Appendices

Strengthening People's Relationships with Biodiversity

An Innovative Paradigm for Zoos for Conservations

Master's Thesis by
Ishit Patel
Strategic Product Design
October 2020

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- The project - BIAZA , Systemic Design, Drive a greater social change

Main Research Questions:

How engaged(aware, concerned and active) are citizens of the UK with regard to the problem of loss of biodiversity?

Topic 1: People and nature

Opening question: How close people feel towards nature?

Sub questions and prompts
1. How do people value nature?
2. What opportunities do people have to engage with nature on a daily basis and monthly basis?

Topic 2: People and conservation

Opening question: How do people get engaged in conservation generally?

Sub questions and prompts
1. What is people's take on conservation? Why are they not actively doing something?
2. What are some opportunities for citizens to support conservation in general and in daily life?
3. 365 days of wild: What kind of activities are in the book? Activities I can do around my house or do I need to go to a specific place?
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B. Interview guide for interviewee 2

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Main Research Questions:

How is the culture of Uk with regards to nature and conservation?

Sub questions and prompts

1. How did your connection with nature happen?
2. What kind of PEBs do you follow? How?
3. What are local initiatives that you are aware of? How did you come to know about them?
4. How do you feel the general perspective of the society towards biodiversity in UK is?
5. What influences people the most? Local grapevines, neighbors?
6. What kind of things have you learnt out of your zoo visit? What about PEBs?
7. What do you think people learn out of their zoo visit? What about PEBs?

C. Interview guide for interviewee 3

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Main Research Questions:

How do zoos as organizations integrate conservation education in the zoos?

Topic 1: Education at Zoos

Opening question: What is zoo education focused on?

Sub questions and prompts

1. How do zoos integrate conservation education?
2. What kind of things do visitors learn out of their visit?
3. What are different touchpoints that visitors can learn through. Signages, panels, keeper talks

Topic 2: Enclosure design process

Opening question: How are enclosures designed to sensitize people conservation issues?

Sub questions and prompts

1. Can you walk me through the process of integrating conservation education as a part of the zoo?
   How does the process start?
   How are different decisions made? (main message, placement, medium)
   Who is in charge of the final design?
2. I went to a zoo in the Netherlands, and I found that people just walked past the signages, the boards, even there was one exhibit with big HELP! written, but people just passed by. How do you address these issues?

Topic 3: Vision on ideal educational outcomes

1. What would be the outcomes of an ideal zoo visit from an educator's perspective?
2. will show you my vision, what do you think about it?

D. Interview guide for interviewee 4

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Main Research Questions:
What are some concerns and challenges that zoo educators face in educating visitors?

Topic 1: Education at Zoos
Opening question: What is the current state of conservation education?

Sub questions and prompts
1. Why do you want to educate people?
    a. Following question: Why? Why do you think it is important to do that?
2. What do you want to educate people about and why those things?
3. What are the key moments where you can engage the visitor?
4. What aspects do you consider when you design an exhibit like the plastic soup?
5. What forms of technology do you use at the zoo to educate?
6. Show some pictures and tell them what kind of images will they prefer to be put in the zoo and why? why not?
7. What if Education was central to the zoo and animals were secondary?
8. How do you see the future of Zoo education?

E. Interview guide for interviewee 5

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Main Research Questions:
How is emotion-centric approach useful in the context of zoo education and behavior change?

Topic 1: Education at Zoos
Opening question: What is the current state of conservation education?

Sub questions and prompts
1. What kind of conservation messages are zoos delivering?
2. Are there messages that connect day to day activities? Why and Why not?
3. Through your podcast I understand that you proposed an emotion-centric approach towards our behavior change efforts. What kind of behaviors are we looking at?
    a. Could they be more specific to UK citizens?

Topic 2: Emotion-centric approach in comparison with other approaches
Opening question: What is an emotion centric approach?

Sub questions and prompts
1. What kind of behaviors can it lead to? (General emotions or emotions with respect to an animal?)
2. If different people feel different types of emotions looking at the animals, how can we leverage them to change behaviors?
3. As per Theory of planned behavior, attitude alone is not sufficient towards a behavior. Social norms and behavioral control are necessary aspects too. So in this approach, what other things are necessary to complement the emotional responses generated at the zoo to secure change of behaviors?
    a. How can we achieve those other things?
    b. How do you see emotional connection playing a role in developing social norms, which influence one's behavior?
4. According to the CBSM model, every behavior has its own set of barriers. How do you see the emotional connections developed at the zoo playing a role in people transforming their behaviors?
5. What kind of engagement outside of the zoo can support the emotional connection built within the zoos to continue the efforts?
6. In the context of PEBs, I came across literature that suggests that having an environmental identity is a better predictor of PEB compared to 'knowledge about

F.   Interview guide for Visitor interviews

Main Research Questions:

1. Why do visitors visit the zoos and what do they learn out of the visit?
2. Why/Why not people behave environmentally responsibly

Initial question to know the participants:

1. How do you view your connection with nature?
2. How long ago did you visit the zoo?With whom?
3. How much time did you spend there?
4. What Activities that you did there?
5. How often do you go?

Research question 1: Why did you go to the zoo last time? > **Purpose**

Sub questions and prompts

1. What did you do during the activities? > **Activities**
2. How did you feel the last time you were there? > **Feelings**
3. Did you learn anything out of the visit? What? > **Learnings**
4. Did you learn anything related to conservation? What? > **Conservation Learnings**
5. Did you learn about the threat to the animals and what can you do to prevent it? > **Conservation Learnings**
6. If you had to recommend someone to go to the zoo and who's never been to the zoo, how would you do it? > **Perception of the zoo**

Research question 2: Why/Why not people behave environmentally responsibly

Sub questions and prompts

1. What's your view on our role in the environmental challenges of today? (Trump vs general view)
2. How did you come about to be this way? (People/ organizations?)
3. How did it grow over the years? Gradually or three was a sharp change? > **Becoming an aware person**
4. How do you behave being environmentally conscious? or Why do you not adopt some pro-env behaviors like less shopping new stuff, less flights more walking? > **Behaviors**
5. How important is it that you behave this way? > **Purpose behind behaviors**
6. How do you know about these things? > **Source of knowledge about PEB**
7. What will you do if you want to do more? Where will you go/look? > **Sources of knowledge**
8. What does biodiversity mean to you? > **Meaning of biodiversity**
9. And what does biodiversity loss mean to you? > **Meaning of Biodiversity loss**
10. Are you aware about the local issues regarding biodiversity? > **Local biodiversity**

G.   Transcribed quotes from Interviewee 1

Spring watch, Autumn watch , BBC series are people's way of engaging with nature

A lot of people have wild garden.

TV

Internet

No knowledge of the species around in the daily lives

Children learn about exotic animals but do not learn about the birds in the garden.

People don't link up cause and effect. Lifestyle activities - loss of biodiversity.

Most people be really upset to find out that polar bears are going extinct because of climate change. But then it won't stop them going on three international flights a year.

So I think people just need to understand more about the impacts of the decisions they make.

Awareness of biodiversity loss is quite high in the UK.

Things people can do in thier daily lives

Go vegan

Reduce plastic use : no bottled drinking water

Less flights

Take time to teach kids about nature

Buying locally is huge thing.

Proper Eco-tourism

Value of nature

People value nature for it's beauty

Love is prevalent in everything we do with nature.

People love green British countryside.

Activities with nature

People often like to take care of many baby brids in their garden.

A lot of people have wild garden.

Bird feeding is a huge huge thing for peoplein UK.

Lake District, North Norfolk, the Welsh mountains, the Welsh coast, the Scottish Highlands. That's a big engagement with nature, so kind of adventure tourism.

Charities with nature organizations: Wildlife trust, RSPB etc.

Nature writting is another huge thing.

Filming nature and putting it on TV, internet is also nig thing.

PEBs in UK

veganism has doubled or tripled in the past few years. In the UK. It's huge now massive industry.

Plastic bags eliminated from the supermarkets.

Why people become members of Nature organizations?

People become mebers for a lot of benefits like chepaer visits, magazines, cheap membership, cuddly toys, card, sticker, advertisements.

Recieve membership as a gift

A slight status thing for membership to Naional Trust

Magazines of nature organizations

Magazines mostly contain infomration about wildlife garening.

People don't like being thorwn Climate change in the magazines.

The magazines thorugh membership maybe drives 50% of people towards greater action such as wild lfe garden, supporting a campaign, writing to government.

Zoos like to be seen as conservation organizations

A lot of the zoos in the UK get very offended now if you don't refer to them as conservation organisations, right.

So I think, I think zoos could do more. **I think they could also partner with the conservation NGOs more. They tend to operate on their own**. And I know I've worked with buyers. Once I went to do a talk to a load of buyers or staff two years ago, three years ago at Langley zoo, and it was brilliant. I loved it. But none of them had ever heard of the organisation I worked for none of them had ever. None of them were members, none of them engaged with their organisation. And so I would really love to see more partnerships and more crossovers and I'd like to see more.

So I think showcasing more UK native species putting more money into UK native conservation, and working more with existing organisations.

Vision

People fall in love with nature at the doorstep.

Domestic eco tourism

I **think embedding nature in schools is really important** at the moment we don't really teach about nature in schools. So I think that's one really obvious thing we can do is actually teach kids when they go into school what nature is. I think that makes a huge difference. It'd be a long term difference, but I think it makes a huge difference.

Initiatives

There's a big campaign called 30 days wild that's happening at the moment, right. And that's connecting people with nature. They've had 80,000 people sign up so far this year, which is really exciting. I think they need to upscale that kind of initiative. You should be getting to 300,000 people,

H.   Transcribed quotes from Interviewee 2

People don't feel responsible. They might just say why not fly if the flight is going with or without you?

A lot of people care, but think it's too late or what they do doesn't make a diffference.

It's difficult to get labeled products.

People in the countryside can be proud of species that they see but if you live in the city, you're far from it and you don't feel a part of it.

People are quite in knowing about nature and like to interact with it.

Blue planet documentary came out, and evevrybody started takling about Plastic problem

Many people spend thier lives in the twon they've grown up in.

As a kid, either you follow your parents or do the opposite. A lot of people end up staying hte towns they grew up.
Kids usually leave their parents when they go to the university but then some return back and some find a job and get on with their life.

UK people characteristics

Childeren used to go out in the streets and play earlier, but now becuase of technology, they don't.

Brexit has divided the country into half.

British people are proud of their sense of humour, British spirit, natural landscapes.

People go to these places quite a lot in the summer breaks.

Sporting is big in the country and other hobby meetups too. You generally have friends from university or work or these hobby places. Hobbies like reading club, running, swimming, bird watching, volunteering at a zoo wor wildlife trust.

YouTube culture is quite huge in the country, people have started appearing in Television.

Joe wick is quite famous in the country, becuase he makes things easy.

Woodland Trust - old people get involved, kind of like a hobby.

Hobbies are purposeful, unlike pubs where you'd go and socialize, meet frinds.

Relatoinship with Neighbours can be through community activities

Community feeling via small number of people and some carnivals and communitiy activities that they do.

Not very close relationships with neighbours, more like hi-hello.

She influenced her house share friend to start recyling and also one other friend to become vegetarian.

Awareness about the issues, making people feel that they can do small things.

A lot of pepole don't know the nature in UK, so connecting them more to it, with local nature which also needs protection.

Knowledge about specific action with related to animals at the zoo is missing

Zoos need to tell people what they specifically can do. If I see that rhinos are getting extinct, what do I do?

There's no informatoin about PEBs readily available. Through social media, zoos spread activitiy sheets for kids but not for adults.

You mostly learn at the zoo thorugh signages and animals talks.
Biodiversity issues on the signages are easy to miss.

There's nobody at the zoo to answer questions.

You don't feel like stoping an animal keeper and ask him questions

Nobody can naswer questions beyond signage. Bigger zoos have rangers sometimes. But smaller zoos don;t have staff. There are keepers who are busy cleaning or feeding the animal, you don't feel like you wanna stop them.

Knowledge about interelatedness of the animals is missing at the zoo.

It's hard to see the animal kingdom as a whole at the zoo. You see a jaguar, a frog and a lemur and it's difficult to see the connection between them.

I. Transcribed quotes from Interviewee 5

Emotional centric appraoch

So in a more emotionally centred model, in the literature, it's talking about very much about trying to shift people's underlying attitudes and values towards the natural world towards animals with the view that if you do that, people are more likely to act do more, they're not going to be told what to do.

So an emotionally centred model is really looking at shifting or enhancing underlying values and attitudes towards the natural world. And this can be talked about in terms of nature connection, it can be talked about in terms of empathy and care. It could also be talks about in my discipline as a more relational engagement with nature. So that people are they are driven to act fundamentally in different ways. And through that, to secure these kind of changes.

Zoo's currnet approach to conservation education

But there is a strong commitment, I think to increasing. I mean, I think increasing knowledge about biodiversity, about increasing knowledge about conservation threats, and also what the zoos themselves are doing to address that, but I would say I think it does vary hugely.

I think there has been a very strong focus on knowledge. And I, I'm not. I don't know how much that's really, knowledge is an important part of it, but it's not something that's going to make the difference. So it's not sufficient.

So , it varies and it is very much about trying to get people it is about a knowledge or awareness thing about getting the particular things, which they may or may not do.

And I think education can I think in schools programme, so the schools that I know, with Paignton you know, they come in specifically to deliver a bit of the curriculum. And the zoo does its best to bring in its conservation messaging and by diversity, knowledge, that kind of stuff.

For the visitors that come to the zoo, although the zoo is keen to get across messages about particular behaviours, so that may be Palm oil or single use plastic bottles, or something of that nature, the only way that it's obvious to people will really be at the moment through attending a talk, or possibly a bit of information from an information board if they happen to see it.

Variety in approach

if you compare that to example, things Victoria, or San Diego or Monterey Bay Aquarium places all I've been, you know, so , you know, Zoo's Victoria has a very active campaign proper, you know, we'll campaign around issues and they actively promote certain behaviours.

So, you know, some are quite reliant, I think on just information boards and stuff around the zoos and others have a much more active programme with lots of volunteers as well.

Critique of current approach

And the critique within social science is saying, look, this isn't really making any major difference. We're still got an environmental crises , biodiversity loss increases, climate change increases. And so we need to look at the different models of engagement, which aren't about social marketing, I'm basically telling people to do individual things, because within the current that that model, you do one thing, but nothing else changes, you know, it's a cycle but nothing else changes to what you count as normal. And until you're nudge to do the next thing, nothing changes

I think generally my sentence has been a very, very strong Focus on knowledge gain, which is obvious but as, as you'll probably have picked up from my research, also from your reading is that knowledge isn't necessarily that the best or only, certainly the only conduit to try and influence behaviour.

Mediums of education

Education at different levels

about them with the general public, you know, they just come in for a day out. And then of course, that raises all sorts of issues about how much they want to learn or are able to learn in that environment. And that will vary hugely as well.

And then of course, there's the zoo, transparent educational organisation in the wide world, so great to influence other local organisations or broader organisations in terms of policy or practice. I think there's quite distinct elements to the education stuff that the zoos could can do or do do.

Zoo visitors
Schools
Govt. policies
Other organizations

Beyond the zoo engagement can help in making people think about more than one behaviors

And obviously, within that, I think there's, I kind of feel this kind of two things. I think that getting people to do individual things, right. Recycle ever. There's others that's a good thing. That's no problem. But I kind of feel and this is this is just my my view is that there's this potential for people to they might start off when they come to the zoo and foot start off, you might get them doing one thing. Okay? But over time, Why would sit you I could see the potential for. And I've seen it myself through my research for people to build this more relationally engagement with the animals, but also with the zoo. And then the zoos coming up in a position to help and support and get them to think about broader issues.

Visitors woul like to see some harsh images as well

So it came up in my research because quite of my participants said to me, that they felt that they also wanted to, they didn't just want to see the cute cuddly side, they actually wanted to see more of what they call sort of harsh images of what was happening because they also felt that words that would trigger an emotional response. Without the more concerned it might make them angry. But that would also be a good reason.

These need to be managed and mediated well

What can an emotion centric approach give?

They might need some information, but they're more likely to they're more predisposed to act in environmentally positive ways. They're more likely to undertake a wider range of behaviours potentially. They weren't wait to be told and also, they're likely to Be more demanding of business and government in trying to encourage them to do the act to actually be more strict and to change things.

So that people are they are driven to act fundamentally in different ways.

So for example, about how much I drive do I fly? Where do I get? How do I how much do we click? How much? How often do I buy clothes? How much do I consume? You know, how much do I buy into this kind of market driven near liberal consumption model? or How much do I say Actually, no, it's much more, it's much more looking at how well you live your life. So that's okay. That's, that's where it's going as a way of being

And so, I suppose, but I was just trying to perhaps my approach was trying to tease out more, perhaps bring give more voice to the emotional aspect which has been rather unexplored for many reasons. Within behaviour change literature, I guess there's more attitude. denial and care and compassion based approach, because that does help to then drive you in ways that you might not have invested in otherwis

Why an emotoin-centred approach is valid in this busy life?

so if you have more if you're more predisposed to be concerned with things that you care about, so that might be, I don't know, whatever is important in your life, whether it's the way what you eat, or how you, your relationships, other people, whatever the things you care about, you tend to attend to.

So for example, making decisions, they are more something I'm not I don't care about I'm not interested in I'm really not going to give it much thought, perhaps whereas something that I do already care about and have it and I'm invested in some way. And that could be any aspect of my life, but certainly for me, it's part of the natural world.

for people in my research group, who had the very strong connections that they developed with nature and animals through going to the zoo, you know, they will make a lot of practical decisions in their life based from that position of care and attitude.

He says, if you don't care, you're not going to act. And obviously care is all about emotion and connection and empathy. So very, very important. Yeah.

Causes of loss of biodiversity

Because in the business as usual model model that we have, government and business don't really do that much nothing really changes. And that's where that's where a lot of the power lies in terms of making these shifts. It's not at the individual level, it's actually at the political level.

Behavioral change is very very complex

Because it's a really good way of basically saying, behaviour change is so complicated, like so many information attitudes, behaviour, social norms, we haven't even talked about barriers even if you want the things I'd like to do, but I can't do because of growth or they're not practical. I live in a quite a rural area, there's not much public transport. There's so many levels of stuff that go on and it's a really good paper just to kind of make you almost made helped me realise that actually, is that complicated and that's okay. And you can't solve it. There's not a silver bullet that you will me or anyone can find for this and I think that's quite an important thing for so for the zoo to hold on to there isn't a silver bullet anywhere if there was we wouldn't have rampant climate change and biodiversity.

People become concious about their behaviors when they feel empathy/care/concern towards the animals

And you know, these people, they saw those animals, often they talked to me about having an emotional connection with the animal at the zoo, so they felt empathy care concern.

So that was a really that then drove there drove their behaviours in quite a lot of ways. They found they were being advocates for conservation that local communities, they would get asked when they shopkeepers to think about palm oil. They were influencing their friends and families. And they were they were really embracing and they were thinking about what they should eat meat anymore. They were concerned about their travel behaviours, could they change those things? So there is, I mean, I think the biting message in my research was that there is a huge potential in the zoos to do to do that stuff, but there's a lot that needs to happen to help support that as well. Right?

Emotional connection with animals is difficult at (and beyond) the zoo

It's a big ask for someone just to stand there, see a lion and make all those connections and then go and do something.

But also, there's an important thing about when people have left the zoo, how you keep that emotional connection with the animal and with the zoo itself after you've left I think zoos don't really pay a lot of attention to that either

Some do to some extent, but that's a whole nother area because again, if you can't go that often, because that's quite common, it's expensive to go to the zoo, you might not live near it. If you can't move that often and get bored experience. Connection. How can you do it virtually?

Single zoo visitors do not express their emotional responses in the same way as frequent visitors do

I think the they had, they had similar, they had some similar motion responses, but none of them expressed. Their their they might say they must of them express their emotions in terms of empathy and care in the same way they didn't they didn't have the same language so much. They really enjoyed it. And they might love certain animals, but they didn't have the same relational engagement in general. I didn't find in general terms,

Social marketing is good for starting people to do something

But I think you could say so people who don't come very often, perhaps you you know, there is a, an element where you need to caption and try and get and doing one thing as a start for 10 I think. And that's what social marketing is really good. I don't think it's nothing wrong with sort of my, my thesis itself is perhaps theoretically more scathing in social marketing, but that's because it's a thesis but as I'm a practitioner at heart, so practically, I think social marketing is a good starter for 10. But I do think there's a huge potential to get people to use that to start with and then to get them more engaged with the with the animals to feel to care more and to then for them to be more proactive in thinking and the

Behavior change models come from predicting behavior

Yeah. And that's all about trying to predict behaviour and I was opposed to coming from a depth of a different perspective. Real good at so I wasn't using that or comparing that I was just saying, uh, psychologically, psychologically based models are very, very they're they're measuring things. They're trying to measure things and predict things and I was coming from a very different perspective.

Extinction of experince

in the wider literature on this kind of subject, there's this whole agenda of extinction of experience, which is kind of the loss of connection with nature. And so the importance of having these times of connection with nature animals in whatever way that might be, and within the within literature kind of related to that frequency. It does come as quite an important it has been identified as important thing about having these frequent, the more You go, the more you get to know like a person, you get to know them. You relate to them you care for them. It's similar thing with nature.

But I think there is a real potential in that frequent engagement to build an emotional relationship.

It's important to have freuent experiences with nature becuase the more you experience it the more you know and the more you relate and then care for it.

Education Docents in America

I think that what what I saw in America, when you go to the zoo, and every single around the place around the zoo, every exhibit there are these volunteers. They call them docents in America, that is education volunteers, and they are there and they can talk to you about anything he wants to know about the animal. The individual habitat species conservation behaviours, you neighbour. So they really help to mediate that relationship between the person, the individual to individualistic and the animal.

A person mediating the relarionship between the animal and the visitor is very valuable to have. Eg. American zoos.

People come with various emotional baggage towards animals and potential of zoos

The zoo needs to recognise the amount of stuff that people come with. And then do as much as it can with people during the visit, to mediate and encourage that caring response and also beyond the zoo visit to help encourage that.

People come with a lot of emotional baggage towards the animals based on their past experiences, memories and their response to a certain things is influenced by so many factors. Zoos need to recognise this and try to mediate the relationship so that it's one of care and concern.

Environemantal identity is a different language for relational engagement

It's a great concept it fits in and it's all about Connect, you know, connect your connection, relation, engagement, love care, empathy, understanding, concern, being with being with nature in a different way

Meaning making as a part of the zoo visit

Zoos have the potential to connect people with the animals

Well, yeah, it's a very artificially constructed nature. But people have the ability to have this very, very caring relationship with these extraordinary animals. And that's great. And as you say, so many people go to the zoo, lots of people will go to the zoo, that wouldn't go to a nature reserve probably, you know, people scary or less sociable or whatever.

Outreach programs of the zoos

And I think that is something that certainly at Paigntonzoo, **they were trying to do more of trying to get people to get more engaged with and helping and supporting the nature on their, on their doorstep, as well as the nature of the zoo.** Mm hmm. So I guess that depends, but that's, you know, potentially Zoo doing outreach programmes. And that's can can be expensive, you know, how do they actually resource and do that? But I do think it's important part of the equation. Yeah, it's like saying, you've come to the zoo. And it's, you've seen particular animals here, but what where else can you go and enjoy the wildlife in your local area?

Frequent visitors felt care and empathy towards the animals and thier counterparts in the wild but similar laguage to describe thier emotions was absent in single zoo visitor's experience as they didn't have a relational engagement in general.

Social marketing is good at making people to start doing something but then how to continue their engagement with the zoo, the animals and then get them to start thinking proactively.

Key Learnings

Zoos vary in thier approach to how they educate people about conservation. Some rely upon boards of information while some may use their volunteers to enagge visitors in conservation

Zoo education is varied in terms of its audience. For schools, the purpose is mostly to fit thier curriculum. For visitors, it's difficult to teach because they come for a day out and how much are they really willing to learn and can they learn in this environment.

Social marketting approach is great to get people started on doing a certain behavior but it only leads to one particular behavior, while we need faster changes.

Zoos have had a strong focus on knowldge as a pard of thier conservation education program but knowledge is not sufficent to drive a change.

Zoos, form being a spectacle or a place for entertainment, to becoming a place for relatoinal engagement with animals.

Taking an emotion centric approach guarantees that people are more likely to engage in wider behaviors than those being told to them.v

Frequent visitors to the zoos who showed this care and concern for the animals reported that they have started taking many practical decisions of thier lives based on these values.

People feel distant from nature. Their experiences are getting extinct which leads to lesser relational engagement and hence lesser care and concern and hence less thought about it in daily lives.

