# Guideline

# Scientific Work

As of: 2024, September 02

STEINBEIS UNIVERSITY
Schools of Next Practices

# Table of contents

# List of Figures

# List of Tables

# List of Abbreviations

| | |
|---|---|
| APA | American Psychological Association |
| AI | Artificial intelligence |
| MLA | Modern Language Association of America |
| VHB | Verband der Hochschullehrer für Betriebswirtschaftslehre (German Academic Association for Business Research) |

# Preface

The preparation of scientific papers requires the observance of numerous formal regulations. These regulations are by no means uniform among the thousands of universities or research institutions that exist around the world. Rather, each of these institutions derives its own rules from what is considered customary in the respective scientific discipline. The following regulations are therefore not universally valid worldwide. They explain what S-Next has integrated into its templates and what it recommends for the creation of good scientific papers. However, you will notice that we are very much guided by a worldwide standard when it comes to the rules for citing foreign sources. It is the so-called "APA Style" of the American Psychological Association (APA). We have defined some other rules (such as paper format, cover page design, page margins, etc.) individually for S-Next and documented or implemented them in this guideline and the Word format templates that are available for all scientific work at S-Next.

# 1 Key formatting data

## 1.1 Paper

All scientific papers that are written at S-Next must be created in DIN A4 format. Since all works are submitted electronically, there is no need to print them out on the corresponding DIN A4 paper. All you need to do is create and submit PDF documents. In addition, we provide Word templates for all academic papers that have to be created as part of a study program. These exist for Project Study Work, for Study Work as well as for the Master's thesis. You can find all of these Word templates in your online campus.

The following Table 1 summarizes the most important key data (margins, font, header and footer) of the formatting of all scientific papers on S-Next, as they are also implemented in all Word templates.

| | | |
|---|---|---|
| **Margins:** | Left Margin: | 3,0 cm |
| | Right Margin: | 3,0 cm |
| | Top Margin: | 3,0 cm |
| | Bottom Margin: | 2,5 cm |
| **Writing:** | Font: | Arial |
| | Type size: | 11pt<br>(Headings and footnotes vary) |
| | Font alignment: | Justification with hyphenation |
| | Line spacing: | 1.5 lines |
| **Header:** | left: | (Short) Title of the paper |
| | right: | First Name Last Name |
| **Footer:** | right: | Page number |

Source: Own work.

**Tab. 1: Key formatting data**

This guideline is also formatted according to these key data. However, since not all indications can be expressed in such key data, but sometimes also have to be explained and demonstrated, you will find many more tips on the design of scientific papers at S-Next below.

## 1.2 Styles

All Word templates for scientific papers at S-Next contain the following styles for the design of the various text elements within a scientific paper. For example, this paragraph is formatted in the Next Standard style. The following list of all available styles is, appropriately, formatted with the „List“ style:

- Enumeration
- Indented Quotation
- Footnote
- List
- Next Standard
- Reference Figure or Table
- References
- Subheading
- Text in Table
- Title of Figure
- Title of Table
- Überschrift 1 (Headline 1)
- Überschrift 2 (Headline 2)
- Überschrift 3 (Headline 3)

Nevertheless, it can happen that you will find numerous other styles, some of which are quite cryptic, in the overview of the styles, which are also created by reformatting individual text elements by hand or copying them into the document. Don't let them bother you, but try to get by with the above-mentioned styles as often as possible. Of course, you can also create your own style sheets if you want to use other text objects, such as text boxes or specially formatted tables.

It is also no coincidence that hyphenation is activated in all styles. This is because the text elements (especially "Next Standard") are justified. If justification is used without hyphenation, such unsightly gaps between individual words almost inevitably arise again and again. Therefore, please be sure to use automatic hyphenation to avoid such a typeface.

## 1.3 Length of chapters and paragraphs

Main chapters or subchapters that consist of only a few lines should not be the rule, but – if at all – the very big exception. Usually, a main or subchapter has a length of at least one whole page – and even that is already little and should be the exception.

