Are you amazing?? (Everyone should say YES!)
 - Give the kids a chance to ask questions if they want!
- Once students are comfortable with the binary numbers give them some different challenges to do!
- First challenge:
 - Line up in order of birthdays (Starting with January) EXCEPT: they can only ask each other yes or no questions and answer with their binary numbers
 - Do this same challenge again but line up in Alphabetical order by last name and next by the number of cousins you have!
- Second challenge:
 - Play would you rather with a partner: pair students off and tell them they will have to pick between two options BUT: they have to agree/come to a compromise with their partner
 - The first option will always be 1 and the second option will be 0
 - The would you rather is read and then students have 30 seconds to come to a decision and both hold up their answers. At the end of the 30 seconds everyone must close their eyes and each hold up the choice they picked. If a partner pair holds up different numbers they must sit down (they can still play but are now sitting)
 - Would you rather be incredibly funny or incredibly smart?
 - Would you rather become five years older or two years younger?
 - Would you rather brush your teeth with soap or drink sour milk?
 - Would you rather be able to create a new holiday or create a new sport?
 - Would you rather only be able to walk on all fours or only be able to walk sideways like a crab?
 - Would you rather have a magic carpet that flies or a see-through submarine?
 - Would you rather everything in your house be one color or every single wall and door be a different color?
 - Would you rather be able to control fire or water?

Conclusion of the day:

Objective and Learning Outcomes:

By the end of the day, students will know more specific vocabulary about coding and could be able to explain the concepts of using binary and bits if prompted. They should feel intelligent and inspired about their bright futures and feel well supported in the club.

Parts of day that worked:

The students were able to learn about binary and how it is like a language for computers. They were also able to imagine their future selves achieving incredible goals like becoming singers or doctors. They listened well to one another speak about themselves in the year 2041.

Parts of the day that did not work:

The students had a difficult time understanding how the 0s and 1s represent a language and that it can signify a true/false or yes/no response. It took a few practice rounds to understand the activity of responding to a yes or no question by using a 0 or 1 to represent their answer.

DAY 5:

Affirmation of the Day: “I am capable and worthy of learning new things. I am smart.”

Vocabulary Word of the Day: Code/Command

- Definition: coding is the set of instructions and a command is a directive to a computer program to perform a specific task based on those instructions

Lesson Icebreaker Name: #GIRLHERO

Goal of Icebreaker: This icebreaker should introduce the idea of Girl Heroes to the students. They should understand the importance of people in their life who empower them and encourage them to be their best selves. They should also be able to further bond with the group and learn more about their classmates.

Length of Icebreaker: 10-15 min

Supplies: N/A

Directions:

- Introduce the idea of a Girl Hero, it is someone who we feel empowered, inspired, and appreciated by
- They are similar to role models; they can be anyone in your life, regardless of their gender, age, etc. as long as they make you feel empowered
- Students should go around and say who their Girl Hero is and why, if they brought a picture of their girl hero they can show it as they talk about them

Lesson Activity Name: Make a Flappy Bird Game

Goal of Activity: Students should understand the basic principles of coding a game, using the code.org software they will be able to code and play their own Flappy Bird Game. Students should realize that coding can be fun and all games they might play have been created by a computer scientist.

Length of Activity: 30-35min

Supplies:

- Computers/chromebooks for each student
- <https://studio.code.org/flappy/1>

Directions:

- Start the day by explaining how the game works if students have not played it before and explain the basic principles of coding on the website
- Have each student go to the above URL and begin to experiment with the game
- Make sure to check in with them periodically and offer any help if needed
- Once students have finished their games do a little gallery walk or show and tell if time
- Discuss what they learned about coding and how this relates to some of the other hands on activities done earlier in the program

Conclusion of the day:

Objective and Learning Outcomes:

At the end of the club, students should be able to feel more comfortable on their devices and be able to have real examples of projects they have been working on coding. They might want to share this to their Girl Heroes, which they will understand are important people in their lives that support and empower them to learn new skills such as coding.

