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Investigating Digital Accessibility in Mongolia Through Systems Thinking: A Group Model Building Approach

Nandintsetseg.B, Lecturer at the Department of Sociology and Social Work, School of Arts and Sciences, National University of Mongolia
Ninjin.E, Student in the Bachelor's Program in Computer Science at the National University of Mongolia
Tuguldur.G Student in the Bachelor's Program in Social Work at the National University of Mongolia

Research question

Digital Inequality Components: Limited access to affordable, high-quality internet, lack of devices, digital literacy gaps, and minimal opportunities for independent digital engagement.

Objective: To explore factors contributing to digital access disparities in Mongolia, especially in rural areas, using a systems thinking approach.

Key Question: What are the primary factors causing digital inequality, and how are they interconnected?

Importance for Mongolia: These factors create significant barriers, particularly in remote and rural regions.

Literature Insights on Digital Inequality

- **Ivan van Dijk (2005):** Highlights that digital inequality includes more than just device access; digital skills are also crucial.
- **U.S. Federal Communications Commission (2017):** Defines five dimensions of digital inequality: internet quality, device accessibility, skills training, tech support, and engagement opportunities.
- **Mongolia’s Digital Readiness (AS, 2019):** Positive on mobile and data access, secondary education, but challenges in advanced tech adoption, talent retention, and digital skills persist.

