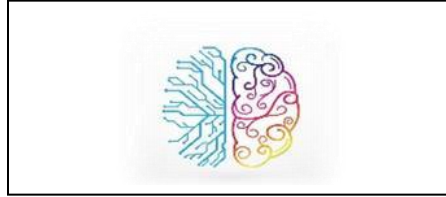King Saud University
College of Computer and Information Sciences
Information Technology Department

IT210
Fundamentals of IT

Empowering the future

Prepared by

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ROLES AND RESPONSIBILITIES:

Student name	Role	Reviewed section	Correction made
Lamya	Interview 2, designing the empathy map and empathy post	ideate	Grammatical correction
Ruba	Group leader, interview 1, designing the empathy map and empathy post	test	Grammatical correction
Hanen	Interview 3, designing the empathy map and empathy post	test	Grammatical correction
Lama	Interview 4, designing the empathy map and empathy post	ideate	Grammatical correction

Introduction

In order to help kids between the ages of 4 and 10 develop their life skills, we realized they needed another resource. Therefore, the goal of this project is to develop games that are appropriate for their age group and that will aid in their understanding of the life skills they will need in everyday life. The goal of this research was to come up with a solution that will both educate and entertain children.

The report is divided into 4 stages:

First Empathize stage, which consist of 4 interviews, the first was made with an elementary school teacher. And the last three interviews were made with mothers.

Along with the empathy map, which has four sections (Says, Thinks, Does, Feels), it also includes the empathy post, which briefly summarizes the interviewees' responses. The Define stage follows, where the needs, insights, and brief problem statements of the user are defined

Following that is the Ideate stage, which features creative ideas obtained from brainstorming.

In addition, the Prototype stage is comprised of sketches of the game interfaces, followed by the Test stage, which provides a summary of the users' input in the form of a table (what worked, what could be improved, questions, ideas)

DESIGN THINKING STAGES:

Stage1: Empathize

1.1.1 Interviews:

Intreview1:

Q1. Have you ever let your child prepare his/her own meal? How was it?

Yes, under my supervision, I have given my kid the freedom to cook for themselves. It builds independence and is a crucial growth step for them. When my child initially began, it was a straightforward activity like making a sandwich or pouring milk over cereal. As they grew older, they developed the ability to manage more challenging kitchen tasks.

Q2. What do you think the kind of meals that your child will be able to prepare?

For children between the ages of 4 and 10, it's important to select recipes and activities that are appropriate for their age group and skill level. As they get older and have more experience in the kitchen, you may gradually introduce more challenging activities. With guidance, children can learn how to make simple meals. They are capable of preparing basic foods like sandwiches, salads, and scrambled eggs. They could help by mixing ingredients, and putting together sandwiches.

Q3. What method have you used in order to teach your child how to prepare his/her meal?

I have used a hands-on method to teach my child how to make their own meals. I explain and demonstrate each task, and then I let them try it with my help and support. I also make sure to emphasize safety rules in the kitchen, like how to handle knives and hot surfaces. I also tried involving them in family cooking activities, such as making pizzas or baking cookies together, can also be a fun and educational way to improve their skills. The child can participate in measuring ingredients, mixing, and decorating, which could help with their understanding of different cooking techniques and encourages creativity.

Q4. What difficulties did you face when trying to teach him/her?

It can be difficult to teach a child to make their own meals. Their short attention span and impatience are two problems that they usually face. If they experience challenges, kids of any age could lose interest fast or become frustrated. It's necessary to keep the tasks entertaining and straightforward so that they can gradually develop their abilities and confidence. Safety issues can be a problem as well. Children must be properly watched and made aware of the importance of following to safety rules because the kitchen can be an extremely dangerous place. Also, it's important to select tasks that are appropriate for their age and to slowly introduce more difficult ones as their abilities advance.

Q5. What kind of game do you think would help to improve this skill?   Perhaps a game where a kid pretends to go grocery shopping with a list, chooses ingredients, and then cooks a dish with those ingredients. It can assist children in understanding the process of meal planning and preparation, practicing decision-making, and learning about various food items.

Intreview2:

Q1. Have you ever let your child prepare his own meal? How was it?

As a mother of 6–10 kids, I've occasionally let my kids prepare meals on their own. It's a great way to encourage their independence and advance their culinary skills.

Q2. What Do you think the kind of meals that your child will be able to prepare?

Depending on their age and level of culinary expertise, kids can advance to making straightforward foods like scrambled eggs, noodles, or grilled cheese sandwiches. They can gradually learn to create more challenging meals like stir-fries, soups, or baked goods with practice and training.

Q3. What method have you used in order to teach your child preparing his\her meal?

By describing recipes, demonstrating processes, and allowing them to take part in different cooking duties, I get children involved in the kitchen.

Q4. What difficulties did you face when trying to teach him\her?

Teaching children to prepare their own meals can have its challenges ,their short attention spans, lack of patience, and sporadic resistance to sampling new meals are just a few of the frequent issues.

Q5. What kind of game do you think would help to improve this skill?

A "mystery box" challenge is a fun game that can enhance children's cooking abilities. Have the kids choose a few items from a package of various ingredients without telling them what they are. Then, ask them to use those components to make a dish.

Intreview3:

Q1. How do you teach your child about personal hygiene?

With pictures and education videos

Q2. what methods have you used to teach him/her personal hygiene?

education videos

Q3. Was teaching the child personal hygiene easy? What challenges did you face?

