

# Propositional knowledge for conceptual understanding of statistics.

## Citation for published version (APA):

Leppink, J. (2012). *Propositional knowledge for conceptual understanding of statistics*. Boekenplan.

## Document status and date:

Published: 01/01/2012

## Document Version:

Publisher's PDF, also known as Version of record

## 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.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

## General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

[www.umlib.nl/taverne-license](http://www.umlib.nl/taverne-license)

## Take down policy

If you believe that this document breaches copyright please contact us at:

[repository@maastrichtuniversity.nl](mailto:repository@maastrichtuniversity.nl)

providing details and we will investigate your claim.

**Propositional manipulation for conceptual understanding of statistics**

Jimmie Leppink, 20 juni 2012

1. Instructional guidance should decrease as students' prior knowledge increases. [*this thesis*]
2. Expert knowledge is a necessary but not sufficient condition to become an excellent teacher.
3. Although all social science research is qualitative in nature, qualitative methods can support but never replace quantitative methods.
4. The question is which instructional format works for whom and in which context rather than which instructional format is superior to all other formats. [*this thesis*]
5. Some formulas comprise more information than any picture or essay.
6. To minimize labor costs, companies massively employ a form of modern-day slavery called *unpaid internships*.
7. Given the hierarchical nature of the statistics knowledge domain, self-explanation and argumentation in combination with appropriate instructional guidance at each hierarchical level will provide the student with the necessary and sufficient conditions to develop expert knowledge. [*this thesis*]
8. If we continue to treat students as consumers rather than as individuals who need to meet essential criteria to obtain a degree, diplomas will continue losing their value.
9. In almost all educational research settings, randomized experiments are feasible and should be preferred over quasi-experimental or observational designs.
10. The *expertise reversal effect* has important implications for statistics education; curriculum developers and teachers should inform themselves about these implications and present their learning materials accordingly. [*this thesis*]