If you want to structure several short sections one after the other, you can alternatively work with subheadings that do not appear as separate chapters and are therefore not listed as chapters in the table of contents.

However, individual main or sub-chapters can not only be too short, they can also be too long. If a scientific paper consists of only one (very long) main chapter with countless subchapters after the introduction, then one usually wishes for a clearer division into different main chapters. It is common for scientific papers to have two to five main chapters, which are inserted between the introduction and the concluding chapter.

But not only chapters can be too short or too long. Also, the paragraphs written within a chapter can be too short or too long. Here, however, don't mind if a single paragraph is very short (i.e. only a few lines long) or very long (a whole page or more). This only becomes disturbing when it happens again and again in a scientific work.

Unless individual paragraphs are interrupted by a bulleted list, figure or table or conclude a chapter, they should be more like a quarter to half a page long. Therefore, avoid too many too short individual sections in the running text – as has been done again on this page for demonstration purposes.

On the following page, you can see how the previous five, intentionally too short paragraphs, become two appropriately long paragraphs.

Repetition of page 4, but now with two instead of five paragraphs.

---

Main chapters or subchapters that consist of only a few lines should not be the rule, but – if at all – the very big exception. Usually, a main or subchapter has a length of at least one whole page – and even that is already little and should be the exception. If you want to structure several short sections one after the other, you can alternatively work with subheadings that do not appear as separate chapters and are therefore not listed as chapters in the table of contents. However, individual main or sub-chapters can not only be too short, they can also be too long. If a scientific paper consists of only one (very long) main chapter with countless subchapters after the introduction, then one usually wishes for a clearer division into different main chapters. It is common for scientific papers to have two to five main chapters, which are inserted between the introduction and the concluding chapter.

But not only chapters can be too short or too long. Also, the paragraphs written within a chapter can be too short or too long. Here, however, you don't mind if a single paragraph is very short (i.e. only a few lines long) or very long (a whole page or more). This only becomes disturbing when it happens again and again in a scientific work. Unless individual paragraphs are interrupted by a bulleted list, figure or table or conclude a chapter, they should be more like a quarter to half a page long. Therefore, avoid too many too short individual sections in the running text – as has been done again on this page for demonstration purposes.

---

Now it looks even more harmonious. In addition, you avoid the unpleasant impression that you want to make room here by making a separate paragraph out of almost every sentence. A harmonious appearance can also be tarnished by arbitrarily separating paragraphs with or without a blank line. In principle, both are allowed. However, the way of separating paragraphs with or without a blank line should not seem arbitrary. Again, we use the text from page 4 to show a negative example below.

Repetition of page 4, now with numerous (unsightly and completely unnecessary) line breaks after individual sentences.

---

Main chapters or subchapters that consist of only a few lines should not be the rule, but – if at all – the very big exception. Usually, a main or subchapter has a length of at least one whole page – and even that is already little and should be the exception.
If you want to structure several short sections one after the other, you can alternatively work with subheadings that do not appear as separate chapters and are therefore not listed as chapters in the table of contents.
However, individual main or sub-chapters can not only be too short, they can also be too long. If a scientific paper consists of only one (very long) main chapter with countless subchapters after the introduction, then one usually wishes for a clearer division into different main chapters.

It is common for scientific papers to have two to five main chapters, which are inserted between the introduction and the concluding chapter.

But not only chapters can be too short or too long.
Also, the paragraphs written within a chapter can be too short or too long. Here, however, you don't mind if a single paragraph is very short (i.e. only a few lines long) or very long (a whole page or more).
This only becomes disturbing when it happens again and again in a scientific work. Unless individual paragraphs are interrupted by a bulleted list, figure or table or conclude a chapter, they should be more like a quarter to half a page long.
Therefore, avoid too many too short individual sections in the running text – as has been done again on this page for demonstration purposes.

---

In this case, too, the presentation of the two paragraphs on page 5 serves as a model solution.

To conclude this subchapter on the formation of chapters and paragraphs, it should also be noted that if you introduce a subordinate level of outline within a chapter, then there must be at least two chapters at this new level of outline.

