Use of ICT and Spatial Knowledge Gaining in the Built Environment

N.J. Wielens, S. Cenani, A.D.A.M. Kemperman, A.W.J. Borgers

Urban Planning Group, Faculty of Architecture, Building, and Planning
Eindhoven University of Technology, Eindhoven, the Netherlands

Introduction

The key purpose of this study is to test whether use of information and communication technologies (ICT's) affects spatial knowledge gaining in the built environment. It is hypothesized that use of ICT's will decrease individuals' attention towards their surroundings and consequently that they will pay less attention to landmarks and spend less effort on remembering the route for a next trip. To test this hypothesis, subjects had to walk a predetermined route in an unfamiliar urban environment, and afterwards perform a series of tasks measuring spatial knowledge (i.e. landmark, route, and survey knowledge).

Method

Two routes were set out in the city of Eindhoven, which were similar in terms of number of turns (10 turns), length (1.6 km) and land-use (mostly residential with some commercial and public buildings), but different in terms of number of landmarks. Data collection took place between November 2010 and January 2011. 60 undergraduate students (40 M, 20 F) from the Faculty of Architecture (TU/e) participated. Mean age of participants was 21.1 years (SD=3.99). Half of the subjects used a paper map for guidance; the other half used an ICT device.

Procedure

Upon return from walking the route subjects had to point to the direction of selected landmarks they had seen during their walk, using a circular pointing device. Hereafter, they returned to the university for completion of seven tasks. The first four were about recollection, the following three tasks can be classified as recognition tasks:

1. Sketch map drawing of the walked route and surroundings on a blank sheet of paper with start/end, prominent landmark (church), scale bar and north indicated;
2. Giving written navigation directions;
3. Drawing the walked route on a map of the neighborhood;
4. Marking striking features on a map containing the correct route;
5. Landmark and intersection recognition from photographs;
6. Ordering photographs of intersections in the right sequence;
7. Placing photographs of intersections at the correct location on a map.

After a one week period, the seven tasks at the university were repeated by all subjects. This was done in order to investigate how much they remembered, and what is more likely to be forgotten over time.

Analysis

Analyses regarding the performed tasks will be conducted in the forthcoming months. For each task, a score has been determined per participant. Scores will be tested by means of *t*-tests and chi-square tests. Differences in gained spatial knowledge between the two navigation modes (map/ ICT) and between the two routes will be tested, as well as the effects over time.

Acknowledgements

The research leading to these results has received funding from the European Research Council under the European Community's Seventh Framework Programme (FP7/2007-2013) / ERC grant agreement n° 230517 (U4IA project).