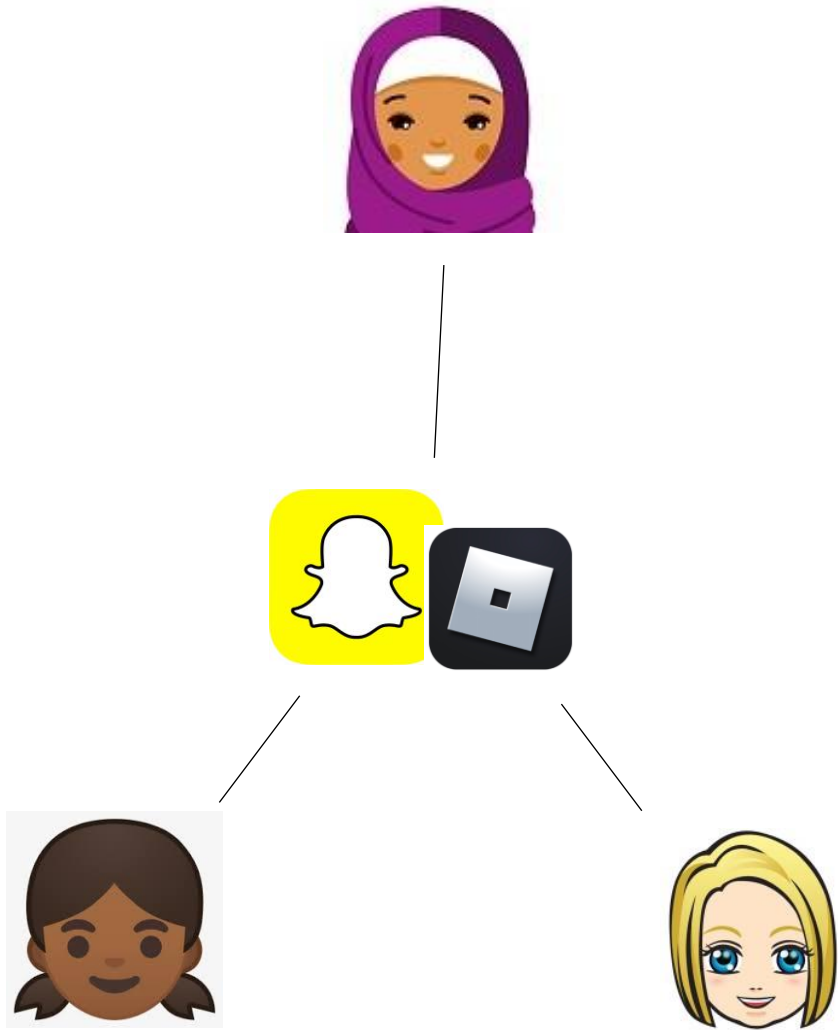


# Researching Digital Ecologies of Primary School Children



AARE Sociology of Education Webinar Series  
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# Project Team



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Project website <https://sahnd.unisa.edu.au/>

# In this presentation

Project objectives (Karen)

Conceptualising digital inclusion (Karen & Narelle)

Project methodology (Sue)

The case of Seesaw at Hakea (Sue & Karen)

The case of Bhodi, a child with ASD (Narelle)

Next steps (Sue)

# Objectives

1. To produce a **conceptual model of networked relationships**, transcending the school-home transitions model, which accounts for new roles of learners, parents/carers, teachers, education providers and technological agents.
2. To **identify forms of digital exclusion and inclusion** impacting on parents' ability to support their children's educational participation and achievement in conditions of increasing uptake of digital platforms for learning.
3. To **inform policy and educational leadership on the use of school-home connected digital tools** and services through the provision of a comprehensive analysis of their selection, management, and uptake by schools and families and their impacts on the school-home relationship.

# The digital and inclusion: Two frames



- 1. Inclusion in the digital:** full participation in the digitalisation of social, economic, political and cultural life
- 2. Inclusion through the digital:** digital assistive technologies support social/economic/cultural inclusion



# Conceptualising inclusion in the digital

From (physical) access and the digital divide to digital inclusion

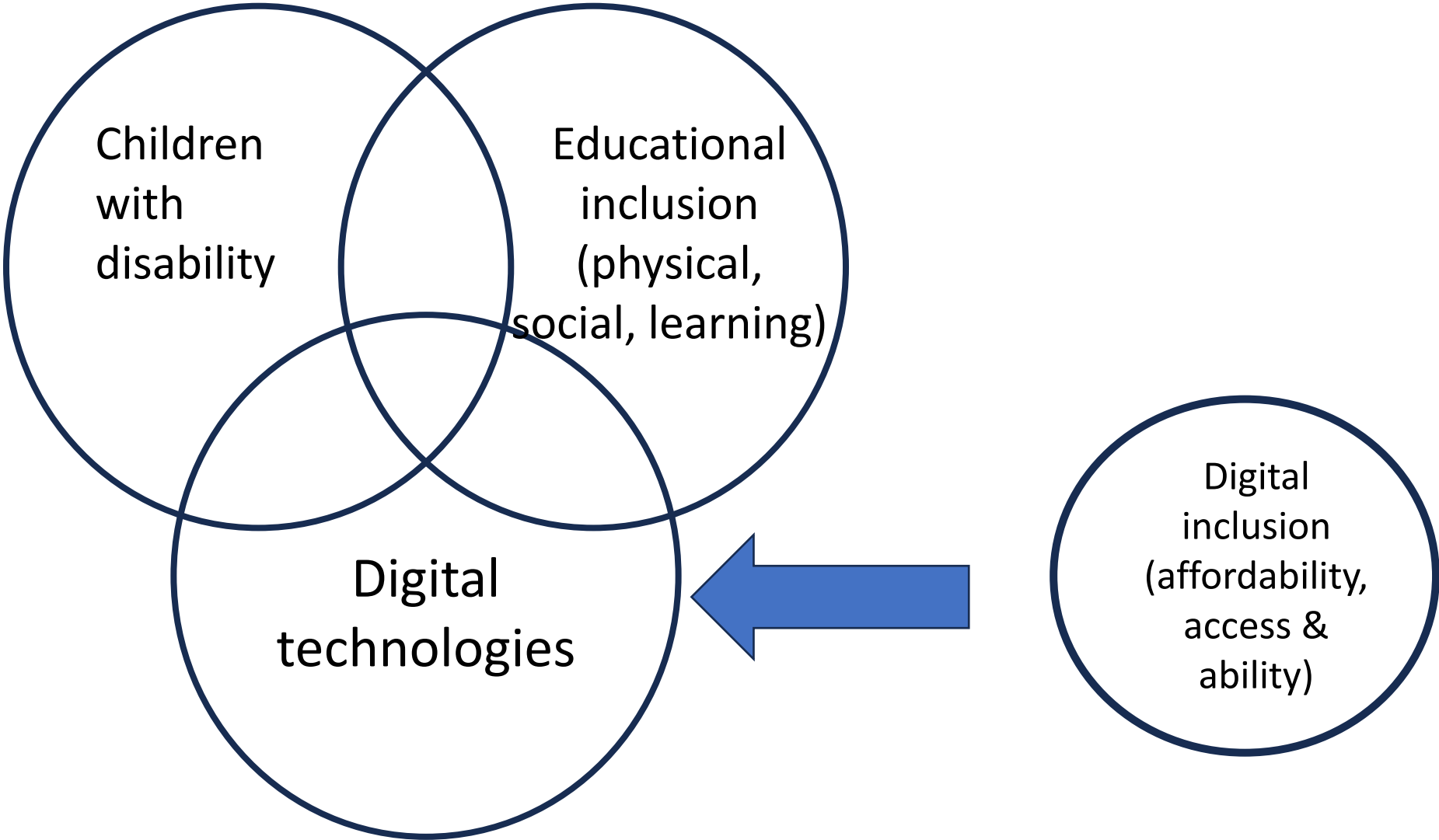
1. Access
2. Affordability
3. Digital Ability