Wrong would be:
2 The branded product as a competitive instrument
    2.1 Branded goods and competition
3 Success potential of branded goods

Right against it:
2 The branded product as a competitive instrument
    2.1 Branded goods and competition
    2.2 Competition instruments
3 Success potential of branded goods

## 1.4 Listings and enumerations

If you want to make an unnumbered list in between, please choose the "List" style. If you simply click on the "Bullet" button, it will be formatted differently than with the style sheet.

- This is a test text so you can see what the list should look like when individual collection items span multiple lines.
- This is a test text so you can see what the collection should look like when individual collection items span multiple lines.
- This is a test text so you can see what the collection should look like if individual collection points span multiple lines.

Above and below the listing, you should insert a blank line. For a numbered bulleted list, choose the "Enumeration" style (also with a blank line before and after):

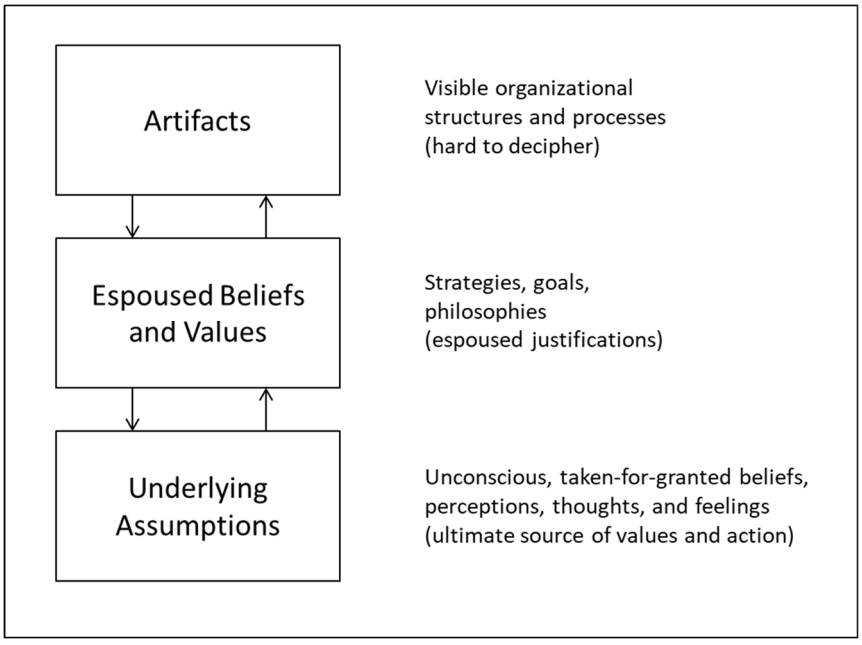
1. This is a test text so you can see what the enumeration should look like when individual numbered bullet points span multiple lines.
2. This is a test text so you can see what the enumeration should look like when individual numbered bullet points span multiple lines.

3. This is a test text so you can see what the enumeration should look like when individual numbered bullet points span multiple lines.
4. This is a test text so you can see what the enumeration should look like when individual numbered bullet points span multiple lines.

If the enumeration style now continues a list listed earlier with correspondingly higher digits, even though you want to start again at number 1, then marking the list and right-clicking on it will help. Then you can reset the start of numbering to 1.

## 1.5 Figures and tables

The use of graphics or tables is also subject to some scientific rules. For example, all figures and tables must be announced in advance with the figure or table number. In addition, they must be explained in terms of content (before or after the figure or table) in such a way that even someone to whom the text is read can understand the key statements – i.e. without having to look at the graphic or the table. As an example, the following Figure 1 shows the model of corporate culture by Edgar Schein (2004).




Source: Schein, 2016, p. 24.

**Fig. 1: Levels of culture by Edgar Schein**

This model has received a lot of attention in scientific debate. He defines corporate culture in terms of three associated levels. The first level, Artifacts, includes everything

readily visible or concretely tangible. The second level is represented by the companies publicly propagated values. The values that are lived actually can be accessed via the third level of the model and are referred to here as underlying assumptions, whose visibility is the lowest.

