A SUMMARY OF STRUCTURED OBSERVATIONS: A QUANTITATIVE RESEARCH METHOD FOR UNDERSTANDING WORK

Introduction

The study of Human Factors through Structured Observations as a way of analysing workplace behaviour is essential if the 'real' workplace is to be understood. Capturing that data in a 'real' physical context presents many challenges: the need for methods that do not intrude on the actual work being carried out, the control of variables in the work environment, and the desire to enable data analysis from one specific workplace to be generalised to work across different workplaces.

Methods

A variety of methods exist for quantifying performance in a workplace. Here, the main methods are discussed, focussing particularly on methods to capture TASKS, rather than goals. These methods include (i) self-report (ii) time-motion (iii) real-time capture. Mobile technology offers the opportunity to develop a more flexible tool to capture activity in real time and at an appropriate level of detail. The aims in developing a new methodology included:

- Minimal intrusion
- Able to capture a wide range of work tasks within a single setting
- To create clear categories, so that multiple observers could use the tool consistently
- To capture location as an integrated part of the method
- Minimal post-processing
- To associate cognitive activities with observable behaviours
- Minimal training requirement

Structured Observation method

The Structured Observation method requires completion of 5 key stages:

1 choosing the level of DETAIL required

2 ESTABLISHING list of tasks

3 SELECTING way to capture data

4 decide how observations should be CONDUCTED

5 determine how the data may be ANALYSED

Case Studies

Two case studies are presented in the full paper, which show in detail, how this method was employed across two different industries. A discussion follows which explains the findings of

the case studies and how some of the limitations and variables of the methods can be better understood and controlled. In particular, it discusses how the introduction and communication of the work the observer is doing is key to gaining working co-operation and support from the workers. There then follows a table of guidance for best practice in carrying out Structured Observations.

Best practice

Table 5. Guidance for best practice when planning and conducting structured observations

Recommendation	Description
1. Use a mutually exclusive task list where possible	Using a mutually exclusive task list will make analysing and interpreting the results easier as the percentages of time spent on each task will add up to 100%. However, if multitasking is a common occurrence in the given domain and mutual exclusivity of tasks cannot be achieved, ensure data is presented clearly to aid interpretation of findings.
2. Conduct inter-rater reliability testing	It is important that separate observers record tasks in the same way. Inter-rater reliability testing should be conducted through having observers partner up and observe the same individual. Without conferring, they should each separately observe and their data should be compared to ensure they have recorded the tasks in the same way.
3. Use supplementary methods for dynamic environments	For dynamic environments where an individual can perform a variety of different tasks in a number of different locations, supplementary methods are required to add context and meaning to the data. For example, if it is found that a worker spends 30% of their shift walking, where is it they are walking to? Pairing structured observation data with data such as indoor location, captured by Wi-Fi, radio frequency identification (RFID), or Bluetooth (Farid, Nordin, & Ismail, 2013) could provide added context which may be useful in informing organisational changes.
4. Select an appropriate method for capturing data, based on the domain being studied	Domains will differ in whether they are a static or dynamic environment. A dynamic environment adds difficulties including walking or standing whilst observing. The tablet application used in case study 2 was developed for both types of environment. For static, a simple list of potential tasks can be used, whereas for dynamic a set of standardised locations can also be included.

Conclusion

The paper describes the method of Structured Observations and provides guidance on best practise and lessons learnt. There are limitations to consider but the method still provides a valuable technique for quantifying workplace behaviour.

Insert link to full paper