Teaching my child personal hygiene had its ups and downs. there were challenges, especially when they resisted things like brushing teeth. It's about patience and finding what works best for your child. The process must be repeated more than once for child to learn

Q4. How do you make toothbrushing and room cleaning enjoyable for your child?

Use Fun Stuff,Get colorful toothbrushes with their favorite characters to make it more fun. Give Praise,When they do a good job, and give a small reward.

Q5. What kind of game do you think would help to improve this skill?

Game: Every time a child does something, his points increase until he reaches a certain number and gets a reward

Intreview4:

Q1. How do you teach your child about personal hygiene?

Teaching the child from the beginning not to throw or scatter things and making him/ her responsible for organizing his/ her room, such as putting things in their place.

Q2. what methods have you used to teach him/her personal hygiene?

Praise the child after completing his/ her tasks, and reward him/ her if he/ she does more than expected.

Q3. Was teaching the child personal hygiene easy? What challenges did you face?

No, it was not easy. There were days when I felt a bit annoyed, especially with work pressure. One of the challenges I faced was that the child didn't want to complete his/ her tasks.

Q4. How do you make toothbrushing and room cleaning enjoyable for your child?

Buying a toothbrush that the child chooses, with unique shapes and characters, and creating a competition among siblings to organize their rooms.

Q5. What kind of game do you think would help to improve this skill?

Games that involve organization and placing items in their appropriate places.

1.2.1 Empathy Post:

Empathy post for personal hygiene:

- Teaching child about personal hygiene isn't easy

- need to repeat the process of teaching the child personal hygiene several times for him/ her to learn it.

- repetition is the key for learning.

•Sometimes, the child doesn't want to complete his/ her tasks.

1.2.2 Empathy Post:

Empathy post for preparing a simple meal:

- More easy recipes.

- Spending time with kids will help with their development.

•Giving clear instructions will make learning for them easier.

- some difficulties in teaching kids how to prepare a simple meal.

- kids teaching methods depend on their age and level.

1.3.1 Empathy Map:

Preparing a simple meal empathy map

SAY	DO
SAY **-** it's an important phase in their child's development and independence. - The child initially began with easy tasks. - They help and guide their child as they explain and demonstrate each task. - They involve their child in household kitchen chores	**DO** -Giving children the freedom to cook under supervision. - Teaching and demonstrating cooking tasks. - Involving children in family cooking activities. - Emphasizing safety rules in the kitchen.
THINK - Helping kids to make their own meals is a key developmental milestone that promotes independence. - Kids can manage basic kitchen activities and later pick up more difficult ones. - If chores are too challenging or not engaging enough, kids may lose interest or grow frustrated. - Cooking lessons can be made more entertaining and educational by including games or exercises.	**FEEL** - Excited - Concerned - Patient and supportive - Wanting to make learning to cook an enjoyable and engaging experience for children

1.3.2 Empathy Map:

SAY	DO	
Teaching child about personal hygiene is not easy. It takes time and need to be patient.	Praise. Reward. Buy a new toothbrush with unique shape.	**Personal hygiene empathy map**
THINK	**FEEL**	
Will my child complete his\her tasks? I hope that teaching my child will be easier.	Worried. A bit annoyed.	

Stage2: Define

2.1.1 Capture Findings
2.1.1.1 Needs
For preparing a simple meal:

- A way for their child to develop independence

- to ensure their child understands and follows safety rules.

- make the learning process enjoyable and fun

  for their child

2.1.1.2 Insights
For preparing a simple meal:

- It can incorporate elements of creativity and personalization.

- encourage real-life connections by using ingredients found in a household.

  Including a progress tracking feature so children can see their improvement over time.

2.2.1 Problem statement

Children from the ages of 4 to 10 need a safe and entertaining way to learn how to prepare simple meals because It builds independence and enhances their creativity.

2.1.2 Capture Findings
2.1.2.1 Needs for
personal hygiene

- An easier way to teach the child

- A fun way to teach the child

2.1.2.2 Insights

personal hygiene

- The biggest issue is the difficulty of teaching the child and the time wasted in re-teaching.

- Mothers and children need a method that makes teaching easier and more enjoyable.
-

2.2.2 Problem statement

Children need an easy and enjoyable method to learn life skills because most of the current methods lack these qualities

Stage3: Ideate

3.1 Ideate

1- Progressive Learning: The idea of gradually introducing more challenging kitchen tasks to children as they grow older. (Interview 1, Question 1)

(As mentioned in the interview, when a child initially begins, they start with simple activities like making a sandwich or pouring milk over cereal.)

2- Age-Appropriate Recipes: The idea of selecting recipes and activities that are appropriate for the child's age group and skill level. This concept ensures that the tasks are suitable for their abilities, making the learning process more engaging. (Interview 1, Question 2)

(As mentioned in the interview, children between the ages of 4 and 10 can prepare basic foods like sandwiches, salads, and scrambled eggs.)

3- Hands-On Method: The concept of using a hands-on method to teach your child how to make their own meals. This approach fosters learning through practical experience and emphasizes safety rules in the kitchen. (Interview 1, Question 3)

(As mentioned in the interview, this approach fosters learning through practical experience and emphasizes safety rules in the kitchen.)

4- Maintaining Engagement: The concept of keeping tasks entertaining and straightforward to maintain children's interest because of their short attention spans and impatience, and gradually developing their abilities and confidence. (Interview 1, Question 4)

(As mentioned in the interview, short attention spans and impatience can be challenges, and it's important to keep tasks engaging. This idea ensures that the game provides an enjoyable learning experience.)