Infrequent zoo visitors might not generate care and concern for the animal just by looking at those animals, they might need to be mediated.
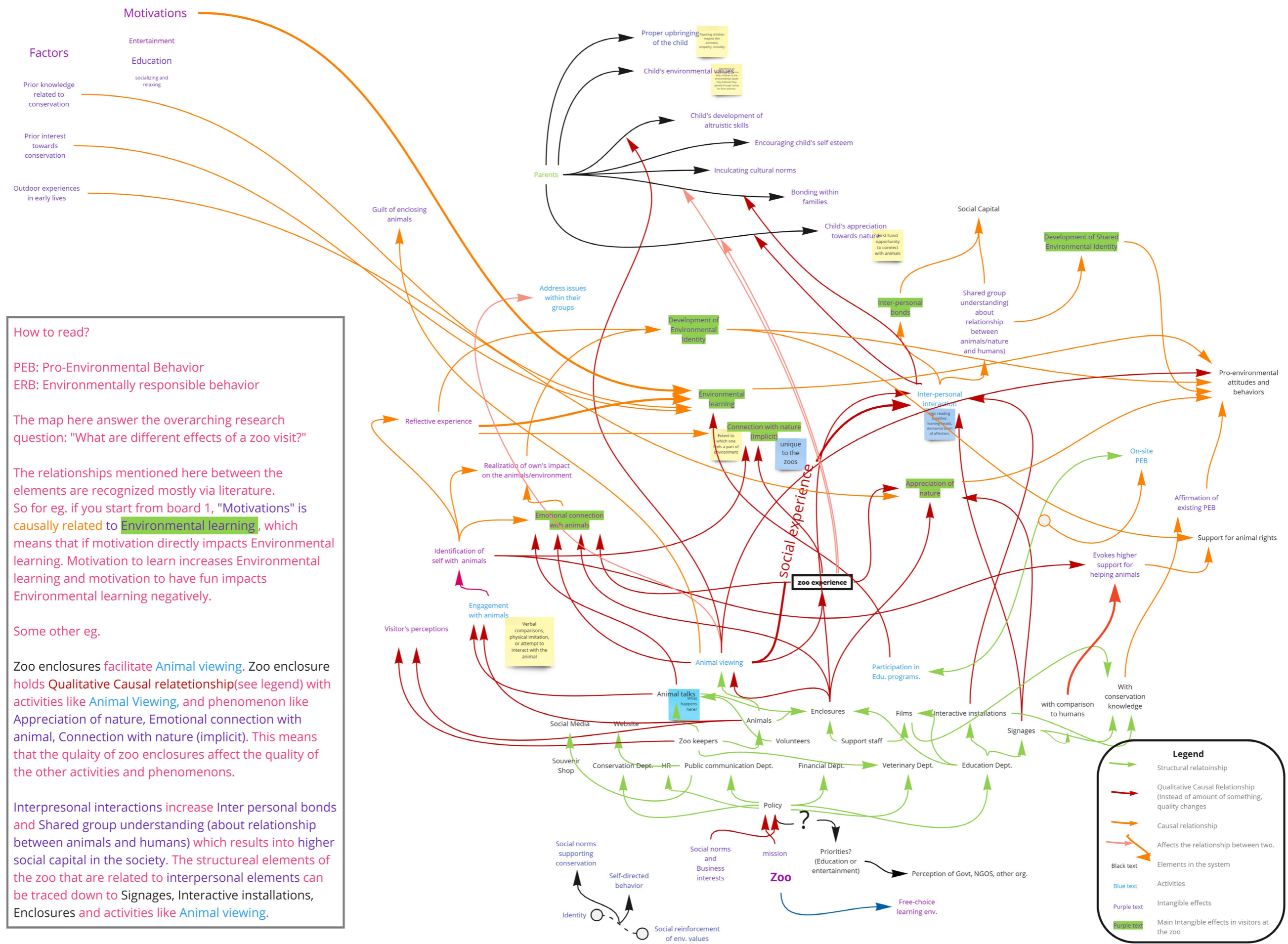
The engagement with the animal dies out after the visit. How can this engagement be kept alive? How can the care and concern continue?

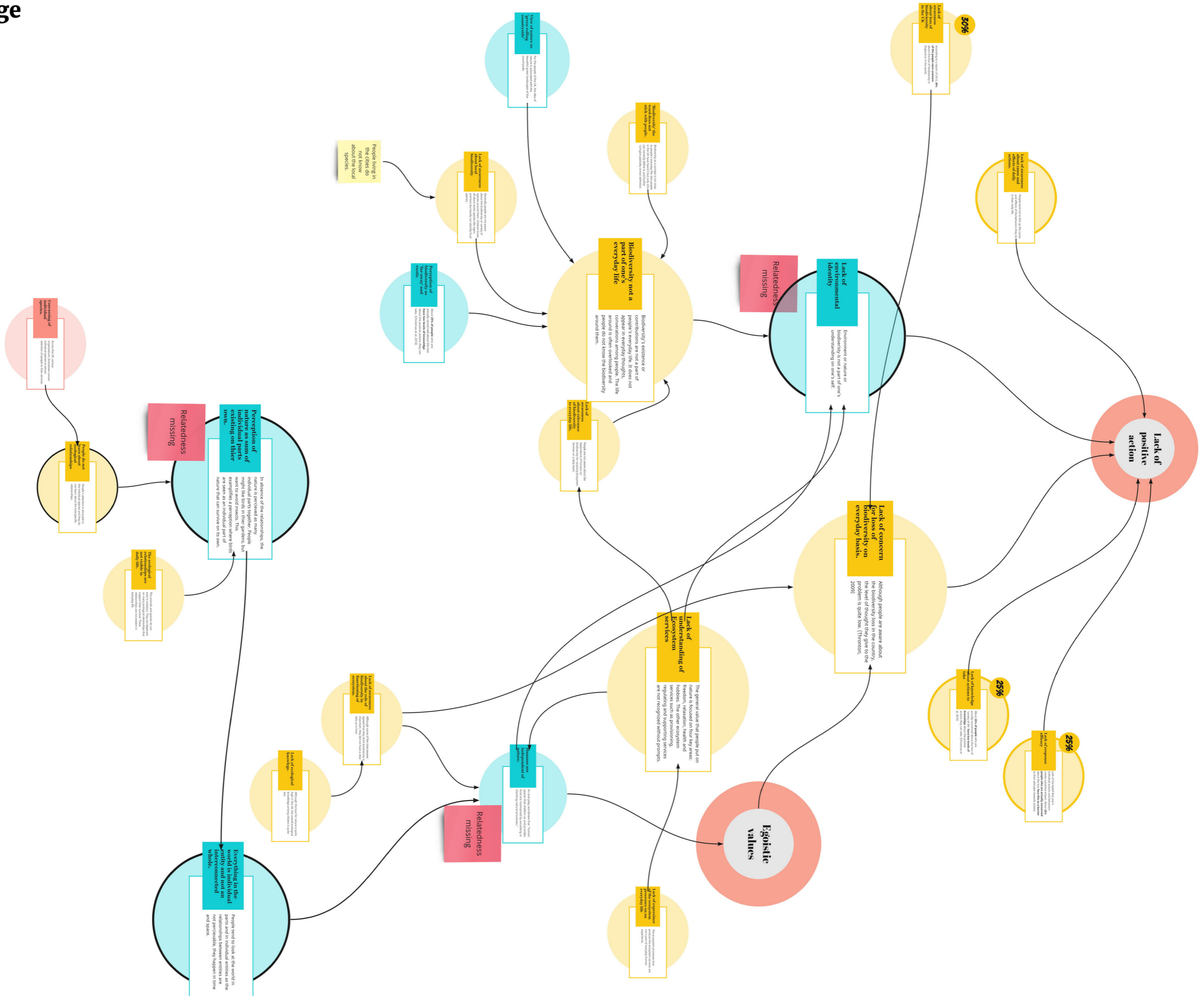People have the ability to care for these extraordinaly animals.

Zoos have distinct educational audiances(schools vs. adults) with different motivations and zoo's approach to education varies quite a lot (using onfo boards vs. volunteers) but it's still focused on increasing knowoldge.

J.   Synthesis map of a zoo visit

Motivations

Factors

Entertainment

Education

socializing and relaxing

Prior knowledge related to conservation

Prior interest towards conservation

Outdoor experiences in early lives

Proper upbringing of the child — Teaching children respect (for animals), empathy, morality

Child's environmental values — Gets children to the environmental values they connect they gained through caring for farm animals

Child's development of altruistic skills

Encouraging child's self esteem

Inculcating cultural norms

Bonding within families

Child's appreciation towards nature — First hand opportunity to connect with animals

Parents

Social Capital

Development of Shared Environmental Identity

Guilt of enclosing animals

Shared group understanding(about relationship between animals/nature and humans)

Inter-personal bonds

Address issues within their groups

Development of Environmental Identity

Pro-environmental attitudes and behaviors

Reflective experience

Environmental learning

Inter-personal interaction — high reading together, learning together, demonstrations of affection.

Connection with nature (Implicit) — Extent to which one feels a part of environment

unique to the zoos

Realization of own's impact on the animals/environment

Appreciation of nature

On-site PEB

Affirmation of existing PEB

Emotional connection with animals

Identification of self with animals

Evokes higher support for helping animals

Support for animal rights

Social experience

zoo experience

Visitor's perceptions

Engagement with animals — Verbal comparisons, physical imitation, or attempt to interact with the animal

Participation in Edu. programs.

with comparison to humans

With conservation knowledge

Animal viewing

Animal talks — Who happens here?

Enclosures

Films

Interactive installations

Signages

Social Media

Website

Animals

Zoo keepers

Volunteers

Support staff

Souvenir Shop

Conservation Dept.   HR   Public communication Dept.

Financial Dept.

Veterinary Dept.

Education Dept.

Policy

Social norms supporting conservation

Social norms and Business interests

mission

?

Priorities? (Education or entertainment)

Perception of Govt, NGOS, other org.

Self-directed behavior

Zoo

Free-choice learning env.

Identity

Social reinforcement of env. values

How to read?

PEB: Pro-Environmental Behavior
ERB: Environmentally responsible behavior

The map here answer the overarching research question: "What are different effects of a zoo visit?"

The relationships mentioned here between the elements are recognized mostly via literature.
So for eg. if you start from board 1, "Motivations" is causally related to Environmental learning, which means that if motivation directly impacts Environmental learning. Motivation to learn increases Environmental learning and motivation to have fun impacts Environmental learning negatively.

Some other eg.

Zoo enclosures facilitate Animal viewing. Zoo enclosure holds Qualitative Causal relatetionship(see legend) with activities like Animal Viewing, and phenomenon like Appreciation of nature, Emotional connection with animal, Connection with nature (implicit). This means that the qulaity of zoo enclosures affect the quality of the other activities and phenomenons.

Interpresonal interactions increase Inter personal bonds and Shared group understanding (about relationship between animals and humans) which results into higher social capital in the society. The structureal elements of the zoo that are related to interpersonal elements can be traced down to Signages, Interactive installations, Enclosures and activities like Animal viewing.

Legend

Structural relatoinship	
Qualitative Causal Relationship (Instead of amount of something, quality changes)	
Causal relationship	
Affects the relationship between two.	
Black text	Elements in the system
Blue text	Activities
Purple text	Intangible effects
Purple text	Main Intangible effects in visitors at the zoo

18

19

K.   Synthesis map of status of UK citizens in the light of behavior change

L.   Template for scenario sketching

Section 2

Ideation

Title of the idea

Description

Sketch/Story boards

What it achieves?

M.   Personal ideas
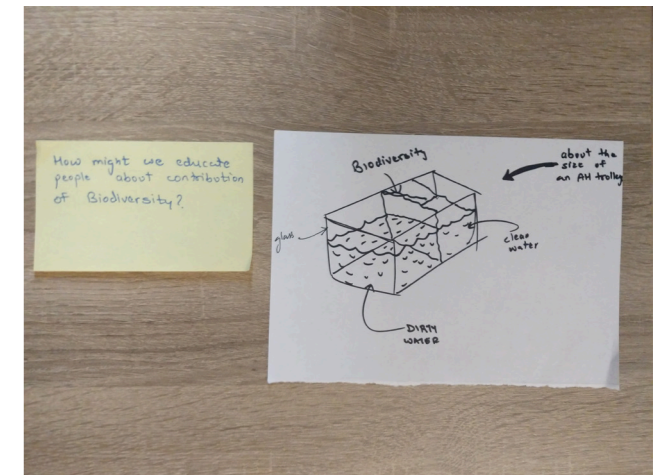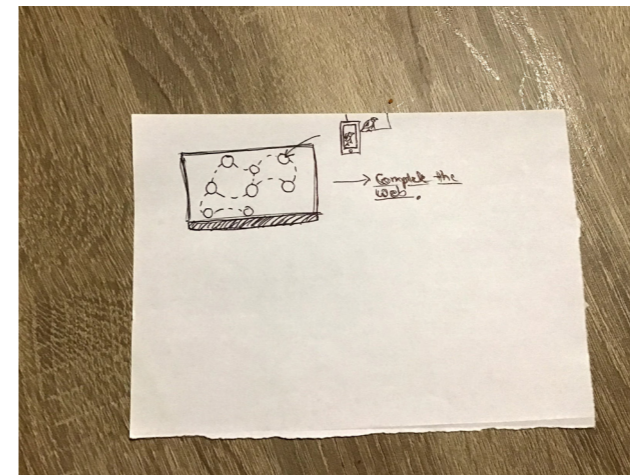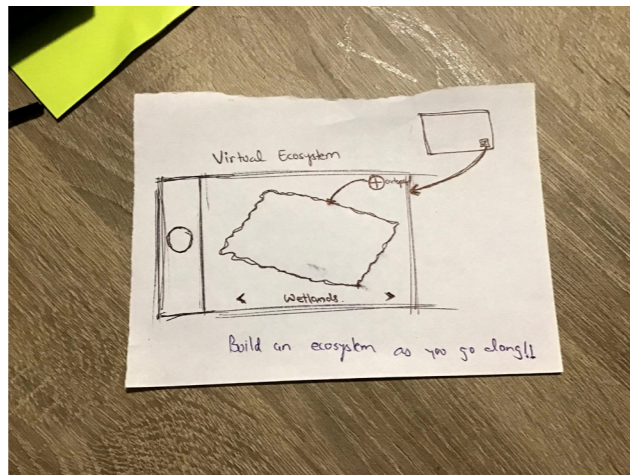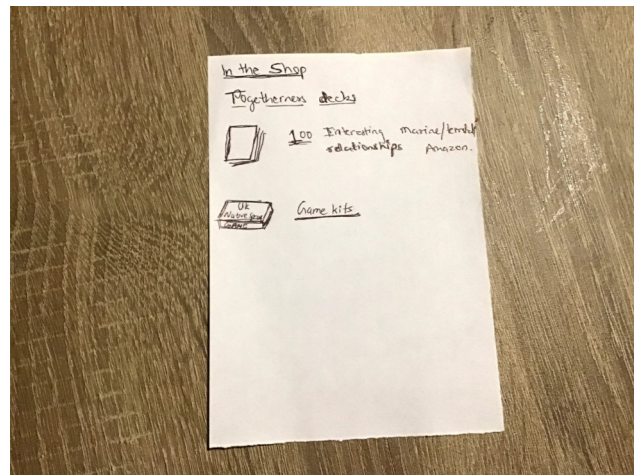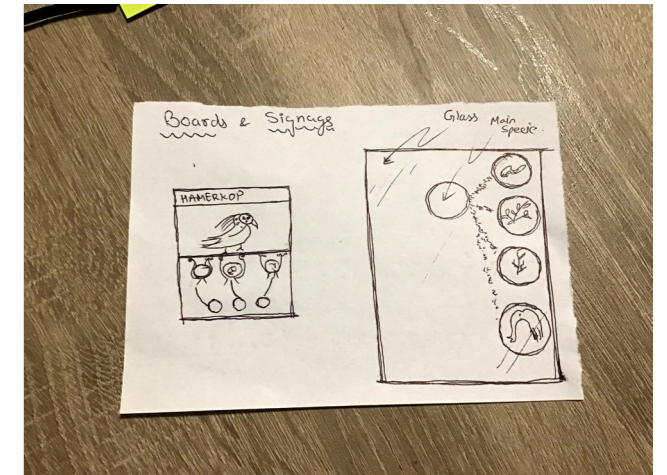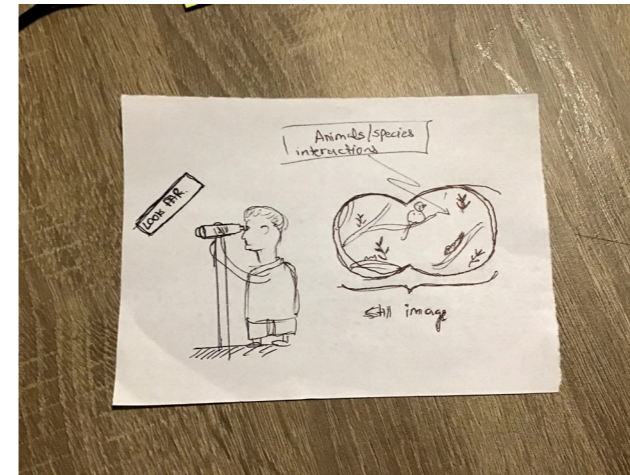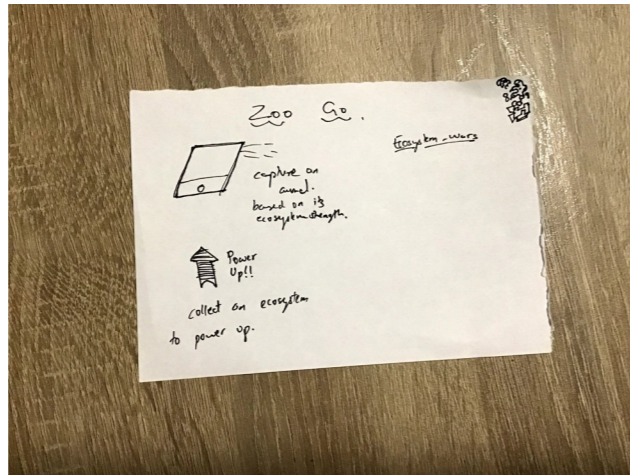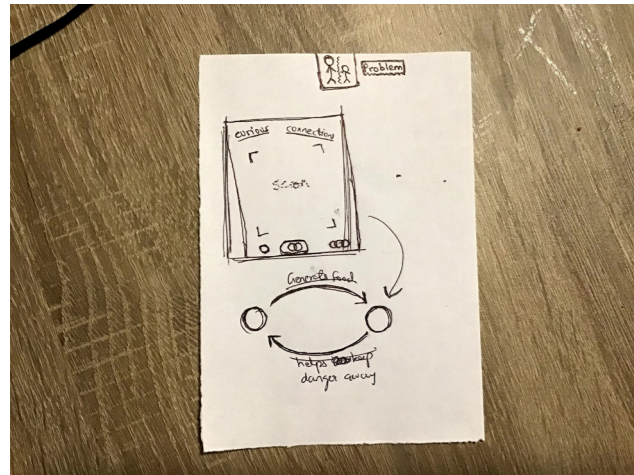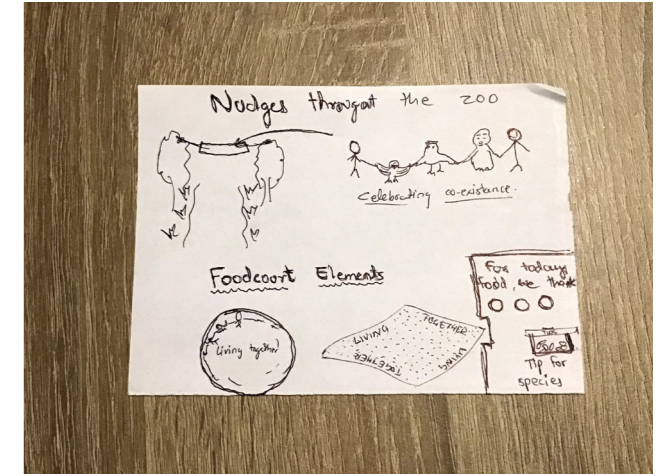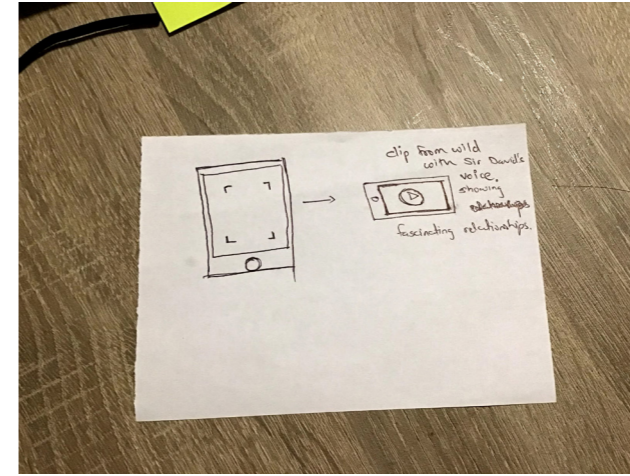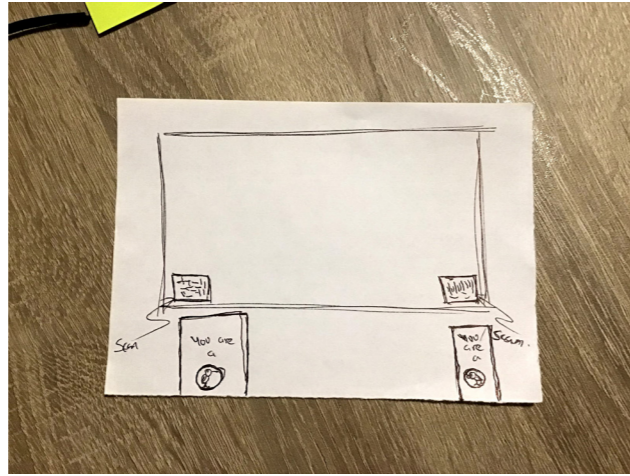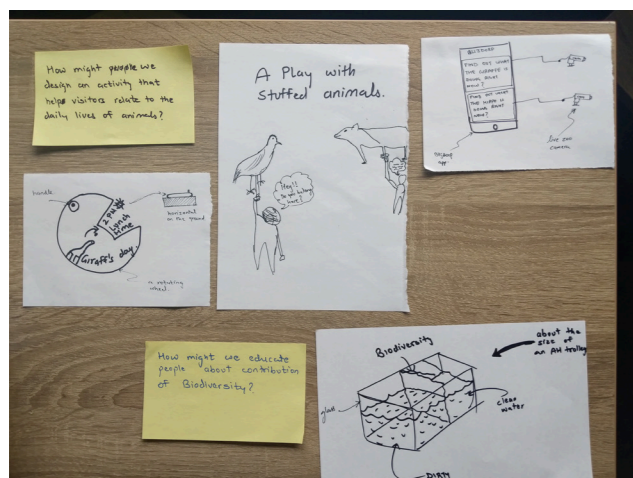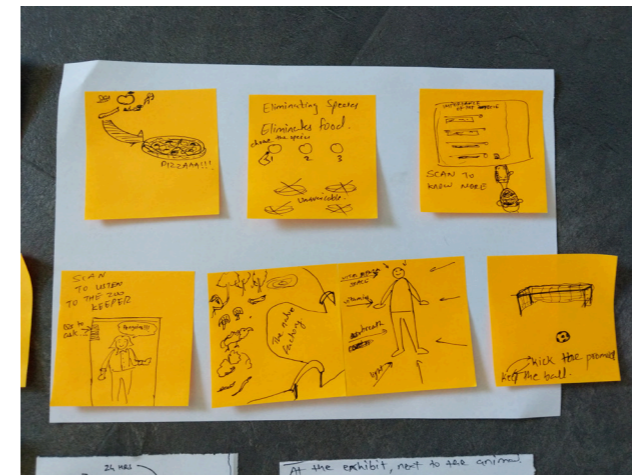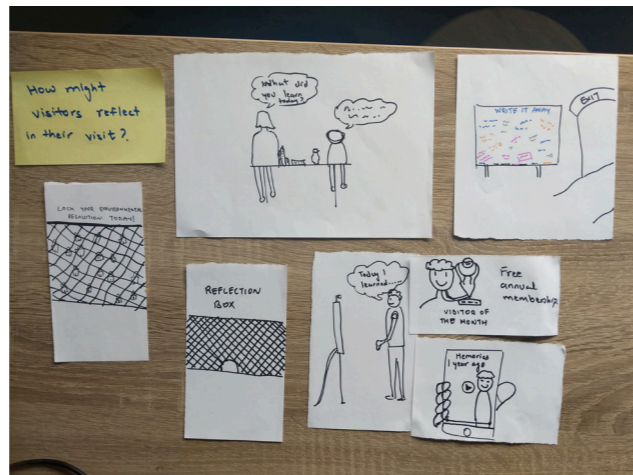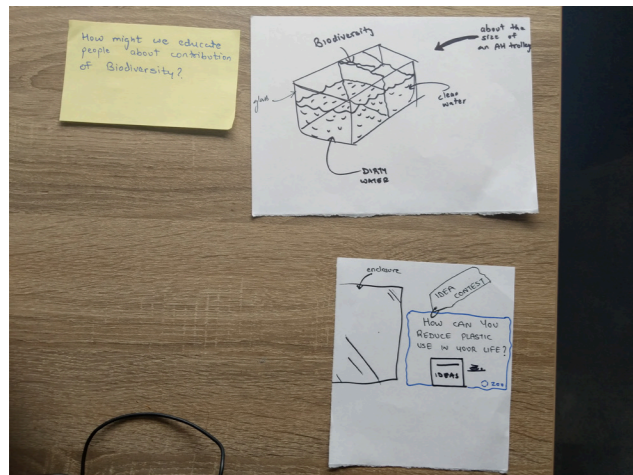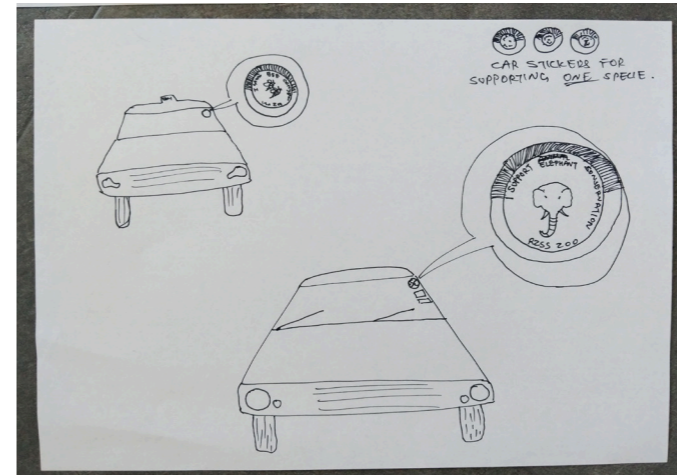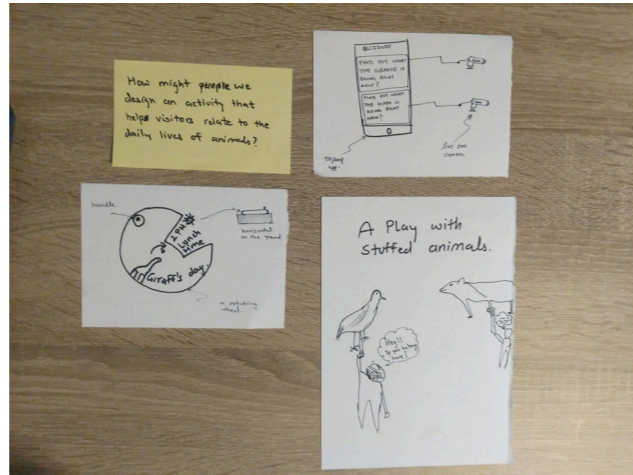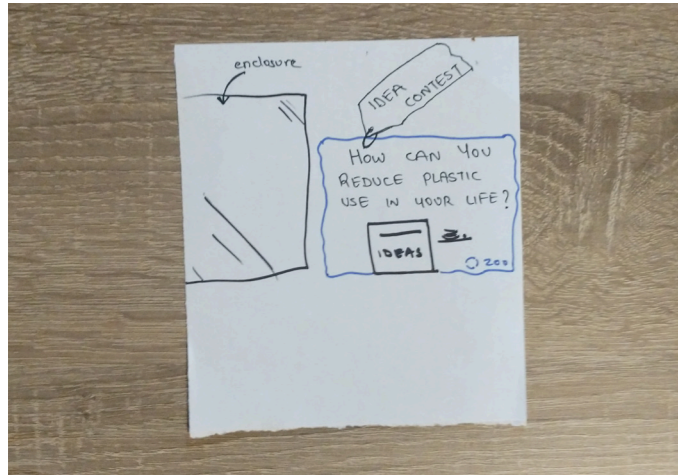
N. Ideas after Scenario Sketching

Eating with the ecosystem

chef · local farm produce · Eating with the ecosystem · food-court in the zoo · Eat with Ecosystem · a unique recipe · Simmering the seas · Recipe book

Description
'Eating with the ecosystem' is an organization that promotes delicacies made of local ingredients. They also have a cookbook which can be sold @ the foodcourt.