(Australian Digital Inclusion Index (ADII)  
Thomas et al., 2023)

1. Affordable & robust broadband internet
2. Internet-enabled devices
3. Access to digital literacy training
4. Quality technical support
5. Enabling apps and online content

([Definitions - National Digital Inclusion Alliance](#))

# Inclusion through the digital for children with disabilities



Children with disability

Educational inclusion (physical, social, learning)

Digital technologies

Digital inclusion (affordability, access & ability)

# Digital Inclusion in Australia: Recent evidence

Measurement of digital inclusion using the Australian Digital Inclusion Index has consistently found an **inverse relationship** between **measures of social disadvantage** (education, poverty, and employment) and **digital inclusion on all dimensions**. Even though overall improvements have been made over time, the gap has not closed.

- 24.5% of Australians are ‘highly excluded’.
- 10.5% rely entirely on mobile phones which ‘hinders... ability to effectively access digital education, work, healthcare and some government services’
- The *Digital Ability* of mobile-only users appears to be lower than the national average which is linked to below average *Affordability* and *Access* to infrastructure.
- Highly excluded citizens are more likely to have a disability. (ADII, Thomas, 2023)



# Digital inclusion in high poverty, high diversity schools

## Evidence from the literature

- Digital and mobile technology is important in immigrant families' translocal networks (Chen et al., 2019)
- Immigrant parents' technology orientations and learning opportunities differentiated (Chen et al., 2019; Chao & Ma, 2019)
- Few teachers had the resources to assist families in 'high-needs' schools to negotiate digital challenges (An & Sue, 2022)

# Conceptual springboards for the project

## **Bronfenbrenner's ecological systems theory**

[I]nteresting linkages take a number of forms, among them the participation of the same persons in more than one setting, communications between settings, and the availability of information in one setting about the other. (Bronfenbrenner, 2005: 159).

## **Actor Network Theory**

[M]aterials (human, textual and technological or artefactual) define one another and hold one another in place (Law, 2003: 8).

Learning can be understood as emerging from what happens in distributed networks and assemblages consisting of both human and non-human matter and organisms that are in interaction (Taguchi, 2011: 8).

## **Activity Theory**

A historically evolving collective activity system, seen in its network relations to other activity systems, is taken as the prime unit of analysis. ... Activity systems realise and reproduce themselves by generating actions and operations. (Engeström, 2000, p. 964)

# Sites & participants

School	Profile	All children	Focus children	Parents	Teachers
<b>Hakea PS</b>	Culturally & linguistically diverse Economically disadvantaged Integrated ICT	19	6	6	6
<b>Saltbush PS</b>	Regional town Low to mid SES Limited ICT	15	4	5	1
<b>Tree Fern College</b>	Private faith based K – 12 Middle to upper middle class Well resourced ICT	28	6	4	5
<b>Goodenia PS</b> (PhD in progress)	Small suburban state school Middle-class community		1	1	
<b>Totals</b>		<b>62</b>	<b>17</b>	<b>16</b>	<b>12</b>

# 'How Do You Connect' Interactive Interview

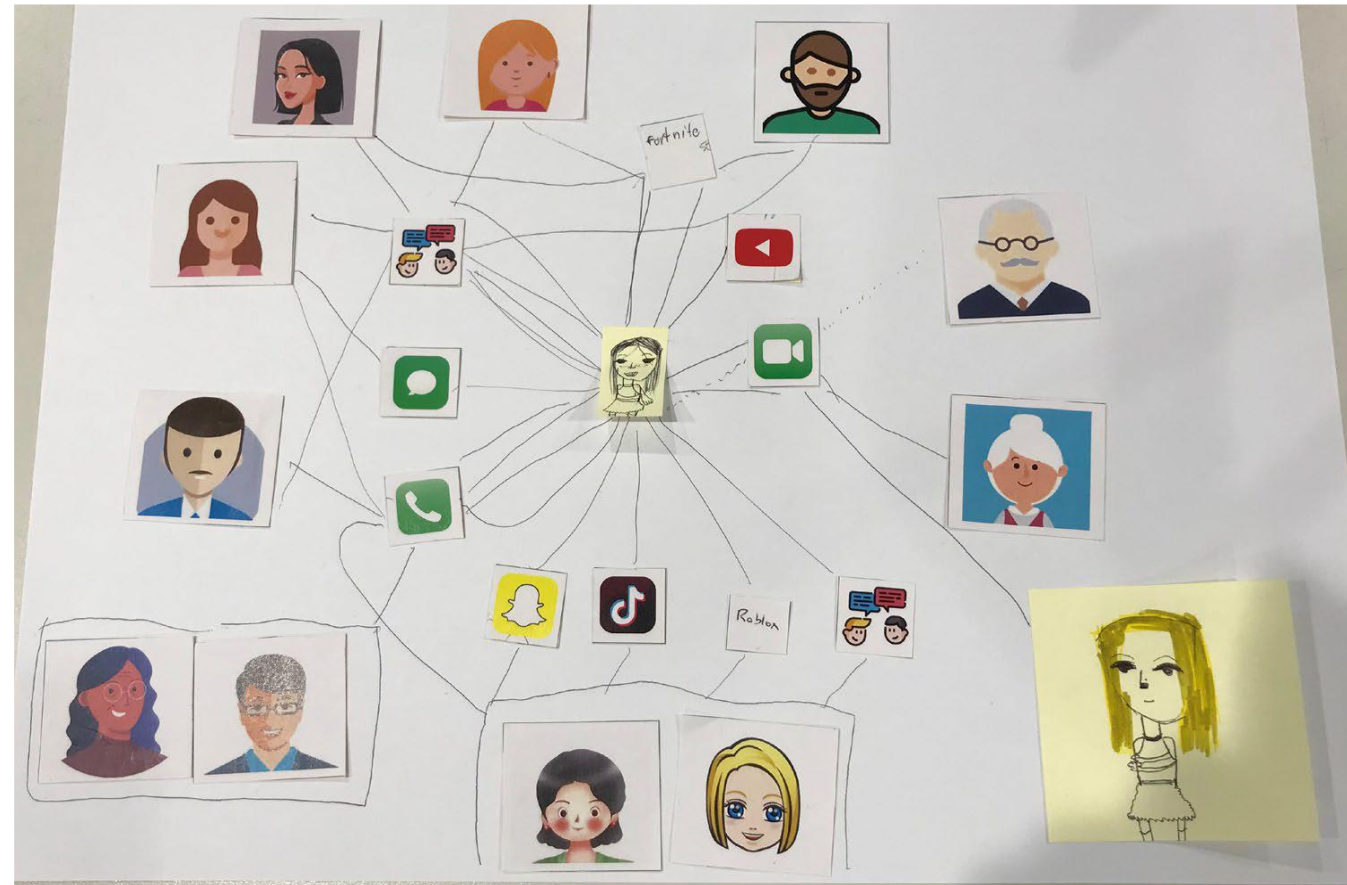
All children participated in this activity.