5- Meal Planning and Preparation Game: The idea of a game where a child chooses ingredients and then cooks a dish with those ingredients. This concept helps children understand the process of meal planning and preparation, practice decision-making skills, and learn about different food items. (Interview 1, Question 5)

(As mentioned in the interview, the idea of a game where children choose ingredients and cook a dish helps them understand the process of meal planning and preparation.)

6- Step-by-Step Cooking: Design a game that includes step-by-step cooking tasks that children need to follow in order to prepare their meal. Each task can be interactive. (Interview 1, Question 3)

(As mentioned in the interview, explain and demonstrate each task, and then let them try it with help and support.)

7- Safety Rules and Kitchen Awareness: Add safety rules and guidelines within the game to educate children about kitchen safety. (Interview 1, Question 3)

(As mentioned in the interview, make sure to emphasize safety rules in the kitchen, like how to handle knives and hot surfaces.)

8- Creativity and Customization: Allow children to customize their meals by choosing different toppings, flavors, or decorations. This encourages creativity and personalization, making the meal preparation process more enjoyable for children. This idea is inspired by (Interview 1, Question 3)

(As mentioned in the interview, involving kids in family cooking activities, such as making pizzas or baking cookies together, can also be a fun and educational way to improve their skills.)

1- The mother says that it's a great way to encourage their independence and advance their culinary skills. (Interview 2, Question 1)

  - We can make it fun by using sounds and colors in the game.

2- The mother says kids can advance to making straightforward food. (Interview 2, Question 2)

  - We can use a simple meal to teach them, like sandwiches, that can be easy and delicious at the same time.

3- The mother suggests describing recipes and demonstrating the process. (Interview 2, Question 3)

  - Displaying the instructions for preparing the meal could be very helpful before starting the game.

  - Writing the instructions in bullet points can make them easier to read for the child.

4- The mother says that the challenges in teaching children to prepare meals are their short attention spans and lack of patience. (Interview 2, Question 4)

  - Making it fun and enjoyable can help maintain their attention during the game.

  - Adding some supporting sounds can make them feel accomplished.

5- The mother suggests having the kids choose a few items from a package of various ingredients. (Interview 2, Question 5)

- Displaying a box with different sandwich ingredients and letting the child choose from them.

	Solutions	Reflected ideas
1	**Cereal chef" is an exciting game designed for kids aged 4-10, where they can learn the art of making a delicious bowl of cereal. Through interactive gameplay, children click and drag ingredients to create their very own cereal masterpieces. This fun and educational experience introduces kids to various ingredients, fosters creativity, and develops essential cooking skills. Get ready to embark on a breakfast adventure and become a cereal-making superstar while having a fantastic time in the kitchen!**	1. Gradually introduce more challenging tasks as children grow older and gain experience. 2. Emphasize safety rules and provide proper supervision 3. Keep tasks entertaining and straightforward to maintain children's interest and to help with their short attention spans 4. Encourage creativity by involving children in measuring, mixing, and decorating. 5. include interactive steps like selecting ingredients, following recipes, and completing cooking tasks. 6. Provide visual and audio cues to guide children through the cooking process. 7. Incorporate rewards or positive reinforcement to motivate children's progress.
2	**Sandwich Chef" is a learning game for children ages 4 to 9 that teaches them how to build a simple sandwich. Players can design their sandwiches by clicking and selecting their own ingredients. Children practice basic kitchen skills, learn about ingredient combinations, and express their creativity in a fun and engaging virtual world through interactive games. It's a fun method for young chefs to learn about food preparation while creating their own sandwich masterpieces.**	1- We can make it fun by using sounds and colors in the game. 2- We can use a simple meal to teach them, like sandwiches, that can be easy and delicious at the same time. 3- Displaying the instructions on how to do that meal could help a lot before starting the game. 4- Writing the instructions into points can make it easier to read for the child. 5- Making it fun and enjoyable can keep their attention on the game.

6- Adding some supporting sounds can make them feel accomplished.

3.2 Ideate

1- The mother says that teaching with pictures and educational videos is beneficial. (Interview 3 Question 1)

- Visual Learning: incorporate visual aids like pictures and interactive educational videos as part of the game mechanics to reinforce personal hygiene practices.

2- The mother suggests using educational videos to teach him/her personal hygiene. (Interview 3 Question 2)

- Interactive Learning Game: develop an interactive game that utilizes educational videos, engaging children in a fun and educational way, promoting personal hygiene practices.

3- The mother says that teaching the child personal hygiene had its ups and downs. There were challenges, especially when they resisted things like brushing teeth. The process must be repeated more than once for the child to learn. (Interview 3 Question 3)

- Persistence in Learning: emphasize repetition in the game to show kids that learning personal hygiene skills requires practice.

4- The mother says that she tried to make toothbrushing and room cleaning enjoyable by getting colorful toothbrushes with their favorite characters to make it more fun. She also gives praise when they do a good job and provides a small reward. (Interview 3 Question 4)

- Fun Elements: integrate colorful toothbrushes with beloved characters to make the process more enjoyable.

- Positive Reinforcement: incorporate elements that provide praise and acknowledgment for completing tasks effectively, fostering a sense of accomplishment.

5- The mother says that a game where every time a child does something, their points increase until they reach a certain number and receive a reward can help improve this skill. (Interview 3 Question 5)

- Reward System: design the game with a points system where each hygiene task completed earns points, leading to a reward once a certain threshold is reached, encouraging consistent practice.

