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Peer-assisted smartphone learning to support digital literacy and participatory design in northern kenya

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Abstract

In pastoral regions of northern Kenya, participatory design processes offer new opportunities for inclusive digital innovation. However, despite familiarity with numbers, limited reading and digital literacy pose fundamental challenges to meaningful engagement among pastoralists. The present study aims to evaluate how peer-assisted smartphone learning, introduced as part of a Progressive Participatory Design (PPD) approach, supports the development of digital literacy and participation in the co-design of a rangeland monitoring application.

The analysis is based on qualitative data collected through twenty semi-structured interviews with pastoral livestock keepers and volunteer peer facilitators, and six Most Significant Change (MSC) story sessions with pastoral livestock keepers within the Borana and Rendille communities, collected over a period of six months. Using Kirkpatrick's evaluation model, we assessed participants' reactions, learning outcomes, changes in actions, and impact.

The results are presented according to Kirkpatrick's four levels of evaluation. Participants' reactions to learning emphasised the role of peer-supported, iterative practice in reinforcing learning. In terms of learning outcomes, they reported improved ability and increased confidence to use smartphones. This translated into changes in actions, with around 60 % of trained pastoralists now actively using WhatsApp as an instant utility artefact, an existing technological tool appropriated for immediate, practical use, such as sharing grazing updates, issuing predator alerts, and communicating with family members. The impact goes beyond information sharing; WhatsApp use fostered confidence, trust, and familiarity with core functionalities of the co-designed app including sharing pictures and voice notes. By gradually building confidence in these practices in an accessible, familiar platform, participants developed transferable skills that will enable them to use the rangeland monitoring app and continue providing meaningful feedback through the co-design process.

These results illustrate how peer-assisted smartphone learning supported the development of practical digital skills, laying the foundation for meaningful engagement in the next stages of the Progressive Participatory Design process.

Keywords: Co-learning, collaborative design, instant utility artefact, progressive design