Using people cards, app cards & emoji cards, children created network diagrams.

During this process, the researcher enters into conversation with the child.

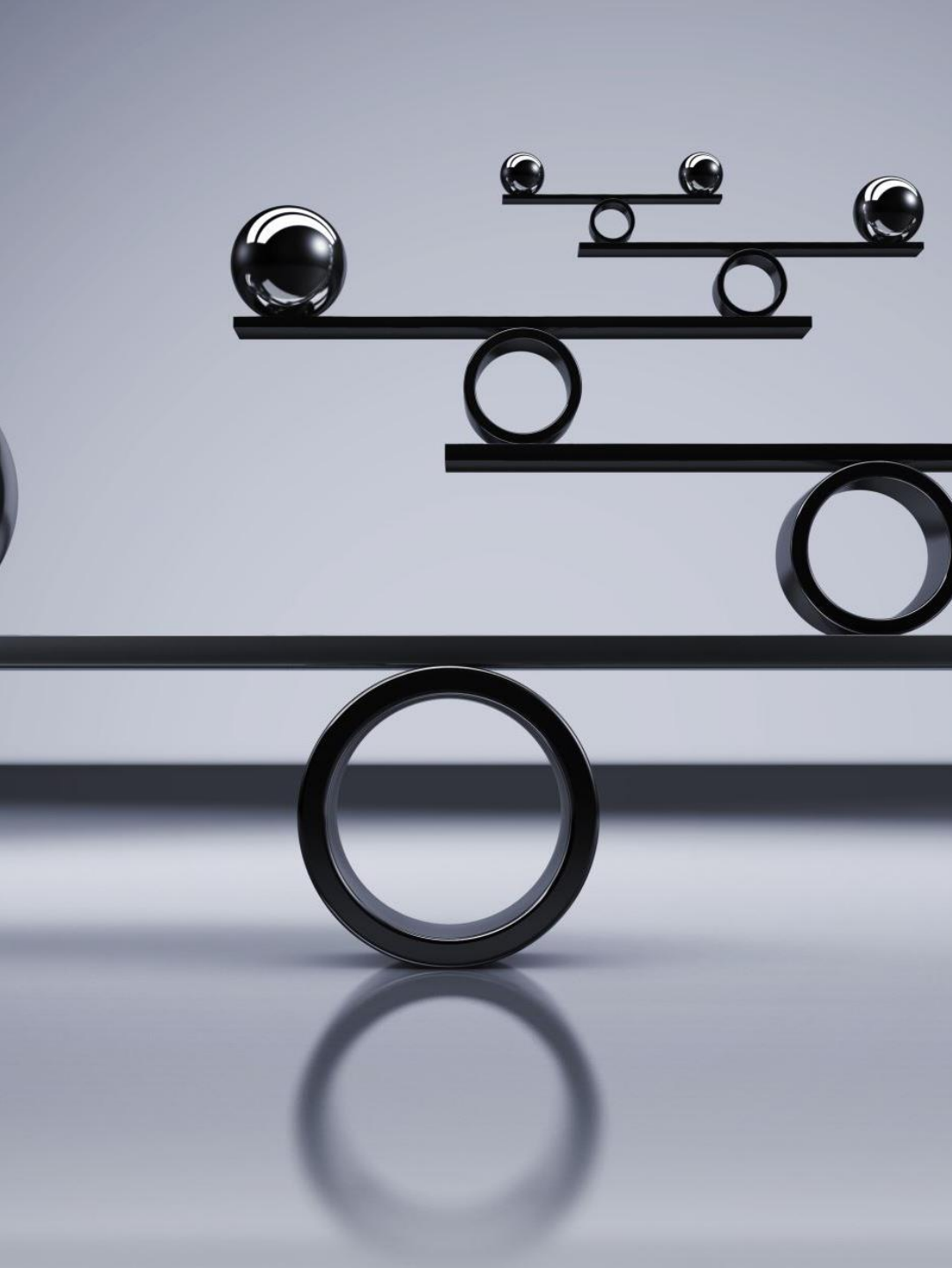
Quantitative analysis generates findings regarding network size, number/type of apps, school comparisons, gender comparisons.

Qualitative analysis explores practices, purposes, experiences, contexts & values.



# Networked case study methodology

- The case study is at the heart of the ANT approach (Law 2007). This is the case seen through a particular lens, that of the dynamic relations between multiple actor-networks. It is the **case networked with other cases** (Nichols et al, 2012, p. 45)
- [S]ocial relations are complex and **extend beyond the confines** of any pre-defined grouping or level (Bartlett & Vavrus, 2017, p. 8)
- Researchers can't follow all actors everywhere, therefore, they need to use their skills, experience, and judgement, like other qualitative research, to **determine the starting point, the actors to follow, and where to cut the network.** (Elsayad, 2016, p. 96)
- In its conceptions of translations that link together heterogeneous materials, knowledges, emotions, agencies, bodies and technologies, ANT examines the **micro-negotiations at these different links.** (Fenwick, 2011, p. 130)