What it achieves?
The food court draws attention of people towards local produce and becomes a place to talk about importance of local ecosystem.

Relationships at Rescue

Hooks · shows animals whose interaction are crucial for ecosystem. · I can't reach the end....

Description
Species interactions are important for an ecosystem without which humans can't survive. This playground brings that idea with the metaphor of 'children needing those relationships (in the form of ropes)', to have fun

What it achieves?
→ Conversation around certain relationships between adults.
→ Signifies value of ecological relationships for us.

Eco-Ville

Interactive display · Species selection · Physical slider · Fast forward · 5 years · 10 years · MORE

Description
The display shows a certain place (eg. Amazon, wetland) where one can increase/decrease some species and then fast-forward to see what will it do to the place.

What it achieves?
→ Shows the growth of forest that otherwise go unnoticed
→ shows importance of some species and how it affects the system
→ shows interconnectedness

Golden Relationship hunt

Symbiosis · Magnets · Child... · Symbiosis!! · Fungi · drop! · Find Golden Relationships!!

Description
The box contains many blocks that can be paired with one another to form a perfect shape. These shapes when dropped in the hole, display on the LCD, the connection between the blocks.

What it achieves?
→ Draws people's attention towards the relationships between species.

Fascinating Friendships

elephant head with LCD · show the benefit of interaction between the two. · Rich Soil · Fungi · A bucket of coins with different specie

Description
An animal in the wild interacts with many species which have positive impact on the ecosystem. The concept brings an element of surprise + physical interaction that is exciting for people to engage with.

What it achieves?
→ shows people importance of interactions between two species

COMMUNITY OF ANIMALS

Rabbit is my food. · wolves keep the system in balance

Description
Ecosystem = Community
On touching two animals, the animal speaks about the inter-connectedness in them.

What it achieves?
→ Reveals the relationship b/w two animals
→ Reinforces the idea of importance of all animals in an ecosystem.

Throw & know

Worms · Thank You · Balls with species on it

Description
The balls represent an animal that shares a relationship with the tree. If you throw the ball in, the tree recognizes the ball and shows the relationship on the panel.

What it achieves?
→ Emphasis on different relationship of different species w/ the tree
→ A fun way to engage children as well as give out information.

SPEND-A-DAY W/ ANIMAL

1 hour training · cleaning · feeding · 2 hours · Pics · observations · Insights · CERTIFICATE ANIMAL EXPERT level 1

Description
The service is offered by the zoo. With each such day the visitor learns more & more about the animal and in the end becomes qualified for volunteering.

What it achieves?
→ Personal connection w/ animal
→ Experiential knowledge about the animals.

BIO-MAN

STORY OF FRIES · FRIES · Bio · Representation all the Biodiversity · press to speech

Description
The exhibit communicates the hidden efforts of biodiversity in producing our favourite food like fries, pizza etc.

What it achieves?
→ Connects thing we value to biodiversity
→ Makes the hidden efforts visible.

TACTILE TROLLEY

Vibrating handle of the trolley

endangered specie exhibit

Description

The trolley handle vibrates as the person reaches to an exhibit that is about a dying specie.

What it achieves?

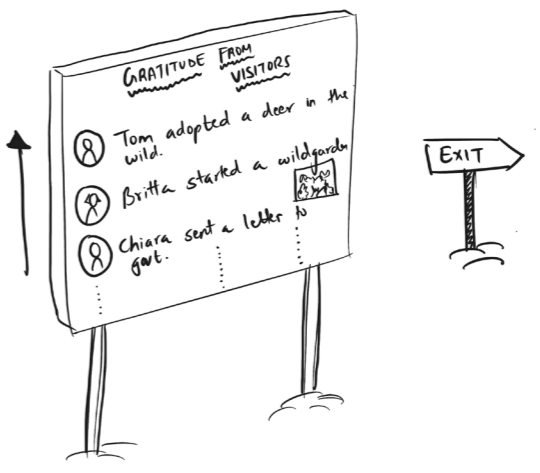→ Without reading tells the visitor if the specie is in danger or not.

Think 4 nature

WIN an animal experience!!

IDEA CONTEST

HOW CAN YOU REDUCE PLASTIC USE IN YOUR LIFE?

drop your idea
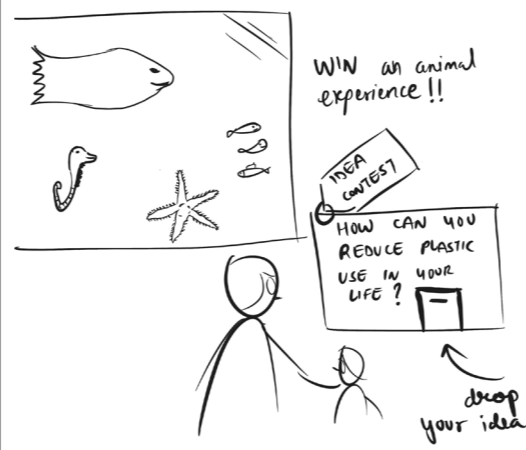
Description

A monthy idea contest @ the zoo regarding one environmental problem.

What it achieves?

→ Makes people think of how can they change - Reflection.

→ Sense of competition encourages to think creatively.

CITIZEN'S COMMITMENTS

GRATITUDE FROM VISITORS

- Tom adopted a deer in the wild.
- Britta started a wildgarden
- Chiara sent a letter to govt.

EXIT

Description

A digital board that shows efforts made in their daily lives to support conservation.

What it achieves?

→ Shows efforts of other visitors to visitors & inspires

→ Sense of pride for the people whose names appear.

Slo-mo growth

Bats

Ant mice

Wheat

seeds mice

soil

Earth worms

How BIODIVERSITY HELPS WHEAT
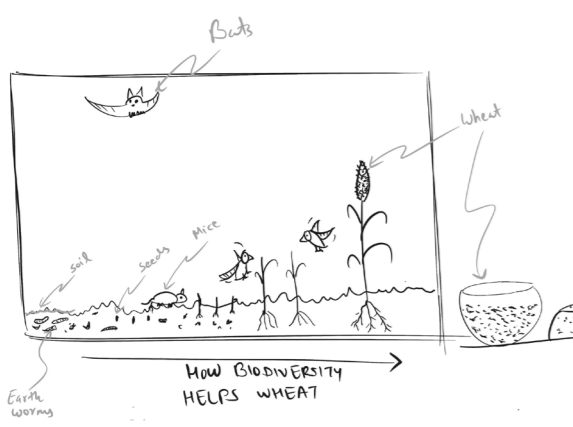
Description

The exhibit shows all the insects, animals, birds that do their job to produce what we eat daily.

What it achieves?

→ Shows links between food & Biodiversity

→ Engages people into coversation about species and food.

#1 CONTRIBUTE

I always buy SUSTAINABLE food from XYZ shop.

RZSS ZOO   23.5k followers

#1 CONTRIBUTE

It wasn't easy but...

TALK @ the ZOO...

RZSS ZOO
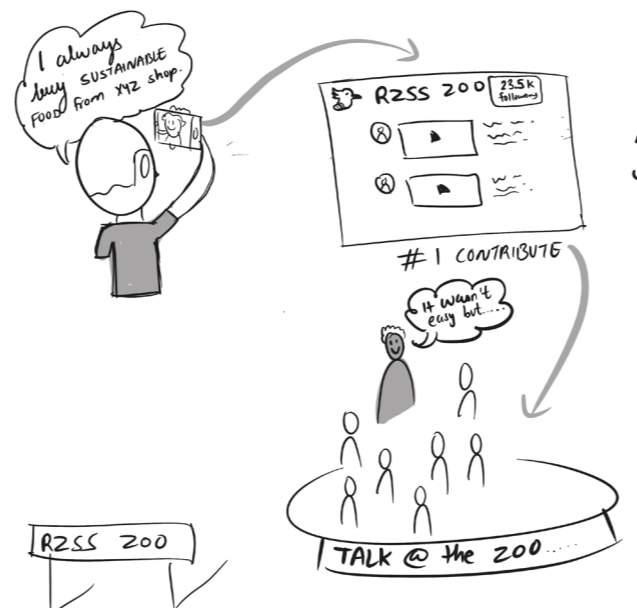
Description

A social media campaign where enthusiasts show how are they doing positive actions daily.

What it achieves?

→ Builds a social psyche of action.

→ The talks make the people 'human' and their presence in the society is acknowledged.

→ Brings out indigeneous ways people can support Biodiversity

---

People's Pledges

TAKE A PLEDGE

Today's pledges

| 53 people | 27 people | 35 people | 22 people |
| Walk to Market | Segregate waste | Talk to one friend | |

PLEDGE TO WALK TO THE MARKET
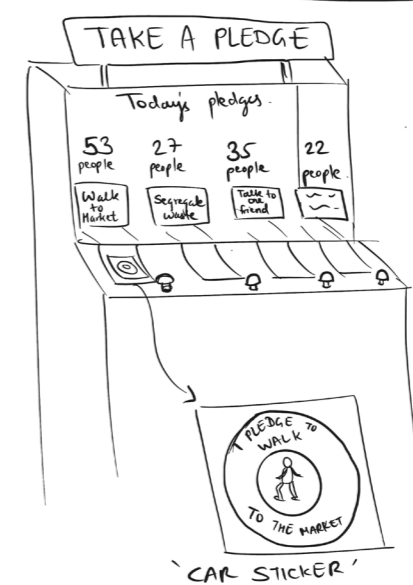
'CAR STICKER'

Description

The machine dispenses a sticker about a pledge that the person decides to take

What does it achieve?

→ It shows the pledges made by other visitors and inspires others to do the same.

→ A physical pledge sticker sticks better in mind and instills responsibility

---

GROW YOUR E-FOREST

RZSS ▶ PLAY E-FOREST

Plants +
Insects +
animals +
birds +

CO₂ :
Moisture :
No. of species :
Health :

Look it's so big and it has pink flowers

64 levels which ones did you put?

Invite a friend

Ask an expert

Read about your ecosystem

Your profile

Friend
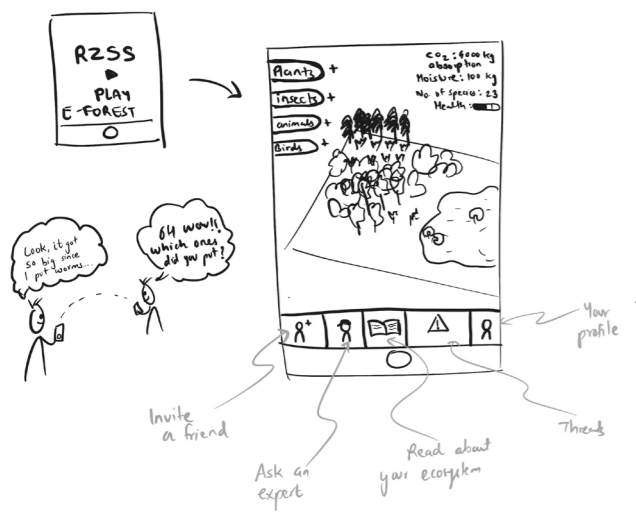
Description

A mobile game developed by the zoo, for teens that helps them learn about how a biodiverse ecosystem thrives more.

What it achieves?

→ Understanding about ecosystems, biodiversity

→ Playing the game instills a responsibility in the player to take care of the nature.

Visitor's Wednesday

First Wednesday of the month.

- challenges
- solutions
- benefit to ecosystem

Speaker of the month

Laura
Marketing Manager at XYZ
Mother of two

TOPIC - MY FIRST COMPOST
5 PM - 6 PM

Description

→ Every month a visitor speaks about how they made one effort in the life to become wilderness friendly.

What is achieves?

→ Strong belief in the audiance about possibility of the action

→ Builds network of people who are 'common man' which can be leveraged to inspire people.

DISAPPEARING GORILLA

Gorilla exhibit

Select to lift the curtain

Buy   Don't buy

X 5

5 correct answer
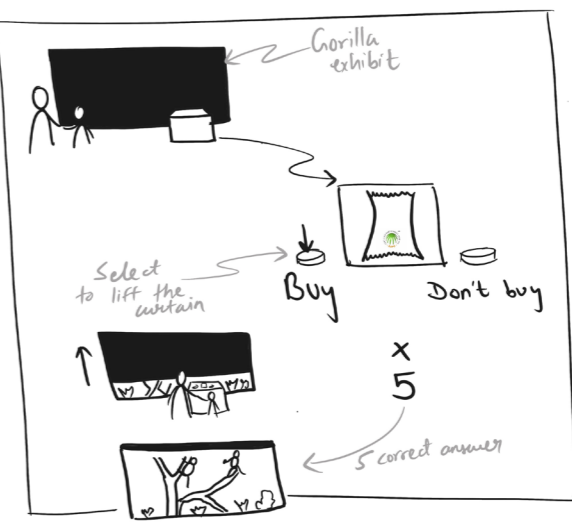
Description

The panel shows five products one by one with some having 'RSPO' (Ⓜ) logo on it. Pressing correct button opens the curtain.

What does it achieve?

→ Teaches people to look for the logo on the products they buy.

→ Sustainable Palm oil products buying habit is cultivated.

Patch-up Cards!!
Small steps to patch-up our relationship.

We unintentionally hurt our relationship with nature, through our everyday actions.

These cards will help you avoid them and bring fulfilment in your personal connection with nature.

£10

Day 1
Instead of hibernating, turn off your your work computer

Hibernating everyday, saves X tons of carbon from getting into air, it is equivalent to two days of breathing.

Days of Wilding
Day 1
Day 2
Day 3

Congratulations!!!

a sheet that helps to keep track.

Guide to make them a habit.

Ranger!! a card game

Savannh is filled with tree. No grass

goals   Specie

Where to play?
@ home

What it achieves?
- Detailed knowledge about roles of species

How to play?
Goal: To become a ranger by saving as many ecosystems.

Rules: Every ecosystem has many species. Based on the goals cards, you have to put down the specie that does it the best.

A Game of 20 Questions

umm.. nest ae pls

This animal is responsible for growth of wheat

This animal eats the insects off the farms

This animal likes to fly in the dark.

Ans. BATS

HAHA!! Come on dad

Description
The game one can play with their parents. The cards are based on relationship between animals -humans.

What it achieves?
- Interpersonal interaction
- Makes people learn about relationship w/ animals.
- Kids can read questions which develops their reading skills, which is also the parents' goal.

LUNCH DATE w/ AN ANIMAL

Let's talk @ the bird until food arrives...

Description
The zoo-keeper while feeding the animal talkes about the animal, good things, bad things and how our day to day activities impact the wild.

What it achieves!
- Start of a relationship with the animal.

TITLE: WORKSHOP ON Wild-life friendly life. (wf-life)

How our decisions affect wildlife?

ecological services
over consumption
Domains of wf-life

① Inform

② Reflecting on lifestyle
chosen domain

food   energy
waste   water

③ Decision & Action
food
List of changes.
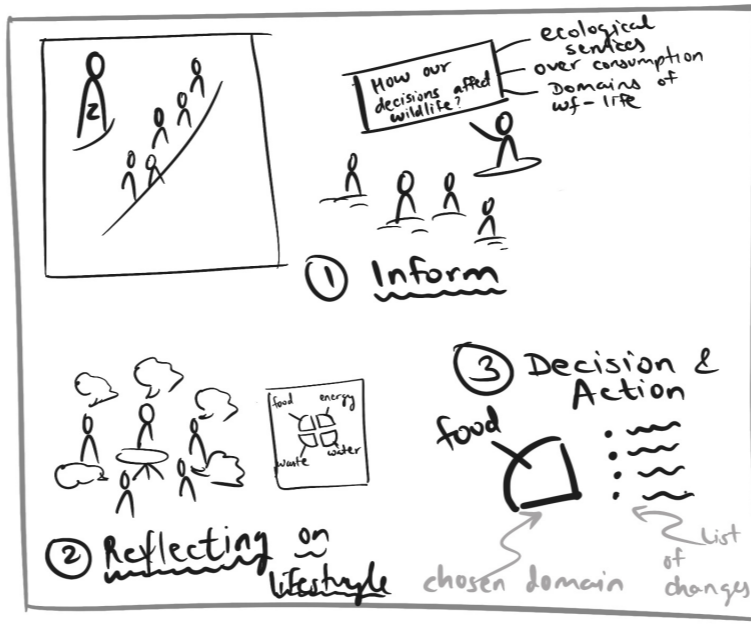
DESCRIPTION: Every month - for members.

¡ Discover

Scan the animal

AR animals

Description
Using a special app, visitors can scan the live animal and the app will show all the specie that the animal interacts with in the app using AR. On clicking the animal, it shows the interaction and its importance

What it achieves?
→ Fun way to discover species related with the species at the zoo.

TITLE: STORYTELLING ANIMAL SERIES

I'm the engineer of the ecosystem. How? ......

Elephant statue

Pull the tail

Inbuilt speakers
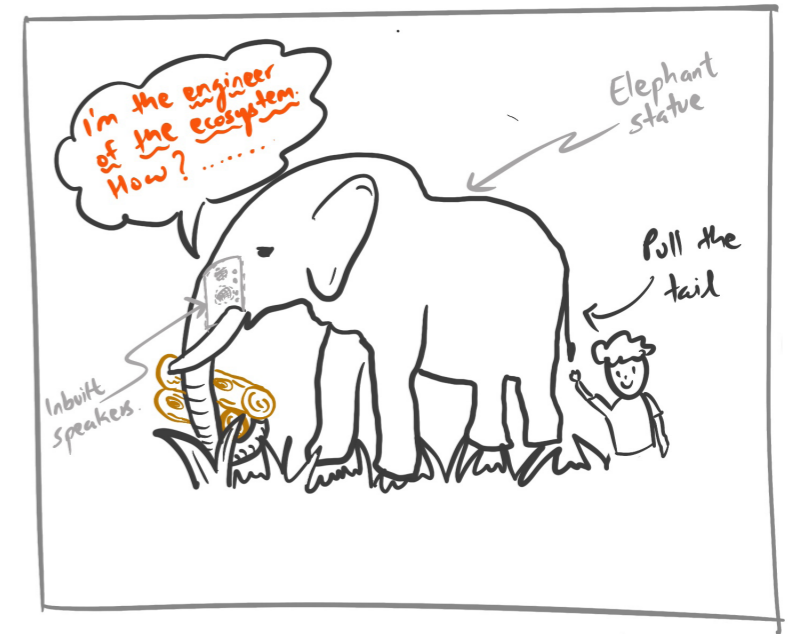
DESCRIPTION: The elephant tells a story about its role in the ecosystem, that parents or adults can understand. The language of the story is comparable to human professions such as engineer, farmer etc.

Similar 'storytelling animals' like insects, frogs can be fun as well as learning experience.

