

Introducing a HCD approach in the development of a health and safety publication for tractor operators

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1. Abstract

Part of the research project "INTRAC – Integration of safety elements with Ergonomics in the design of agricultural machinery", funded by the Italian Ministry of Agriculture, was aimed at devising a health and safety handbook focused on use and maintenance of tractors, adopting a Human-Centred Design (HCD) approach. The designed publication was aimed at increasing the effectiveness of the information that is delivered to users on injuries/accidents prevention and management. Through the HCD approach, it was applied a Participatory Ergonomics (PE) strategy for involving users in outlining topics, graphic design and printing layout most suitable to the agricultural environment. Preliminary results have already highlighted a remarkable gap between the defined operators' requirements and the available publications on this topic. The next step will be to perform iterative tests on real-scale prototypes aimed at verifying the usability of this new publication. This part of the INTRAC project attempts to encourage the HCD process adoption in publishing, thus demonstrating how designing handbooks based on users' inputs and requirements can contribute to the development of a safety culture.

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2. Activities

Benchmarking



The first activity was the benchmarking of nineteen health and safety handbooks in agricultural environment that were published by European, national and regional institutions over a decade. The comparison between publications made it possible to identify recurring topics, stylistic choices in composition and graphic solutions.

Focus group



The purpose of the focus group was to investigate how users interact with tractors and how they interact with health and safety handbooks related to tractors use. For this part of INTRAC project, the contingent conditions for using the manuals, the motivations for using them and the selection of topics were investigated. The sample was composed of 22 members aged from 20-60 years. Age of the participants was roughly balanced in the three sessions of focus groups, taking into account differences in working habits related to expertise, thus enriching the discussion.

Noun prioritization



The purpose of noun prioritization was to define how users organize topics of interest in three key areas (KNOWING the risks, LEARNING how to avoid them, ACTING in case of emergency) chosen according to the output of the benchmarking activity. Sixteen topics (six for KNOWING area, six for LEARNING area and four for ACTING area) were proposed to participants in order to classify them. These topics have been selected from a pool of themes mentioned by users during in-depth interviews, as well as from the analyzed publications on these topics.



3. Results

Both the focus group and the noun prioritization activities showed a huge gap between the topics included in the publications and the preferences expressed by the workers. Users showed a preference towards the most practical topics, such as KNOWING how to approach to real risks in driving, how to drive in the fields, how to drive on the road; LEARNING how to approach for the first time to a tractor, how to do the maintenance of the tractor; and ACTING in emergency situations. As a matter of fact, in the KNOWING area, the topic "how to approach to real risks in driving" was selected as the most interesting topic by the majority of the sample, while it was the less debated in analyzed publications, whereas in the LEARNING area, the topic "work environment" was selected as the

less interesting topic by the majority of the sample, while it was the most debated in analyzed publications. Moreover, users acknowledged that they had never read a health and safety publication if not obliged during update courses. Furthermore, health and safety publications are considered to be very similar to each other, often outdated, too complex and not very responsive to real needs in the operative setting. Ultimately, users consider these publications just as lists of safety "obligations" and conforming to those requirements will eventually lead to considerable expenditure of resources (including economical resources).

4. Next steps

Using these results, the next step is the design of real-scale prototypes of the new health and safety handbook, which will be subjected to iterative usability tests with workers for addressing legibility, readability, handiness and user satisfaction.