Parts of day that worked:

The students did a great job of thinking of their own personal girl heroes and sharing them with the group and why they inspire them. The girls listened to one another share and didn't interrupt as much. They also liked the computer game of creating a Flappy Bird game.

Parts of the day that did not work:

The students did not understand how the Flappy Bird game connected to coding and algorithms, and had a hard time completing some of the challenges on the coding website.

DAY 6:

Affirmation of the Day: “My voice matters. I can make a difference.”

Vocabulary Word of the Day: ASCII

- Definition: used to translate computer text to human text; uses numeric codes to represent characters so that the computer can understand it (language)

Lesson Icebreaker Name: Musical Chairs Affirmations

Goal of Icebreaker: This icebreaker will serve as a fun way for the students to practice giving and receiving compliments. By giving positive affirmations, students will be able to raise their self-esteem and practice empathy and kindness by giving affirmations to others.

Length of Icebreaker: 10min

Supplies:

- Chairs or tape

Directions:

- Before starting the icebreaker, set up different spots around the room for the students to stand/sit. Mark the spots in some way, either with a chair in that spot or a mark on the ground (tape/chalk).
- Begin the game with everyone standing/sitting at a spot. Have a short discussion about what positive affirmations are and give the students some examples of affirmations they could give to each other.
 - Positive affirmations are statements that can help one to overcome self-sabotaging and negative thoughts.
 - Examples:
 - I am confident
 - I learn from my mistakes
 - I can accomplish anything I set my mind to
 - I know how to be kind and understanding
 - I never give up
 - I can forgive myself and those around me
 - If students do not know each other very well, they should still try to give valuable affirmations to each other, which are not just based on appearance. Let them know that the affirmations they share with their peers should also be ones which they can use for themselves.
- Turn on some kid friendly (clean) music and instruct the students to dance around the room moving away from their original spot.

- When the music stops they should move to the nearest designated spot and turn to the person nearest to them.
 - Have them share with this person a positive affirmation which they think they could benefit from
- Continue having the students move around the room and share affirmations until each person has shared with each other.
- At the end, have a discussion about how positive affirmations can help you be confident in yourself and understanding of others. Give everyone a chance to share the best affirmation they heard.

Lesson Activity Name: Binary Name Bracelets

Goal of Activity: This activity is a fun way for students to begin to understand how ascii characters work through creating a bracelet with their name! At the end of the activity students should understand how to convert letters into binary and make the connection that computers do this to understand english characters.

Length of Activity: 40min

Supplies:

- Markers/crayons and paper
- string/elastic to put bracelets on
- 3 different colored beads (enough for each student to make their name)
- Scissors
- Ascii conversion charts

Directions:

- Start by explaining to students how computers read and translate english characters into binary using the ASCII system
- Tell students they will be able to create their own “Binary Bracelets” using the ASCII character conversion chart
- Hand out the conversion charts, coloring materials and paper
- Have students start by making “paper bracelets” to practice the order of the binary. They should color the order of the beads onto the paper.
- Once they have finished their paper, hand out the bracelet making supplies; each student should receive mainly two colors and a bit of a third one (if their name is not long enough to fill the whole bracelet
- Give all the students time to make their bracelets and help if needed.
- At the end of the day double check with a final discussion the relationship of the activity to computer’s translation of language

Conclusion of the day:

Objective and Learning Outcomes:

By the end of the club, students should feel closer to their clubmates and feel supported and empowered by them. They should begin to feel like they know the basic vocabulary of coding and some real-life examples of it based on activities they've done. Students should also feel that they got to release their more creative side during this club day.

Parts of day that worked:

The students were able to give affirmations to each other and focus on the activity. They really enjoyed making the bracelets and doing a craft activity.

Parts of the day that did not work:

The students were not able to completely understand the purpose of making the binary bracelets and how it connected to the theme of computer science. ASCII was a difficult vocabulary word for the age group and was difficult for some to understand.

DAY 7:

Affirmation of the Day: "I am creative. I have good ideas."