O. Creative facilitation session and plan and the generated ideas

Sensitizing materials:

To read:

1. https://www.khanacademy.org/science/high-school-biology/hs-ecology/hs-ecological-relationships/a/ecological-interactions
2. https://themasites.pbl.nl/natuurlijk-kapitaal-nederland/natural-capital-netherlands/results/the-relationship-between-biodiversity-and-ecosystem-services
3. https://en.wikipedia.org/wiki/Keystone_species

To watch:

1. https://www.youtube.com/watch?v=bJEToQ49Yjc (6 min)
2. https://www.youtube.com/watch?v=JGcIp4YEKrc (5 min)
3. https://www.youtube.com/watch?v=vk-12s7tB_Y (2 min)

Inspiration material:

A continuous slideshow on iPad of images:
https://docs.google.com/presentation/d/1wtpk7vXY4fMDUiSkGD-TSxTKRmRoq_oIdoHeCBgJ_04/edit?usp=sharing
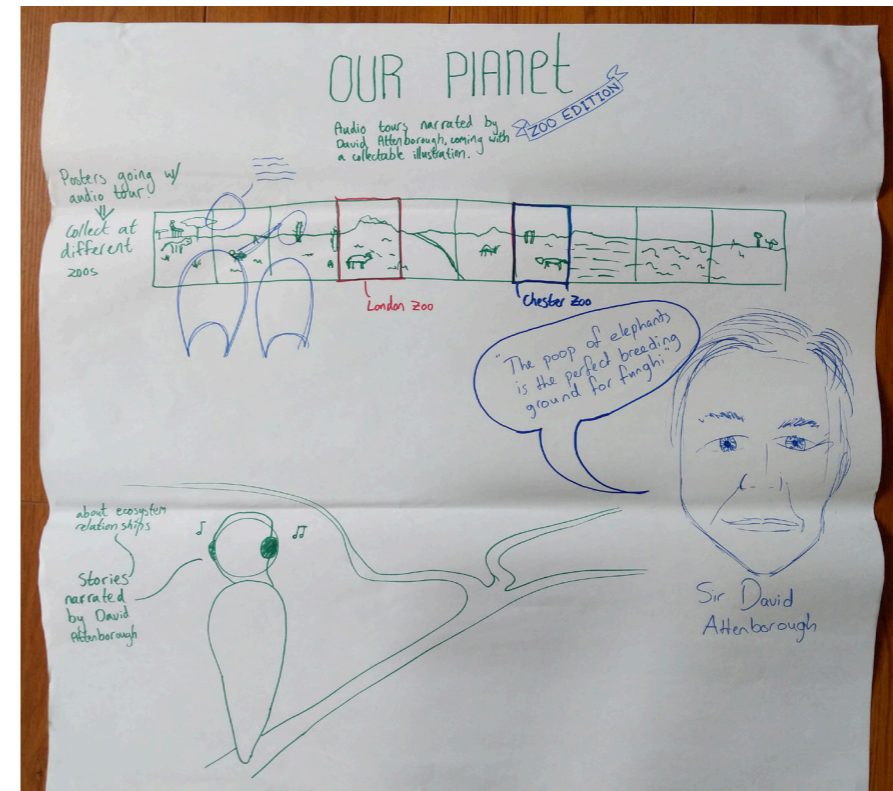
Final Concept 1

Session Plan:

1. Present how might we: "How might we show relationships amongst animals and its importance for their survival?
2. Problem finding:
   a. Mind map
   b. Generate HMW questions
   c. Discuss and select 1
   > Reframed How might we
3. Idea Finding:
   a. Purge
   b. Hidden presumptions
   c. Brainstorming
   d. Clustering
   > Clusters with titles and ideas
-----------Break-------
4. Solution Finding
   a. Choose one cluster per team. (Total 2 teams with 2 person per team)
   b. Developing the idea.
5. Concept Presentation
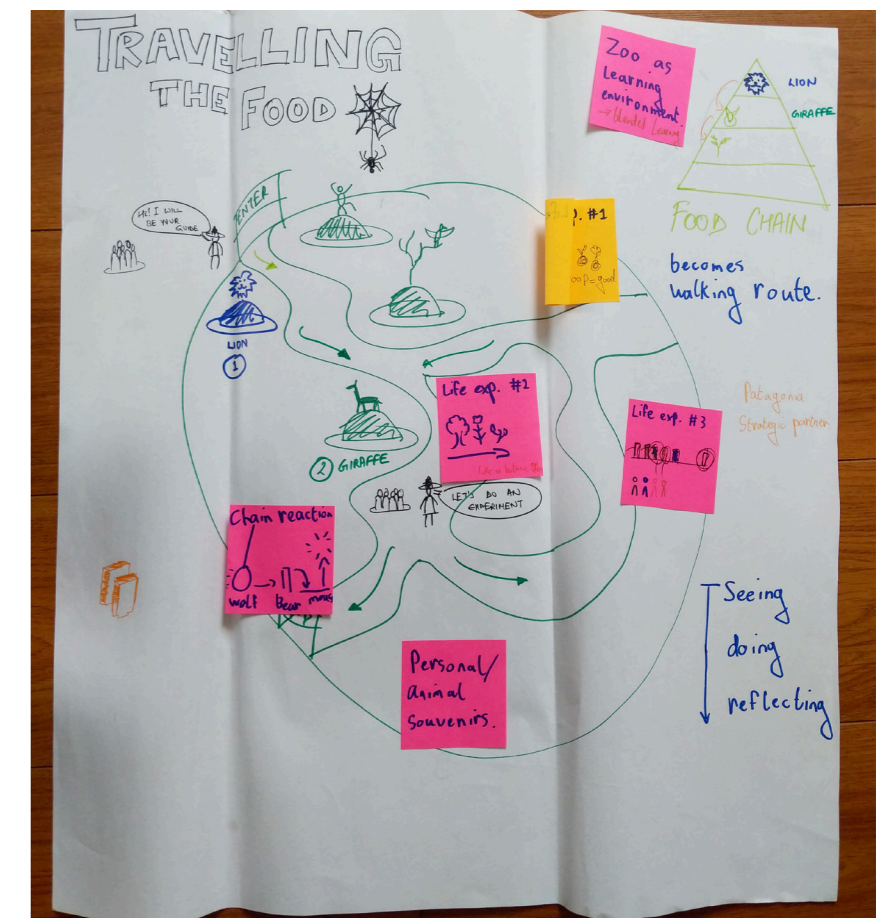
Final Concept 2

Other ideas and the clusters
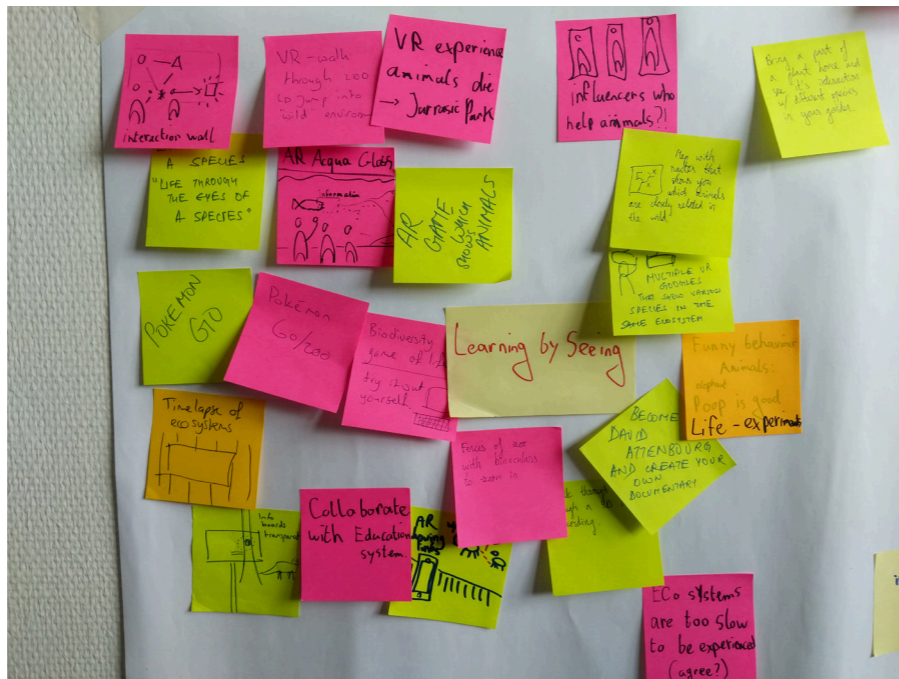
Section 3

Design

P.   Detailed design

In this chapter we will discuss the design considerations and decisions made in the design of each section of the app.

Account Set up and Onboarding experience

Why account set-up?
Setting up an account is an important feature but not urgent. It is important because setting up an account helps a user to store data related to discovered species online as well as helps send personalized pledge based notifications to the users. However, according to a research 86% users feel bothered for signing up for another account. Hence the better way is to first show the users the value of the app and later prompt the user for creating an account to save one's progress.

Why onboarding experience?
Beyond the zoo is not like another food delivery or shopping app whose interactions are generally known to people. Hence an onboarding experience is a must to show people the basic interactions that one needs to know to learn how to use the app.
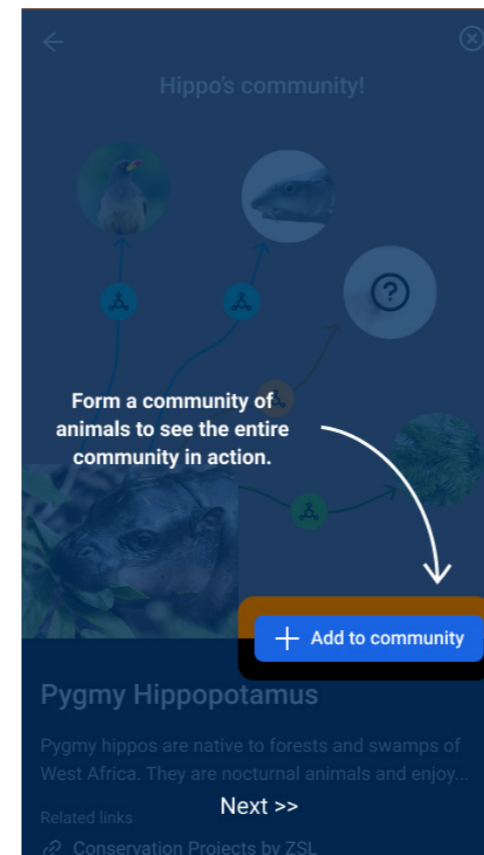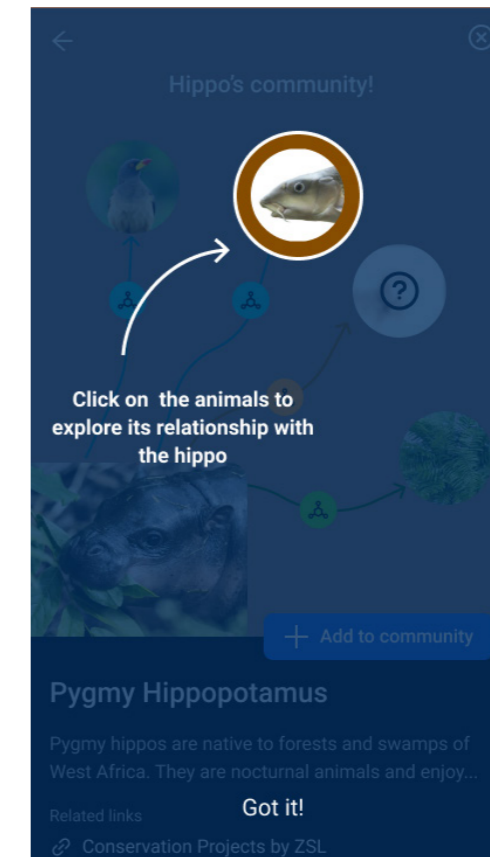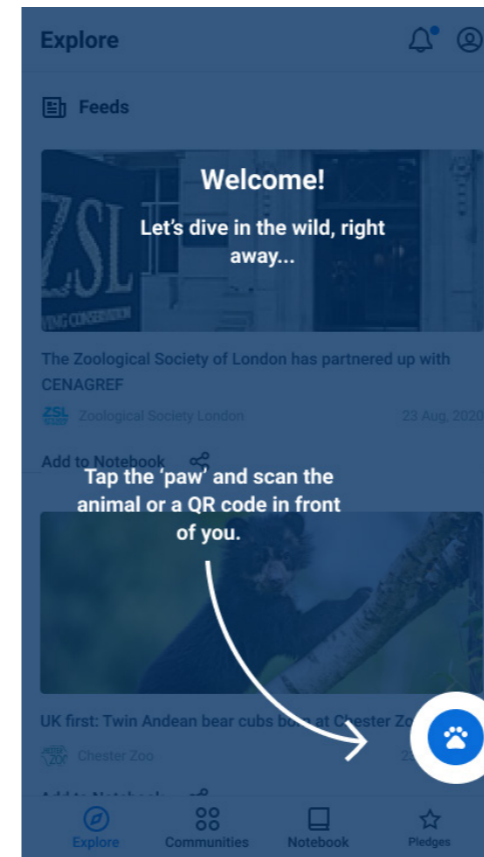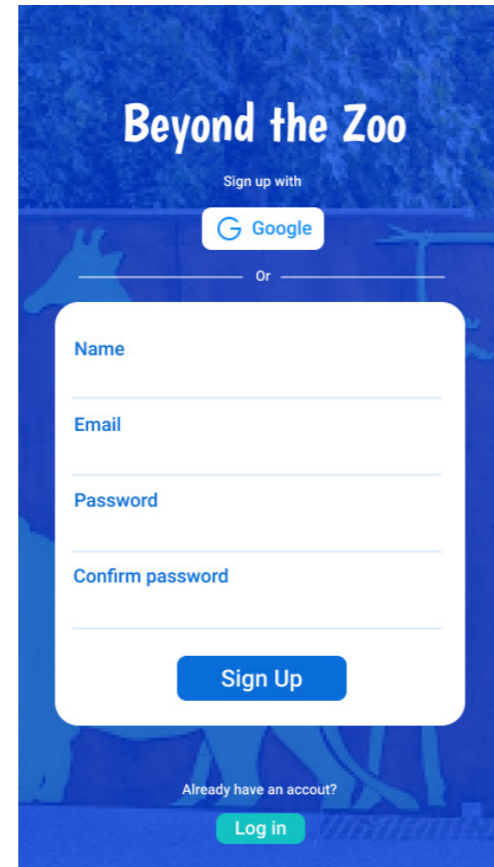
QR codes scanning and Discovering relationships
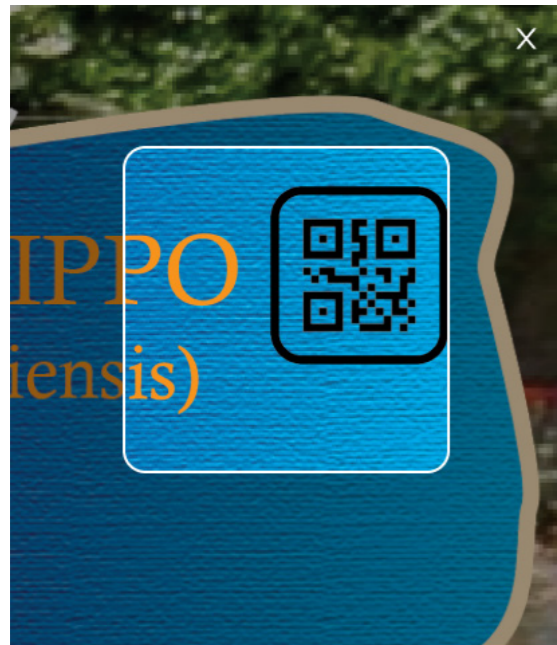
OR you can

Capture image

QR scanning or capturing a picture are two options a user can add animals to his/her community. The reason behind this is that if the animal is clearly visible, the camera can capture it but if not, QR code can be scanned. Moreover QR code scanning allows for adding species that are not present at the zoo, but necessary for improving community health and make it feel like a discovery as discussed in the previous chapter.

Yay!!
A Pygmy Hippopotamus

All animals live within thier community of freinds and foes!!

Explore Hippo's community

Not a Hippo?
Well, sometime we make a mistake. Scan again!
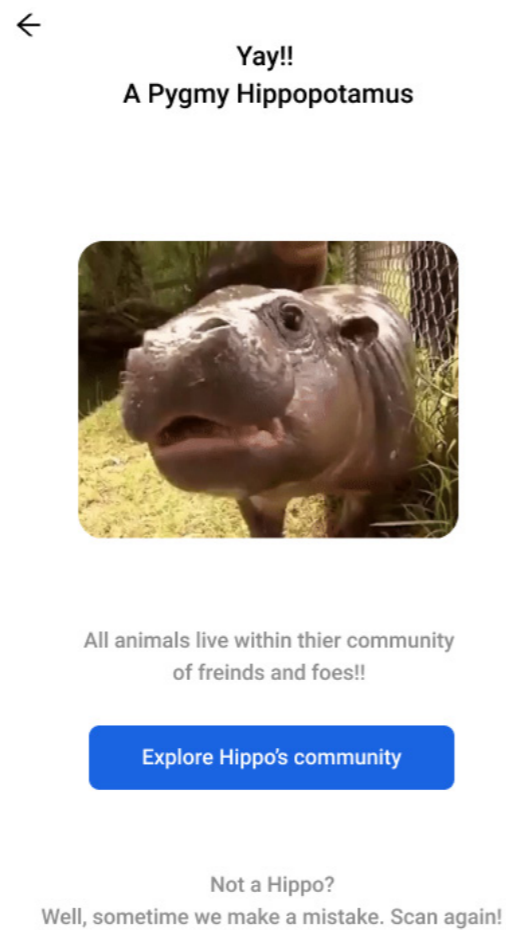
To give feedback to users about accurate scanning, the next screen with an animal GIF is shown. The GIF makes it engaging and at the same time allows visitors to see the animal closely.

Hippo's Community

Pygmy Hippopotamus

Consumer   Endangered

Pygmy hippos are native to forests and swamps of West Africa. They are nocturnal animals and enjoy...

Related links
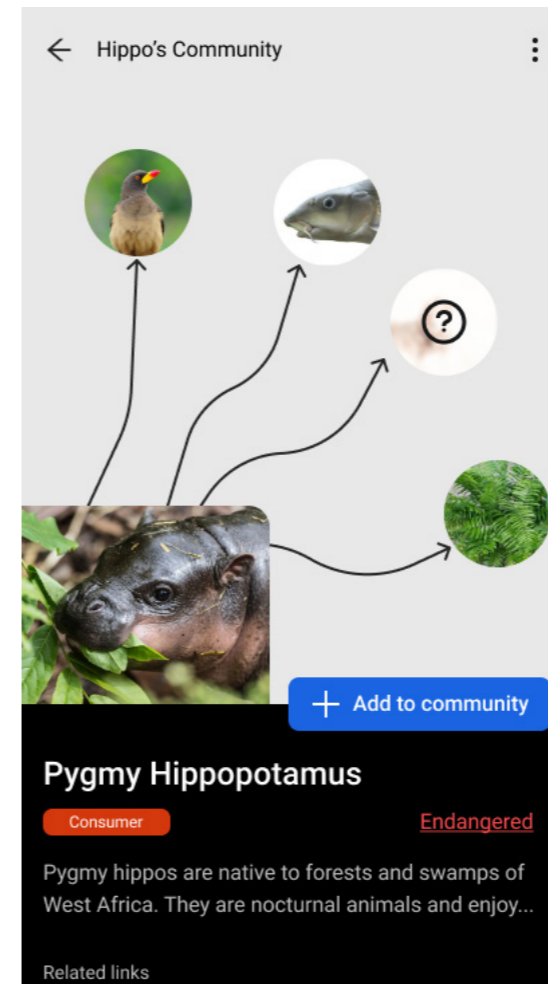
+ Add to community

The screen about relationships is designed to clearly show different animals related to the hippo. Also the copy of the screen is meant to reframe people's view of the animals from individual species to a community. The information in the bottom of the screen has two critical information: the type of the species(consumer) and its IUCN status. Former is important to make a link with the rest of the app and the latter is important to show for the zoos to draw attention towards conservation issues.

On this screen, species from various different kingdoms of life can be shown, especially fungi and plants. The reason is the animals and plants and fungi are all interconnected and usually at the zoos animals are in the spotlight. Hence by showing different species from different kingdoms, one's view about nature can be broadened.

Symbiosis
or
A Fantastic Friendship

Barbel fish and hippos share a friendship where both are benefited. Barbel fish gets its food in the form of ticks and other insects on hippo's body. For hippo its a way to clean itself.

Free cleaning Yay!!

Add to Notebook
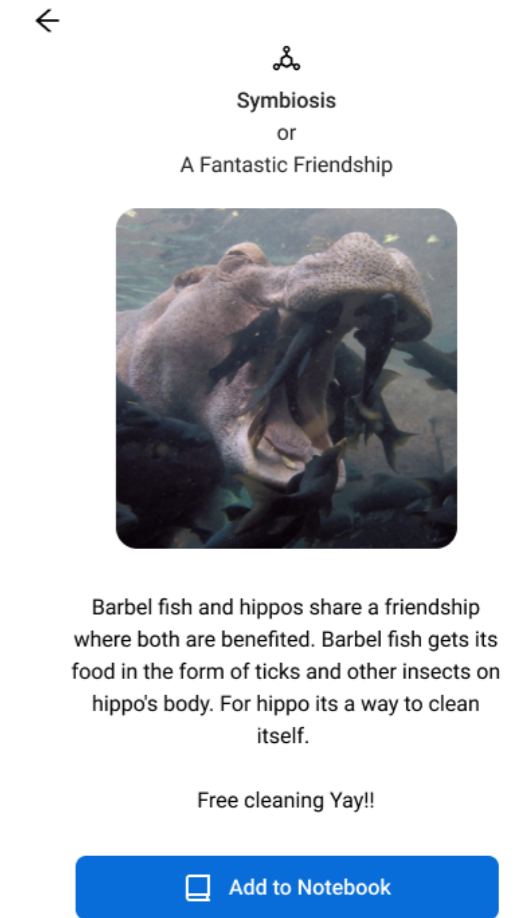
For each relationship, the pictures are used to visually show the relationship in action. Moreover, the title of relationships are purposefully made human to make it relatable. Eg. include Symbiosis as 'Fantastic Friendships' , Competition as 'First come first serve' etc.

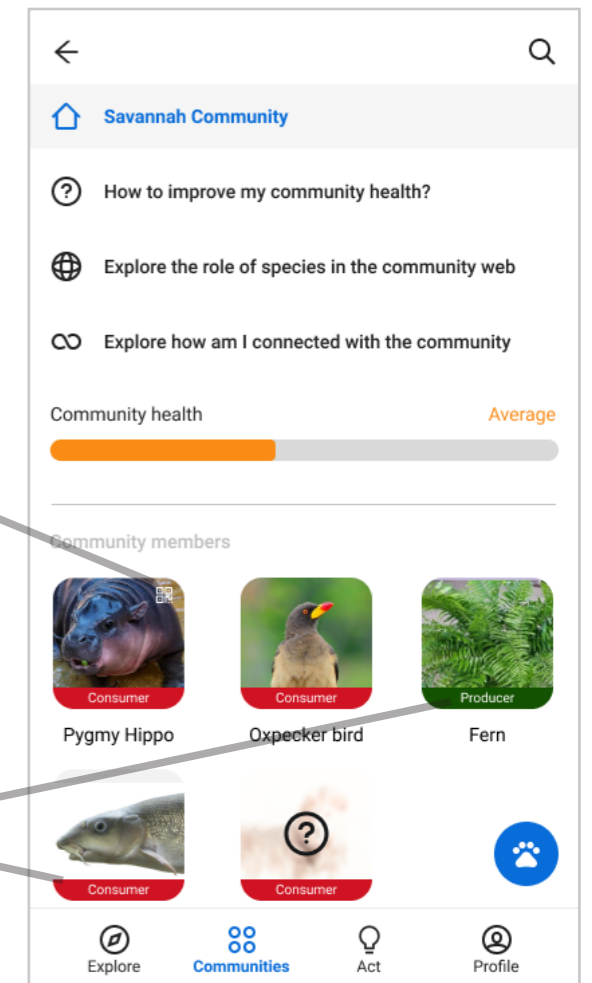Some examples of different relationships and their screens,

Competition
or
First come first serve

Giraffe and Zebras share a relationship of competition as they both share the same food resources in a grassland

Add to Notebook

Predation
or
Food dependence

Lions depend on Giraffe for food. One giraffe can easily feed 3 to 4 lions.

Add to Notebook
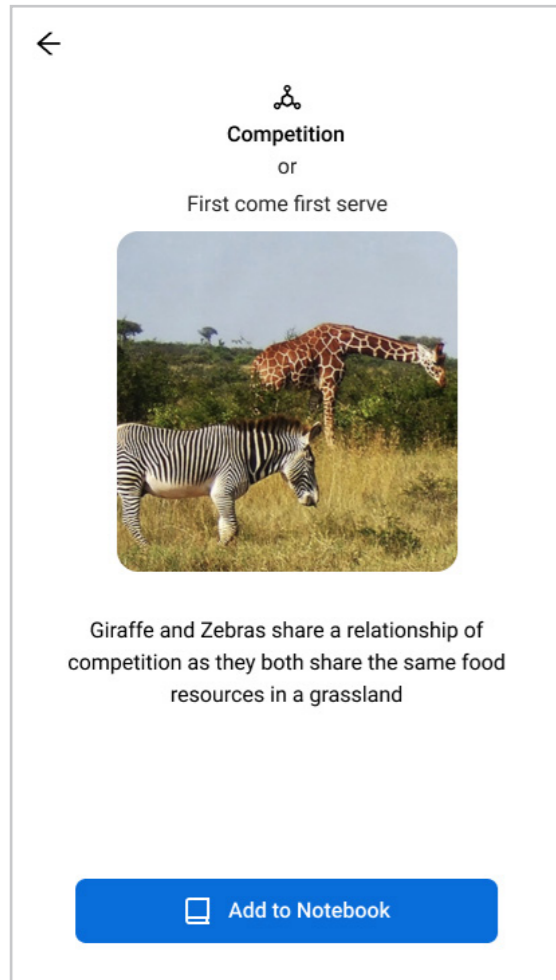
My communities

Why add all the animals to one's community?
From the previous screens, all the animals are added to the community, for two reasons:
1. To give the user feeling of building a community rather than collection of animals they scan at the zoos
2. The feature of the missing animal can be very well highlighted on this screen and motivate visitors to visit more of the zoo.

The distinction between the animals actually discovered is made by the small barcode icon at the corner of the species.

Each animal has a color tag for a reason. These tags help the users to quickly know the types of species in a community. The relevance of this is discussed in the next section.

Savannah Community

How to improve my community health?