In addition, illustrations in a scientific paper should be delimited by a line frame. And if they don't have the full width of the text, they should be centered in the middle of the page. The source citation should be placed left-aligned below the graphic (i.e. under the lower left corner of the line frame). The title of a figure or table, on the other hand, is centered below the figure or table and below the source. Source and figure titles each have their own style sheets, which you can simply click on. The following are some scientific sample texts with tables and figures to illustrate how they should be integrated into a text:

Both the entry into entrepreneurship and the upper limit of the companies considered here can be linked to the concept of micro-enterprise. In a very simple definition, this means all companies that have a maximum of 9 employees. However, there are other criteria (see Table 2) according to which membership in the different size classes is determined. On the recommendation of the European Union, these are structured as follows[1]:

| | Employees (Full time) | Turnover max. in million euros | Balance sheet max. in million euros |
|---|---|---|---|
| Micro enterprise | 0-9 | 7 | 5 |
| Small enterprise | 10-49 | 7 | 5 |
| Medium-sized enterprise | 50-249 | 40 | 27 |
| Large enterprise | ≥ 250 | ≥ 40 | ≥ 27 |

Source: European Union, 1996.

**Tab. 2: Size classes for enterprises**

The following census of enterprises from the year 2021 still has some uncertainties, since especially in the area of small and micro enterprises in some cases different counting criteria (enterprises, legal units, VAT units) are used (see Table 3).

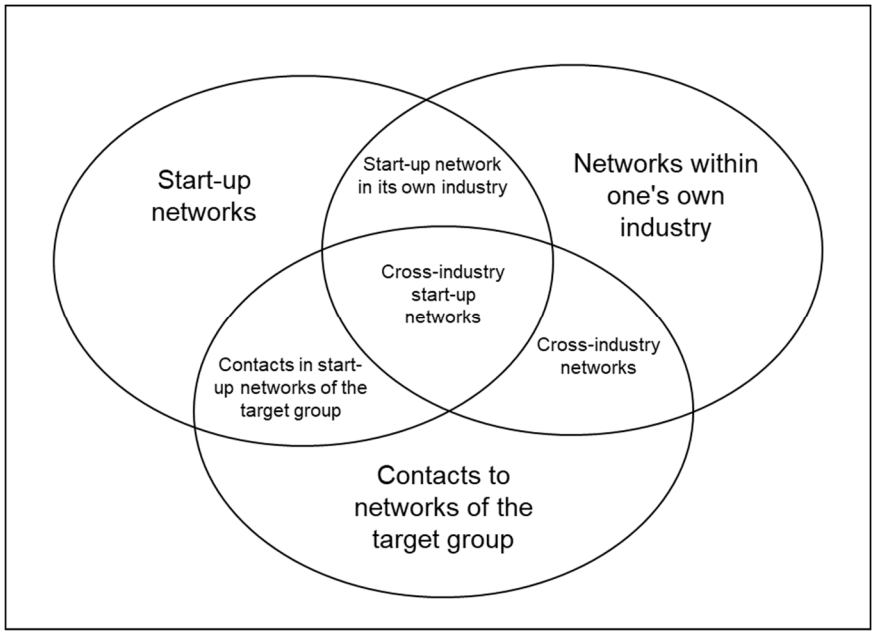
[1] The status for micro and small enterprises only applies if the company is not more than 25% owned by one or more companies that do not meet these criteria.

| Size of enterprise (number of employees) | Number of enterprises in 1.000 | Number of enterprises in % | Number of employees in 1.000 | Number of employees in % |
|---|---|---|---|---|
| Micro enterprises (1-9 employees) | 29,171 | 94,1 | 46,9861 | 30,1 |
| Small enterprises (10-49 employees) | 1,519 | 4,9 | 29,5029 | 18,9 |
| Medium-sized enterprises (50-249 employees) | 0,248 | 0,8 | 24,0394 | 15,4 |
| Large enterprises | 0,062 | 0,2 | 55,5716 | 35,6 |
| **Total enterprises:** | **31,0** | **100** | **156,1** | **100** |

Source: Derived from Eurostat, 2024, p. 10f.

