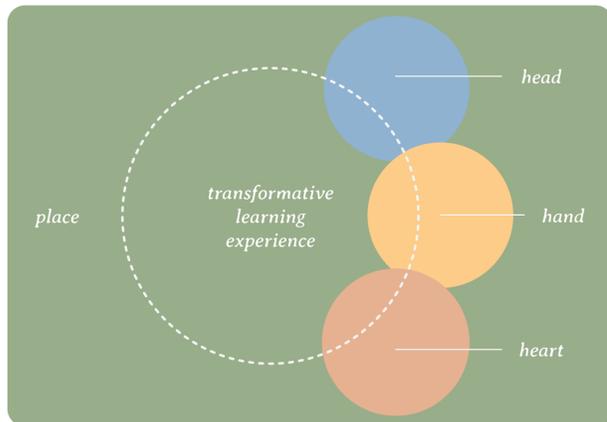


Biodiversity loss is happening and a change in human activity can make a difference. That is why this thesis set out to investigate how Naturalis can make (digital) educational products that contribute to the transformational societal change necessary to enable a biodiverse future.

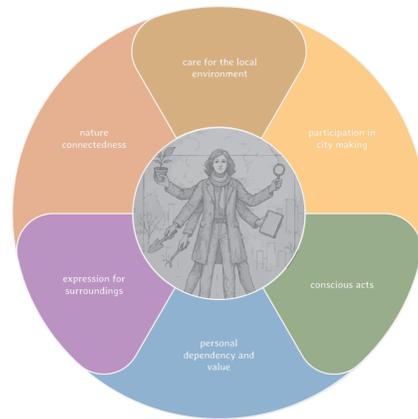
Biodiversity positive attitudes

encouraging a biodiversity positive future by providing perspectives for action through a nature education platform for primary schools.



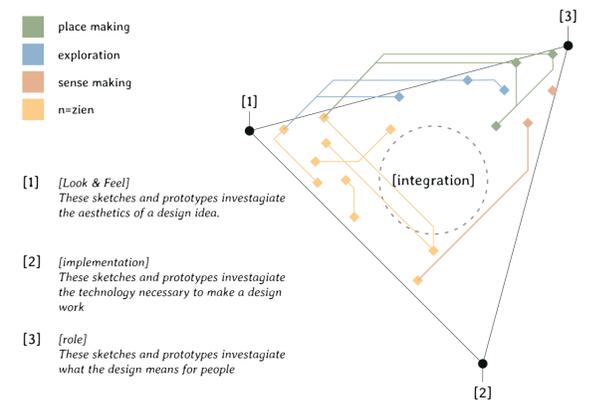
Education and more than human design

During this thesis a natural fit between more than human design and the education philosophy of constructionism was found. Both disciplines emphasise the situated and embodied nature of our existence. From this perspective we see that learning and education are inherently tied to the world of experience of the pupil. So in our search for enabling biodiversity positive attitudes we need to consider the bigger picture. Singleton proposes that to create a transformative learning experience we need to be considerate about the environment it takes place [place], the interaction with others and opportunity for reflection [head], the activities and actions that are possible [hand] and the deeper understanding and connection with the topic [heart] (2015).



Keystone citizen framework

Based on the overlap between education and design a framework was conceptualised to reframe what a user can be in a user-centered design approach. Here it was discovered that a biodiversity positive attitude manifests itself in six overlapping domains. Through an array of means, activities that contribute to the development of one or more of the domains, the biodiversity positive attitude is carried out. Through one of four categories of motivational drivers people are engaged with the topic. These manifestations, means and drivers together form a design framework that function as a template for delimitating goals, formulating design directions and evaluating ideas.



Exploratory development

Building on the manifestations, means and drivers from the keystone citizen framework and a delimitation based on the brief from Naturalis a design goal tree was created. This tree visualised the different avenues this project could take. To embrace the exploratory nature of this project three tracks were selected and developed in tandem to generate design insights used to later formulate a concrete design concept. To investigate these tracks, different sketches and prototypes were made based on the model proposed by Houde and Hill (1997). This iterative workflow contributed not only to design insights but also became a vehicle for discovery and learning.

N=ZIEN

A digital platform providing a primary school curriculum that teaches pupils about the ecology of their local environment through a citizen science narrative.

The N=ZIEN platform is designed by aligning the goals of the main stakeholder, Naturalis, the keystone citizen framework and a more than human design perspective. Through a series of five lessons pupils are introduced to the diversity of the ecosystem around their school. Through a citizen science narrative, the pupils are asked to go out with the N=ZIEN device and take photographs of organisms in a predetermined area. Back in the classroom they can upload these images to the N=ZIEN platform, where they can discover more about the organisms they have encountered through a chat environment. After three consecutive lessons about plants, invertebrates and vertebrates, the observations and identifications of all the pupils are combined into an ecosystem map. Based on this map, the pupils learn more about the importance of different roles and learn to analyse complex data in a child-friendly and situated way. The curriculum ends with an assignment to look for ways to improve the biodiversity of the local neighbourhood.

Houde, S., & Hill, C. (1997). What do Prototypes Prototype? In Elsevier eBooks (pp. 367-381). <https://doi.org/10.1016/b978-044481862-1.50082-0>

Singleton, J. (2015). HEAD, HEART AND HANDS MODEL FOR TRANSFORMATIVE LEARNING: PLACE AS CONTEXT FOR CHANGING SUSTAINABILITY VALUES. Journal Of Sustainability Education. <http://www.jsedimensions.org/wordpress/wp-content/uploads/2015/03/PDF-Singleton-JSE-March-2015-Love-Issue.pdf>