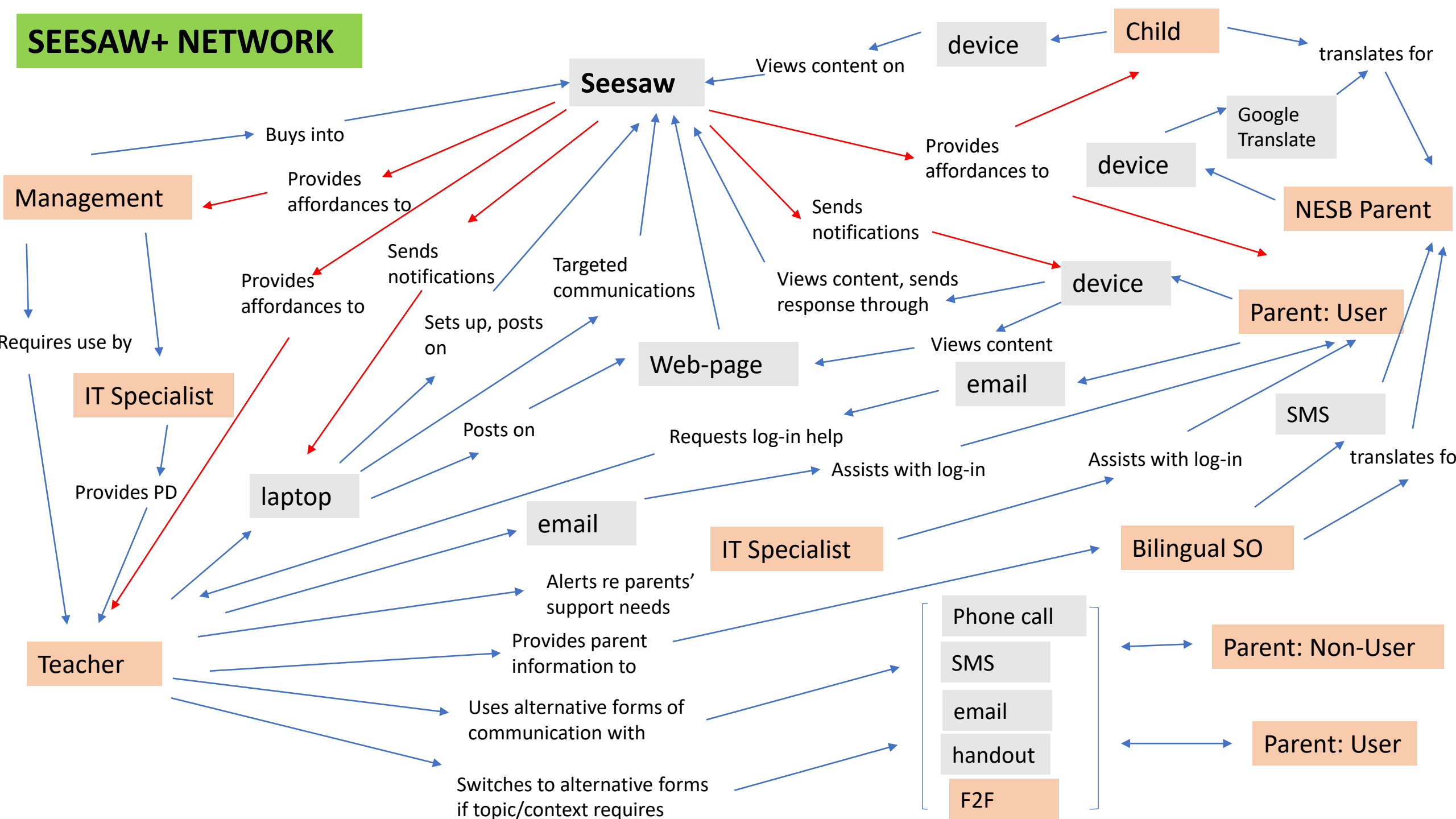


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## Seesaw at Hakea: Approach to analysis

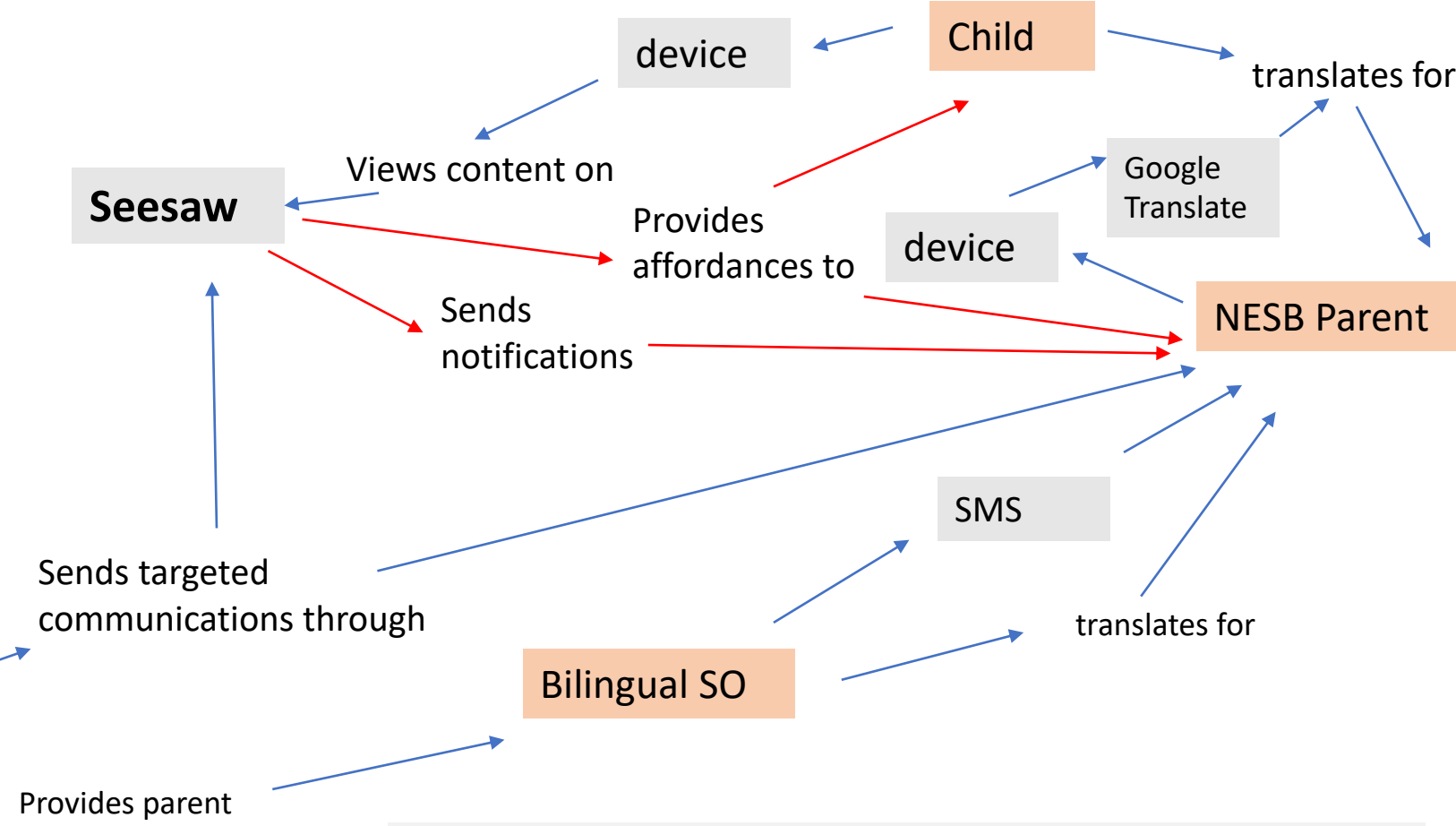
1. Choice of a digital actor. Seesaw was chosen as it has been adopted as the primary digital platform for home school connectivity at Hakea.
2. Reading the data. All references to Seesaw were collected.
3. Looking for interactions between Seesaw, human actors and other non-human actors (digital and other tools)
4. Paying attention to the pathways, including diversions from Seesaw
5. Creating the network diagram
6. Thinking about implications for digital equity and inclusion in relation to the adoption of a digital learning management platform in a school of high cultural/linguistic diversity.