- The mother says that teaching and making the child responsible for organizing his/her room, such as putting things in their place. (Interview 4, Question 1)

1- Matching game, where players match or put items in their appropriate places, fostering creativity and problem-solving skills.

- The mother says that she praises and rewards the child after completing his/her tasks. (Interview 4, Question 2)

1- Praise, we can display motivational messages when the player puts items in their appropriate places, encouraging creativity and a sense of accomplishment.

- The mother says that teaching the child personal hygiene wasn't easy, and sometimes the child didn't want to complete his/her tasks. (Interview 4, Question 3)

1- Easy and enjoyable, an effective way for the mother to teach the child, fostering creativity and making the learning process enjoyable like a game.

- The mother says that she tried to make toothbrushing and room cleaning enjoyable by buying a toothbrush that the child chooses, with unique characters, and creating a competition. (Interview 4, Question 4)

1- Unique characters, using popular and engaging characters that stimulate creativity and captivate the players.

2- Competition, introducing scores or points to create excitement and motivation for the players to strive and win the game, stimulating their competitive spirit and creative thinking.

- The mother says that games that involve organization and placing items in their appropriate places would help improve this skill. (Interview 4, Question 5)

1- Placing things in their appropriate places games will be a valuable addition to this type of teaching, promoting creativity and organizational skills among the players.

	Solutions	Reflected ideas
1	**"Toothbrushing Game: Helping Mrs. Abby"** **Prepare for a unique experience with Mrs. Abby in this game!** **Join forces with Mrs. Abby for a teeth cleaning experience in a teeth brushing game with colorful toothbrush that adds an extra touch of appeal to your brushing routine.** **Explore a points system integrated into the game. As you diligently clean each tooth, watch your points soar, adding an element of accomplishment to your dental routine with motivational messages that inspire and uplift throughout your journey.** **The toothbrushing game combines the excitement of play with valuable lessons for learning discipline. It's a fun way to Motivate players to adopt a daily toothbrushing routine to help in learning discipline and commitment to healthy habits. Using motivational messages and point awards encourages them to continue practicing the good toothbrushing habit.**	**1-Fun Elements, Integrate colorful toothbrushes with beloved characters to make the process more enjoyable.** **2-Positive Reinforcement, Incorporate elements that provide praise and acknowledgment for completing tasks effectively, fostering a sense of accomplishment.** **3-Reward System, Design the game with a points system where each hygiene task completed earns points., leading to a reward once a certain threshold is reached, encouraging consistent practice.**
2	**Room Cleaning Game: Helping Mrs. Abby"** **Start an exciting cleaning experience with Mrs. Abby in this interactive game! Join forces with Mrs. Abby to tidy up the bedroom by putting things in their appropriate places.** **Earn points and get motivational messages as you successfully place things in their appropriate places, making the room neat and organized.**	**1- Match, where players match or put the item in its appropriate place, fostering creativity and problem-solving skills. (Interview 4 Question 1)** **2- Prise, we can display motivational messages when the player puts the item in its appropriate place, encouraging creativity and a sense of accomplishment. (Interview 4 Question 2)** **3- Easy and enjoyable, an effective way for the mother to teach the child, fostering creativity and making the**

With vibrant visuals and engaging gameplay, Clean Room Game combines the excitement of a game with the valuable lesson of keeping things tidy. It's an enjoyable way for children to learn about the organization and the importance of maintaining a clean living space while having fun.

4- Competition, introducing scores or points to create excitement and motivation for the players to strive and win the game, stimulating their competitive spirit and creative thinking. (Interview 4 Question 4)

5- Putting things in their appropriate places in games, will be a valuable addition to this type of teaching, promoting creativity and organizational skills among the players. (Interview 4 Question 5)

Flowchart (Solution #)

