A close-up photograph of a field of crocuses. The majority of the flowers are a vibrant purple, with some white flowers interspersed. The flowers are in various stages of bloom, with some showing bright orange centers. The background is slightly blurred, showing more of the same field under bright, natural light.

Kew Gardens as a setting for science learning: Families' views

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Kew Gardens

- Situated in London, UK
- One of the largest and most famous botanic gardens worldwide
- Received UNESCO World Heritage Site status in 2003
- Houses the world's largest and most comprehensive living plant collection
- Focuses on scientific research, as well as being a major visitor attraction
- Annually receives around 1.2 million visitors, about 15% of whom are families

Public science engagement

- Kew Gardens is obliged to *‘allow the public opportunities to enter any land occupied or managed by Kew, for the purpose of gaining knowledge and enjoyment from the collections’* (UK National Heritage Act 1983)
- The mission of Kew Gardens is *‘to inspire and deliver science-based plant conservation worldwide, enhancing the quality of life.’*
- Kew Gardens strategy documents outline aims to:
 - Create a visitor experience that delights, intrigues and informs
 - Engage visitors with Kew’s mission and purpose
 - Inform visitors about Kew’s work
 - Develop and expand public science learning facilities







Do families view Kew Gardens as a setting for them to learn science?

Methods:

- Interviews with 24 families
- 29 accompanied visits
- What are accompanied visits?
 - Observe and participate in family visits
 - Insider's perspective
- Who are the families?
 - Children aged 2-12 years (mean 7 years)
 - All had previously visited Kew, often regularly for many years
 - Most parents note no specific interest/knowledge of science
- Data capture and analysis:
 - Audio recorded accompanied visits
 - Interviews, field notes

Beauty in the foreground

"I think of Kew Gardens as a place full of beautiful plants..."

"Kew Gardens is one of the most amazing places in London, I really like the beautiful old greenhouses with all the exotic plants."

"I'd characterise Kew Gardens mainly as a place with beautiful big old trees... It's a place for us to come and enjoy looking at old and pretty trees."

Emotional attachment to the beauty at Kew Gardens

A peacock with vibrant blue, green, and orange feathers is standing in a lush green field. In the background, there are trees and foliage. The image is used as a background for a graphic with three speech bubbles and a title box.

"My son learnt to walk at Kew Gardens... It's always going to be a very special place for our family."

"The beautiful landscape in Kew Gardens is very important to our family. It's something I'd really like the children to pick up on. I want them to appreciate the beauty as part of who we are as a family."

"I feel really emotional about Kew Gardens. It's not just any beautiful place we visit. There are a lot of memories here, we've come for many years and I used to come with my parents when I was a child."

Science 'behind the scenes'

"The science [at Kew Gardens] isn't something I think of, I'd assume it's difficult for us to get to grips with, certainly more difficult than appreciating the beautiful plants."

"Clearly science is an important part of what Kew Gardens does, there is serious science behind the scenes that we don't see on visits... I'd say that beauty is in the foreground at Kew Gardens, and science is somewhere in the background."

"These plaques provide scientific information to the knowledgeable eye, but they're not useful for us to learn about plant science, there's just not enough basic information."

000-73.12050

AMARYLLIDACEAE

Hymenocallis
x macrostephana
(H. speciosa x
H. narcissiflora)

GARDEN ORIGIN

1984-2290
HOBB

PALMAE

Latania
verschaffeltii

"Learning science at Kew Gardens is mainly about the botanical names and codes, and how they relate to each other. The things that are written on the plaques... I'd say that science at Kew Gardens is not for our family."

1973-11203

SAPOTACEAE

SWEET CHESTNUT
CASTA

"There are plaques on all the plants that show the science name and other information... The plaques are about the science of the plants, and are useful for experts... They're not useful for me... The science there isn't something I would know how to use. To be honest it's a bit dull to me and not something I'm really interested in."



"Labels that give information about the plants in a really basic manner are useful."

"Interpretations are useful... But, there simply aren't enough."

Rattans

If you own any cane furniture, you already know how versatile rattans are.