# SEESAW+ NETWORK



I can post things that, um, either particular parents I've selected or all parents can see, um, a bit tricky with my class, because lots of my parents of my students don't speak English. (Teacher)

It'll often be the kids reading the Seesaw messages. (Teacher)



He don't know when he received it. He will check it, but he doesn't know how to reply because it is all in English. (Interpreter for parent)

There are some occasions where they receive SMS in Arabic, for example, for this interview or for if their son is sick. (Interpreter for parent)

**Seesaw & the NESB parent**





## Findings from Hakea

- The persistence of linguistic exclusion in the digital domain
- Misrecognition of families' digital skills and difficulties
- Interdependence of digital and non-digital communication systems



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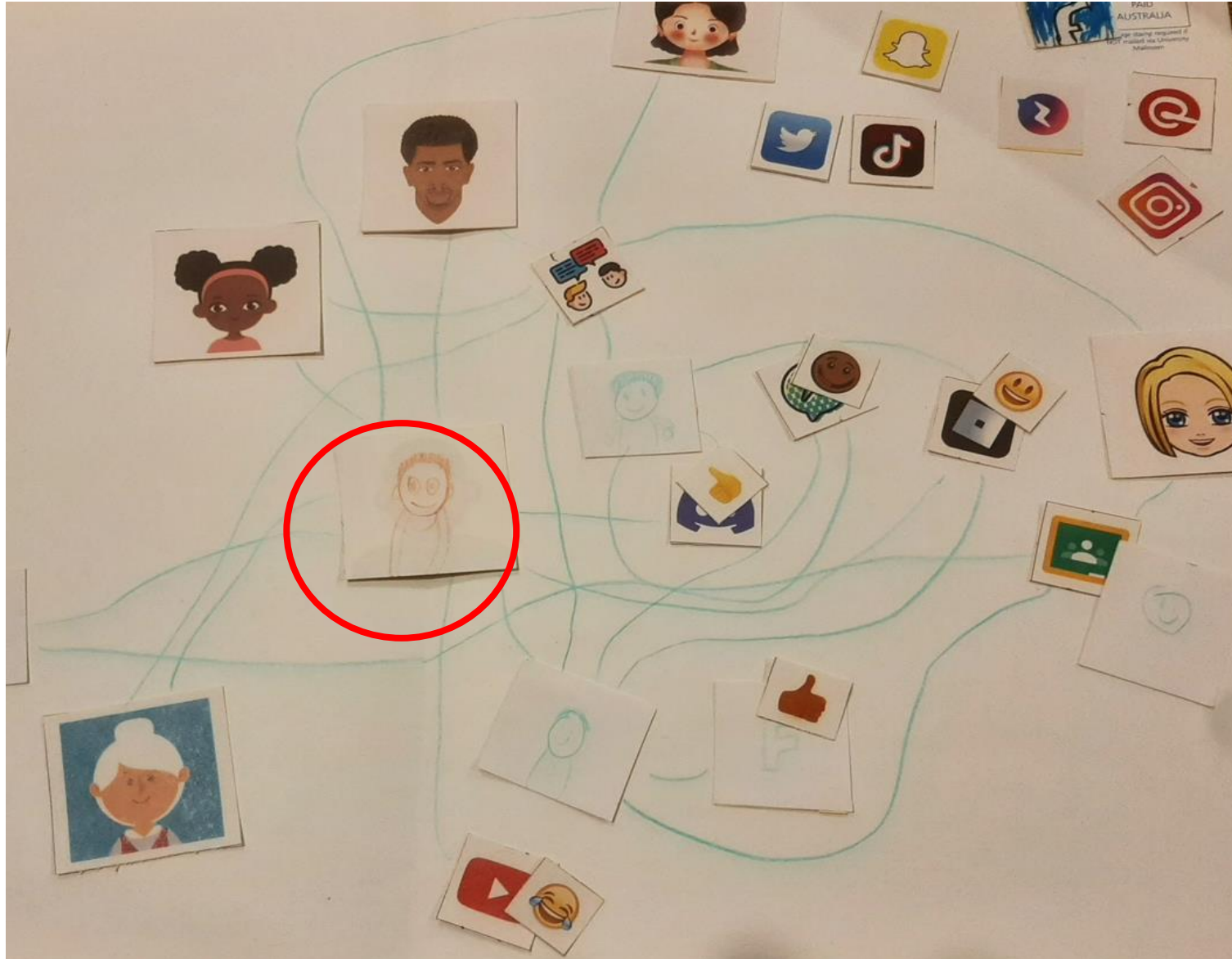
**An ecological case study  
of the digital networks of  
children with a learning  
difficulty.**

**How do digital  
connections and activities  
influence the learning and  
inclusion of children with  
a learning difficulty?**