Room Cleaning Game
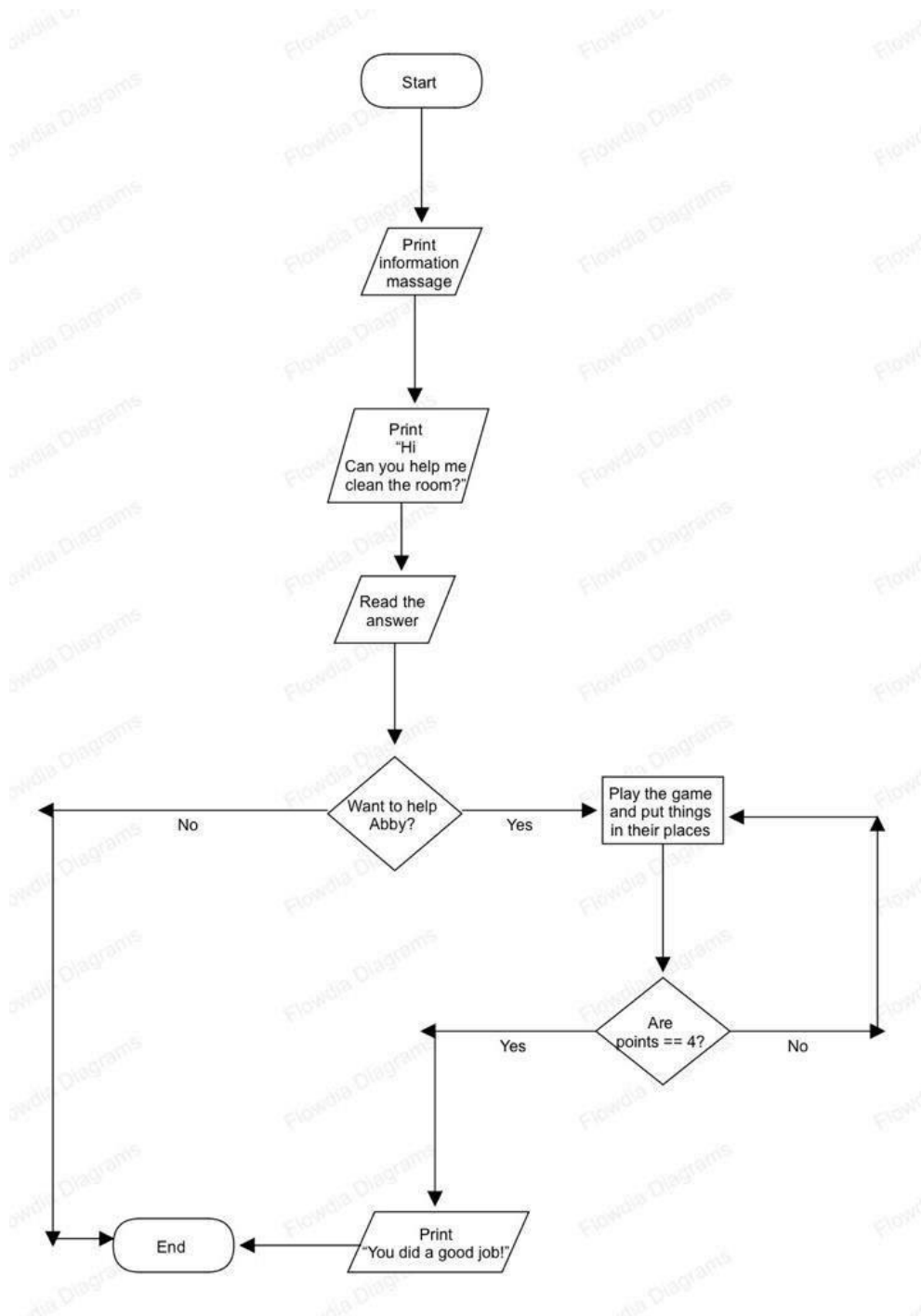
Pseudocode (Solution #)

Pseudocode for cereal chef

Initialize all sprites (the bowl, the milk carton, the cereal box, the fruit bowl, Abby falling cereal, fruit falling, milk pouring, spoon

1. Abby Sprite:

When GreenFlag clicked:
   Show
   Switch costume to abby-a
   Go to x: 111, y: -47
   Say "Hello there guys!" for 2 seconds
   Say "My name is Abby" for 2 seconds
   Say "I'm really hungry" for 2 seconds
   Switch costume to abby-b
   Think "Hmm..." for 2 seconds
   Say "What should I make?" for 2 seconds
   Switch costume to abby-c
   Say "Let's go make cereal together" for 2 seconds
   Switch costume to abby-a
   Glide 1 second to x: -65, y: -44
   Switch backdrop to kitchen 2

When backdrop switches to kitchen 2:
   Go to x: 111, y: -47
   Switch costume to abby-a3
   Say "Let's go collect the ingredients" for 3 seconds
   Switch costume to abby-b3
   Say "Can you drag the milk onto the counter and click on it?" for 3 seconds

When I receive milk:
   Repeat 1:
     Switch costume to abby-c2
     Say "Good job!" for 3 seconds
     Switch costume to abby-b3
     Say "Can you drag the cereal onto the counter?" for 3 seconds

When I receive cereal:
   Repeat 1:
     Switch costume to abby-c2
     Say "Good job!" for 3 seconds
     Switch costume to abby-b3
     Say "Can you do the same with the fruit bowl and click on it?" for 3 seconds

When I receive fruit bowl:
   Repeat 1:
     Switch costume to abby-c2
     Say "Good job!" for 3 seconds
   Switch backdrop to kitchen 3
   Start sound tada

When backdrop switches to kitchen 3:
   Go to x: 111, y: -47
   Switch costume to abby-a3
   Say "You're one step closer to finishing" for 4 seconds
   Switch costume to abby-b3
   Say "Can you drag the milk above the bowl to pour it?" for 4 seconds

When I receive milk in bowl:
   Switch costume to abby-c2
   Say "You're doing amazing" for 4 seconds

Switch costume to abby-b3
Say "Can you do the same with the cereal box?" for 4 seconds
Broadcast pouring cereal

When I receive cereal in bowl:
   Switch costume to abby-c2
   Say "You're doing amazing" for 4 seconds
   Switch costume to abby-b3
   Say "Can you do the same with the fruit bowl?" for 4 seconds
   Broadcast falling fruit

When I receive almost:
   Switch costume to abby-c2
   Play sound (clapping) until done
   Say "Wow, you're done!" for 2 seconds
   Say "Now go enjoy your cereal" for 2 seconds
   Broadcast spoon

When I receive spoon:
   Forever loop:
      Hide

2. Bowl Sprite:
When GreenFlag clicked:
   Forever loop:
      Hide

When backdrop switches to kitchen 2:
   Forever loop:
      Go to x: -46, y: -63
      Set size to 120%
      Show

When backdrop switches to kitchen 3:
   Forever loop:
      Go to x: -46, y: -63
      Set size to 120%
      Show

When backdrop switches to spoon:
   Forever loop:
      Go to x: -20, y: -74
      Set size to 200%

3. Milk Carton Sprite:
When GreenFlag clicked:
   Forever loop:
      Hide

When backdrop switches to kitchen 2:
   Point in direction 90
   Go to x: 47, y: 36
   Forever loop:
      Set size to 15%
      Show