**Tab. 3: Enterprises in Europe by size class**

This is followed by another text module, which is underlaid with a self-developed graphic: Within professional networks, a further distinction is made between open and closed networks. Within the open networks, three different types of social structures are then distinguished from each other: start-up networks, networks of one's own industry and access to networks of the target group. This should not obscure the fact that real open networks can often exist as hybrid forms of start-up and industry networks (see Figure 2).




Source: Own work.

**Fig. 2: Open networks and their overlaps**

You should also make sure that there is some text after a figure or a table before the next section begins. Usually, this is achieved by writing a few explanatory sentences after the figure or table. Only if there is no other way for reasons of formatting or page break, a new section may begin immediately on a figure or table.

## 1.6 Formal criteria in the evaluation reports

The evaluation report templates for the PSA, the Study Work, and the Thesis each contain two headings. The first section is used to evaluate the scientific content of the respective work. The second section is used to evaluate the formal criteria of the work. While the first category in each of the three evaluation reports is designed differently in order to meet the requirements of the respective work, the formal criteria in all three evaluation reports are completely identical. The following Table 4 shows these formal criteria.

Hints:

- The table that should now be shown does not fit into the remaining space on this page, together with its source and title.
- Since tables (and even more so figures) may only be wrapped from one page to the next page if they are longer than one page of text (and then again belong in the appendix rather than in the continuous text), the table was moved to the next page.
- If this results in too large empty spaces, the text that should actually follow after the table should be dragged to the front (i.e. here) – to prevent this empty space.
- However, this reaches its limits (as is the case here) when a table or figure is followed by not much text at all, or when several tables or figures follow each other. In this case, the resulting empty spaces are more likely to be accepted than if they could have been easily prevented.
- Table 4 is followed by four lines of text. This text could have been moved here now. However, since there is also the rule that a chapter should only end with a figure or table in exceptional cases, but always with a continuous text if possible, we have not moved these four lines here.
- If there are several large empty spaces in a scientific paper, then these are not taken into account when calculating the scope of the work. This is particularly relevant if a paper only reaches the lower limit (80%) of the required page size and also contains numerous large empty spaces. In this case, this can lead to the result that the thesis has not reached the required minimum scope of 80 %. If a thesis is rather too long (over 120% of the required number of pages), then many empty spaces contained in it would conversely lead to the result that the thesis is in fact somewhat shorter than the number of pages makes appear at first glance.

| Criteria | Evaluation* | | | |
|---|---|---|---|---|
| | very good | mostly good | with weaknesses | with major weaknesses or non-existent** |
| **Form** | | | | |
| The required number of pages is achieved | X | | | |
| Use of the template (cover pages, declarations, table of contents) | X | | | |
| Chapter numbering | X | | | |
| Wording of chapter headings | X | | | |
| Used space for figures and tables | X | | | |
| Avoidance of large blank spaces | X | | | |
| **Figures and Tables** | | | | |
| Numbering of figures and tables | X | | | |
| Use of figure and table captions | X | | | |
| Announcement to figures and tables in the previous text | X | | | |
| **Language, Spelling and Punctuation** | | | | |
| Grammar | X | | | |
| Spelling | X | | | |
| Punctuation | X | | | |
| Structure of sentences | X | | | |
| Comprehensibility of language | X | | | |
| Academic language | X | | | |
| **Citation** | | | | |
| Citing sources for quotations, figures, and tables | X | | | |
| The formal structure of citations | X | | | |
| **Directories** | | | | |
| Lists of figures, tables and abbreviations (if applicable) | X | | | |
| List of sources | X | | | |
| List of AI tools uesed (if applicable) | X | | | |

* The evaluation of the criteria (with the exception of the fields marked in grey) does not lead to a mathematically determined awarding of points. Rather, it is up to the evaluators to award their points on the basis of the overall impression. The differentiation of the criteria and their evaluation should also help students to identify opportunities for improvement.

** Formal evaluations marked in gray lead to the paper not being passed regardless of the evaluation of the scientific content.