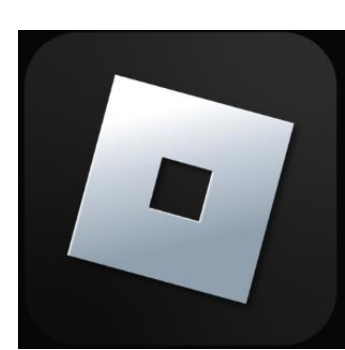
# Bodhi's Digital Network: Data sources

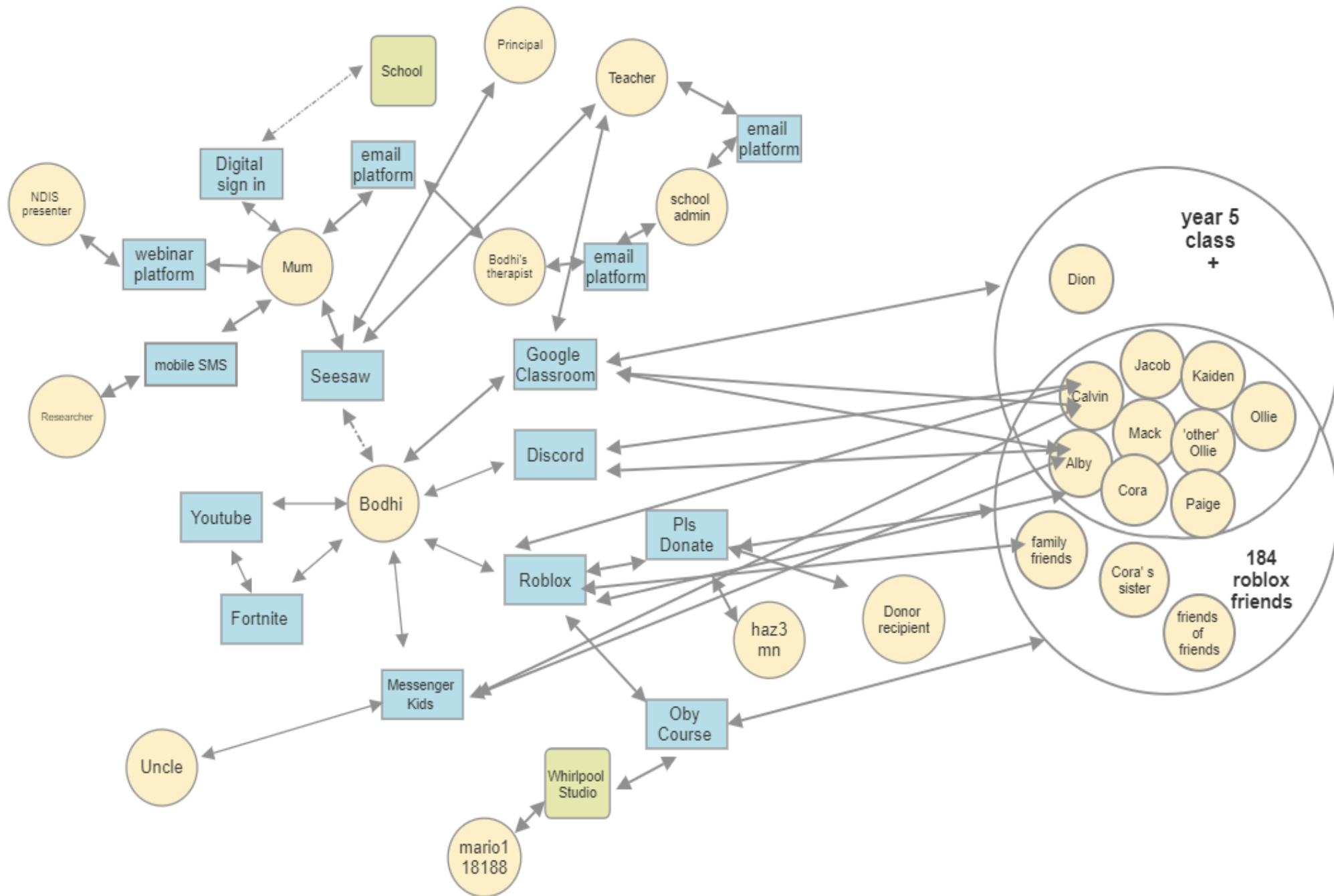
1. How Do You Connect? Network diagram & transcript
2. Interview
3. Screenshots
4. Observation
5. 'interviewing objects' (Adams & Thompson, 2011)

