

# **FROM ROUTES TO RELATIONS: A SOCIOMATERIAL PERSPECTIVE ON GAMIFICATION OF MAZEMAP**

*[Lie Printz, Liepr847]*

**Word count: 1023**

**7256G33 Samskapande av digitala lösningar  
HT 2025**

## **1 Introduction**

Navigating the university is important, both for the practical part of finding on campus, and it can also be a social practice that shapes how students form connections. Accessibility plays an important role in ensuring equal participation, and especially when gamification is becoming a more popular design in digital tools. Yet, there is not much known about how these functions actually shape movement and community in everyday campus activities.

This essay will study this gap by analyzing gamification with sociomaterialism, a perspective where technologies are not neutral tools, but active participants which influences how students move, interact and might build community on campus. To better understand this, the study will focus on the following research question:

- How do the accessibility and gamification of MazeMap influence students' movements and sense of community from a sociomaterialistic perspective?

## **2 Literature Review**

*The literature review begins with an overview of socialmateriality, focusing on how technology and social practices are entangled. It then turns to research about gamification of navigation, showing how digital tools shape behaviour and engagement.*

### **2.1 Sociomaterialism**

Sociomaterialism builds on the idea that the social and the material cannot be understood as separate things, but are always entangled in practice. It is argued that all materiality is social, because it is created through social processes and is interpreted in different social contexts. At the same time, all social actions are dependent on some form of materiality (Leonardi, 2012). This shows that materiality becomes vital for the human activities and relations (Orlikowski & Scott, 2008).

When it comes to materiality, it does not only refer to the physical parts of technology. It also focuses on the way technologies are shaped to last across space and time, meaning the same piece of technology can be used in different ways in different contexts. The features stay the same but there is a difference in how people understand and use it, which can be called contunuanance (Leonardi, 2012).

Within this, agency is not only human. Social agency refers to people's ability to form and reach goals, while material agency shows how technologies and different artifacts shape practices (Leonardi, 2012). Humans use technology while also being shaped by it, which is called the double dance of agency (Orlikowski & Scott, 2008).

Not only does socialmaterialism focus on the social and material, but also the spatial aspects. "Material and non-material, human and non-human entities [...] where all entities are understood as causes in relation to each other" (Baroutsis, 2020, p. 736), which together with spatial environment shows that these practices are not fixed, but continuously formed through these sociomaterial, and special, entanglements.

### **2.2 Gamification of Navigation**

Gamification, meaning to integrate gaming mechanics into a non-game context, can help shape how users navigate by adding goals, rewards and other playful challenges to traditional map-based systems, such as navigation tools. One study examined a navigation system with two modes: a free mode providing standard GPS guidance, and a game mode, where users could follow an AR guide, collect items, and receive rewards. The study showed that participants in the game mode followed consistent routes, which shows that gamified navigation can help navigating effectively (Lee, 2022).

In another study, riddle-based navigation in a location-based game was compared to conventional 2D maps. Families reported greater enjoyment and engagement with the riddle-based navigation, which helped the participants to interact and explore the physical environment more. While traditional maps allowed efficient a to b navigation, mixing it with games created opportunities for more social interaction and learning (Nadarajah et al., 2017).

These studies show that gamified navigation can help user engagement without risking autonomy.

### 3 Case study

Previous research on gamified navigation points to how material features of technology interact with human action to shape behaviour and social practices. In the context of MazeMap, this sociomaterial perspective can show how the app's functions can act as agents that both guide, structure and engage student movement and navigation on campus. E.g. GPS positioning allows users to navigate along specific routes in real time, but it also shows expectations for how they should follow paths set by the app, which further shows an entanglement of the social and material agencies.

MazeMap features, such as the search function and accessibility options, also brings up this interplay. The search function determines what students can find and explore, while the wheelchair accessibility option shows both guidance and can also change how campus is experienced. Some paths become possible, others blocked, and even new paths can be discovered. This reflects how accessibility is both social norm and a material feature that can reshape how campus is used.

Gamification transforms navigation from a simple task, going from point a to b, into a playful practice, following game routes or collecting rewards can guide, and create new, movement patterns, and even make locations more popular due to the game or its algorithms. In this way, the app's material functions create new social practices where students explore, interact and experience campus in new ways.

At the same time, the app use is also formed by the university's culture and practices such as introduction weeks, called Nolle-P, lectures and social life. MazeMap can act as a guide, making campus entangled both *socially* with who students meet, *materially* and *spatially* in how and what places they visit and discover. The combination of use, buildings, signs, routes and paths, obstacles and other elements, goes together to co-create how students move and navigate. Future developments, like riddle-based games, could further increase engagement, turning navigation even more towards a social experience.

### 4 Conclusions & reflections

The app's features are not neutral, they actively shape what it means to be a student and to move around campus. *Social practices*, such as introduction week, orientation games, inclusion and community, interact with *material features* such as algorithms, in-game achievements, and suggested routes, as well as the *spatial environment*. Together, these elements form entangled sociomaterial practices.

There is no purely social practice, such as campus community, where technology simply supports the behaviours. Instead, the technology is embedded within the social practice itself, and the social, material and spatial aspects constantly shaping and reshaping each other.

## References

- Baroutsis, A. (2020). Sociomaterial Assemblages, Entanglements and Text Production: Mapping Pedagogic Practices Using Time-Lapse Photography. *Journal of Early Childhood Literacy*, 20(4), 732–754. <https://doi-org.e.bibl.liu.se/10.1177/1468798418784128>
- Lee, C.-I. (2022). Benefit Analysis of Gamified Augmented Reality Navigation System. *Applied Sciences (Switzerland)*, 12(6). <https://doi-org.e.bibl.liu.se/10.3390/app12062969>
- Orlikowski, W. J., & Scott, S. V. (2008). Sociomateriality: Challenging the separation of technology, work and organization. *The Academy of Management Annals*, 2(1), 433–474. <https://doi-org.e.bibl.liu.se/10.1080/19416520802211644>
- Leonardi, P. M. (2012). *Materiality, Sociomateriality, and Socio-Technical Systems: What Do These Terms Mean? How Are They Different? Do We Need Them?* Oxford University PressOxford. <https://doi-org.e.bibl.liu.se/10.1093/acprof:oso/9780199664054.003.0002>
- Nadarajah, S. G., Overgaard, B. N., Walz Pedersen P., Hansen Schnatterbeck, C. G., & Rehm, M. (2017). Gamifying Navigation in Location-Based Applications. *EAI Endorsed Transactions on Creative Technologies*, 4(13), 1–11. <https://doi-org.e.bibl.liu.se/10.4108/eai.8-11-2017.153333>

## Appendix. Use of Generative Artificial Intelligence (AI)

*I used AI for:*

- *Help finding key words in search for articles about navigation and gamification (with some alterations of the suggestions)*
- *Help with finding a good title for the paper (specifically, generative AI gave the first part of the title: From routes to relations)*

*I did **not** use AI to create the texts, as is stated in the assignment information.*

### Example

| <b>Prompts</b>                                                                                                                       | <b>Student</b>                                                                             | <b>Generative AI</b>       |
|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------|
| Jag skulle behöva hjälp att hitta artiklar som handlar om både gamification och navigering. Jag skulle behöva tips för olika sökord. | Asked for key words to search for. Accepted some, and changed some to better suit my needs | Gave examples of keywords, |
| Jag skulle vilja ha en lite rolig och catchy rubrik till min underrubrik: a sociomaterial perspective on gamification of mazemap     | Asked for first part of title for the paper, accepted one of the suggestions               | Gave suggestions of title  |