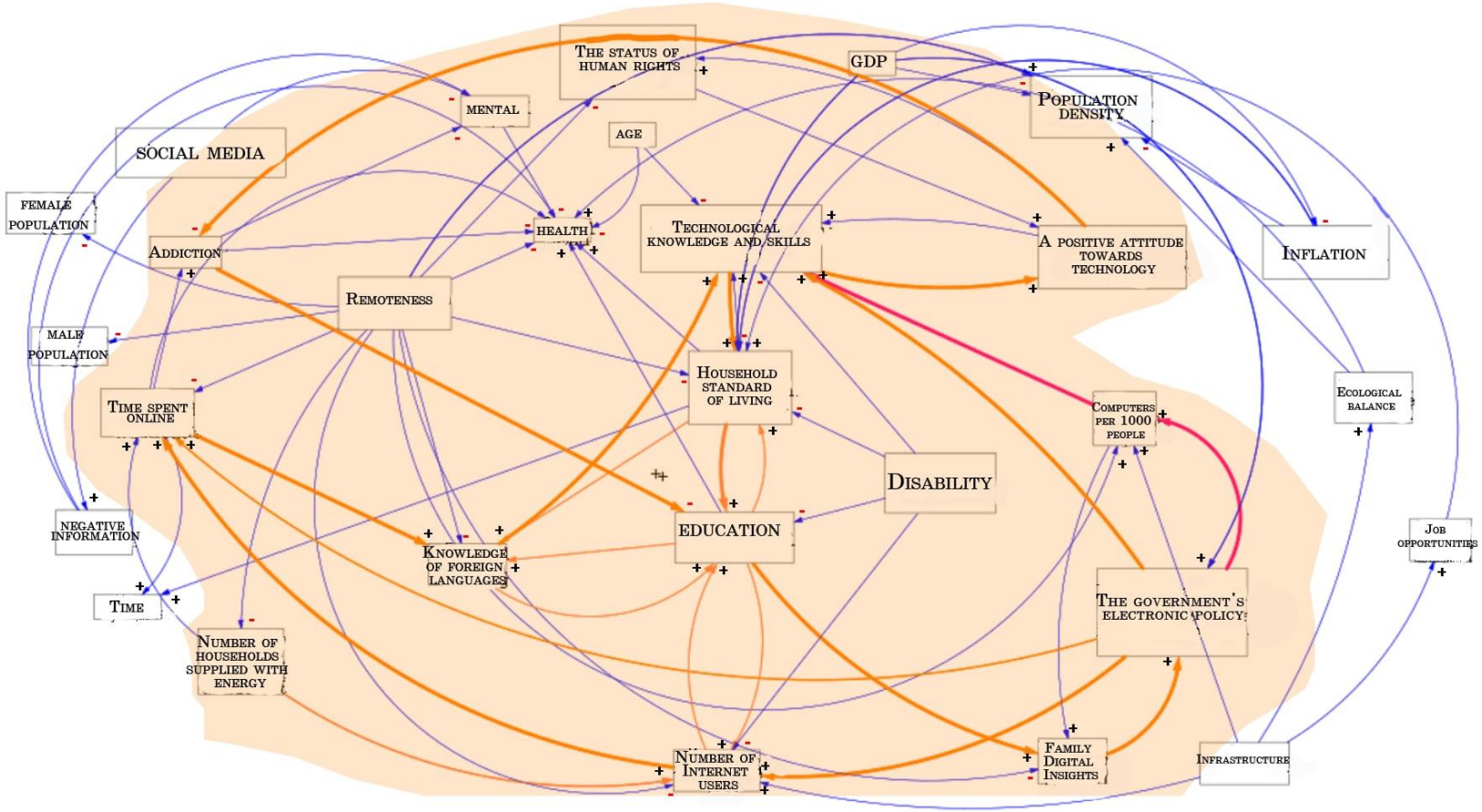
Methodology

Approach: Qualitative research using **Causal Loop Diagram** (CLD).

Participants:

- 90 participants (aged 18-22), organized into **16 groups**.
- Regions covered:
  - **Western Region:** Bayan-Olgii, Gobi-Altai, Zavkhan, Uvs, Hovd
  - **Khangai Region:** Arkhangai, Bayankhongor, Bulgan, Overkhangai, Khuvsgul, Orkhon
  - **Central Region:** Dornogovi, Dundgovi, Umnugovi, Selenge, Central, Darkhan-Uul, Govisumber
  - **Eastern Region:** Dornod, Sukhbaatar, Khentii
  - **Ulaanbaatar:** Divided into five groups

Results


THE STATUS OF HUMAN RIGHTS
GDP
MENTAL
POPULATION DENSITY
SOCIAL MEDIA
AGE
FEMALE POPULATION
HEALTH
TECHNOLOGICAL KNOWLEDGE AND SKILLS
A POSITIVE ATTITUDE TOWARDS TECHNOLOGY
INFLATION
ADDICTION
REMOTENESS
MALE POPULATION
HOUSEHOLD STANDARD OF LIVING
ECOLOGICAL BALANCE
TIME SPENT ONLINE
COMPUTERS PER 1000 PEOPLE
DISABILITY
NEGATIVE INFORMATION
EDUCATION
JOB OPPORTUNITIES
KNOWLEDGE OF FOREIGN LANGUAGES
THE GOVERNMENT'S ELECTRONIC POLICY
TIME
NUMBER OF HOUSEHOLDS SUPPLIED WITH ENERGY
NUMBER OF INTERNET USERS
FAMILY DIGITAL INSIGHTS
INFRASTRUCTURE

Key Feedback Loops

•*Education and Living Standards Loop:* Improved education enhances living standards, which in turn can facilitate better educational outcomes.
•*Language Skills and Education Loop:* Better education can improve foreign language skills, feeding back into education quality.

Role of E-Policies: Government policies on internet access, technological training, and online engagement can directly impact digital skills and access.
Impact on Remoteness: Remoteness affects multiple factors but is less easily influenced by policy. Policies can still make indirect impacts by focusing on improving tech infrastructure and education access in remote areas.

Implications for Policy and Systemic Interventions

Leverage Points Identified: Household living standards, education, and e-policies.

Suggested Interventions:

- Enhanced E-Policies: Support internet infrastructure and digital literacy programs in rural areas.
- Focus on Education: Increase access to quality education to create a foundation for digital skills.

Conclusions

The **system dynamics-group modeling** method effectively captured the challenges of digital access based on students' experiences.

Government e-policies emerged as a key **leverage point** for driving systemic change in digital access.

Remoteness is difficult to address directly through policy, but improvements in remote areas can have **indirect positive effects** on other factors like education and technology access.

Targeting **conditions in remote areas** is essential for broader **systemic improvements** in digital equity.