When this sprite is clicked:
   Set drag mode draggable
   Repeat 1:
      Broadcast milk
   End repeat

When backdrop switches to kitchen 3:
   Point in direction 90
   Set drag mode draggable

Go to x: 72, y: 56
Forever loop:
    If distance to bowl < 60 then
        Glide 1 second to x: -11, y: -16
        Point in direction 0
        Broadcast milk pouring
        Play sound (glug) until done
        Point in direction 90
    End if statement
    Point in direction 90
    Go to x: 72, y: 56
End Forever loop

When I receive spoon:
    Forever loop:
        Hide

4. Fruit Bowl Sprite:
When GreenFlag clicked:
    Forever loop:
        Hide

When backdrop switches to kitchen 2:
    Point in direction 90
    Go to x: 2, y: 26
    Forever loop:
        Set size to 80%
        Show

When this sprite is clicked:
    Set drag mode draggable
    Repeat 1:
        Broadcast fruit bowl
    End repeat

When backdrop switches to kitchen 3:
    Go to x: -149, y: -91

When I receive falling fruit:
    Point in direction 90
    Set drag mode draggable
    Go to x: -149, y: -91
    Forever loop:
        If distance to bowl < 60 then
            Glide 1 second to x: -86, y: -27
            Point in direction 146
            Broadcast pouring fruit
            Play sound (recording 1) until done
            Point in direction 90
        End if statement
        Point in direction 90
        Go to x: -149, y: -91
    End Forever loop

When I receive spoon:
    Forever loop:
        Hide

5. Cereal Box Sprite:
When GreenFlag clicked:
    Forever loop:
        Hide

When backdrop switches to kitchen 2:
    Point in direction 90

Go to x: -149, y: 43
Forever loop:
   Set size to 60%
   Show

When this sprite is clicked:
   Set drag mode draggable
   Repeat 1:
      Broadcast cereal
   End repeat

When backdrop switches to kitchen 3:
   Go to x: -175, y: -53

When I receive pouring cereal:
   Point in direction 90
   Set drag mode draggable
   Go to x: -175, y: -53
   Forever loop:
      If distance to bowl < 60 then
         Glide 1 second to x: -96, y: -18
         Point in direction 158
         Broadcast falling cereal
         Play sound (cereal) until done
         Point in direction 90
      End if statement
      Point in direction 90
      Go to x: -175, y: -53
   End Forever loop

When I receive spoon:
   Forever loop:
      Hide

6. Spoon Sprite:
When GreenFlag clicked:
   Set point to 0
   Forever loop:
      Hide

When I receive spoon:
   Forever loop:
      Go to x: 136, y: -56
      Point in direction -71
      Set size to 40
      Show
   End Forever loop

When this sprite clicked:
   Forever loop:
      Repeat until touching mouse-pointer:
         Go to mouse point
         Move 1 step
         If touching fruits falling:
            Broadcast spin
            Play sound (recording 1) until done
            Go to mouse pointer
            Change points by 1
         End if statement
      If points = 1:
         Switch backdrop to done
      When backdrop switches to done:
         Forever loop:
            Hide
         End Forever loop

7. Milk Pouring Sprite:
When GreenFlag clicked:
   Forever loop:
      Hide
   End Forever loop

When I receive milk pouring:
   Go forward 1 layer
   Switch costume to pouring1
   Forever loop:
      Show
   End Forever loop

When I receive milk pouring:
   Go to front layer
   Go to x: -65, y: -117
   Set size to 100
   Repeat 10:
      Glide 0.1 seconds to x: -64, y: -117
      Glide 0.1 seconds to x: -65, y: -117
      Glide 0.1 seconds to x: -66, y: -117
   End repeat
   Broadcast milk in bowl
   Forever loop:
      Go to front layer
      Go to x: 4, y: -122
      Switch costume to pouring2
      Set size to 65
   End Forever loop

When I receive spoon:
   Forever loop:
      Hide
   End Forever loop

8. Falling Fruits Sprite:
When GreenFlag clicked:
   Forever loop:
      Hide
   End Forever loop

When I receive pouring fruits:
   Switch costume to fruits falling1
   Forever loop:
      Show
   End Forever loop

When I receive pouring fruits:
   Go to front layer
   Go to x: -35, y: -32
   Set size to 50
   Repeat 10:
      Glide 0.1 seconds to x: -34, y: -32
      Glide 0.1 seconds to x: -35, y: -32
      Glide 0.1 seconds to x: -36, y: -32
   End repeat
   Broadcast almost
   Forever loop:
      Go to front layer
      Point in direction 90
      Go to x: -45, y: -77
      Switch costume to final
      Set size to 28
   End Forever loop

When I receive spoon:
   Go to front layer
   Point in direction 90
   Forever loop:
     Go to x: -21, y: -94
     Set size to 40
   End Forever loop

When I receive spin:
   Go to front layer
   Point in direction 90
   Forever loop:
     Go to x: -21, y: -94
     Set size to 40
     Repeat 10:
       Glide 0.1 seconds to x: -17, y: -90
       Glide 0.1 seconds to x: -18, y: -90
       Glide 0.1 seconds to x: -19, y: -90
     End repeat
   End forever

When backdrop switches to done:
   Forever loop:
     Hide
   End forever loop

9. Falling Cereal Sprite:
When GreenFlag clicked:
   Forever loop:
     Hide
   End Forever loop

When I receive falling cereal:
   Switch costume to cereal falling 1
   Forever loop:
     Show
   End Forever loop

