

Making bread

Title: Water, salt, wheat flour – make bread right now

Age group: 5-6

Learning activities:

Observing, questioning, making connections, explaining evidence, communicating explanations

Creative dispositions:

Motivation, ability to make connections, curiosity, thinking skills

Synergies:

Play and exploration, questioning and curiosity, dialogue and collaboration, reflection and reasoning

Background Information

School setting: Inner London

School policy for science: Using the 'Big Ideas' of science as a starting point for planning and to promote open-ended learning activities

Curriculum links: (from Development Matters for children aged 0-5)

- Looks closely at similarities, differences, patterns & change. [Understanding of the World 40-60]
- Children know about similarities & differences in relation to places, objects, materials & living things. They talk about the features of their own immediate environment & how environments might vary from one another. They make observations of animals & plants & explain why some things occur, & talk about changes. [Early Learning Goals]
- Finding out and exploring, Being involved and concentrating, Having their own ideas, Making links, Choosing ways to do things [Characteristics of effective learning]

Background Information



School setting: Bucharest, 4th ward

School policy for science: The school policy follows the curriculum objectives for preschool education, but the teacher is free to decide and organize all the activities, including science.

Curriculum links: Science activities are derived from the annual planning and they are consistent with the national curriculum for the preschool education:

- The pre-schoolers will develop skills associated to scientific investigation such as: observation, formulation of hypothesis, experiments planning and making, interpreting of data obtained from experiments.
- The pre-schoolers will be encouraged to make experiments, to use instruments or equipments, to register and communicate the results of the scientific observations, to use different sources of information, to solve problems, to look for solutions, to synthesize valid conclusions.

Setting the Scene

Focus

The focus of this activity was to increase children interest for working in groups and explore. My main goal was to provide the opportunity for them to make observations on materials and processes and communicate their opinions by connecting all these with their prior experience and knowledge. This will lead to the enrichment of vocabulary too, as they learn new words naming different materials and stages of the process.

Rationale

Children are very much interested in exploring the real word surrounding them; so I decided to give them the opportunity to understand how different ingredients can be used to make bread. Fostering children curiosity towards such a common foodstuff I could plan an interesting inquiry activity.

The implications for my planning and teaching

- I provided specific materials/ingredients related to making bread and started discussions about them. Many **questions** rose, as children tried **to find explanations** for their use.
- I fostered children's agency through **dialogue and collaboration**, knowing that encouraging communication between them would lead to new ideas as well as **reflections** on their scientific work.
- I was also interested in **building on children's prior knowledge** as bread could be a subject discussed in many families. Children worked in groups and this was very useful in sharing ideas and explanation.
- After the activity started, I acted as an observer, helping children when necessary and encouraging the peers to respond to their colleagues' questions.
- Children could make notes (mainly by drawing) to express their thoughts during the activity or at its end.

Developing the Learning Journey

Starting point

Activity: The science lesson “Water, salt, wheat flour – make bread right now” is a sequence in the project “The bread journey”, where children learn about the cultivation of wheat and how it is processed. I started by presenting images of the whole cycle, from wheat grains to the final product: bread.

Rationale: The images of the bread journey were designed to encourage children to share their initial ideas and questions.

- The science lesson “Water, salt, wheat flour – make bread right now” is a sequence in the project “The bread journey”, where children could learn about the cultivation of wheat and its processing conditions. I started by presenting images of the whole cycle, from wheat grains to the final product: bread.

- Children came with lots of questions and comments: How to get bread from wheat grains? What shall we do if we cannot find bread at the store? Sometimes my grandmother prepares bread for us, but I do not know how she does it.... Of what the bread is made? How can we make the flour stay stacked together?



- I have brought in the classroom some ears of wheat in order for children to understand how the grains are produced by the plant. Discussions rose when I came with explanations about transforming the grains into the flour. Children made connections with their prior knowledge saying that the process is similar with that in which “... my mother is grinding the coffee grains”
- It was a very motivating starting point as children concluded: we can be bakers for a day and make bread using the necessary ingredients (water, salt, flour, yeast).

Children’s responses

It was a very motivating starting point as children concluded: we can be bakers for a day and make bread using the necessary ingredients (water, salt, flour, yeast).

Reflections and implications

Importance of time for discussion. This encourages children to make links with everyday experiences.

Developing the learning sequence

First stage – knowing about the materials to be used:

Activity: I split the class into groups and children prepared themselves for the process of making bread, by wearing the protection equipment. This made them aware of the importance of their role.

Rationale: Children were grouped to promote collaboration. Wearing hats and aprons encouraged excitement and a sense of responsibility.



- Children were enthusiastic and started to touch every material on the table and discuss about it, **sharing opinions**. This provided evidence of their **motivation** and **interest** in the activity.
- I encouraged children to express their own thoughts and asked them how all the ingredients should be mixed together. Is it any order of mixing? Children made predictions about the taste of the bread given by different ingredients. I did not interfere in the process, but I let them explore and produce the dough.
- I felt it is very important to stimulate them in making predictions: if we do not use water, what do you think we can get?
- I reminded them the assignment: mix the ingredients so that you get dough for bread. Do not forget to use of all the ingredients.
- Dialog and collaboration helped children reflecting on the explorations they made, and finally they could formulate simple explanations about the process of making bread.

Children's responses

Dialogue and **collaboration** helped children reflect on their **explorations** finally they could formulate **simple explanations** about the process of making bread.

Reflections and exploration

Working in groups was successful in encouraging children to come up with ideas and make links with everyday life.



What if I add some sugar?