Explore the role of species in the community web

Explore how am I connected with the community

Community health   Average

Community members

Consumer   Consumer   Producer
Pygmy Hippo   Oxpecker bird   Fern

Consumer   Consumer

Explore   Communities   Act   Profile

Top menu: Community health
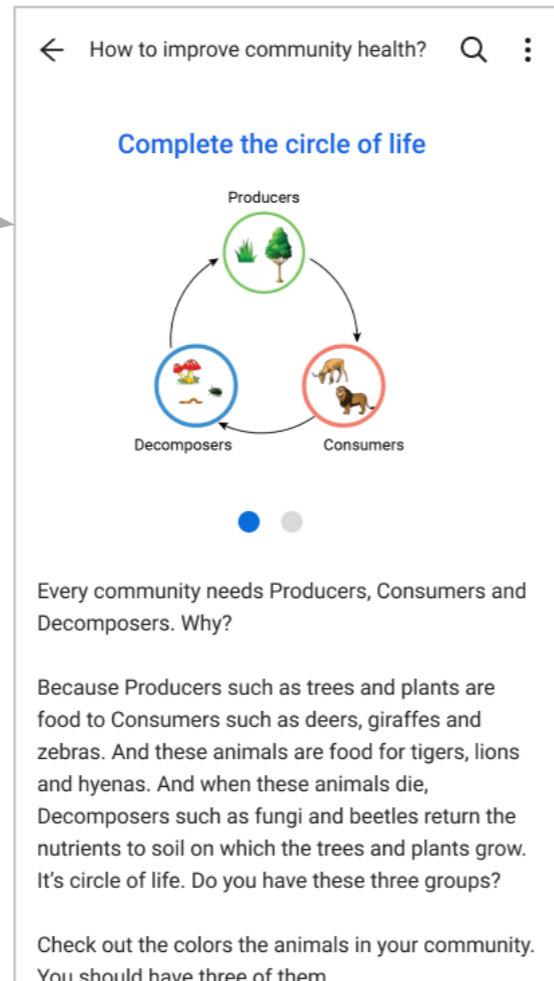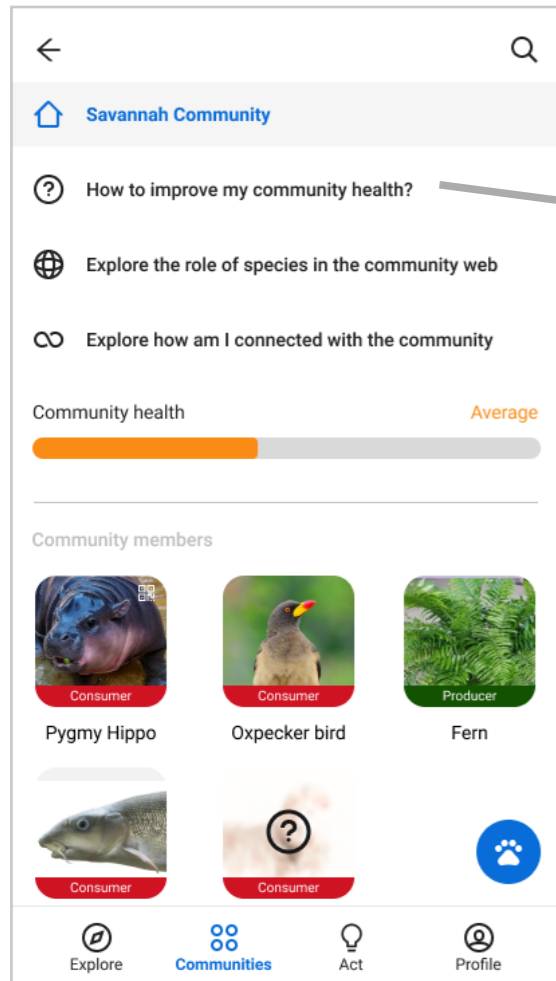
This screen is mainly designed for informing the users about 'rule of the game'. The copy of the explanation is kept very simple and human to read. The example of the bees is included for users' understanding of the concept.
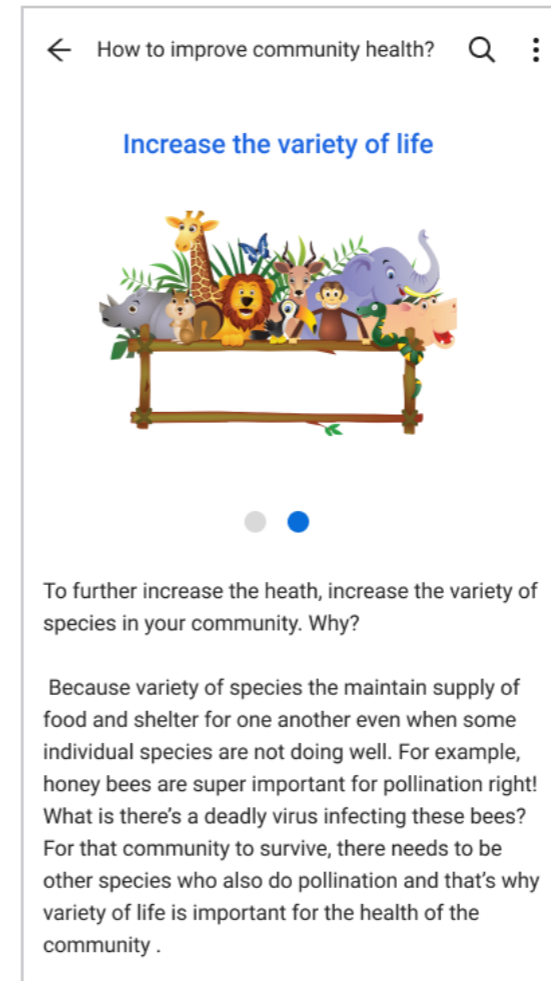
The relevance of the tags on the community is mentioned here as 'circle of life'. Again the language is kept simple and relatable.
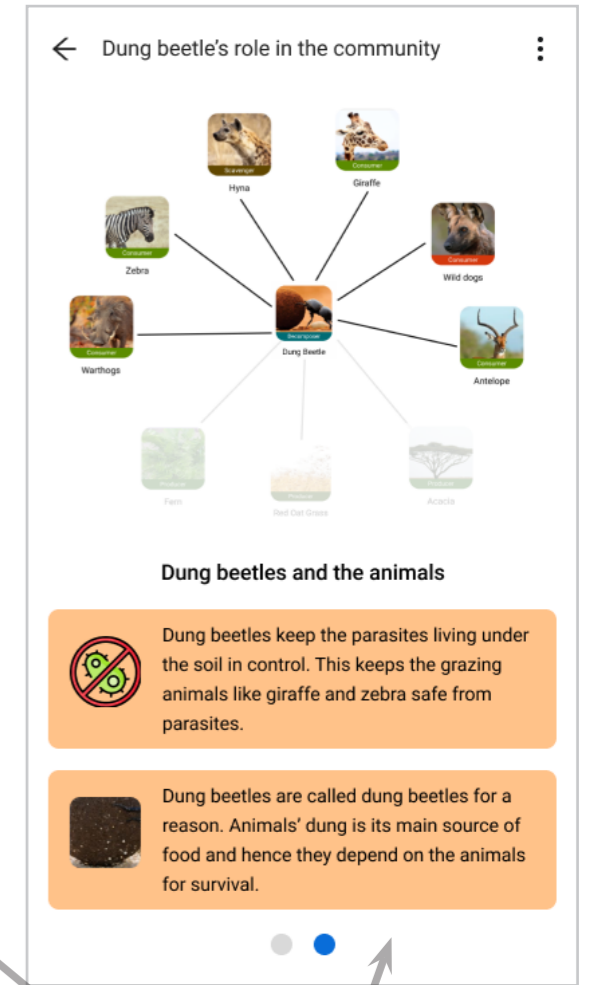
Top menu: Community Web
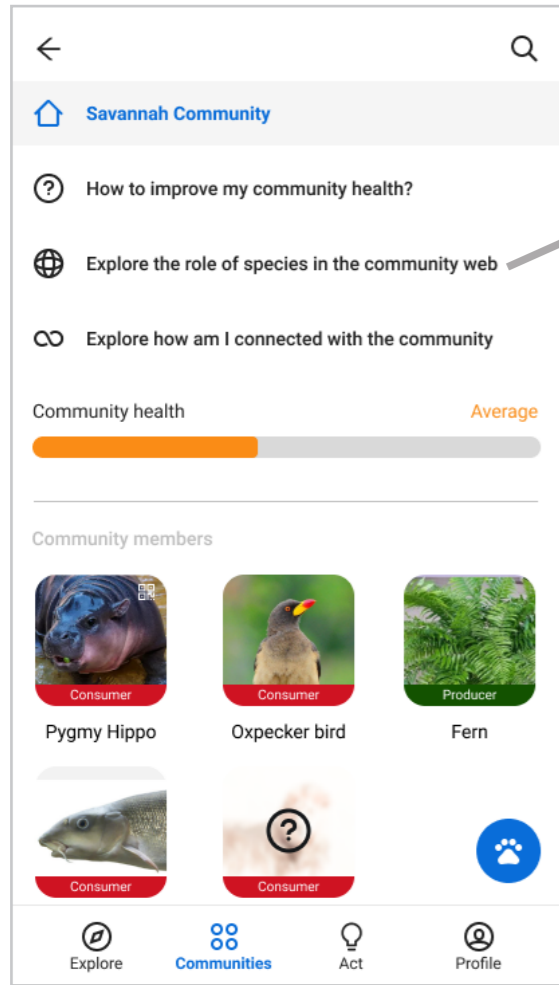
The community web page is designed very simply for the purpose of the prototype, but here the actual images of African Savannah can be included and it can be made graphically engaging. The purpose of showing the relationships connecting lines between species is to convey the amount of complexity present within the community but it is greyed out to not overwhelm the user.
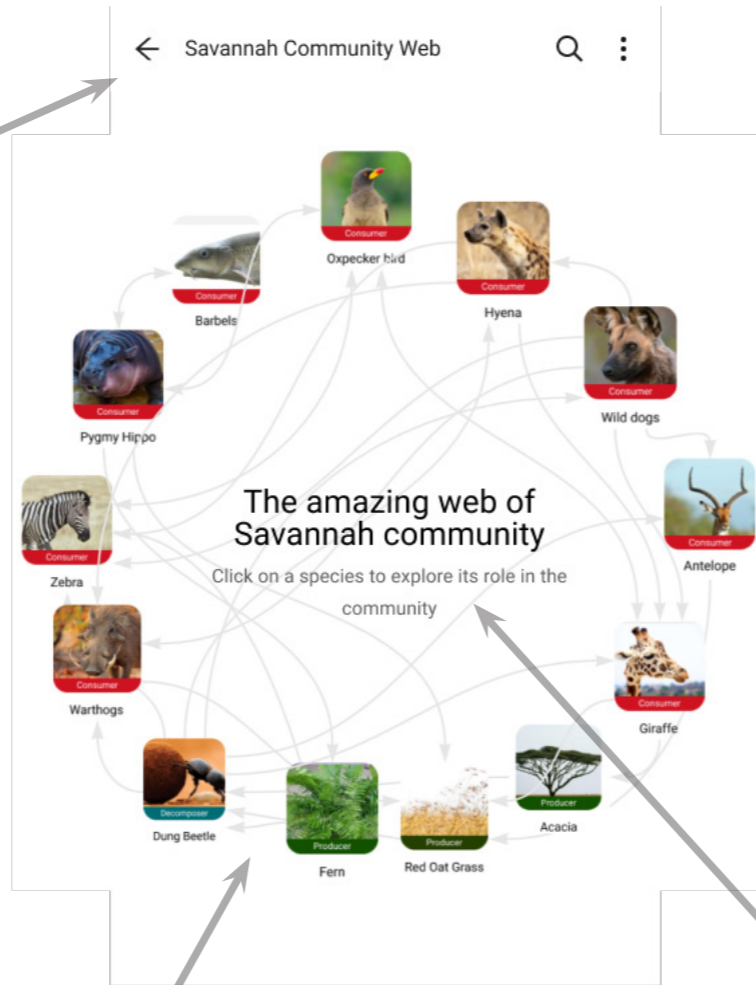
Clear instructions about what can be done on this page are included.
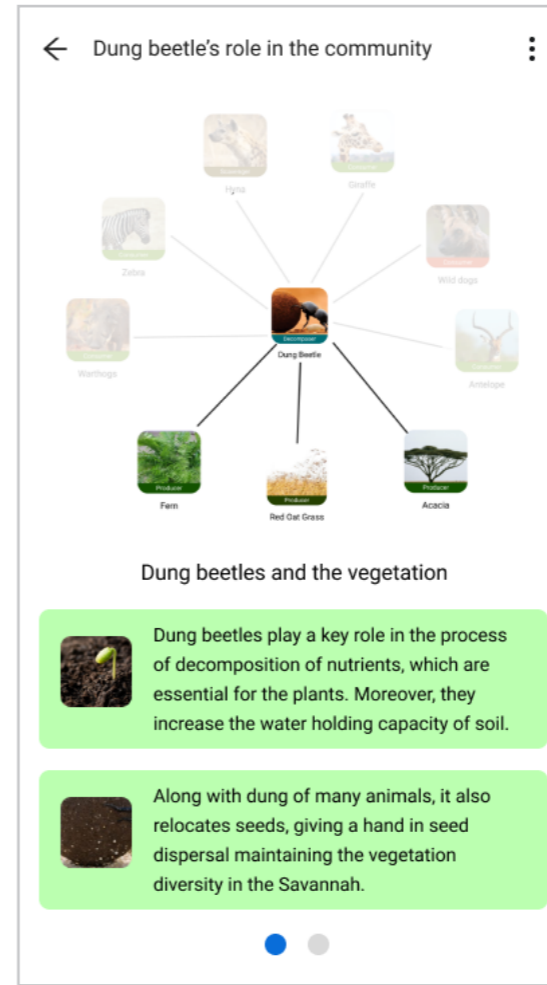
Each species is a clickable link and when clicked, the information about its relationships with every other species is shown. The visuals with the connecting link between the selected species and other species are important to emphasize the relationship aspects.

Top menu: How am I connected?

On the page about the why are the communities in danger, the picture that compares the before and after picture is included to clearly show the users the reality of today. The information on this page is linked to the articles already available online.
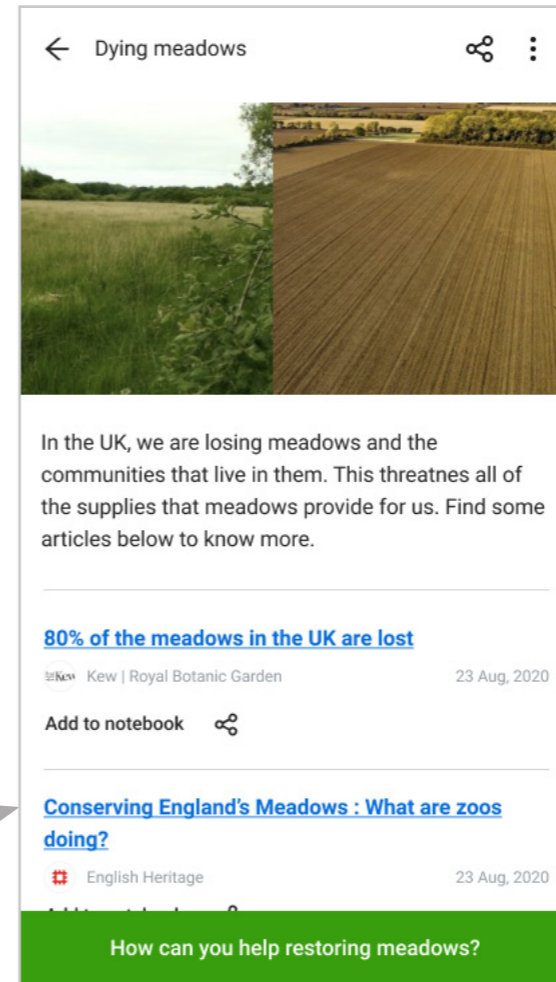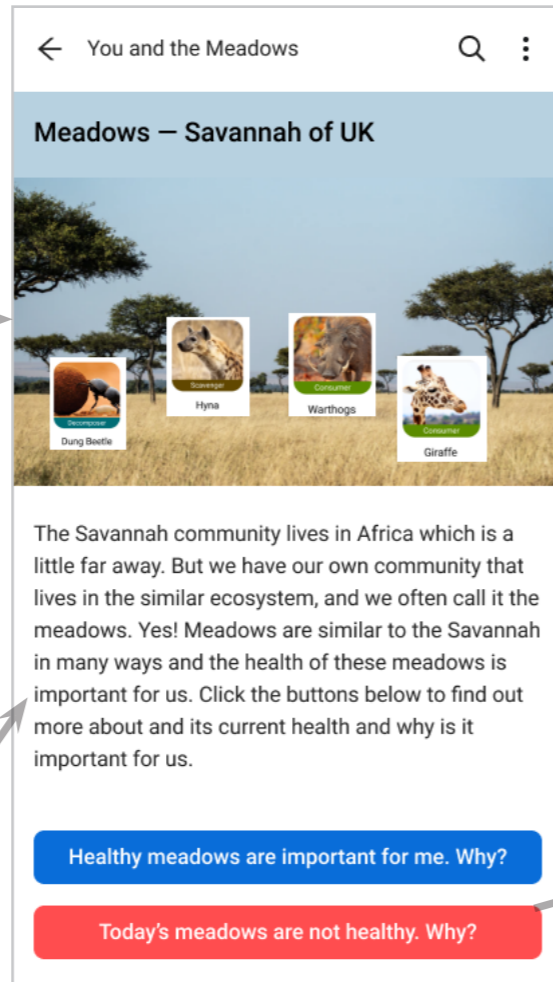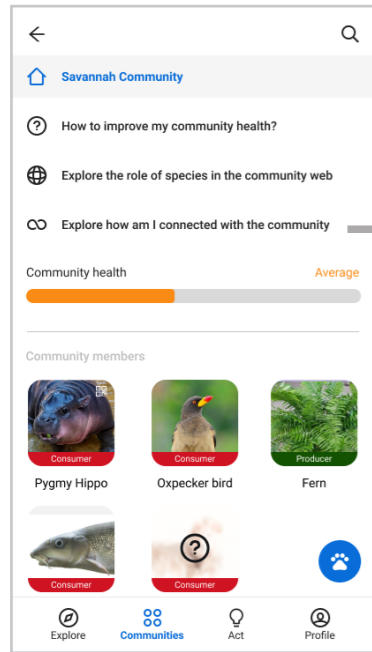
The language used for this screen is very crucial to transfer the user from the context of Savannah to context of local communities. To do this the title is made crisp and clear to bring the Savannah close to people. With better graphics, the main picture can include and emphasize the local similar species.
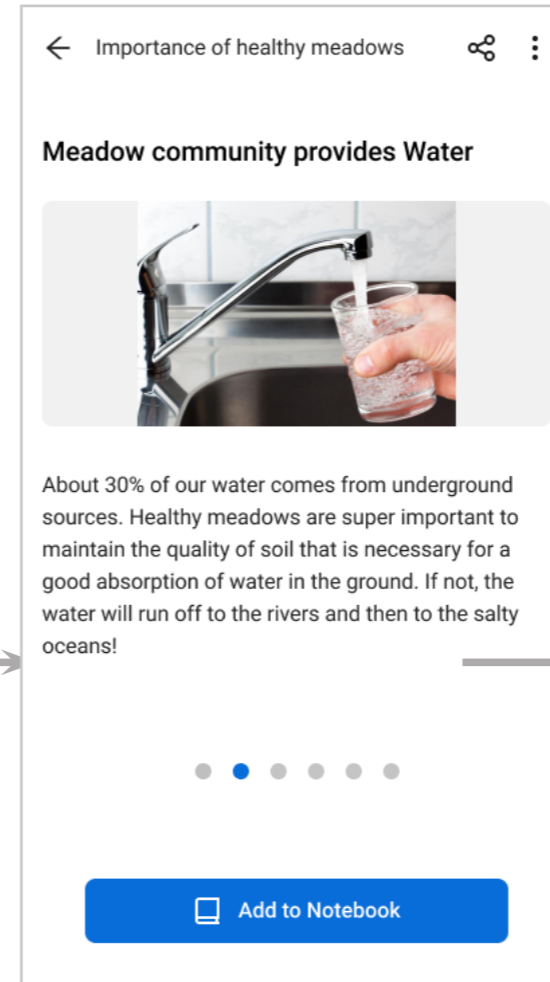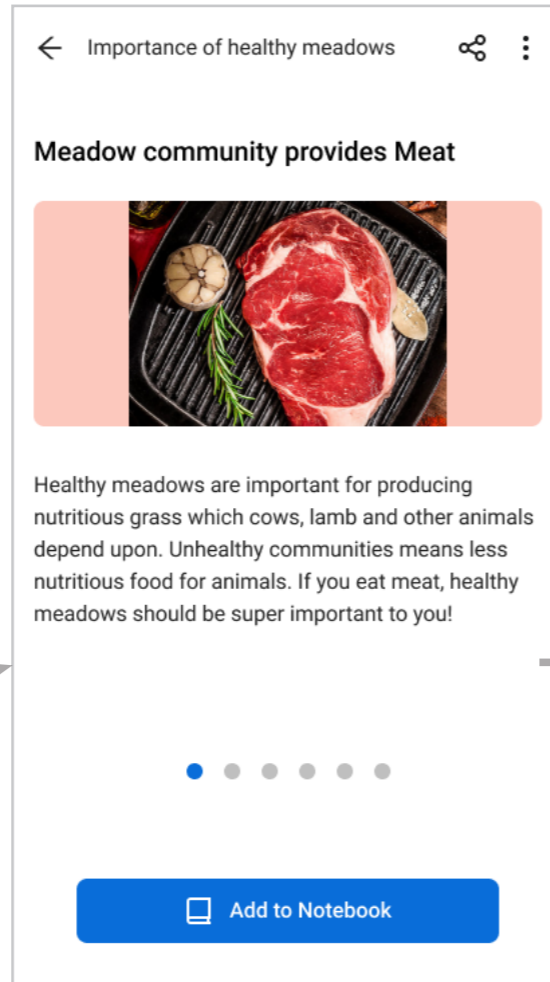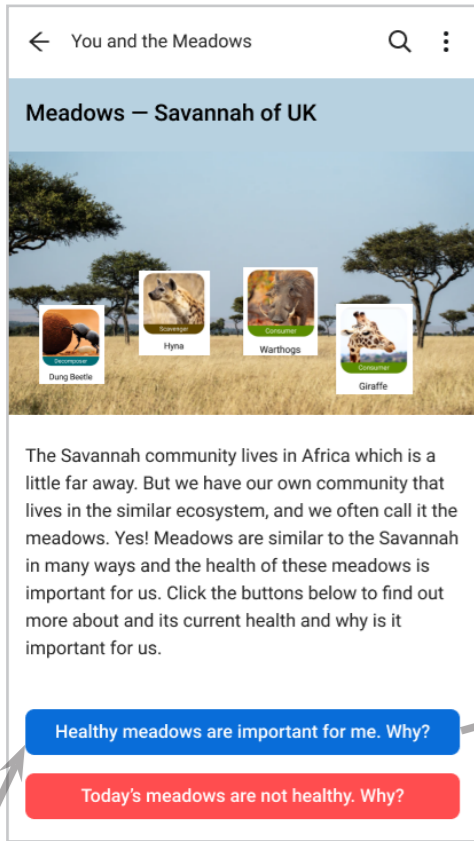
The Uk, has very diverse landscapes starting from its own tropical lush green forests to deserts including everything in between. Hence every habitat of the wild can potentially be compared with a local landscape.

The page is meant to lead the people to two main pages: one that talks about the local conservation issues around the particular community and the other takes the users towards actions one can take.

The purpose of bringing the local conservation issues is to use the attention that the African Savannah captures and based on that communicate the issues about places that people actually can relate to.**(Design principle 2 in 4.3.1).**

With the content about the problem, a direct navigation button to the actions page is linked, following the **design principle 1**

You and the Meadows

Meadows — Savannah of UK

The Savannah community lives in Africa which is a little far away. But we have our own community that lives in the similar ecosystem, and we often call it the meadows. Yes! Meadows are similar to the Savannah in many ways and the health of these meadows is important for us. Click the buttons below to find out more about and its current health and why is it important for us.

[Healthy meadows are important for me. Why?]
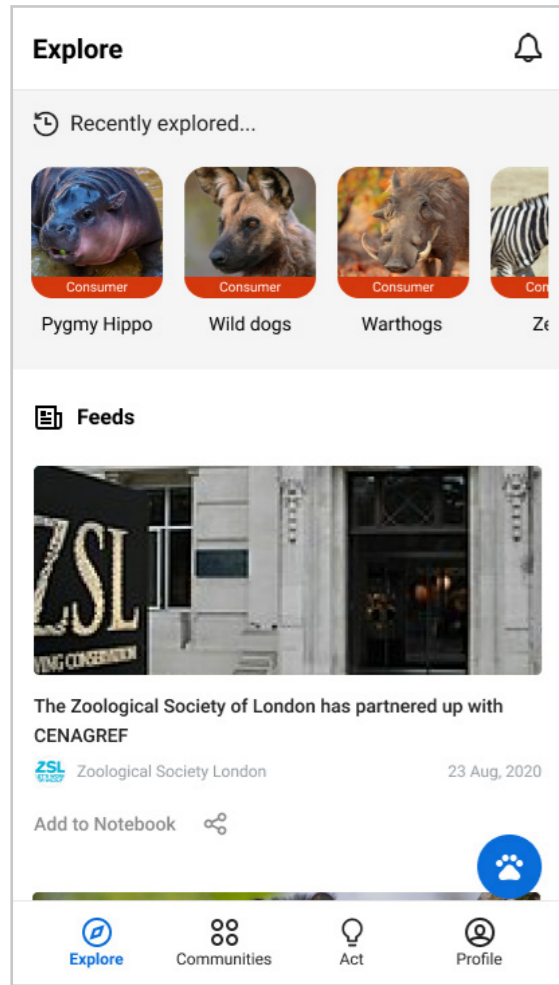
[Today's meadows are not healthy. Why?]