When I receive cereal falling 1:
   Go to front layer
   Go to x: -60, y: -53
   Set size to 30
   Repeat 10:
     Glide 0.1 seconds to x: -48, y: -49
     Glide 0.1 seconds to x: -49, y: -49
     Glide 0.1 seconds to x: -50, y: -49
   End repeat
   Broadcast cereal in bowl
   Forever loop:
     Go to front layer
     Point in direction 90
     Go to x: -41, y: -36
     Switch costume to cereal in bowl 1
     Set size to 50
   End Forever loop

When I receive spoon:
   Forever loop:
     Hide
   End forever loop

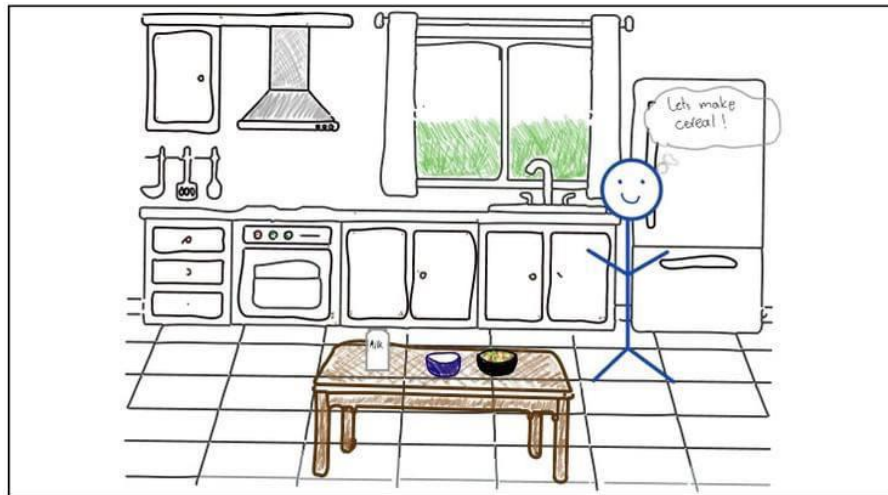When I receive almost:
   Forever loop:
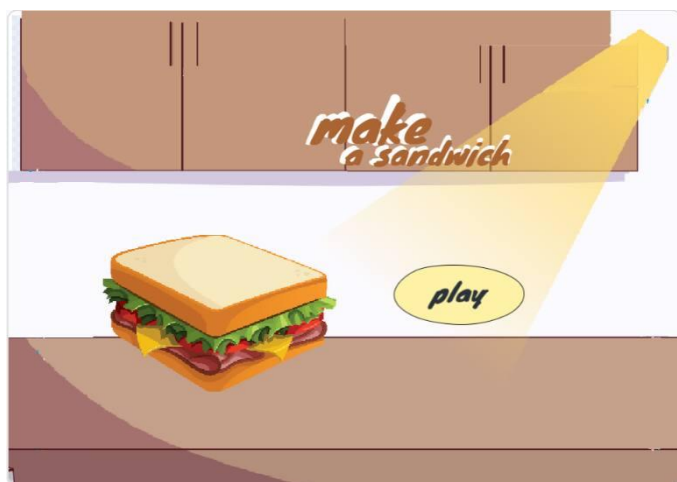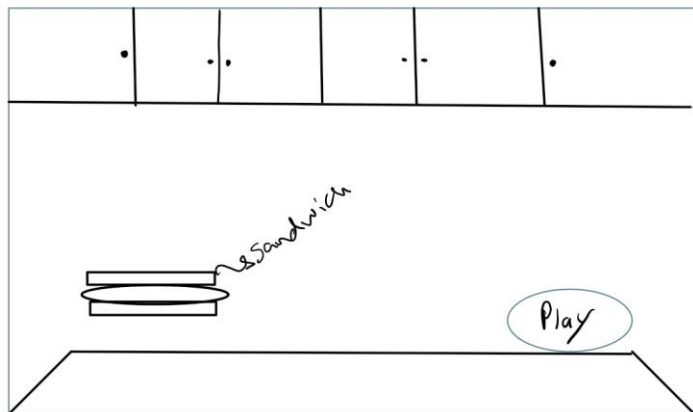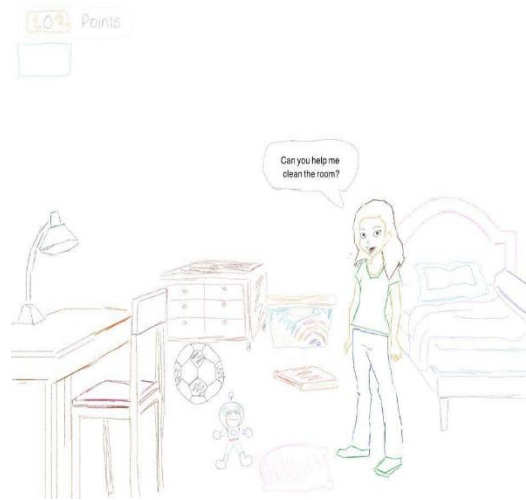   Show