Vocabulary Word of the Day: Input/Output

- Definition: an input is data that a computer receives, and an output is data that a computer sends

Lesson Icebreaker Name: Six Word Story

Goal of Icebreaker: This is a challenging and creative way for students to build self confidence and share about themselves to the group. This is also a fun way for the children to learn more about their peers and what makes everyone unique.

Length of Icebreaker: 10min

Supplies: Half sheets of paper and writing utensils for each student

Directions: Have the students write a complete sentence describing why they are awesome and amazing using only 6 words

- After they are done writing their sentences have them read it out to everyone else
- Give each person a turn to share their 6-word story and let them elaborate on their story if they wish

Lesson Activity Name: Create a Google Logo

Goal of Activity: Students should understand the basic principles of coding. By using this website they will be able to code and create their own Google Logo-- something they might see and relate to from their own experiences. Students should realize that coding can be fun and creative and that it is how many things are made that we use/see everyday.

Length of Activity: 40min

Supplies:

- <https://scratch.mit.edu/projects/177224273/editor>
- Computers/chromebooks for each student

Directions:

- Start the day by explaining how this website works if students have not used it before and explain the basic principles of coding on the website
- Have each student go to the above URL and begin to experiment with the game
- Make sure to check in with them periodically and offer any help if needed
- Once students have finished their logo do a little gallery walk or show and tell if time
- Discuss what they learned about coding and how this relates to some of the other hands on activities done earlier in the program

Conclusion of the day:

Objective and Learning Outcomes:

By the end of the club, students should feel capable of a challenge. They will be able to spend time on their devices doing some true coding and be able to connect this actual process to some of the previous activities of the club. Students should also feel comfortable sharing aloud in the group and that they are supported by the other members and leaders.

Parts of day that worked:

The students were able to come up with their own six word story and share it with the group. They were attentive and focused on the other people sharing and did not interrupt. They were able to embrace their creativity and make many awesome Google logos using the website.

Parts of the day that did not work:

The website used for making the Google logos ended up crashing for some students and they lost their progress and had to start over, but everyone remained positive and still enjoyed the activity.

DAY 8:

Affirmation of the Day: “I have many talents. I can be good at whatever I set my mind to.”

Vocabulary Word of the Day: IP Address

- Definition: internet protocol address; it is an identifying number that is associated with a specific computer or computer network. When connected to the internet, the IP address allows the computers to send and receive information.

Lesson Icebreaker Name: Gendered Charades

Goal of Icebreaker: Gender stereotypes often unconsciously take root in our brain at a young age and affect our perception of normal activities. In this twist on Charades, the students will call out what activity it is but also say whether it is a men or a woman thing. This icebreaker will motivate students to face obstacles built by gender roles in their own lives!

Length of Icebreaker: 10-15min

Supplies:

- Slips of paper with words attached. Examples include:
 - Painting
 - Putting makeup on
 - Skateboarding
 - Gymnastics
 - Cleaning the floor
 - Football
 - Video games
 - Fixing a car
- Board/paper slip to keep score

Directions:

- Divide students into four teams (this can depend on the size of the program).
- Select a team to go first and have a member of that team pick a slip of paper out of the bucket.
- Have students act out the activity/word designated on the cards without saying the word. The other teams will try to guess what the word is. Whichever team gets the word first wins a point.
- After each “act”, discuss whether students feel this is a male or female activity and why.
- Play multiple rounds of this rotating between teams until all the slips of paper have been completed.
- End the icebreaker by reviewing once more what gender stereotyping is and the connection this activity has to gender stereotyping.

Lesson Activity Name: IP Address Game

Goal of Activity: This activity will allow students to understand a basic idea of how the internet works to send and receive messages. Students should be able to explain how IP addresses serve as “mailing addresses” over the Internet.

