Using Learning Progressions to track students’ understandings about the food system
Research has shown that the general public is ill-equipped to participate in science-related debates about issues related to food systems.
Our aim is to engage youth in developing scientific understandings about food systems.
We teach students about food systems in the **Growing Food** and **Farm to Table & Beyond** modules of LiFE.
We use **learning progressions** to understand how students’ **thinking** about food systems becomes more **complex**.
At first students understand the system as parts.
The most simplistic understanding is being able to list various parts.
Learning Progressions for Understanding Food Systems

Parts

Isolated Parts  More Parts

Next, students can list an increasing number of parts.
As students advance in their understandings, they begin to explain various parts.
Once students can explain all the various parts, they begin to think about the parts relating to each other as a system.
When students start to apply systems thinking, their explanations show how the different parts interact.
Next, their explanations show relationships and how different parts interact.
Learning Progressions for Understanding Food Systems

Finally, students see the entire picture of the system and their explanations represent a synthesized whole.
To summarize, the food system learning progression has **six stages:**

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<th>Isolated Parts</th>
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We develop **formal understandings** of students’ learning progressions through **pre- and post-assessments**.
Students were asked to describe scenarios, make choices, analyze impacts, and take positions on everyday food and environmental issues.
On the following slides, students’ answers are unedited. First, you will see a student’s answer before being exposed to the LiFE Curriculum (pre-assessment). Next, you will see the same student’s answer on the post-assessment.
Look at the bottom of the screen to see how the student moves through the **stages of the learning progression**.
QUESTION 1:

The LiFE Story of Strawberry Jam

Describe all the steps to get strawberries from a farm in California to be sold as strawberry jam in a store in New York City.
The LiFE Story of Strawberry Jam

Describe all the steps to get strawberries from a farm in California to be sold as strawberry jam in a store in New York City.

Pre:
To deliver the strawberries you could send it on a boat or a plane or train.
The LiFE Story of Strawberry Jam

Describe all the steps to get strawberries from a farm in California to be sold as strawberry jam in a store in New York City.

Pre:
To deliver the strawberries you could send it on a boat or a plane or train.

Post:
First it has to get to a factory to get produced then it goes to another factory to get packaged in glass bottles then it gets sent to the stores for people to buy it and eat.
The LiFE Story of Strawberry Jam

Describe all the steps to get strawberries from a farm in California to be sold as strawberry jam in a store in New York City.

Pre:
Farmers have to plant strawberry seeds and let the strawberries grow. Then they smash it and do the jam and then a truck comes and packages them in boxes and they take them to the store.
Describe all the steps to get strawberries from a farm in California to be sold as strawberry jam in a store in New York City.

Pre:
Farmers have to plant strawberry seeds and let the strawberries grow. Then they smash it and do the jam and then a truck comes and packages them in boxes and they take them to the store.

Post:
Most probably: farmers pick the strawberries from plants. They sell it, a person smushes it and all that. They package it and set it on a truck they store in a warehouse for one or more days they are set in supermarkets or groceries for you to buy and eat.
QUESTION 2:

Positive and negative effects of pesticides
Positive and negative effects of pesticides

Pre:
I don’t know.
Positive and negative effects of pesticides

Pre:
I don’t know.

Post:
It destroys harmful insects but it also destroys useful insects and pollutes the soil.
Positive and negative effects of pesticides

Pre:
It might come ready to eat, but it might not come ready to eat.
Positive and negative effects of pesticides

Pre: It might come ready to eat, but it might not come ready to eat.

Post: It kills bugs but it is bad for our health.
QUESTION 3:

Positive and negative effects of trucks
Positive and negative effects of trucks

Pre:
It might get to us in time but, maybe it can take days or weeks to come.
Positive and negative effects of trucks

Pre:
It might get to us in time but, maybe it can take days or weeks to come.

Post:
It takes food anywhere, but the food might be spoiled.
Positive and negative effects of trucks

Pre:
They should put it in a bag, but they just throw the food in.

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Positive and negative effects of trucks

Pre: They should put it in a bag, but they just throw the food in.

Post: We get our food. It destroys the earth and our ozone layers.
QUESTION 4:

Positive and negative effects of factories
Positive and negative effects of factories

Pre:
It might come fresh or not fresh.
Positive and negative effects of factories

Pre: It might come fresh or not fresh.
Post: It is easier to make but brings lots of chemicals.

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Positive and negative effects of factories

Pre:
They should check before they finish, but they don’t check before they finish.
Positive and negative effects of factories

Pre:
They should check before they finish, but they don’t check before they finish.

Post:
We get our apple sauce and processed foods. They make black smoke in the sky.
Advice on healthful eating

If a friend asked for one piece of advice on healthful eating, what would you say and why?
Advice on healthful eating

If a friend asked for one piece of advice on healthful eating what would you say and why?

Pre:
You should eat food from the food pyramid so you can be active.
Advice on healthful eating

If a friend asked for one piece of advice on healthful eating what would you say and why?

Pre:
You should eat food from the food pyramid so you can be active.

Post:
Don’t eat anything that has been processed a lot and has a lot of chemicals to preserve it. The chemicals may go into your body and make you a little sick and weak if you eat too much of these kinds of food.
Advice on healthful eating

If a friend asked for one piece of advice on healthful eating what would you say and why?

Try to eat low fats and less oily food drink milk natural pure juice. Eat salads vegetables and fruit. Don’t get sick and not too fat because is bad in case of emergency your body can’t take too much running.
Advice on healthful eating

If a friend asked for one piece of advice on healthful eating, what would you say and why?

Pre:
Try to eat low fats and less oily food. Drink milk natural. Pure juice. Eat salads, vegetables, and fruit. Don’t get sick and not too fat because is bad in case of emergency your body can’t take too much running.

Post:
Organic vegetables and fruits. You should eat mostly plant vegetables like spinach, cilantro, etc. They should drink a lot of water after every meal. They could eat dietetic food. Most likely because that way all food would have less chemicals going into their body. Water is because if you drink some beverages with chemicals your thirst won’t stop.
These questions serve as a “lens” to help us see where students are along the food systems learning progression, shaping their ability to reason about food and the environment.
With new scientific understandings, students can apply what they have learned to their day-to-day lives.