Stage4: Prototype

4.1 Prototype

Solution 1

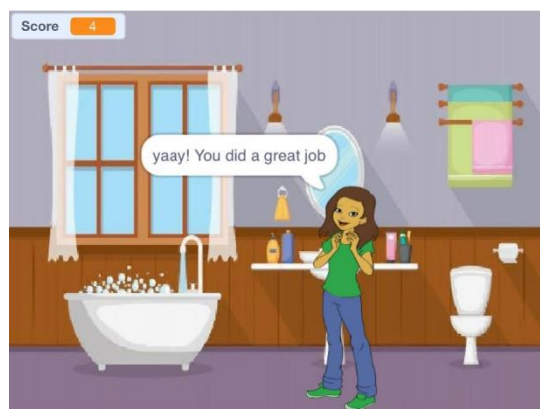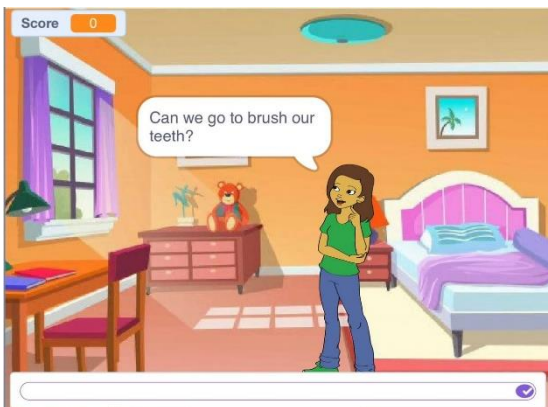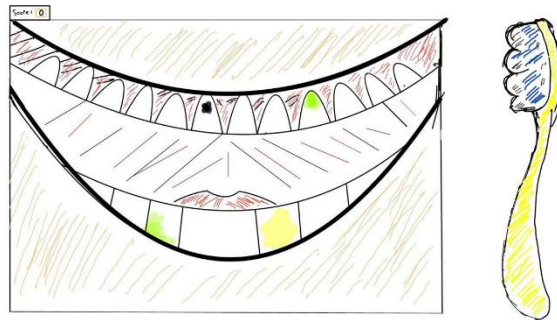## 4.2 Prototype

Solution 1

Stage5: Test

Aljohara – mother of 7 years old (Cereal chef)

Amina – mother of 9 years child (Sandwich chef)

5.1 Feedback Grid

Questions?	*Ideas?*
• How can we make the game more visually appealing? (Sandwich chef) • How can we make the game more challenging? (Cereal chef) • How can we ensure the game is accessible to all users? (Sandwich chef) • How can we make the game repayable? (Cereal chef) • Can players save and share their sandwich creations? (Sandwich chef)	• Include a scoring system based on presentation and taste. (Sandwich chef) • Include mini games to collect sandwich ingredients. (Sandwich chef) • Include mini quests to gather cereal ingredients. (Cereal chef) • Include nutrition facts and educational tidbits about cereal. (Cereal chef)
What worked?	*What could be improved?*
• Clear step-by-step instructions for making cereal. (Cereal chef) • Interactive process of assembling a sandwich. (Sandwich chef) • interactive process of preparing cereal. (Cereal chef) • Encouragement of creativity through customizing sandwich ingredients. (Sandwich chef)	• Incorporate more interactive elements for engagement. (Cereal chef) • Offer variations in bread and filling options. (Sandwich chef) • Include more options for cereal customization. (Cereal chef) • Provide additional information on sandwich making tips. (Sandwich chef) • Incorporate more diverse sandwich recipes. (Sandwich chef)

5.2 Feedback Grid

Alanoud-mother of 8 years old child (Room cleaning game)

Hadeel- mother of 6 years old child (teeth brushing game)

What worked?	*What could be improved?*
1- Instructions: The instructions were helpful in understanding the game. (Room cleaning game)	1- Adding the feature to clean rooms other than the bedroom. (Room cleaning game)
2- Messages and sounds: The messages and sounds were motivating and encouraged the game's completion . (Room cleaning game)	2- Incorporating multiplayer functionality where players can compete to clean the room better. (Room cleaning game)
3- Easy to understand: The game was easy to understand. (Room cleaning game)	3- Adding levels to the game. (Room cleaning game)
4- Learning and enjoyment combined: The game provided a fun experience while facilitating learning. (Room cleaning game)	4- Expanding the game to include various dental scenarios beyond basic teeth cleaning could add complexity and make the experience more engaging. (teeth brushing game)
5- Engaging character design that encourages children to participate in teeth brushing. (teeth brushing game)	5- Incorporating different levels or challenges within the game structure could provide a sense of progression, encouraging players to embrace healthy dental habits consistently. (teeth brushing game)
6- Effective use of bright colors and stimulating sound effects that make the teeth brushing experience more enjoyable. (teeth brushing game)	
7- Incorporating motivational oral feedback with encouraging messages proved to be a powerful motivator, reinforcing positive dental habits. (teeth brushing game)	
Questions?	*Ideas?*
1- Is there a possibility of adding languages other than English? (Room cleaning game)	1- Adding a save progress feature. (Room cleaning game)
	2- Including additional languages. (Room cleaning game)
2- Does the game support playing on different devices? (Room cleaning game)	3- Adding other rooms in the house for cleaning. (Room cleaning game)
3- Is it possible to incorporate languages other than English to reach a broader audience in the dental care game? (teeth brushing game)	4- Consider adding an educational mode providing tips and information on oral care and dental hygiene. (teeth brushing game)
4- Does the game support gameplay across different devices, allowing players to enjoy the dental care experience on various platforms? (teeth brushing game)	5-Adding more languages, especially Arabic. (teeth brushing game)
	6- Introducing new challenges set in different parts of the mouth for cleaning could add excitement and variety to the dental care gaming experience. (teeth brushing game)