Writing Scientific Reports: Guidelines

Alexander Schönhuth

UNIVERSITÄT
BIELEFELD

Faculty of Technology

Bielefeld University
May 9, 2023

Form

FORM I

- Word processor:
  - LaTeX
  - Word
  - Anything similarly applicable is Ok, of course

- Simple, clear layout

  - The content is important
  - Layout should support understanding it

- Clear structure

  - Use sections, subsections, and so on

FORM I

- ▶ Word processor:
    - ▶ LaTeX
    - ▶ Word
    - ▶ Anything similarly applicable is Ok, of course

- ▶ Simple, clear layout
    - ▶ The content is important
    - ▶ Layout should support understanding it

- ▶ Clear structure
    - ▶ Use sections, subsections, and so on

FORM I

- ▶ Word processor:
    - ▶ LaTeX
    - ▶ Word
    - ▶ Anything similarly applicable is Ok, of course
- ▶ Simple, clear layout
    - ▶ The content is important
    - ▶ Layout should support understanding it
- ▶ Clear structure
    - ▶ Use sections, subsections, and so on

FORM I

- Word processor:
  - LaTeX
  - Word
  - Anything similarly applicable is Ok, of course

- Simple, clear layout
  - The content is important
  - Layout should support understanding it

- Clear structure
  - Use sections, subsections, and so on

FORM II

- ▶ Consistent layout of text elements
  - ▶ For example, same style for definitions throughout
  - ▶ No unmotivated switching of style or fonts
- ▶ Support understandability
  - ▶ Keep sentences short (this is not a writing contest in general)
  - ▶ Be clear, avoid ambiguous or vague descriptions
  - ▶ Avoid unstructured, long paragraphs
  - ▶ Do not make too many words if other means are available
  - ▶ Use examples
  - ▶ Use figures (likely re-used from presentation)
  - ▶ Avoid typos

FORM II

- ▶ Consistent layout of text elements
  - ▶ For example, same style for definitions throughout
  - ▶ No unmotivated switching of style or fonts

- ▶ Support understandability
  - ▶ Keep sentences short (this is not a writing contest in general)
  - ▶ Be clear, avoid ambiguous or vague descriptions
  - ▶ Avoid unstructured, long paragraphs
  - ▶ Do not make too many words if other means are available
  - ▶ Use examples
  - ▶ Use figures (likely re-used from presentation)
  - ▶ Avoid typos

FORM II

- ▶ Consistent layout of text elements
  - ▶ For example, same style for definitions throughout
  - ▶ No unmotivated switching of style or fonts

- ▶ Support understandability
  - ▶ Keep sentences short (this is not a writing contest in general)
  - ▶ Be clear, avoid ambiguous or vague descriptions
  - ▶ Avoid unstructured, long paragraphs
  - ▶ Do not make too many words if other means are available
  - ▶ Use examples
  - ▶ Use figures (likely re-used from presentation)
  - ▶ Avoid typos

FORM II

- ▶ Consistent layout of text elements
    - ▶ For example, same style for definitions throughout
    - ▶ No unmotivated switching of style or fonts

- ▶ Support understandability
    - ▶ Keep sentences short (this is not a writing contest in general)
    - ▶ Be clear, avoid ambiguous or vague descriptions
    - ▶ Avoid unstructured, long paragraphs
    - ▶ Do not make too many words if other means are available
    - ▶ Use examples
    - ▶ Use figures (likely re-used from presentation)
    - ▶ Avoid typos

FORM II

- ▶ Consistent layout of text elements
  - ▶ For example, same style for definitions throughout
  - ▶ No unmotivated switching of style or fonts
- ▶ Support understandability
  - ▶ Keep sentences short (this is not a writing contest in general)
  - ▶ Be clear, avoid ambiguous or vague descriptions
  - ▶ Avoid unstructured, long paragraphs
  - ▶ Do not make too many words if other means are available
  - ▶ Use examples
  - ▶ Use figures (likely re-used from presentation)
  - ▶ Avoid typos

FORM II

- ▶ Consistent layout of text elements
  - ▶ For example, same style for definitions throughout
  - ▶ No unmotivated switching of style or fonts