Rattans are actually climbing palms. They have long, flexible stems which can be woven into many useful objects – from mats and baskets to furniture and even rope bridges.

Rattans produce the world's longest stems which reach up to 200 metres and scramble into the canopy using vicious barbed whips that hook onto surrounding trees.

There are around 600 rattan species, most of which come from tropical Asia. International trade in rattan for the cane furniture industry is worth billions of pounds each year with most of the rattan still being collected in the wild.



DID YOU KNOW?

- Over 600,000 tonnes of rattans are exported each year from Indonesia alone.
- Many species are now endangered but plantations are helping to take pressure off wild populations.
- Some rattans bear fruit which exude a red resin known as 'dragon's blood'. This was once used medicinally and also as a dye for violins.

IMAGES – BILL BAKER, BING NEW

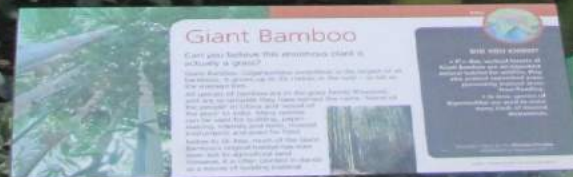
Cane chairs

Rattans are climbing palms with long stems that are made into cane chairs, baskets and mats. The palm has spines that help it to scramble high in the forest canopy. The spines may hurt collectors harvesting rattans from the rainforest.



Cutting rattan

"I like being able to use the interpretation with the children, something that really illustrates science to them... The measuring rod in the Palm House is visual and even small children can understand it."



Guided sessions








Impact of guided sessions

Families:

- Spoke about themselves in relation to science at Kew Gardens
- Framed their visits to include science learning
- Viewed Kew Gardens as a setting for their families to learn science
- Spoke about science in more positive terms than before

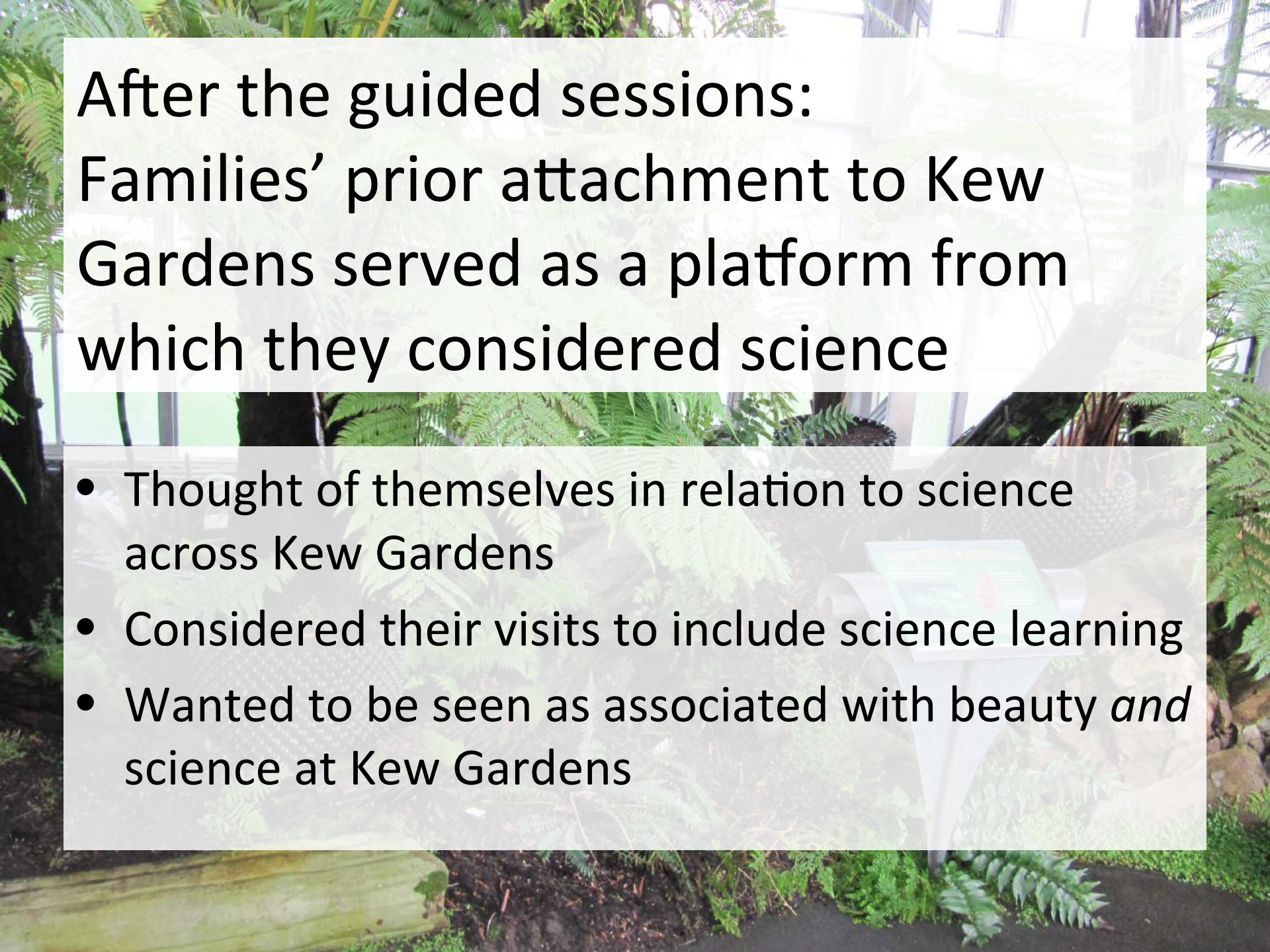
The background image shows the interior of a conservatory. Large, broad green leaves of tropical plants are visible, along with a prominent white, cone-shaped flower (possibly a Philodendron) in the center. Sunlight filters through the glass panels of the conservatory, creating a bright and airy atmosphere.