Length of Activity: 10-15 min

Supplies:

- Printed/prewritten IP addresses for students
- Printed/prewritten sentences/messages (different one for each student)
- These should be about 6-7 words long and have matching IP addresses on them cut into their separate words
- Examples on this doc:
https://docs.google.com/document/d/148Pp4cKgpPZ75I_FVAiH8yrXwIKTpWBXbpKwgxgnYAs/edit?usp=sharing
- Writing utensils

Directions:

- Split students up into two groups, Group A will start with the IP addresses and “receive the messages”. Group B will be “delivering” the messages
- Explain to the students that IP addresses are just like addresses on a house, they help direct computers and identify where to send and deliver messages to
- Hand one group their IP address and have them hold it in front of them, give the other group a set of messages to deliver
 - The messages each have one word on them along with the IP address they must be delivered to
- Before starting, have the students station themselves at different desks/tables around the room, this is their “home base”. Group A will stand in this spot the entire time messages are being delivered. Group B will put their set of messages in this spot and return each time to pick up a new message to deliver
 - Illustrate how this process works so that students understand what to do
 - Lay out the expectation that students must WALK, not run, and that their message will not be delivered if they are running
- When leaders say go, Group B will pick up their first message and deliver it to the indicated IP address. They will continue to return to their “home base” and deliver messages until they do not have any more
- Explain to the students that the messages might arrive out of order and they do not take the same path every time, and that’s okay! That is how communicating on the Internet works
- While Group B is delivering, Group A will try to piece together their message as they receive the parts!
- When everyone is done, have Group A and B switch, collect all the messages and mix them out, handing them to Group A to deliver this time and giving group B the IP addresses.
- At the end make sure to reiterate the connection between this activity and the way that computers send and receive messages.

Conclusion of the day:

Objective and Learning Outcomes:

At the end of the day, students should be able to understand some common stereotypes about girls as well as be able to find ways to combat those incorrect limitations of what a girl is capable of. They should understand the general idea of how we use the Internet to send messages to each other to communicate.

Parts of day that worked:

The students did a great job of acting out during the charades and guessing the right answers. They also were able to focus on all of the activities and seemed to really enjoy the IP Address game. They understood the concept of sending and receiving messages via the Internet.

Parts of the day that did not work:

By the end of the IP Address activity, the students had a difficult time staying focused and passing the individual messages throughout the group and began to shout out IP addresses to find the person they belonged to.

DAY 9:

Affirmation of the Day: "I am proud of myself. There is no one I'd rather be than myself!"

Vocabulary Word of the Day: Debugging

- Definition: the process of finding and resolving bugs (what isn't working) within computer programs, software, or systems

Lesson Icebreaker Name: Guess Who!

Goal of Icebreaker: In preparation for the play that will follow, students will learn about their fellow participants and then act them out for their icebreaker. This will help students fully adopt the role and characterization of someone other than themselves, fostering empathy in the process.

Length of Icebreaker: 20min

Supplies:

- 3x5 index notecards for notes

Directions:

- In this activity, students will write down some notes about one of their classmates and then present these facts about the person with a twist--they are to act like the person while they present and use “I” to tell the group about the person!
- Students should be paired off to interview one another and, if possible, pairs should not be seen by other students to make guessing even more fun.
- Students should state:
- Birthday, place of birth, and at least one fun fact. They can add any other details of their choice to constitute a 1-2 minute presentation.
- This must be done quite quickly (in about five minutes), so there is enough time for each student to present. In a large group (>10), have students present to a smaller group of 4-5. In smaller groups (<10), students can present to the entire group.
- Encourage students to memorize their notes (but not necessary due to time constraints) and ensure they use first-person pronouns to describe their person. They should also, respectfully, try to embody the person. The group should then try to guess which of their classmates they are.

Lesson Activity Name: Bee: Debugging

Goal of Activity: At the end of this activity students should understand the basic principles of debugging a program and why that is important. Students should be confident that they can debug their own code and should be able to identify issues in code and how to fix it.