- ▶ Support understandability
  - ▶ Keep sentences short (this is not a writing contest in general)
  - ▶ Be clear, avoid ambiguous or vague descriptions
  - ▶ Avoid unstructured, long paragraphs
  - ▶ Do not make too many words if other means are available
  - ▶ Use examples
  - ▶ Use figures (likely re-used from presentation)
  - ▶ Avoid typos

Structure

STRUCTURE I

- *Title page*
  - Title
  - Name of the author
  - Name of seminar
  - Appropriate date and time

- *Introduction*
  - Motivate the contents ("Why")
  - Outline related work that matters: the scientific foundation of the "Why"
  - Tell what will be discussed in the following ("What")
  - Brief description of sections in the following (optional)

STRUCTURE I

- *Title page*
  - Title
  - Name of the author
  - Name of seminar
  - Appropriate date and time

- *Introduction*
  - Motivate the contents ("Why")
  - Outline related work that matters: the scientific foundation of the "Why"
  - Tell what will be discussed in the following ("What")
  - Brief description of sections in the following (optional)

STRUCTURE I

- *Title page*
  - Title
  - Name of the author
  - Name of seminar
  - Appropriate date and time

- *Introduction*
  - Motivate the contents ("Why")
  - Outline related work that matters: the scientific foundation of the "Why"
  - Tell what will be discussed in the following ("What")
  - Brief description of sections in the following (optional)

- *Problem definition*
  - Provide a clear, formal description of the problem you address in the following
  - The formal summary of the "What"

- *Methods*
  - Provide all theory in sufficient formal detail
  - Provide all algorithms in sufficient formal detail
  - Mention anything else methodical that matters in practice
  - Reproducibility is key

UNIVERSITÄT
BIELEFELD

STRUCTURE II

- *Problem definition*
  - Provide a clear, formal description of the problem you address in the following
  - The formal summary of the "What"

- *Methods*
  - Provide all theory in sufficient formal detail
  - Provide all algorithms in sufficient formal detail
  - Mention anything else methodical that matters in practice
  - Reproducibility is key

STRUCTURE II

- *Problem definition*
  - Provide a clear, formal description of the problem you address in the following
  - The formal summary of the "What"

- *Methods*
  - Provide all theory in sufficient formal detail
  - Provide all algorithms in sufficient formal detail
  - Mention anything else methodical that matters in practice
  - Reproducibility is key

STRUCTURE III

- *Evaluation*
    - Describe the data
    - Describe the (likely computational) experiments that were run
    - Refer back to Methods wherever needed
    - Again, reproducibility is important

- *Discussion / Summary / Outlook*

    - Discuss the results achieved in a larger context
    - Summarize achievements
    - Mention open problems that remain
    - Outline possible future research that may help to overcome remaining issues

- *Literature*

    - Cite everything from which you draw in the text
    - List all cited work at the end of the report

STRUCTURE III

- *Evaluation*
  - Describe the data
  - Describe the (likely computational) experiments that were run
  - Refer back to Methods wherever needed
  - Again, reproducibility is important

- *Discussion / Summary / Outlook*
  - Discuss the results achieved in a larger context
  - Summarize achievements
  - Mention open problems that remain
  - Outline possible future research that may help to overcome remaining issues

- *Literature*
  - Cite everything from which you draw in the text
  - List all cited work at the end of the report

UNIVERSITÄT
BIELEFELD

STRUCTURE III

- *Evaluation*
  - Describe the data
  - Describe the (likely computational) experiments that were run
  - Refer back to Methods wherever needed
  - Again, reproducibility is important

- *Discussion / Summary / Outlook*
  - Discuss the results achieved in a larger context
  - Summarize achievements
  - Mention open problems that remain
  - Outline possible future research that may help to overcome remaining issues

- *Literature*
  - Cite everything from which you draw in the text
  - List all cited work at the end of the report

STRUCTURE III

- *Evaluation*
    - ▶ Describe the data
    - ▶ Describe the (likely computational) experiments that were run
    - ▶ Refer back to Methods wherever needed
    - ▶ Again, reproducibility is important