Source: Own work.

**Tab. 4: Formal criteria in all S-Next evaluation reports**

All evaluation reports for the Transfer Project are available on the OnlineCampus. Please feel free to get an idea of the evaluation criteria that will be used by the evaluators to assess the various papers that you will write as part of your Transfer Project.

# 2 Working with sources in scientific papers

An important element of scientific research is the processing of existing knowledge from the literature and the correct handling of the corresponding sources. In every scientific paper, this ensures that arguments are strengthened, theses substantiated and one's own knowledge deepened. By examining the literature, the following sub-questions are to be answered piece by piece in the course of a scientific paper (here using the example of the Transfer Project):

- How should the **core terms** used in the Transfer Project be defined?
- Which **models** can be used to answer the research question of the Transfer Project?
- Which **theories** can help to answer the research question of the Transfer Project?
- What **answers** or partial answers to the research question of a Transfer Project can already be found in the literature?

This 2nd chapter of the Guideline Scientific Work is intended to provide students with instructions on how to use external sources in academic work (in INSIDER, in the Project Study Work, in the Study Work, and in the Master Theses). This applies to both the selection of sources and the correct citation of these sources.

## 2.1 Quality and quantity of sources

An essential part of scientific work is the foundation and linking of the knowledge gained with already published scientific literature. Students are often faced with the question of what types of sources should or must be consulted in order to make this literature work qualitatively convincing. Sometimes a more quantitative approach predominates, the aim of which is to cite a certain number of sources at all. Occasionally, the question can be heard: "How many sources do you need for a Study Work or a Thesis?" Experienced scholars are reluctant to answer this question because it gives the impression that source work is about quantity – not quality. Nevertheless, we take the liberty of giving a rough thumb value for the amount of sources that are good for a scientific paper: This is one source per page of text. However, please note the following:

- "One source per page" does not mean one citation per page. What is meant is the list of sources at the end of the work. If it has about as many sources as the work on

pages is strong, then it usually looks harmonious. Deviations downwards or upwards are completely normal. This quantity specification is a rough orientation.

- Some sources are often consulted and cited more frequently in the course of a scientific work. Therefore, scientific papers usually have significantly more citations in the current text than references in the list of sources.
- Even a very extensive list of sources is not convincing in terms of quality if the quality of the sources used is not convincing. And this is where the tide turns from quantity to quality: A shorter list of sources with high-quality scientific sources is worth much more than an extensive list of sources with countless sources that are irrelevant from a scientific point of view!

When it comes to the question of the quality of sources, ChatGPT's answer to the following prompt "What categories of sources are distinguished in scientific works in business administration when it comes to the scientific quality of the sources used?" can be summarized as follows (based on ChatGPT, July 4, 2024)[2]:

1. **Primary Sources:** These are original research articles in academic journals. Such sources are highly regarded as they provide information that has mostly been obtained through scientific methods.
2. **Secondary sources:** These are scientific textbooks, meta-analyses or review articles in renowned journals. These are also highly regarded, especially when they are published in recognized journals or by renowned experts. They provide a more in-depth analysis and contextualization of primary sources.
3. **Tertiary sources:** These are textbooks, manuals, encyclopedias, or scientific databases. They are considered useful for getting started with a topic and understanding basic concepts, but they are less detailed and specific than primary or secondary sources.
4. **Grey literature:** Scientists understand this to mean research reports from institutions, conference papers, working papers, or white papers. These can provide valuable and up-to-date information, but often without a formal peer review process, which is why their quality and credibility need to be critically assessed.
5. **Popular scientific sources:** These include business magazines (e.g. Harvard Business Review, Manager Magazin), news articles, blogs and popular science

[2] We didn't use ChatGPT at this point because there would have been no other way to find a list of such sources. We used it to show how to use AI tools in a scientific paper in a formally correct way as part of this guideline. See chapter 2.3 for more details.

books. They are considered useful for general introductions and practice-oriented insights, but they are less detailed and scientifically sound than academic sources.