The navigation button "Meadows are important. Why?" leads to the everyday things we get from the meadows. The pictures are homely, relatable and the content is presented in a way that clarifies the role of communities in producing the particular item.
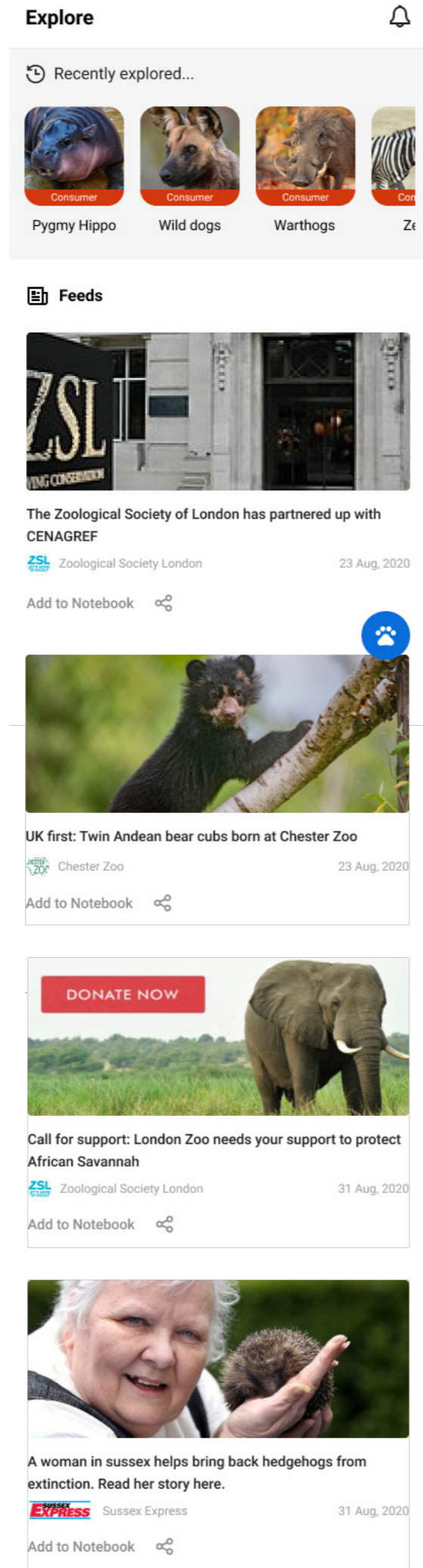
Essentially the content of the screen is about the Ecosystem Services that humans receive from nature, but to keep it simple, the concept of ecosystem services is purposefully not introduced.

The feature about adding a notebook is provided here for users to store some information for quick retrieval.

Importance of healthy meadows

Meadow community provides Meat

Healthy meadows are important for producing nutritious grass which cows, lamb and other animals depend upon. Unhealthy communities means less nutritious food for animals. If you eat meat, healthy meadows should be super important to you!

[Add to Notebook]

Meadow community provides Medicines

St. John's Wort is one of the plants found in our meadows that has medicinal benefits. It's a cactus alike plant with yellow flowers that produces a chemical that helps people deal with depression. The chemical is consumed in the form of extracted oil and capsules.

[Add to Notebook]

Importance of healthy meadows

Meadow community provides Water

About 30% of our water comes from underground sources. Healthy meadows are super important to maintain the quality of soil that is necessary for a good absorption of water in the ground. If not, the water will run off to the rivers and then to the salty oceans!

[Add to Notebook]

Meadow community provides Milk

Healthy meadows produce healthy fodder, hay and grass for the cows. Cows diet directly affects the quantity and quality of milk. For humans to have milk, cows need food which is provided by the interactions of the entire meadow community.

[Add to Notebook]

Importance of healthy meadows

Meadow community provides Mushrooms

British Meadows are rich with wild mushrooms. Many of this mushroom are edible and are a part of daily diet of many people in the UK. Do you fancy mushroom delicacies? Next time maybe look for some native mushrooms.

[Add to Notebook]

Meadow community helps absorb Carbon

Apart from the trees, soils also capture carbon. They do this through the plant world growing on its surface. The plan uses the carbon dioxide in the air and uses it to grow itself. The more its roots grows, the more carbon is absorbed from the atmosphere and put into the soil. And for healthy plants and a good absorption, the entire community of meadows is responsible.

[Add to Notebook]

Explore

On this screen, it is important for the content to remain relevant to zoo visits. Hence information about the zoos the user has visited, the different projects zoos have taken in the wild and local organizations working on local issues can be shown.

This screen also acts as a history of the particular animals explored. Each of these animals can be clicked to explore their relationships with the species across the entire community.

The news about the positive differences that human activities are making in the natural world, inspiring stories about common man taking certain actions in their daily lives must be made part of the feed to restore one's faith in one's own actions and inspire one to take action on his/her own.

Act today

This screen is meant to show people the number of ways in which one can support the environment and gives people choice to change the part of life they wish to change.

An inspiring message is shown at the top of the screen which updates at regular intervals, keeping the content engaging and fresh.

The positive actions are categorized to specific domains for a better overview of the users and to not make it overwhelming. Moreover, since zoos already promote certain behaviors of donation, signing petitions, they are also made a part of this page.

Each domain has a variety of behaviors one can do. The detailed list of the behaviors in all the domains can be found in Appendix Q.
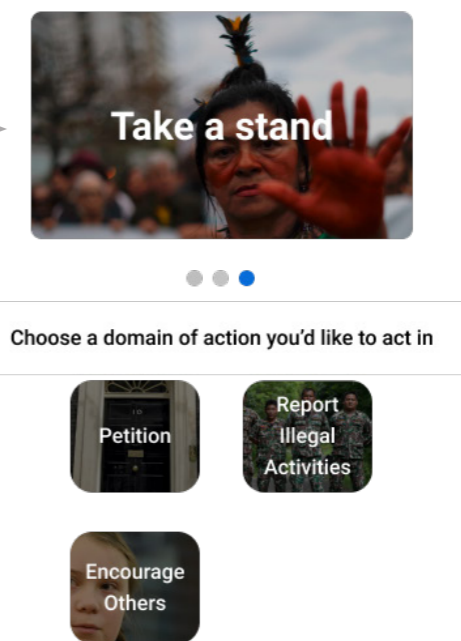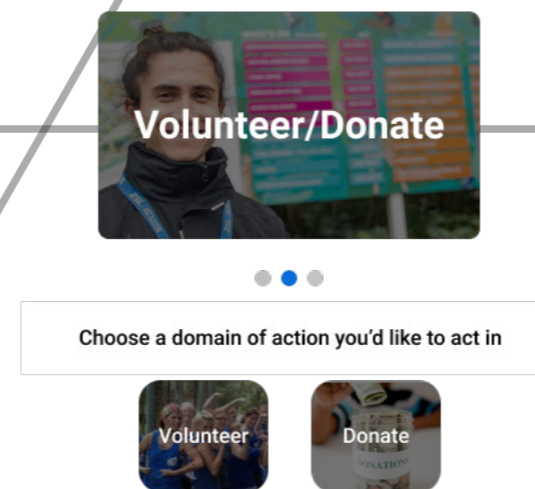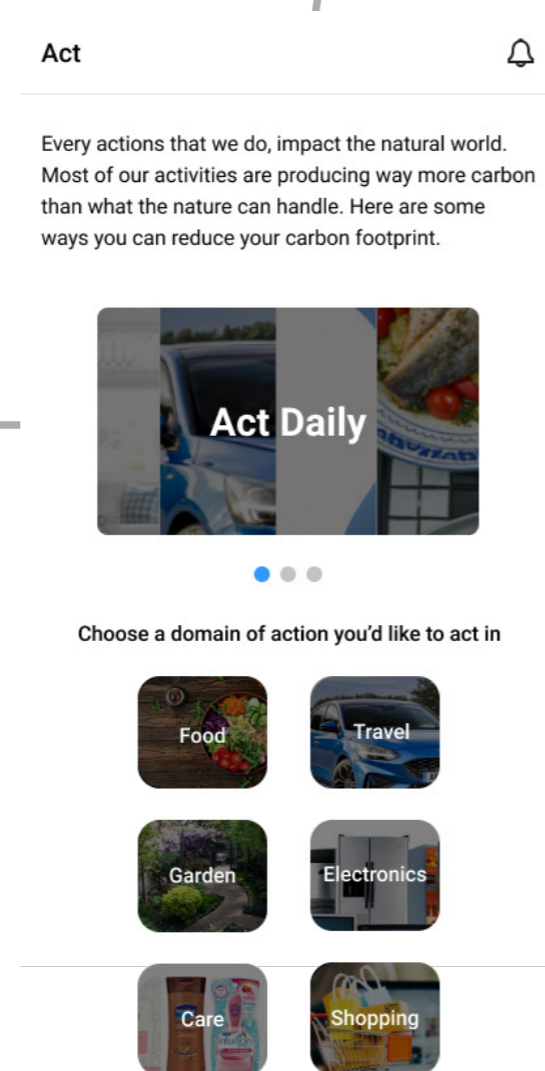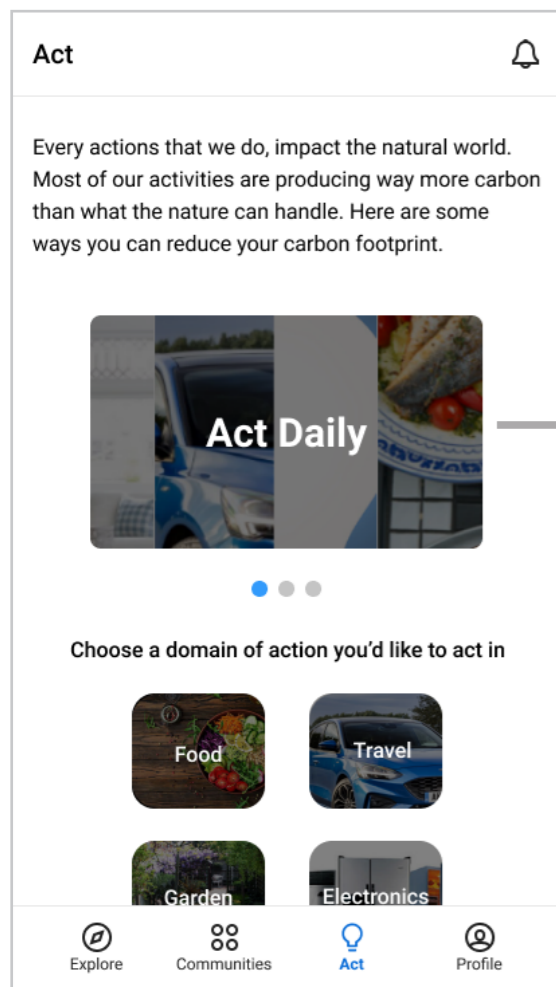
Each domain has a variety of behaviors one can do. The detailed list of the behaviors in all the domains can be found in Appendix Q.
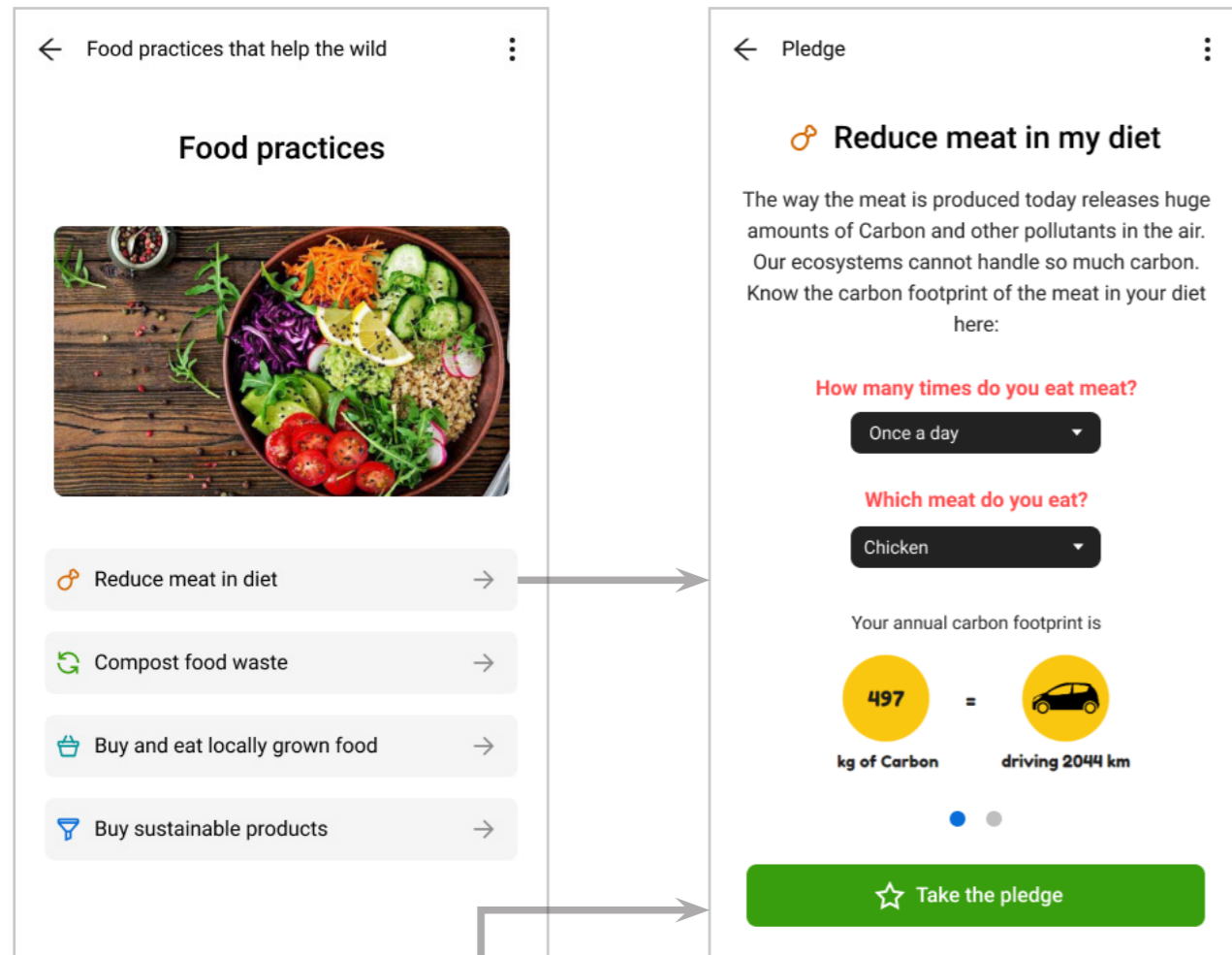
With each action, more information is also present. This information plays two key roles:
1. It shows people their own personal environmental impact,
2. How does the behavior positively influence the communities

Both of these information are essential for one to get a better picture about influences of an action and feel responsible and motivated to act. Continuing this motivation, the button to "Take a pledge" is right there.

Taking the pledge drawer gives an option to the users to gradually change their behavior instead of making a big commitment and later falling short of it.
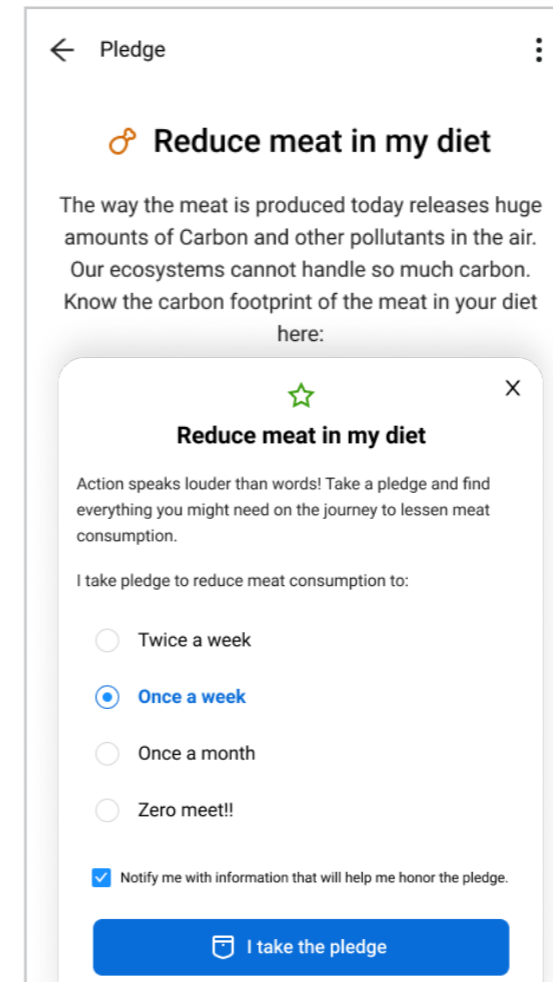
This is a crucial feature for inspiring people to take the pledge and later honor it. The check box about the notification is how the additional resources of "How" to take an action are communicated. **(Design principle 3)**

On the last screen of taking the pledge, an affirmative GIF is displayed along with information about the number of people who have taken the pledge.

Initially this information should not be shown as the number will be zero which may demotivate a person, but later when the number increases, it can be shown.
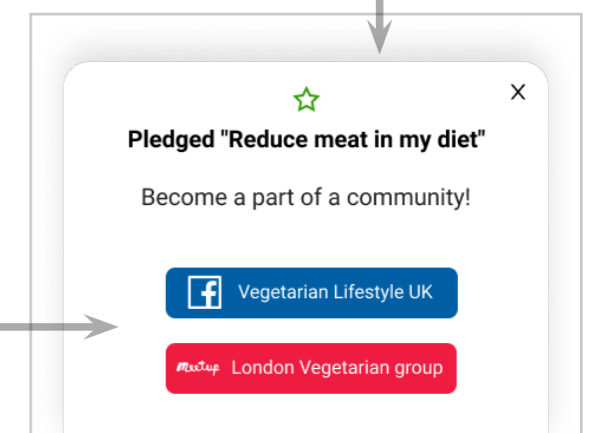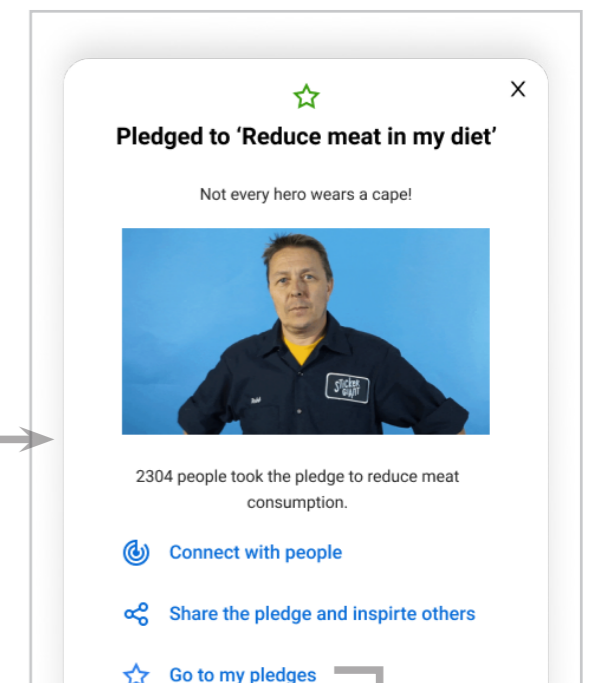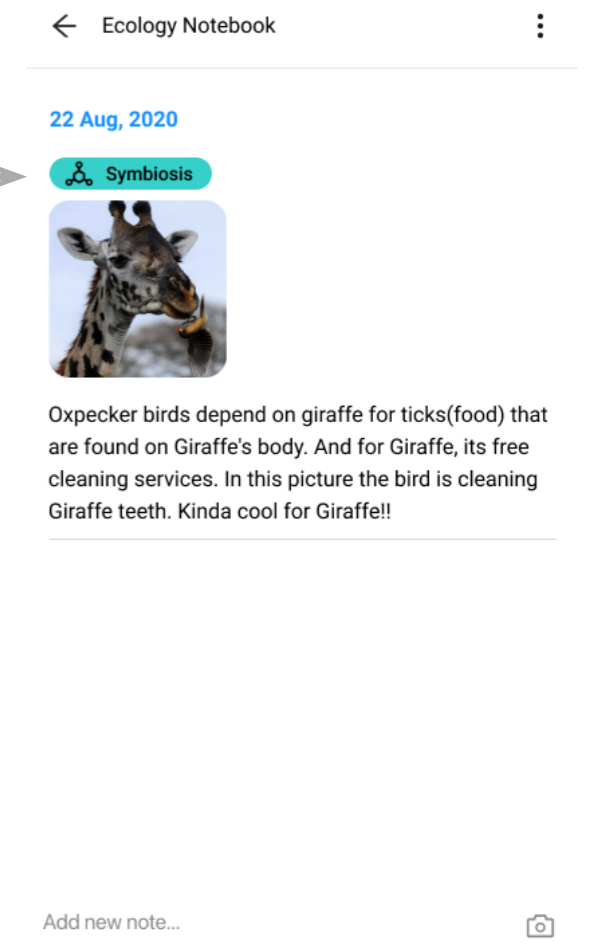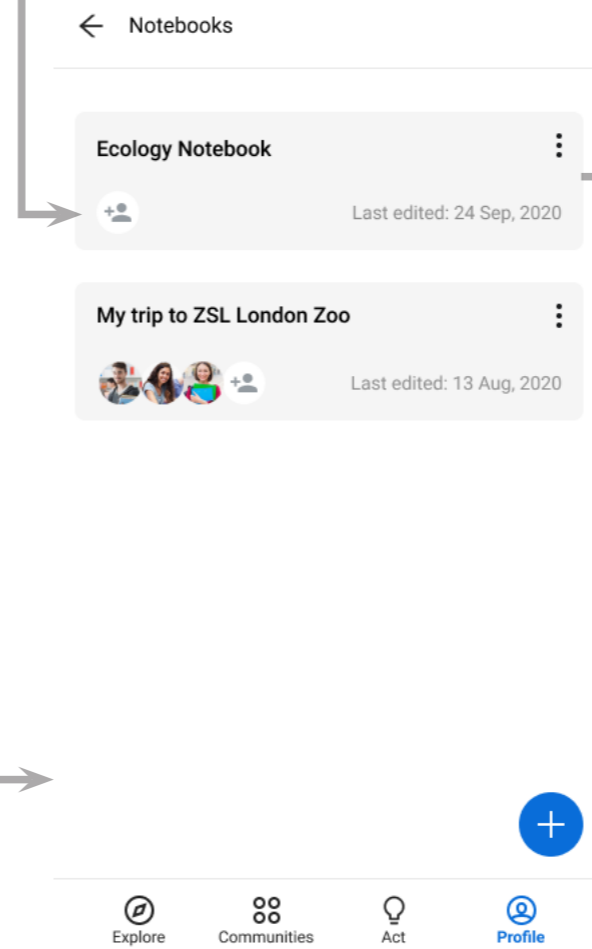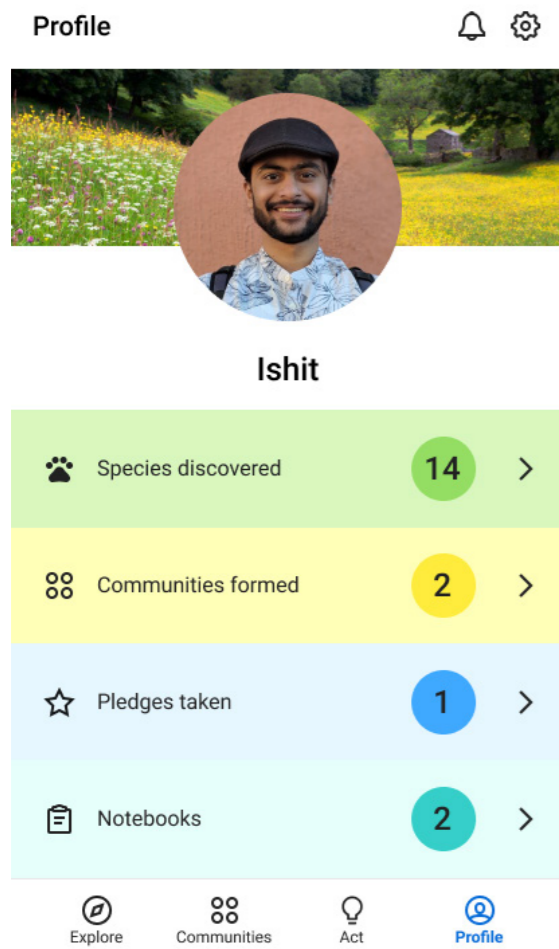

Moreover, here the option to share a pledge and join a community is also an important addition as it builds a social circle around the new behavior.

Profile

Profile is a space in the app where a summary of a user's activities are shown. The summary has information about two kinds: **Discovery and contributions.**

Discovery is related to the species and communities discovered, whereas the contribution section is about the pledges taken, financial donations and petitions signed.

The notebooks may also have a feature of sharing. The feature was not tested in particular but may be nice addition if notebook as a feature are added.

Profile

Ishit

🐾 Species discovered	14	›
88 Communities formed	2	›
⭐ Pledges taken	1	›
📋 Notebooks	2	›

Explore · Communities · Act · Profile

← My Pledges 1

🐏 Reduce meat in diet   one week ago

Explore · Communities · Act · Profile

← Notebooks

Ecology Notebook
Last edited: 24 Sep, 2020

My trip to ZSL London Zoo
Last edited: 13 Aug, 2020

Explore · Communities · Act · Profile

← Ecology Notebook

22 Aug, 2020

🔗 Symbiosis

Oxpecker birds depend on giraffe for ticks(food) that are found on Giraffe's body. And for Giraffe, its free cleaning services. In this picture the bird is cleaning Giraffe teeth. Kinda cool for Giraffe!!

Add new note...

Q. List of pro-environmental behaviors classified by domains

BIODIVERSITY IS A BALANCE

MY DAILY ACTIONS FOR BIODIVERSITY

I EAT

- ☐ I eat local.
- ☐ I avoid wasting food by buying only what I need.
- ☐ I buy my food in bulk.
- ☐ I avoid foods packed in three different plastic layers.
- ☐ I do not eat much meat.
- ☐ I choose foods carefully and favour production methods that respect biodiversity (labels, sustainable production, no pesticides, herbicides and other chemicals that are hazardous to health and nature).
- ☐ I refer to different guides to choose my food.
- ☐ I avoid heavily processed foods.
- ☐ I use compost for my organic waste.
- ☐ I drink tap water and use a flask.
- ☐ I say NO to plastic straws.