Length of Activity: 30min

Supplies:

- Computers/chromebooks for each student
- <https://studio.code.org/s/course2/stage/10/puzzle/1>

Directions:

- First watch the intro video to debugging with the students and explain further if they need more clarification about how debugging works
- Start the day by explaining how the game works if students have not played it before and explain the basic principles of coding on the website
- Have each student go to the above URL and begin to experiment with the game
- Make sure to check in with them periodically and offer any help if needed
- Once students have finished their games they can continue with other lessons on code.org or look at the additional materials (at the end of the packet)
- Discuss what they learned about coding and how this relates to some of the other hands on activities done earlier in the program

Conclusion of the day:

Objective and Learning Outcomes:

At the end of the day, students should understand the concept of debugging and its applications. They should now feel comfortable completing coding activities on their devices and know some additional resources that they can use if they want to learn more outside of the club. They should also feel like they truly got to know their groupmates well and be able to guess facts about them.

Parts of day that worked:

The students were able to interview someone else during the Icebreaker activity. They also worked hard on the debugging activity and were able to understand the concept of solving errors to fix the result. Many students completed all of the levels of this activity.

Parts of the day that did not work:

The students had a hard time pretending to be another student and presenting as them. They wanted to present as themselves because they could not remember the responses of the other students in the group.

DAY 10:

Affirmation of the Day: “I am smart, strong, and beautiful. I can do whatever I set my mind to!”

- Set aside additional time for each girl to have an opportunity to say an affirmation for the group to repeat if they'd like to do so

Vocabulary Word of the Day: Girl

- Definition: Each student is allowed to share their own definition of what a girl is to them!

Lesson Icebreaker Name: Compliment Circle

Goal of Icebreaker: This icebreaker should help students to become more comfortable with giving compliments/praise to their peers and build self confidence! This is a great way to finish off the club and help everyone feel good about themselves!

Length of Icebreaker: 15min

Supplies:

- Slips of paper and writing utensils for each student
- Prewritten compliments/affirmations about each student
- Bucket/hat to draw compliments out of

Directions:

- Being able to give and receive compliments is a great way to build relationships and grow self confidence.
- Hand out supplies and tell students to write one compliment/affirmation about another student in the club.
 - This cannot be about appearance
 - Students can think back to any of the previous club meetings (EX: I really liked your solution to the tower activity)
 - Other examples: “You are good remembering how to debug”, “I like that you always greet everyone with a smile”
- The twist is that students cannot put their name or the name of the student they are complimenting, it must be completely anonymous
 - Tell them that if there are any names or identifying details, their compliment will not be read
- After everyone is done writing, have them fold their papers and put them in the bucket
 - Put the prewritten compliments from leaders into bucket as well
- Sit in a circle and have leaders draw and read out all the compliments
- At the end have a discussion about why it is important to find the good in those around us and be kind to everyone!

Lesson Activity Name: Free For All Fun!

Goal of Activity: Students will have the opportunity to return to anything they did not finish in the other club meetings or start something new! They would have a fun last club meeting and feel confident that they can be and do whatever they want to.

Length of Activity: 40min

Supplies:

- Computers/chromebooks for each student

Directions:

- Let students know that today they can do any coding related activity they want! Direct them to resources on code.org and Hour of Code. They can also try to complete the challenge activities listed below
- Make sure to help students find what they want to work on and help them along the way.
- About 15 minutes before the end of the club have everyone stop and share what they worked on today and if they learned anything new!
- Also give students time to say goodbye as this is the last club meeting!

Conclusion of the day:

Objective and Learning Outcomes:

By the end of the club, students should feel they have gained new knowledge and understanding about some of the basics of computer science. They should feel empowered and capable of learning any new topic and studying within any field, regardless of their gender. They should have made strong connections with others within the club and know they are smart and amazing individuals with bright futures ahead of them.

Parts of day that worked:

We have not yet had our last day of club, but we anticipate that the students will do a great job on the affirmation and challenge activities based on how hard they have worked all semester and how great of a job they have done!

Parts of the day that did not work:

The students will be able to choose their own activity, so if something doesn't work they can try a new website for coding practice.

Challenge Activities:

<http://compute-it.toxicode.fr/>

<https://hourofcode.com/gfcrossyroad>

<https://hourofcode.com/scigirlsquest>

<https://hourofcode.com/educodecake>

<https://hourofcode.com/educoderace>

<https://code.org/dance>