I think my grandmother is adding milk sometimes...

Second stage – knowing about the process

Activity: I helped with mixing the ingredients and kneading the dough. I **asked questions** about what would happen if we did not use yeast. I explained the process behind the investigation: the CO₂ produced by yeast makes the dough rise.

Rationale: The purpose of this activity was to find out about children's ideas and support their understanding of the processes involved in making bread.

We shall make lots of good bread.

My bread is very tasty, you'll see

I wonder if the gas is still inside the dough...



I am not sure I can work with the dough

The role of yeast in making the dough fluffy was as magic. It was difficult for them to wait for one hour or so to let the dough double its volume: *Why should we do this? We want to prepare the bread now.*

The chemistry behind the experiment was not very difficult to be understood by the children:. They asked questions : *How can we see the gas? What if we have no gas in the dough? What if we use much yeast?*

Children's responses

Children had lots of opinions about *what if we do not use yeast?* but found it hard to imagine what bread without yeast can look like or taste like.

Reflections and Implications

I decided to come back to this issue at a later stage, when the dough will be ready for modelling the bread.

Children questions gave me ideas for extensions of this activity: I shall give them the possibility to explore some other types of pastry dough and try to analyze the role of ingredients in each case.

Finally time passed and the dough had raised enough for children to shape it into different kinds of bread.

The third stage: shaping and baking the bread

Activity: Children were given worksheets and asked to draw the bread in the form they want it to be after baking. Children showed the drawings to their colleagues and discussed the size, aspect and shape of the bread.

Rationale: The aim was to help children imagine what the bread will look like and make decisions about the shapes they wanted.



Children's responses

The preparation and shaping of the little breads were very **serious and enjoyable** activities as the children could feel the texture of dough and could model the bread into the shapes they preferred.



Finally, all the little breads covered the tray and children waited anxiously for them to be baked.

Tasting the bread, the conclusion was: it is not difficult to make bread; we can try again with other ingredients.



Reflections and Implications

Opportunities for children to handle materials themselves and make decisions helps foster **motivation and discussion**.

Focus children involvement



Child 1. At the beginning Laura was not very confident and showed not much involvement. She just looked at the materials on the table and listened to their colleagues' comments and questions. Laura is shy and not very curious. But when the dough was ready for being shaped and distributed to children, she participated and enjoyed the work. Laura has shown a gradual agency, from just observing the materials and other colleagues' attitude to her own involvement and pleasure for experiment.

Child 2. Andrei was enthusiastic and proved agency throughout the whole activity. He was interested to touch all the materials and tried to find an explanation of use for each of them: "I think water is good for "linking" together all this flour... the flour is spreading around without water...". He happily communicated with other children and asked them about their opinions: "Yeast will make the bread big ... but how big? Do you know Sorin? How big?" Andrew was curious all the time and asked many questions; he proved creativity by imagining what if we shall use other ingredients and made connections with his prior knowledge talking about his mother doing similar things (e.g. cakes) with flour, milk and eggs.

Child 3. Tudor proved not much confidence in asking questions, but receiving the teacher encouragement he finally managed to make observations and comments. He was interested in exploring the materials and confessed that "... the flour is so soft I like to feel it in my hand". He creatively tried to express his wish for the final product when he made the drawing on the worksheet: "I would like my bread to be dark brown on the surface"

Reflections

Children's progress

In the previous activities I had observed that children do not really cooperate when they look for solutions to their problems. Therefore, once they had the opportunity to work with many

ingredients, they started to cooperate: they were interested in the solutions proposed by their peers and came up with new ideas.

As a result of children involvement in exploring the ingredients and the procedures, they enriched their vocabulary and could also understand the science involved.

Children really liked the activity and the possibility to combine (mix) various materials/ ingredients by themselves made them more involved and creative. They made predictions and came with many investigative questions.

Reflections – Teacher role

The fact that the children could manipulate the ingredients by themselves and explore was a strong motivation for cooperation and investigation. They could play with the flour and then feel the different texture of the dough.

Initial discussions and questions were for me helpful in fostering children's curiosity and agency. My support was reduced during the activity and children could act following their own predictions. I encouraged children to discuss at home with their parents and grandparents about the process of making bread. This will help children to better understand and make connections with their own experience. I tried to enhance children's creative thinking by helping them formulate questions and by allowing enough time for exploration and discussion.

Classroom environment

Through discussions and their own reflections and judgment children understood that not only the ingredients (materials) used are important to get good bread, but the fact that the dough has to rise under the effect of the yeast (process).

The assessment of the activity was done by observations (making notes, asking questions, taking photos), but I also encouraged children to repeat the experiment at home, for a better understanding on how to use natural ingredients (materials) to obtain food.

Various materials and dedicated workspace were provided for children, as well as protection equipment like hats and aprons.

I found very useful to let children express their own thoughts and formulate questions and comments. Sometimes corrections were needed to vocabulary - children needed to be introduced to scientific vocabulary - and it was my role to do so.

Next steps for learning and teaching

I would like to involve parents in this type of practical activity so that they can understand the role of exploration and inquiry for creativity and development of children's thinking.

I plan to organize such science lessons as frequently as possible and give children the freedom to work with and experience with materials in the surroundings.



In the future activities I shall use children working in groups more frequently. it is a good method to encourage children to communicate and share ideas.

Reflection questions for the reader

How do you motivate children in science?

In what ways do you encourage children to discuss their ideas?

How do you record children's ideas/comments? In what ways do you build on them in your planning and teaching?

How do you organise science activities? Do you provide a specific space in the classroom for science activities?



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