I MOVE AROUND

- ☐ I give maximum priority to soft transport modes: on foot, by bicycle or scooter for the shortest journeys, public transport for longer journeys or carpooling.
- ☐ I do not fly too often.
- ☐ I follow marked paths in natural habitats.
- ☐ I avoid riding quad bikes, noisy motorcycles or other vehicles in the countryside and forests.

I TAKE CARE OF MYSELF

- ☐ I only use the care products that I really need and in small quantities.
- ☐ I use cosmetics whose production methods are respectful of biodiversity (labels, sustainable production, no chemicals dangerous to human health and nature).
- ☐ If possible, I use products with little packaging, such as soap bars, and larger container sizes, such as EU Ecolabel products.
- ☐ I use reusable care accessories such as make-up remover discs made of washable fabric and I avoid, for example, disposable wipes.
- ☐ I use an electric or bamboo toothbrush.

BIODIVERSITY IS A BALANCE

I GARDEN, I GROW

- ☐ In my garden or home, I prefer native plant species.
- ☐ I set up my garden to accommodate local fauna: I plan wild land areas and plant flowers for bees, I leave dead branches, I prefer natural hedgerows rather than fences, I vary and diversify plants and tree species, etc.
- ☐ I only use natural products to keep pests away (vinegar, etc.) or grow my local flowers (compost, etc.).
- ☐ When I buy plants in nurseries, I make sure they have not been treated with chemicals.
- ☐ I count birds, butterflies and other species visiting my garden and send the results to a nature protection association such as Natagora or Natuurpunt.

I COMMUNICATE

- ☐ I only buy the electronic devices (telephone, computer, tablet, etc.) I really need.
- ☐ I have my electronic device repaired before deciding to buy another one.
- ☐ Whenever possible, I buy them second-hand or favour sustainable brands that pay attention to their impact on biodiversity.
- ☐ I resell my electronic accessories when I no longer need them or drop them off at the designated collection points to give them a second life.

#BeBiodiversity

Section 4

Testing and Validation

R. Test Plan

Test Set-up

Participant Criteria:

- Zoo visitor in last 5 year
- Young adult: 18-30.

Methods:

Thinking Aloud
Post-test interview.

Objective of the research:

Desirability of the concept - Interview
Usability of the concept - Think Aloud and interview
Functionality of the concept - Interview

Verify assumptions:
1. People will download the app when they see its advert at the zoo to explore the relationships in the wild.
2. People do see themselves using it in multiple zoo visits.
3. People will scan all the barcodes, and people will look for surprise barcodes.
4. People understand the 'Add to community', 'Completion of community' and 'Community health' features.
5. People understand the interconnectedness screen and learn how in nature species are interdependent for survival.
6. People would like to explore the human connectedness on their own.
7. People are willing to take the pledge, join the community and follow the behavior in their daily life and share their pledges.
8. People like to be prompted with new learning resources and motivating beh. change messages.
9. People do see themselves using the app at home to know more about ways in which they can support.
10. The amount of information is OK.
11. The navigation is easy to understand.
12. Calling it a "community" makes it relatable to people.

Procedure:

1. Introduction of the designer(me) - **00:00**
2. Introduction to the project and the concept.
3. On the scale:
    a. What kind of a person are you?
        i. I'm barely concerned about the environment - sometimes I can't sleep at night.
        ii. Animals are animals, nothing more - Animals are amazing and I love knowing more about them.
4. Start the story: **00:03**

Me: Imagine your last visit at the zoo. Who did you visit with?

/eg. User: I think it was me and my boyfriend and my brother. The three of us.

Me: Alright, so imagine, you guys are visiting the zoo. You show your tickets and you enter the zoo. Because of Corona, there are three one-way routes through the zoo. You choose one of them and you follow the arrows on the ground. You arrive at the Africa section, where you see this advertisement. (Slide 1 to 10) ⟵——————————— **Clickable link**

Me: You scan the code on the board and you install the app.While the app is being installed, you continue walking towards the first animal, a Pygmy Hippopotamus. You see the hippo, sitting and eating some grass. While you're watching it, your (brother) points at the QR code on the signage. You remember about the app and you open it on your phone.
    (Give them the phone: Start the prototype)
    They sign up, and follow the instructions with the hippo and end at the community screen.(Slide 13,14)

African Dogs
Me: Now you continue the route on the zoo. From the hippos you walk for a while towards the next animal - African wild dogs. As you walk in, you see a barcode on the information board. You want to scan it, so you open the app, and continue from where you left off.
    (Slide 16 to 23)
    Continue the app.
    (Slide 24)
Warthog
Me: Now you continue back with the route on the zoo. Just a brief walk leads you to another animal - A warthog. As you walk in, you see a barcode on the information board. And of course you scan it.
    (Slide 25 to 28)
    Continue the app
    (Slide 29)

Zebra
Me: You now know that there is one more missing species in your community, and you move to the next animal - a zebra. This time, you can't scan the barcode, but the zebra is right in front of you, so you open the scanner and scan the zebra
    (Slide 30 to 34)
    Continue the app
    (Slide 35)
Giraffe
Me: The Giraffes are right next to zebras. So you walk to the balcony and find the giraffes. You scan them too.
    (Slide 36, 37)
    Continue the app
Me: Now as you start to move away, your brother points out a QR code, which is rather stuck on a pole. You're thinking, where does this lead to? And of course you scan it.
    (Slide 40 to 42)
Me: Now curious as to know more about the missing species. Meanwhile your brother proposes to eat an ice cream and sit for a while. So you go to the ice cream place, get the ice creams and sit on the table. As you are sitting together, you take out your phone and start exploring more of the app.
    Instructions: There are certain parts of the app that work and you'll see them in blue, but otherwise you can go all the way.

Questions after the test

Desirability:

1. How was your overall experience with using the app?
    a. What are the two things that you like?
    b. What are the two things that you did not like?
2. How do you like the prospect of discovering more of the wild through this app?
3. When you go again to the same zoo, would you like to use it?
    a. And to a different zoo?
4. If you want to find out about positive behaviors you can do in your daily life, would you use this app?
5. Would you like to join a community through the app?
6. Would you like to have a feature of extra resources? (Can it be on the website, rather the app?)
7. Would you like to keep the Ecology notebook?

Functionality

1. What did you learn out of using the app?
   Specific learning
   Generic learning

2. Did the term "community" make it relatable to you?
3. Do you see the importance of variety of life for community health?
4. Do you see the importance of community health for your own survival? Why and why not?
5. Do you see how these communities are threatened due to human activities?
6. Do you see how you can support the conservation of these communities?

Deeper goal:
- I see myself as connected to the animal world and the animal world matters to me.

Usability

Effectiveness
1. Did you understand the content provided on the screen?
   a. Phrases - Community health?
   b. Information
   c. Visual
2. Did you feel information overload?

3. Ask them to perform these actions:
   a. Scan and add animals in the community.
   b. Find out how are you connected?
   c. Find out positive actions you can do.

Comfort
4. How easy it was to use the app?

**Slide 1 t 10 : From entering the zoo
to downloading the app**

1.

2.

3.

4.

5.

6.

7.
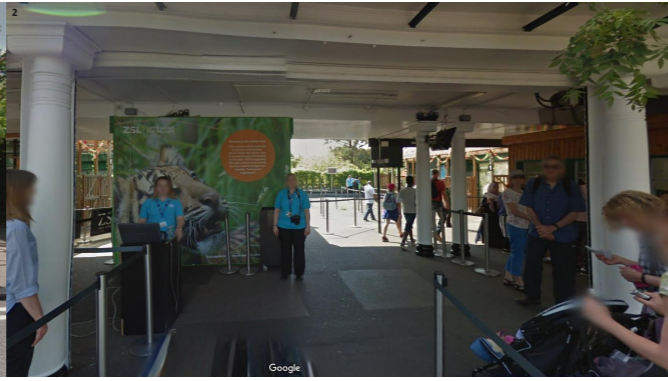
8.

9.

10.

Slide 11 to 15 : Scanning the first QR code and adding Hippo to the community
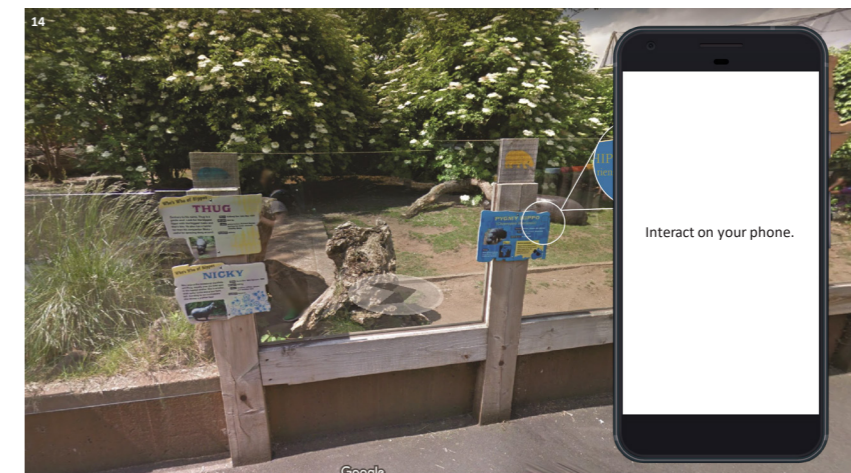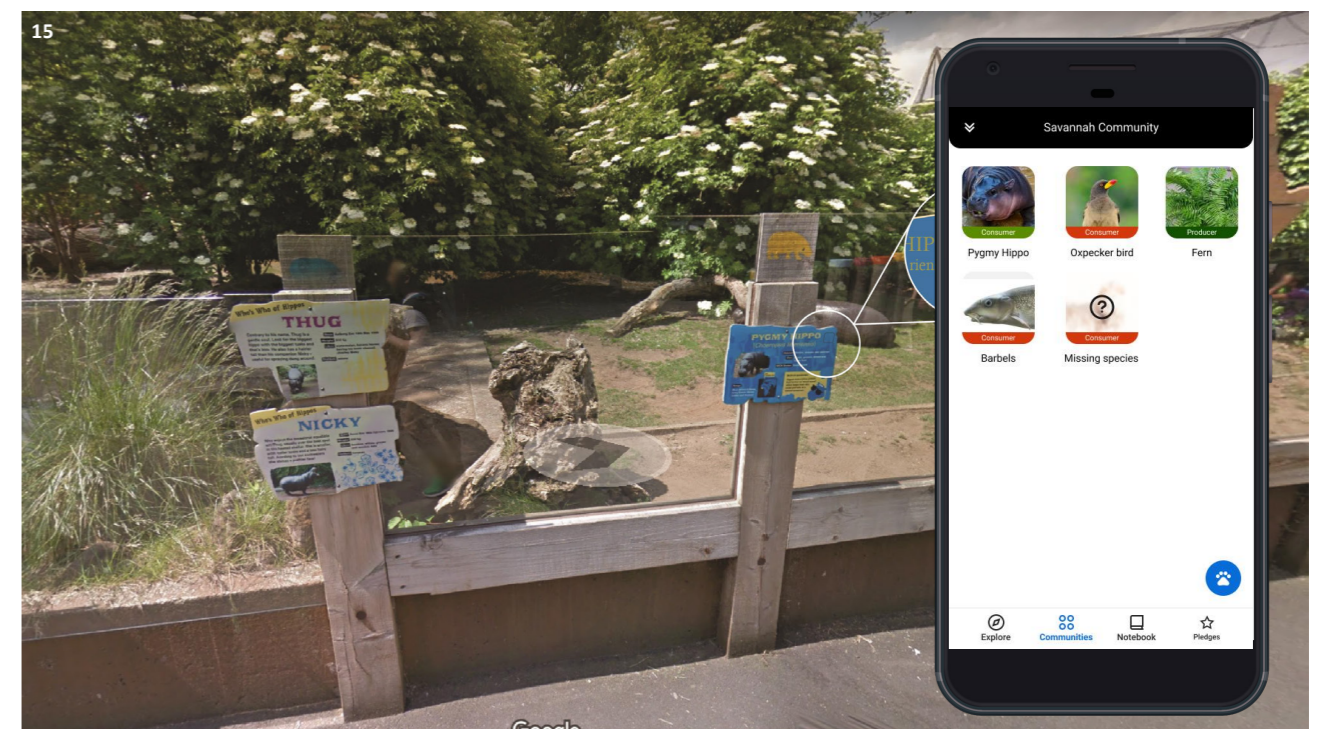

11.

12.
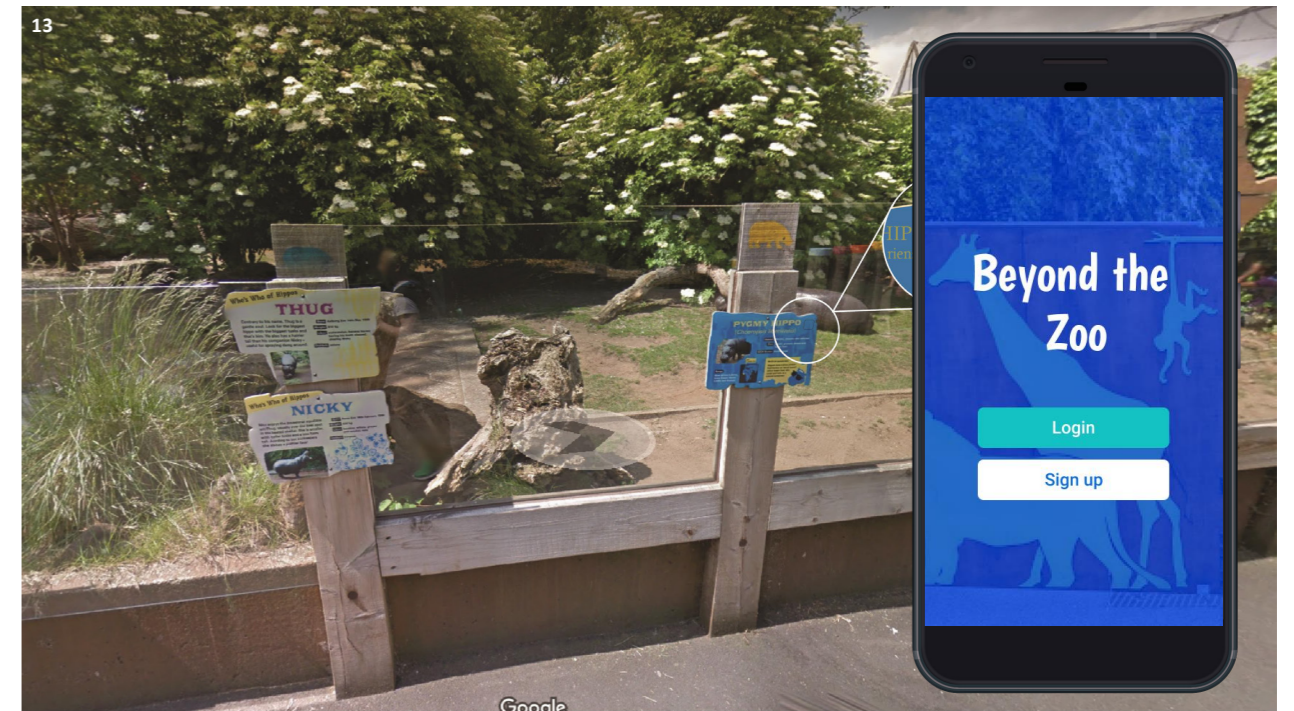
13.

14.

15.

Slide 16 to 24 : Moving to the next animal : African wild dogs
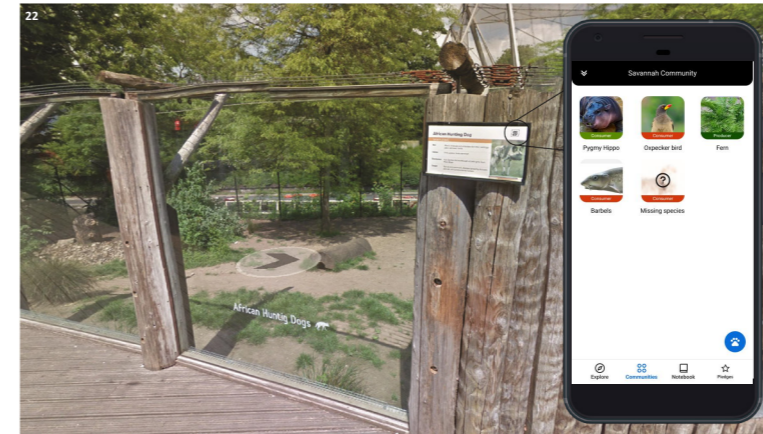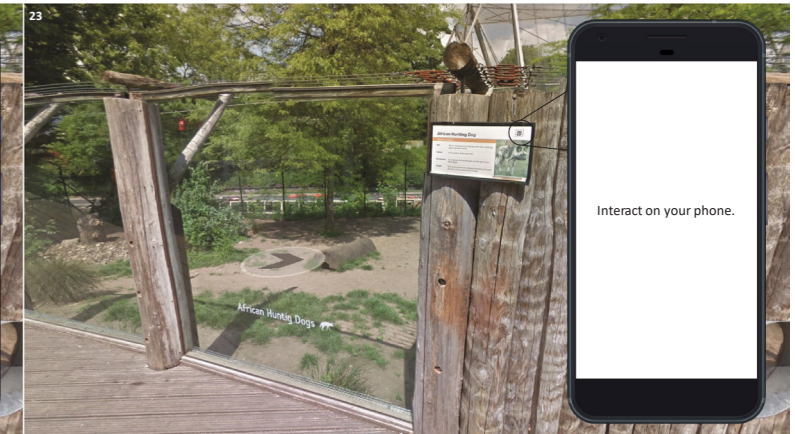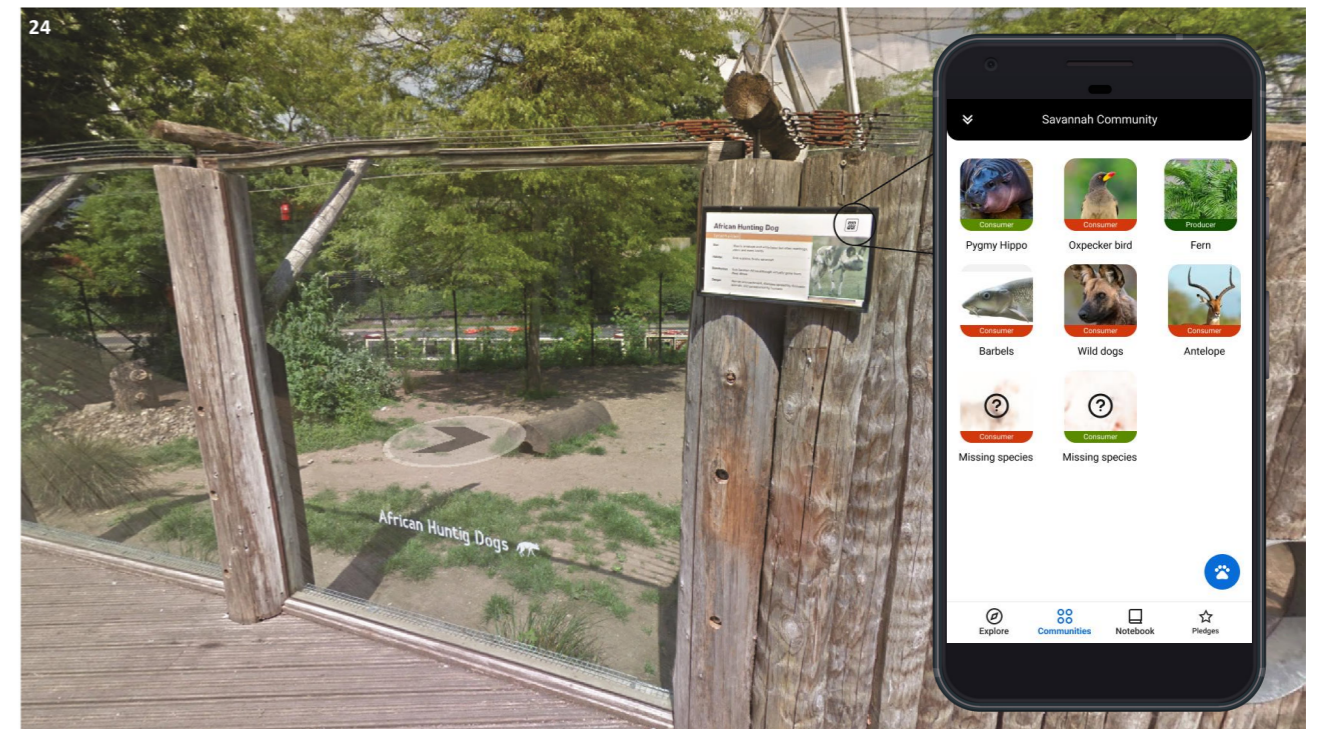

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Slide 25 to 39 : Visiting next animals : Warthogs, Zebras and Giraffe
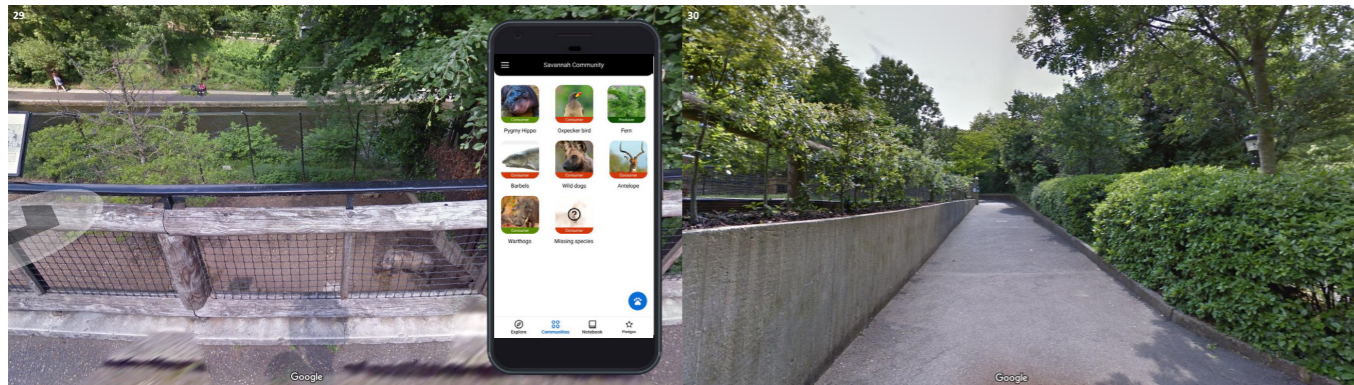