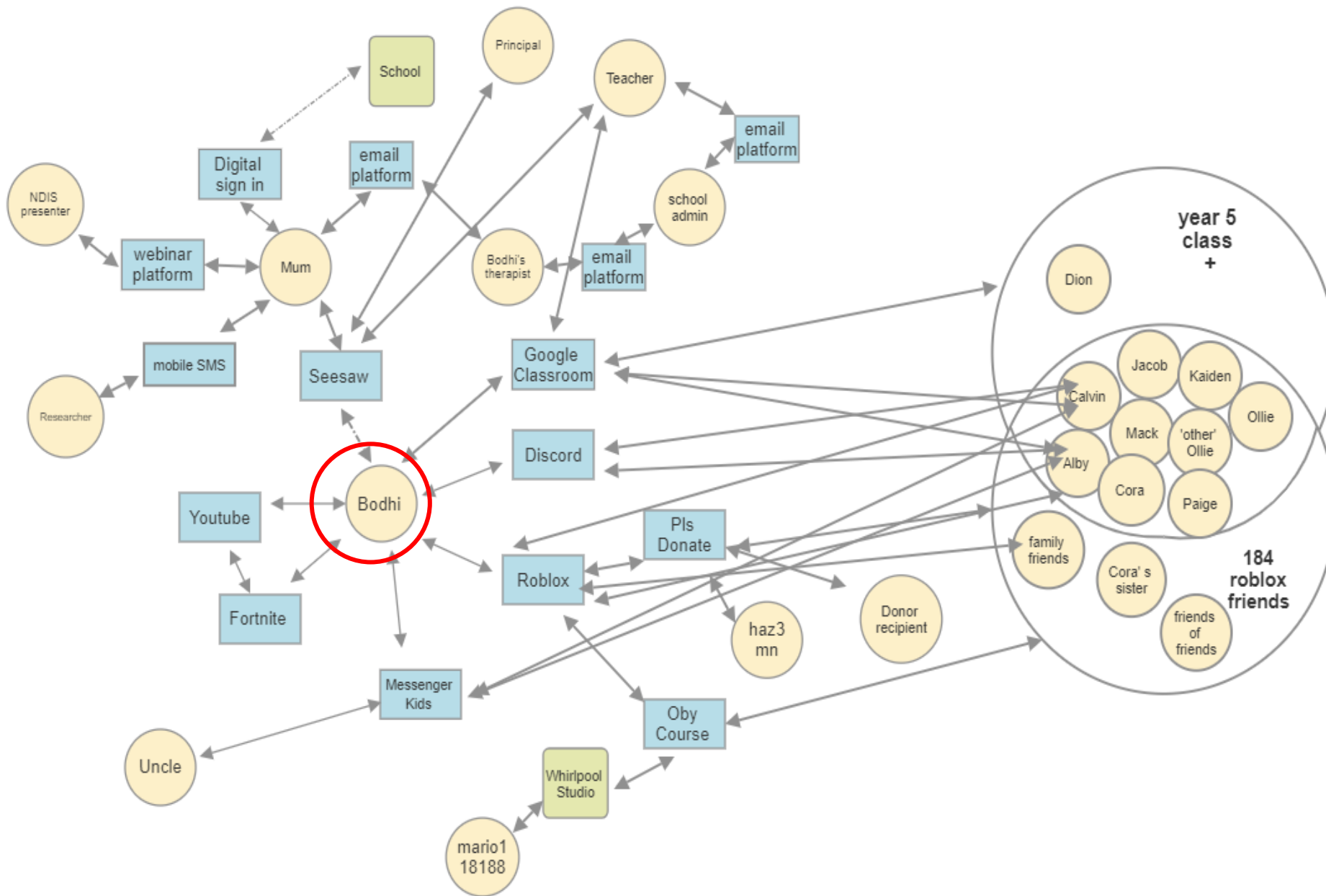
*It's a Work-in-Progress!*



**Bodhi's digital network  
generated from the  
How Do You Connect?  
interview**





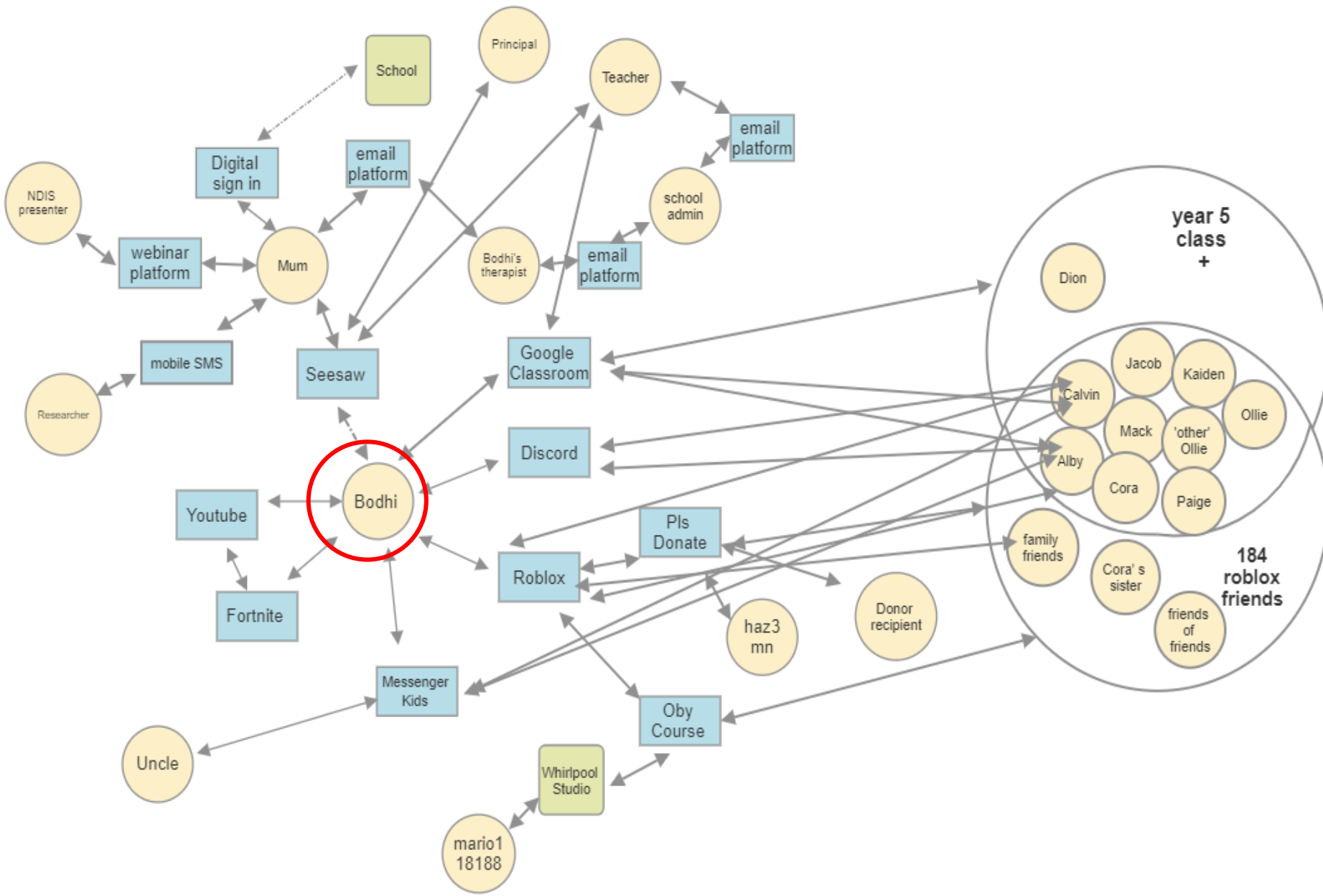


**Who are the actors? (human and non-human)**

Human actors (eg, Bodhi, his teacher, haz3mn)

Digital actors (eg Seesaw, Roblox, email)

'Institutional actors' (eg, Whirlpool Studio)