6. **Non-scientific sources:** These are general magazines, newspaper articles, opinion articles, commercial websites or personal blogs. They are not suitable for scientific papers, but can be used for contextualization or as background information.

If a list of sources corresponds quantitatively to expectations, but consists mainly of popular scientific or non-scientific sources, then the sources do not meet the requirements of a good scientific work. Good scientific work doesn't use (or uses only few) popular or non-scientific sources. The majority sources used are primary, secondary and tertiary sources as well as a few grey literature. An overview of academic journals that are relevant to business administration is provided by the German Academic Association for Business Research (originally: Verband der Hochschullehrer für Betriebswirtschaftslehre VHB) with its VHB rating.

https://www.vhbonline.org/service/vhb-rating-2024

Sub-ratings for 20 different sub-disciplines of business administration are presented there. Each of these ratings lists all scientific journals that are considered relevant to the respective sub-discipline. They are also sorted with the letters from A+ to D. A+, A and B are considered to be journals of particularly high scientific quality. However, journals with a rating of C and D are also recognized as scientific journals.

In many of these sub-rankings, the journals of the Academy of Management are considered to be particularly high quality academic journals and are therefore rated A+. We mention this because these journals are also available in the EBSCO database that we provide to our students. EBSCO offers full-text access to many other scholarly journals, but by no means all of those included in the VHB ratings. However, with the journals available from EBSCO alone, any scientific paper on S-Next can be extensively supported with high quality sources. In the OnlineCampus, you will also find a screen video in which we explain how to use EBSCO. The OnlineCampus also provides access to the ProQuest literature database. This allows access to numerous English-language books, the quality of which ranges from secondary sources to popular scientific sources.

## 2.2 In-text citations and references

Now that it has been clarified that external sources are used in scientific papers and what quantitative and qualitative requirements exist for this, we now come to the question of how external sources are cited in scientific papers. There are basically two variants for this:

1. With in-text citations at the text passages where reference is made to an external source and a full reference of the cited sources at the end of the paper in a list of sources.
2. With a full reference directly at each text passage where a source is cited. Then there is no need for a list of sources at the end of the paper.

All scientific papers at S-Next (as well as at all other universities known to us) are prepared in variant 1 (in-text citation + list of sources at the end). In the formal design of in-text citations and references in the list of sources, we are guided by regulations issued by the "American Psychological Association". The abbreviation of this association as "APA" is also the namesake for the world-famous and recognized "APA Style". Below we list two URLs that our students should visit to get to know the APA and APA Style:

- www.apa.org
- https://apastyle.apa.org

On the website for the APA Style you can click on the "Style and Grammar Guidelines". Then (in July 2024) a menu will appear with the following eight categories[3]:

- Paper Format
- In-Text Citation
- Mechanics of Style
- Bias-Free Language
- Tables and Figures
- References
- Grammar
- Publication Process

[3] Since the content of a website can change at any time, it is possible that the corresponding information is no longer up-to-date. As soon as we become aware of this, we will of course adapt this guideline.

This list makes it clear that APA Style is not just about citing sources. It contains numerous other regulations for the design of scientific papers. However, we do not adopt all the rules of the APA at S-Next. For the formatting of text pages, we refer to our own templates and we ask our students to use only these templates created by us and provided for our students. Only where it comes to the citation of sources do we adhere very closely to the guidelines of the APA. Of the eight headings mentioned, two are headings of the work with sources. These are the sections "In-Text Citations" and "References". These two rubrics correspond exactly to the two elements of the above-mentioned variant 1 of citation with short and full references:

There are numerous rules and examples for both on the APA Style website. All scientific papers that are produced at S-Next should be based on these rules of the APA Style. We therefore ask our students to consider the APA Style website as an extension of this guide and to apply the rules for "in-text citations" and for "references" described there exactly as they are described there. For "in-text citations" we give two additional notes here. These concern footnotes and page numbers:

*Footnotes*

An important and easily recognizable feature of the APA Style is that short references are NOT made in footnotes, but directly in the text. Nevertheless, the use of footnotes within a scientific paper is also possible when using the APA style.[4]