- *Discussion / Summary / Outlook*
    - ▶ Discuss the results achieved in a larger context
    - ▶ Summarize achievements
    - ▶ Mention open problems that remain
    - ▶ Outline possible future research that may help to overcome remaining issues

- *Literature*
    - ▶ Cite everything from which you draw in the text
    - ▶ List all cited work at the end of the report

STRUCTURE III

- *Evaluation*
    - Describe the data
    - Describe the (likely computational) experiments that were run
    - Refer back to Methods wherever needed
    - Again, reproducibility is important

- *Discussion / Summary / Outlook*
    - Discuss the results achieved in a larger context
    - Summarize achievements
    - Mention open problems that remain
    - Outline possible future research that may help to overcome remaining issues

- *Literature*
    - Cite everything from which you draw in the text
    - List all cited work at the end of the report

Content

CONTENT

- ▶ Logical coherence
  - ▶ Content provided optimally builds on contents previously provided (but not on contents to be provided later)
  - ▶ Mention things that matter as closely as possible to where they are needed
  - ▶ Again: Introduction, Contents, Summary
- ▶ Work out and stress a main message
  - ▶ Provide main message in the Introduction
  - ▶ Keep particular focus on it in all that follows
- ▶ Keep things consistent and as simple as possible
  - ▶ Write only what you understand
  - ▶ "Lying" or "hiding" no longer allowed though; all necessary details to be provided

CONTENT

- ▶ Logical coherence
  - ▶ Content provided optimally builds on contents previously provided (but not on contents to be provided later)
  - ▶ Mention things that matter as closely as possible to where they are needed
  - ▶ Again: Introduction, Contents, Summary
- ▶ Work out and stress a main message
  - ▶ Provide main message in the introduction
  - ▶ Keep particular focus on it in all that follows
- ▶ Keep things consistent and as simple as possible
  - ▶ Write only what you understand
  - ▶ "Lying" or "hiding" no longer allowed though; all necessary details to be provided

CONTENT

- ▶ Logical coherence
    - ▶ Content provided optimally builds on contents previously provided (but not on contents to be provided later)
    - ▶ Mention things that matter as closely as possible to where they are needed
    - ▶ Again: Introduction, Contents, Summary
- ▶ Work out and stress a main message
    - ▶ Provide main message in the introduction
    - ▶ Keep particular focus on it in all that follows
- ▶ Keep things consistent and as simple as possible
    - ▶ Write only what you understand
    - ▶ "Lying" or "hiding" no longer allowed though; all necessary details to be provided

CONTENT

- ▶ Logical coherence
  - ▶ Content provided optimally builds on contents previously provided (but not on contents to be provided later)
  - ▶ Mention things that matter as closely as possible to where they are needed
  - ▶ Again: Introduction, Contents, Summary
- ▶ Work out and stress a main message
  - ▶ Provide main message in the Introduction
  - ▶ Keep particular focus on it in all that follows
- ▶ Keep things consistent and as simple as possible
  - ▶ Write only what you understand
  - ▶ "Lying" or "hiding" no longer allowed though; all necessary details to be provided

CONTENT

- ▶ Logical coherence
  - ▶ Content provided optimally builds on contents previously provided (but not on contents to be provided later)
  - ▶ Mention things that matter as closely as possible to where they are needed
  - ▶ Again: Introduction, Contents, Summary

- ▶ Work out and stress a main message
  - ▶ Provide main message in the Introduction
  - ▶ Keep particular focus on it in all that follows

- ▶ Keep things consistent and as simple as possible
  - ▶ Write only what you understand
  - ▶ "Lying" or "hiding" no longer allowed though; all necessary details to be provided

CONTENT

- ▶ Logical coherence
  - ▶ Content provided optimally builds on contents previously provided (but not on contents to be provided later)
  - ▶ Mention things that matter as closely as possible to where they are needed
  - ▶ Again: Introduction, Contents, Summary

- ▶ Work out and stress a main message
  - ▶ Provide main message in the Introduction
  - ▶ Keep particular focus on it in all that follows

- ▶ Keep things consistent and as simple as possible
  - ▶ Write only what you understand
  - ▶ "Lying" or "hiding" no longer allowed though; all necessary details to be provided

Thank you for listening!