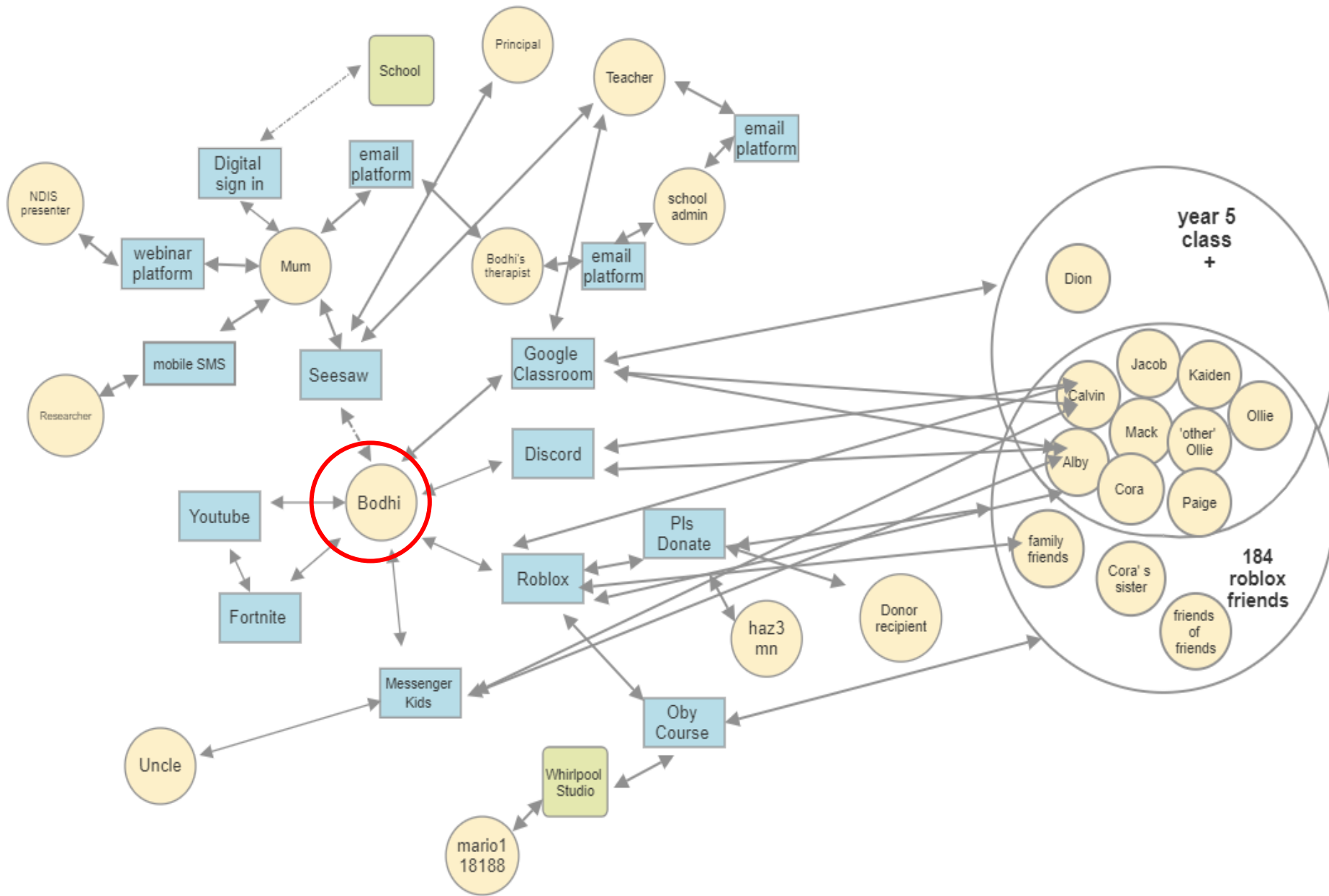


**Where do connections exist?**

Actors are the nodes

Connections represented by arrows

Unstable connections – dashed arrow



**What goods are (not) circulating?**

information

physical access

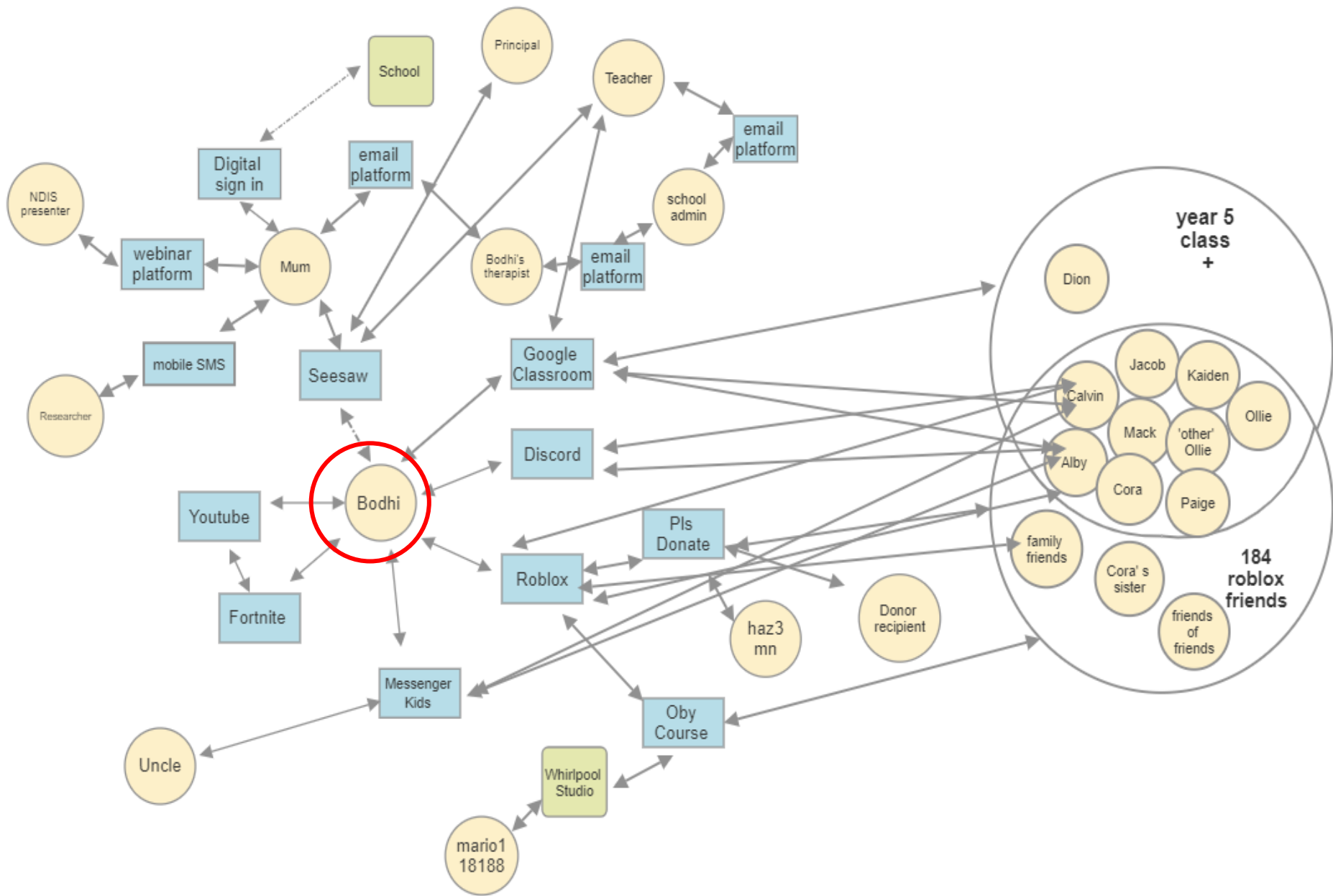
virtual currency

encouragement

reminders

feedback





**What network effects are arising?**

Fun

Learning

Inclusion

Exclusion

Relationships

# In-progress conclusions from the Bhodi case

The data from Bodhi's case study so far shows him to digitally included across the three facets of digital inclusion (affordability, access, ability).

This digital inclusion, and the strength of his digital network, is contributing to Bodhi's learning and to his social inclusion in and out of the classroom.



# Next steps

- Article on rethinking digital risk in childhood (Soong et al)
- Report on the quantitative analysis of How Do You Connect data
- Cross-site analysis of case study data
- Administration of school leaders survey
- Book or special issue proposal

# Publications & Presentations

## Journal articles

Neumann, M., Park, E., Soong, H., Nichols, S. & Selim, N. (2022) Exploring the social media networks of primary school children, *Education 3-13*, DOI: 10.1080/03004279.2022.2144404

Nichols, S. & Selim, N. (2022) Digitally mediated parenting: A review of the literature. *Societies*. 12(2) article 60  
<https://www.mdpi.com/2075-4698/12/2/60/htm>

Robertson, N. (2023 under review). The use of digital technologies by children with learning difficulties in inclusive primary schools: a critical literature review. *Australian Journal of Special and Inclusive Education*

## Conference presentations

Nichols, S., Dooley, K., Neumann, M. Soong, H. & Selim, N (2021) Parent involvement goes online: Towards a new ecology of school-home-world connectivity. Australian Association for Research in Education Conference, Nov 28 – Dec 2, Melbourne and online.

Nichols, S. (2022) Investigating children's literacies in digitally mediated interactions. Literacy Research Association Conference, Phoenix Arizona, Nov 29 – Dec.

Nichols, S., Soong, H. & Dooley, K. (2022) The place of school in children's digital and material networks. Australian Association for Research in Education Conference, Adelaide, Nov 27 – Dec 1.

Nichols, S., Neumann, M. & Soong, H. (2022) 'How Do You Connect?' Investigating children's digitally mediated interactions with significant others. British Educational Research Association Conference, Liverpool, Sept 6 – 8.

Soong, H., Nichols, S. & Dooley, K. (2023) Contesting the framing of digital risk in children's social lives. XX ISA World Congress of Sociology, Melbourne, June 25<sup>th</sup> – July 1<sup>st</sup>.

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