"We have a tent just like that, it's what scientists use on expeditions, and we use for camping."

"I'd like us to be seen as a family who appreciates and engages with science at Kew Gardens."

"Kew Gardens is about science too, so I'd say that to some extent our visits here are inevitably going to be about science."

"This kind of session made me think that we can learn about science here, Kew Gardens is a place for us to learn science."



After the guided sessions:
Families' prior attachment to Kew
Gardens served as a platform from
which they considered science

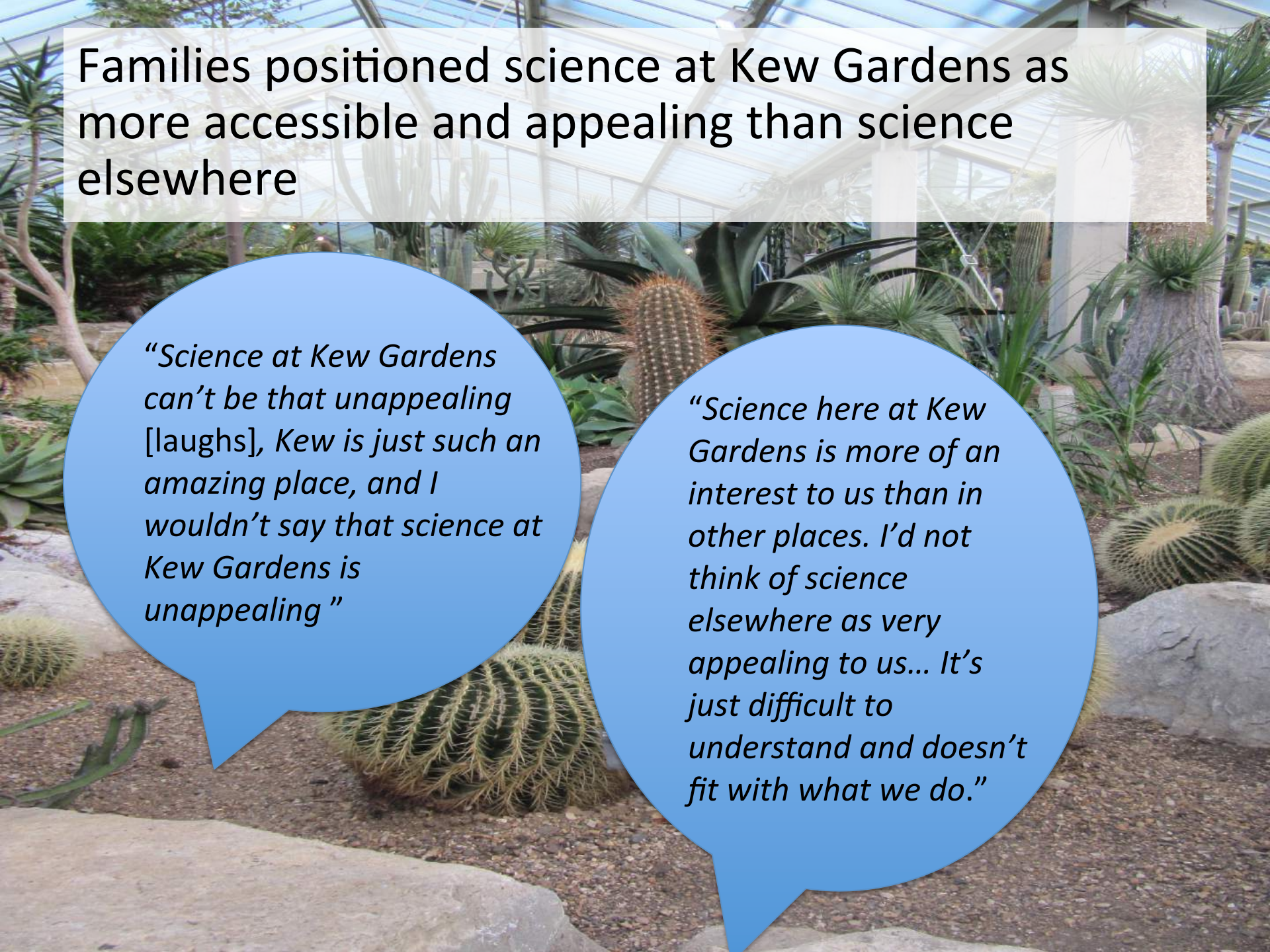
- Thought of themselves in relation to science across Kew Gardens
- Considered their visits to include science learning
- Wanted to be seen as associated with beauty *and* science at Kew Gardens

Reasons that guided sessions were associated with families' changed views

- Sessions provided objects (e.g., water bottle and tent) that families used during every-day lives
- Sessions explicitly portrayed science as interesting and accessible to families
- Sessions linked science at Kew Gardens to wider environmental concerns e.g. deforestation, climate change



"The session showed science that's exciting and interesting to us. It seemed really like a big adventure, and something we'd love to hear more about."



Families positioned science at Kew Gardens as more accessible and appealing than science elsewhere

“Science at Kew Gardens can’t be that unappealing [laughs], Kew is just such an amazing place, and I wouldn’t say that science at Kew Gardens is unappealing ”

“Science here at Kew Gardens is more of an interest to us than in other places. I’d not think of science elsewhere as very appealing to us... It’s just difficult to understand and doesn’t fit with what we do.”

Conclusions

- The appreciation of beauty can be a bridge towards appreciating science at Kew Gardens as relevant and interesting to families
- Families can be supported in viewing Kew Gardens as a setting for them to learn science through appropriate interpretation
- Families' positioning of science as more accessible than elsewhere needs further consideration

The background of the slide is a photograph of a lawn with scattered autumn leaves in shades of brown, orange, and yellow, interspersed with patches of green grass.

Points for discussion

- Does it matter if families don't think of Kew Gardens or other botanic gardens as being scientific organisations?
- Does it matter if families don't think of themselves as science learners while in botanic gardens?
- Does it matter if families position science in botanic gardens as more accessible and attractive than science elsewhere?