

# Expertise differences in air traffic control: An eye-tracking study

## Citation for published version (APA):

Van Meeuwen, L., Jarodzka, H., Brand-Gruwel, S., Kirschner, P. A., De Bock, J., & Van Merriënboer, J. (2012). *Expertise differences in air traffic control: An eye-tracking study*. Paper presented at Annual Meeting of the American Education Research Association (AERA) 2012, Vancouver, British Columbia, Canada.

## Document status and date:

Published: 25/09/2012

## Document Version:

Peer reviewed version

## Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
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- The final published version features the final layout of the paper including the volume, issue and page numbers.

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# Expertise Differences in Air Traffic Control: An Eye-tracking Study

**Abstract.** Air traffic control (ATC) involves dealing with complex visualizations. Making decisions based on those visualizations requires not only conceptual but also perceptual skills, like efficient visual search of critical airplane compositions, their quick and correct interpretations, and the appropriate reactions. This study examined expertise differences in perceiving and interpreting ATC stimuli on a perceptual and performance level. Moreover, the potentially mediating influence of spatial abilities was investigated. Expertise differences were found between experts, intermediates and novices in ATC performance and eye movements. No expertise differences were found in spatial ability.

**Keywords:** expertise; eye tracking; spatial ability; instructional design; air traffic control