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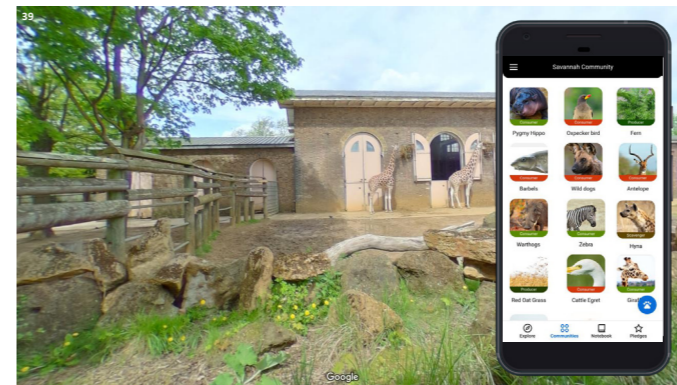
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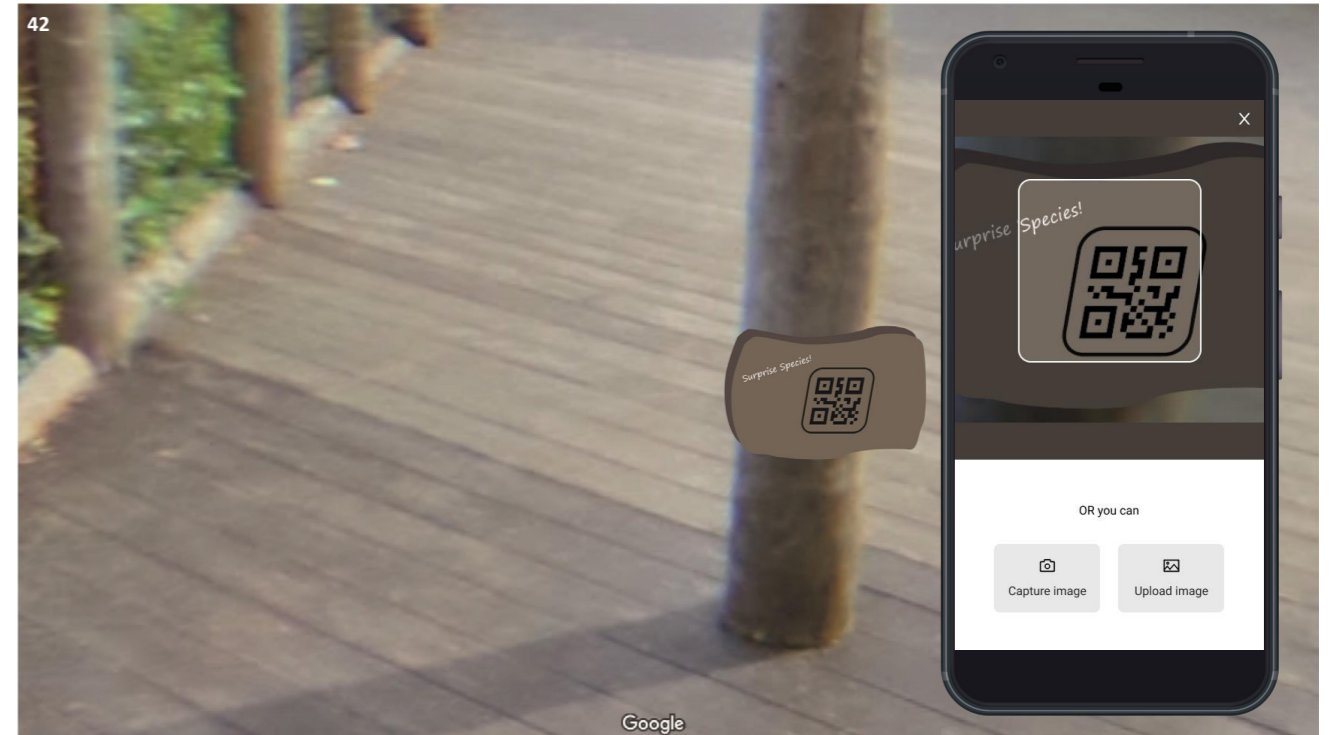
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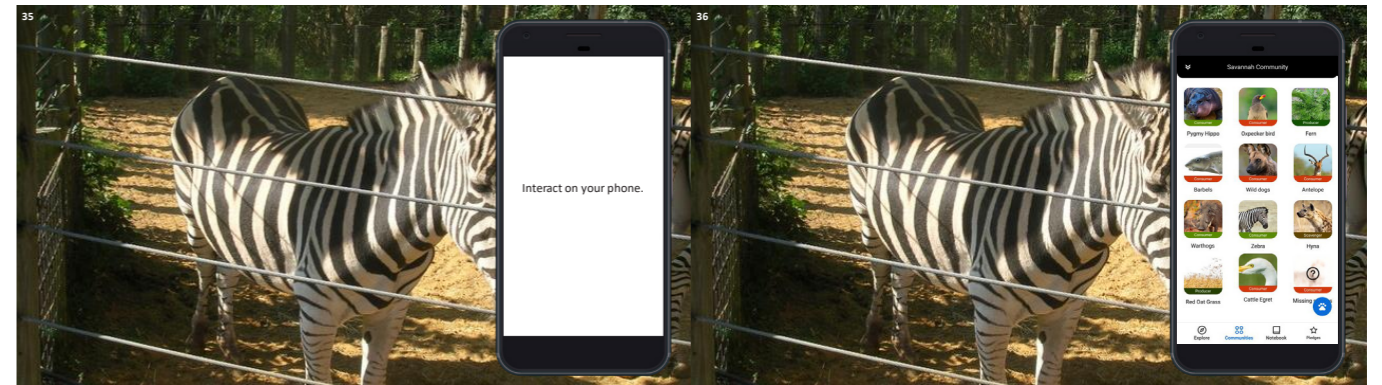
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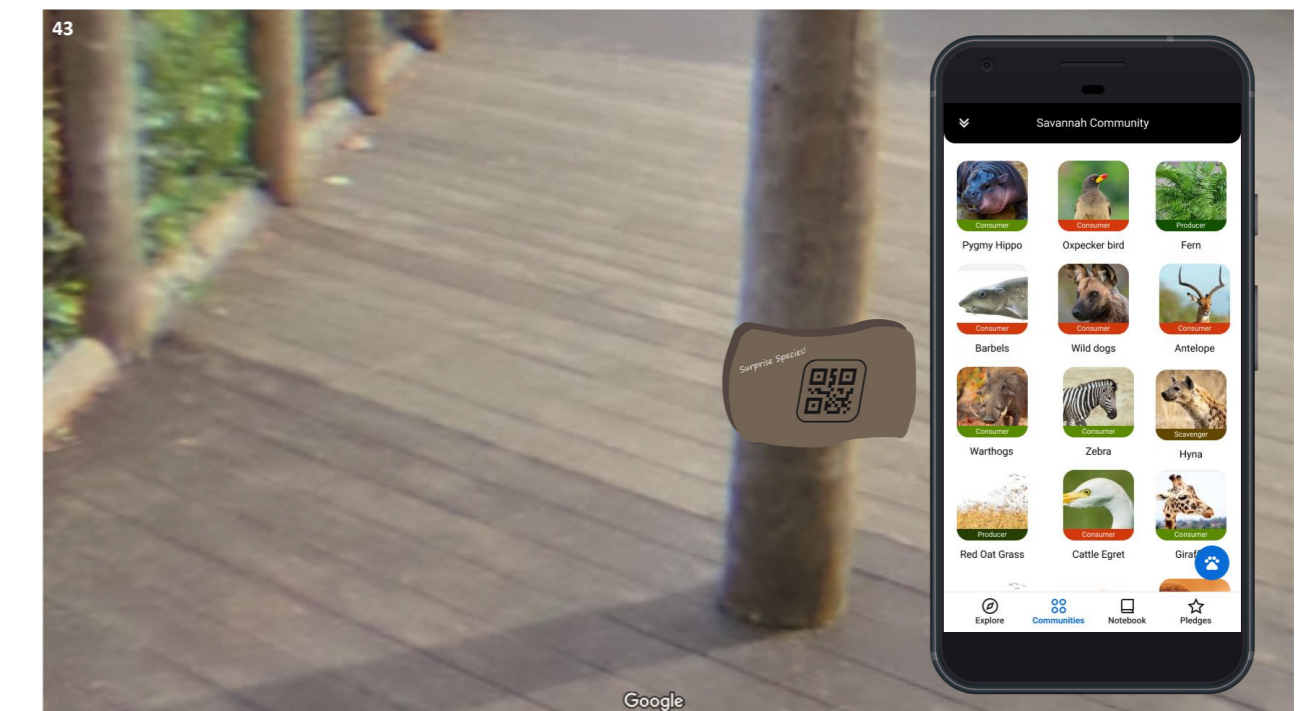**Slide 40 to 43 : Finding a secret species.**

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S.   Interview guide for Validation

Interview guide for Validation

- **Gratitude**
- **Introduction of me and the project**
- **Research findings -**
  - The relationships are not emphasized: between animals and human - animal world relationship. People don't know why is biodiversity important or even necessary.
  - Changing how one perceives one self can change their behaviors in drastic ways, but we don't see the our relationship with the animals world, and we see ourselves as separate.
  - And in the zoo, the animals are mostly kept separately and there's hardly information about the relationships between animals and our connection with it.
  - Based on these findings, I designed a concept that follows a strategy: Show, Sensitize, Inspire.
- **Purpose of today's discussion: Practicality of the concept.**
- **Showing the concept**

Interview

Research Questions:

1. How does the concept fit to the context of informal zoo education?

Other prompts:

1. From your own personal experience as an educator, what are the things that you like and don't like about this concept?
2. How do you see the idea of educating people about relationships between the animals and between humans and animals?
3. How do you think the visitors will welcome this idea?
4. What are the things that would be difficult for the visitors to consume?
5. What would you change in this concept?

2. How practical is it for the zoo to implement this?

Other prompts:

1. Would you like to implement this? Why and Why not?
2. What are the difficulties that zoos may face in adopting this concept?
3. How will you approach implementing this?

Section 5

Project Brief

T. Project brief

DESIGN FOR our future

TUDelft

IDE Master Graduation
Project team, Procedural checks and personal Project brief

This document contains the agreements made between student and supervisory team about the student's IDE Master Graduation Project. This document can also include the involvement of an external organisation, however, it does not cover any legal employment relationship that the student and the client (might) agree upon. Next to that, this document facilitates the required procedural checks. In this document:

- The student defines the team, what he/she is going to do/deliver and how that will come about.
- SSC E&SA (Shared Service Center, Education & Student Affairs) reports on the student's registration and study progress.
- IDE's Board of Examiners confirms if the student is allowed to start the Graduation Project.

⚠ **USE ADOBE ACROBAT READER TO OPEN, EDIT AND SAVE THIS DOCUMENT**
Download again and reopen in case you tried other software, such as Preview (Mac) or a webbrowser.

STUDENT DATA & MASTER PROGRAMME
Save this form according the format "IDE Master Graduation Project Brief_familyname_firstname_studentnumber_dd-mm-yyyy".
Complete all blue parts of the form and include the approved Project Brief in your Graduation Report as Appendix 1 !

family name	Patel	4162
initials	I	given name	Ishit Sureshbhai
student number	4799518	
street & no.		
zipcode & city		
country		
phone		
email		

Your master programme (only select the options that apply to you):

IDE master(s): ( ) IPD ( ) DfI (★) SPD

2nd non-IDE master: _____

individual programme: _____ (give date of approval)

honours programme: (★) Honours Programme Master

specialisation / annotation: ( ) Medisign

( ) Tech. in Sustainable Design

( ) Entrepeneurship

SUPERVISORY TEAM **
Fill in the required data for the supervisory team members. Please check the instructions on the right !

** chair	Dr. Jotte de Koning	dept. / section:	SDE/DfS
** mentor	Dr. Nynke Tromp	dept. / section:	HCD/studiolab
2nd mentor	Dr. Madelon Willemsen		
	organisation:	British and Irish Association of Zoos and Aquariums	
	city:	London	country:	England

comments (optional)

⚠ Chair should request the IDE Board of Examiners for approval of a non-IDE mentor, including a motivation letter and c.v..

⚠ Second mentor only applies in case the assignment is hosted by an external organisation.

⚠ Ensure a heterogeneous team. In case you wish to include two team members from the same section, please explain why.

APPROVAL PROJECT BRIEF
To be filled in by the chair of the supervisory team.

chair   Dr. Jotte de Koning   date 02 - 03 - 2020   signature

Jotte de Koning - IO
Digitally signed by Jotte de Koning - IO
Date: 2020.03.19 16:02:51 +01'00'

CHECK STUDY PROGRESS
To be filled in by the SSC E&SA (Shared Service Center, Education & Student Affairs), after approval of the project brief by the Chair.
The study progress will be checked for a 2nd time just before the green light meeting.

Master electives no. of EC accumulated in total: 7   EC

Of which, taking the conditional requirements
into account, can be part of the exam programme   0   EC

List of electives obtained before the third
semester without approval of the BoE

★ YES   all 1st year master courses passed

○ NO   missing 1st year master courses are:

name   C. van der Bunt   date 19 - 05 - 2020   signature

FORMAL APPROVAL GRADUATION PROJECT
To be filled in by the Board of Examiners of IDE TU Delft. Please check the supervisory team and study the parts of the brief marked **.
Next, please assess, (dis)approve and sign this Project Brief, by using the criteria below.

- Does the project fit within the (MSc)-programme of the student (taking into account, if described, the activities done next to the obligatory MSc specific courses)?
- Is the level of the project challenging enough for a MSc IDE graduating student?
- Is the project expected to be doable within 100 working days/20 weeks ?
- Does the composition of the supervisory team comply with the regulations and fit the assignment ?

Content: ★ APPROVED   ○ NOT APPROVED

Procedure: ★ APPROVED   ○ NOT APPROVED

- the title does not properly describe the content of the project

comments

name   Monique von Morgen   date 26 - 05 - 2020   signature

 Design for zoos and aquariums towards a sustainable future for species   project title

Please state the title of your graduation project (above) and the start date and end date (below). Keep the title compact and simple.
Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.

start date   02 - 03 - 2020   05 - 08 - 2020   end date

INTRODUCTION **
Please describe, the context of your project, and address the main stakeholders (interests) within this context in a concise yet complete manner. Who are involved, what do they value and how do they currently operate within the given context? What are the main opportunities and limitations you are currently aware of (cultural- and social norms, resources (time, money,...), technology, ...).

The world we live in today is debated to be amidst the sixth mass extinction event called as 'Holocene Extinction.' Mass extinction events are defined as the loss of the majority of species in a relatively short geological time, caused by a catastrophic natural event. The rate at which species have gone extinct is a hundred times greater than all the previous events and according to the United Nation's research of the biodiversity and ecology dept. we are expected to lose about one million species of plants and animals within the time frame of decades because of human activities.(IPBES, 2017)

Loss of biodiversity is more than just a loss of certain organisms from the planet. It is a potential threat to the survival of life on the planet. Extinction of one species disrupts not only the food chain, but also contributes to the creation of circumstances which are unfavorable to life of all species, including humans. For example, with the decline in population of vultures in India, a steep rise in number of dogs was observed and dogs being a leading cause of rabies, the association between loss of vultures and rise of human health impact of rabies was found to be significant (Markandya, 2008). The problem is multifaceted as, beyond human health, it also influences the customs of our culture (Worrall, 2017). Reversely, changes in our customs owing to the changes of our lifestyle and other factors, are also negatively impacting biodiversity.
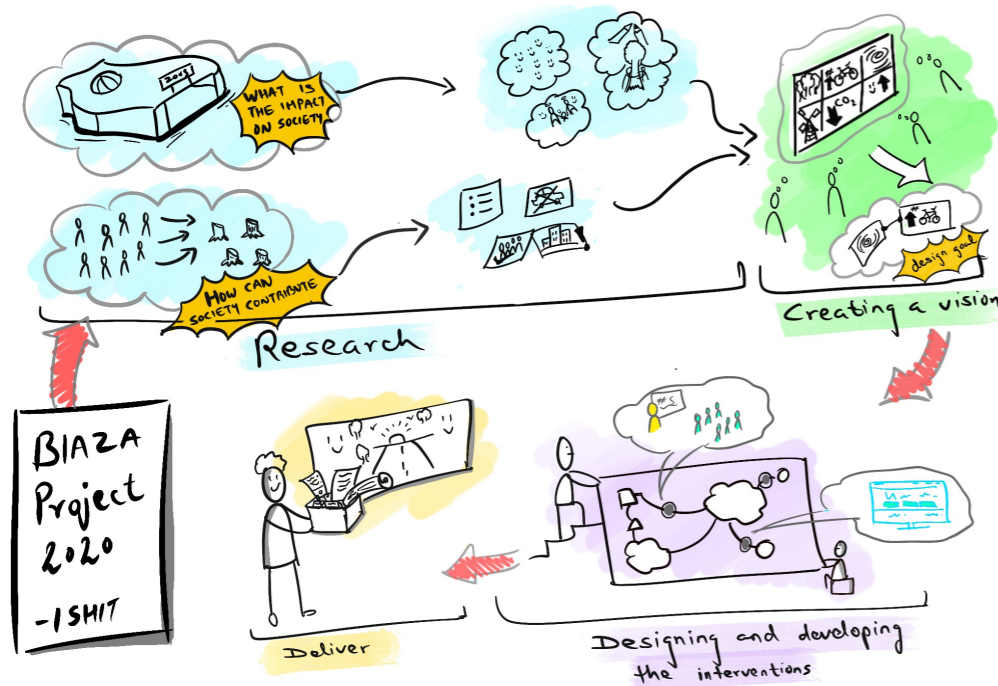
In modern society, zoos are a significant link that connects public with nature. Unlike the zoos of the late 19th century where animals were captured to showcase power, today's zoos are interested in knowledge. They are actively pursuing numerous opportunities in the field of conservation of biodiversity thorough education, research and conservation projects and creating a lasting impact in the society.

British and Irish Association of Zoos and Aquariums (BIAZA, UK) is non profit organization whose vision is to be a powerful force in the care and conservation of the world. It is a professional organization that represents its 122 members and promotes the value of good zoos and aquariums. BIAZA supports their member zoos and aquariums in carrying out various projects in the domain of conservation, education and research that contributes to positive impact in the natural world. To produce the needed support, the organization leverages the knowledge and skills of the representatives from the member organizations and facilitates networking within their community. Moreover, BIAZA also has a strong system of governance that holds each member accountable to be the best in the sector of zoos and aquariums. With over 32 million visitors to BIAZA members, the zoos play a critical role in engaging society at all levels to take action to halt rapid decline in species and damage to precious ecosystems.

At this point, the society is in the state of sustainability transition. The zoos and aquariums, being a significant link between the urban society and nature, are compelled to play an impactful role to catalyze the transition. As indicated by Maynard, a way forward for conservation organizations can be to focus their strategic planning towards mobilizing their large audiences towards direct activities that reduce the threat to biodiversity (2008). The project involves exploration and re imagination of the activities performed by the BIAZA members and consequently a strategy for BIAZA to support and reinforce these new roles and activities. The immediate stakeholders of the project are BIAZA, its member organizations and public. Since BIAZA is an organization at a higher hierarchy compared to an individual zoo, the project presents an opportunity to channel the strengths of 122 member zoos and organizations towards creating a greater impact in the field of conservation of biodiversity.

space available for images / figures on next page

TUDelft

introduction (continued): space for images

image / figure 1:   Phases of the project

TO PLACE YOUR IMAGE IN THIS AREA:
* **SAVE THIS DOCUMENT TO YOUR COMPUTER AND OPEN IT IN ADOBE READER**
* **CLICK AREA TO PLACE IMAGE / FIGURE**

PLEASE NOTE:
* **IMAGE WILL SCALE TO FIT AUTOMATICALLY**
* **NATIVE IMAGE RATIO IS 16:10**
* **IF YOU EXPERIENCE PROBLEMS IN UPLOADING, COVERT IMAGE TO PDF AND TRY AGAIN**

image / figure 2:

PROBLEM DEFINITION **
Limit and define the scope and solution space of your project to one that is manageable within one Master Graduation Project of 30 EC (= 20 full time weeks or 100 working days) and clearly indicate what issue(s) should be addressed in this project.

At its core, loss of biodiversity is a problem about unsustainable and illegal activities of people, businesses and organizations. Along with zoos and aquariums worldwide, BIAZA members(BMs) are continuously putting their efforts in trying to save what is lost in the wild or what is at the brink of extinction with various in-situ and ex-situ conservation programs. Their zoos and aquariums provide an opportunity for people to engage with the otherwise distant wilderness through visiting and attending workshops. However, with almost a quarter of the UK population visiting BM every year, they have a greater potential to positively influence society and drive a change. In this time of almost mandatory sustainable transition of society, how can zoos leverage their capacity of reaching millions and become agents of positive change in the society?

ASSIGNMENT **
State in 2 or 3 sentences what you are going to research, design, create and / or generate, that will solve (part of) the issue(s) pointed out in "problem definition". Then illustrate this assignment by indicating what kind of solution you expect and / or aim to deliver, for instance: a product, a product-service combination, a strategy illustrated through product or product-service combination ideas, ... In case of a Specialisation and/or Annotation, make sure the assignment reflects this/these.

The Research Question the project answers is "In this time of almost mandatory sustainable transition of society, how can zoos leverage their capacity of reaching millions and become agents of positive change in the society?"

In this graduation project, firstly, the various activities regarding inspiring and educating society about conservation of biodiversity that BIAZA and its members are currently engaged in will be explored (via interviews and desk research.) Secondly, (through available literature and interviewing experts and visitors), the current notion/perception/impact on people will be giga-mapped(Sevaldson, 2011). Parallelly, (through literature and interviews), the necessary social change that can positively influence the field of conservation fill be explored. Through these two parallels, leverage points where BMs can intervene effectively will be identified. The intervention concepts and the support structure that BIAZA needs to develop for the members will be prototyped and iterated and thfinal results will be delivered to BIAZA. During the project, choices of using certain tools and methods will be made according to the complexity of the situation. It is important for the project to receive inputs and feedback from various different experts on content (Giga-map and vision) I create, hence their accessibility is important.

The possible outcome of the project can be design of a new activity for BIAZA that can help them achieve their own vision on 'Becoming a powerful force in the care and conservation of natural world' effectively. This new activity could be imagined as a new product service system that BIAZA offers to the member organizations to achieve the defined vision. One of the important outcomes of the project will be the Giga-map(Sevaldson, 2011) which will be the source of inspiration and understanding for the future projects of BIAZA.

PLANNING AND APPROACH **

Include a Gantt Chart (replace the example below - more examples can be found in Manual 2) that shows the different phases of your project, deliverables you have in mind, meetings, and how you plan to spend your time. Please note that all activities should fit within the given net time of 30 EC = 20 full time weeks or 100 working days, and your planning should include a kick-off meeting, mid-term meeting, green light meeting and graduation ceremony. Illustrate your Gantt Chart by, for instance, explaining your approach, and please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any, for instance because of holidays or parallel activities.

start date   2 - 3 - 2020   5 - 8 - 2020   end date
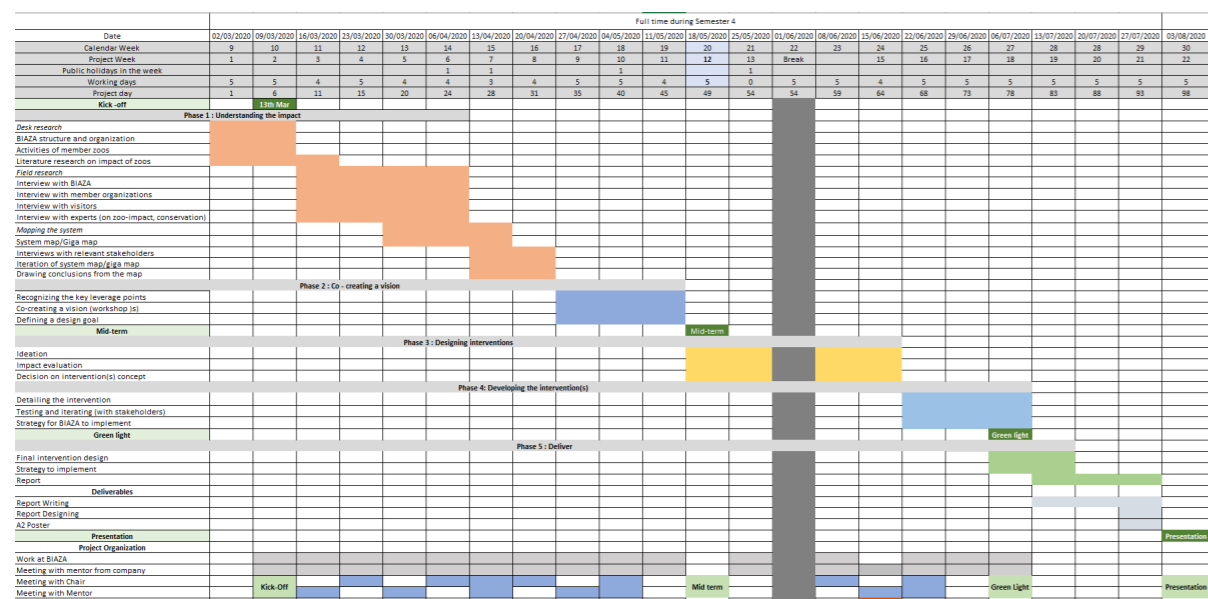
My approach to the project is not defined by any particular methodology, but by the major phases of the project. I expect these phases will overlap extensively during the project, however the plan attached above should act as a guide in decisioning during the project. In the project, co-designing(Sanders, 2000) and tools from systems oriented design(Sevaldson, 2013) will be used as sense making methods and tools from Transition design such as Winterhouse Social Design Pathways Matrix(2015) will be used to evaluating the current impact and designed intervention.

My working days at BIAZA office will vary depending on the project phase necessity of me being in the office.

After the mid-term, I want to take a break for a week for traveling in Europe with my family. The break is meant to refresh me and give me a little time-off from the project to gain some fresh perspective.

In the seventh week of the project, in addition to a public holiday I am taking one day off my project to finish the report of my elective course of Creative Facilitation.

As a part of my Master's program, I am also pursuing an Honors Program. I am allocating one day every alternate week to work on the Honors project.

Travel to Dublin: As per my initial meeting with Dr. Madelon, I will be traveling to Dublin in the week of 8th June to present a tangible concept at IUCN conference 2020. For now I have planned it as a part of my 20 week project, but the project may get delayed for a week in order to prep and travel for the conference.

MOTIVATION AND PERSONAL AMBITIONS

Explain why you set up this project, what competences you want to prove and learn. For example: acquired competences from your MSc programme, the elective semester, extra-curricular activities (etc.) and point out the competences you have yet developed. Optionally, describe which personal learning ambitions you explicitly want to address in this project, on top of the learning objectives of the Graduation Project, such as: in depth knowledge a on specific subject, broadening your competences or experimenting with a specific tool and/or methodology, ... Stick to no more than five ambitions.

Over the course of my MSc, I developed an interest in Systems thinking and a systemic way of looking at a context. Based on my interest I explored various tools like system maps, feedback loops and leverage points through my other projects in the course. In my graduation project I wish to adopt and use some of these tools from systems thinking (Meadows, 2008) and system oriented design(Sevaldson, 2013) to make sense of the context and design interventions respectively. Through my elective of Creative Facilitation, I have learned ways to facilitate a session with multiple stakeholders which I would want to practice in my graduation. Based on the availability of time, I would also like to use some tools from co-creation(Sanders and Strappers 2008), to get a first hand experience on carrying out co-creation sessions.

Ambitions:
Learn to make meaningful system maps/giga maps and derive useful insights from it.
Learn to re-frame the situation and generate a creative idea and prototype in the real context.
Learn to facilitate a creative session with multiple stakeholders.
Learn to embrace the ambiguity and complexity of a project and remain holistic.
Learn to understand and communicate my shortcomings effectively and ask for help.

References:

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FINAL COMMENTS
In case your project brief needs final comments, please add any information you think is relevant.