*Page References*

Contrary to the practice sometimes encountered in books or essays that references are designed in APA Style but do not have page references, we attach great importance to the fact that all references that refer to certain passages of a cited work are also accompanied by corresponding page references. The APA Style also provides for this in exactly the same way. However, this rule is – to our incomprehension – violated in many scientific papers. Therefore, please do not be misled by the sometimes missing page references in the in-text citations in some books or essays. We attach great importance to the fact that page references are included in the in-text citations of our works when reference is made to certain text passages (e.g. to a direct quotation) or a certain statement

[4] However, these footnotes are not intended to cite sources. They serve as supplementary references that – precisely because they are only supplementary in nature – were not inserted into the regular text by the author. Only if such a supplementary reference within a footnote in turn refers to an external source, then an APA-style reference is made in the footnote. This is then done according to the same principles as those described below for direct and indirect quotations.

within a work. Only if reference is made to a work as a whole, these page references are not required.

## 2.3 Use of AI tools

In order to use AI tools effectively for scientific work and at the same time ensure academic integrity, we want to provide our students with advice on how to use AI appropriately. AI tools are to be used to improve research skills and research results. At the same time, strict academic standards are to be adhered to. This is intended to create a level playing field for all students and is in line with both our qualification goals and the evolving AI landscape in science.

The use of AI tools is intended to support our students in completing research and correction tasks efficiently in order to have more resources available for the recognizable proof of the following own skills:

- **Understanding of scientific literature:** The ability to understand scientific discourses, to evaluate them with regard to their usefulness for one's own research interest and to engage with these discourses in a constructive, critical and reflective manner.
- **Logical structure:** The ability to structure research projects in a goal-oriented manner and to explain in a comprehensible way which steps are necessary in which order to answer the research question posed.
- **Scientific Methods:** The ability to select suitable scientific methods and to apply them correctly on their own.

In the course of working on an INSIDER or the various elements of a transfer project, AI tools that do not restrict the proof of these skills can and may therefore be used in various ways. In the following Table 5, we go into different phases of the creation of a scientific paper and explain how AI tools may be used for scientific work at S-Next (some without referencing, some with referencing) and which types of their use of AI tools are not permitted in order to leave an adequate space for demonstrating one's own skills.

| **Finding a topic** | |
|---|---|
| Allowed without referencing | ▪ Generate and vary from possible research questions.<br>▪ Using AI tools such as ChatGPT, Jasper for brainstorming topics and refining ideas |
| Not allowed | ▪ Adopt an exposé created by AI tools |
| **Literature Review** | |
| Allowed without referencing | ▪ Find and recommend relevant work (e.g., with ResearchRabbit, elicit.org)<br>▪ Citation management as well as organization and formatting of references (e.g. with EndNote, Zotero, PaperPile)<br>▪ Reformulate your own texts for more clarity, shortening and improving writing style (e.g. with QuillBot) |
| Allowed with referencing | ▪ Explaining theories / paraphrasing literature<br>▪ Summarize key points of work (e.g., using Scholarcy) |
| Not allowed | ▪ Evaluation and reflection of theories with regard to one's own research concerns |
| **Development and description of the methodology** | |
| Allowed without referencing | ▪ Receive suggestions for the methodology to be used |
| Not allowed | ▪ Let AI design and describe the methodology |
| **Data collection and analysis** | |
| Allowed with referencing | ▪ Cleansing and organizing data (e.g. with OpenRefine)<br>▪ Support in setting up data analysis<br>▪ Support for statistical analyses (e.g. with R, Python, AI libraries)<br>▪ Creation of diagrams and graphics (e.g. with Tableau, Datawrapper) |
| Not allowed | ▪ Modify data to fit hypotheses<br>▪ Have analyses prepared<br>▪ Create visualizations without data validation |

Table 5 continues on the following page.

| **Writing the paper** | |
|---|---|
| Allowed with referencing | ▪ Correction of grammar and spelling (e.g. with Grammarly)<br>▪ Improvement of readability and style (e.g. with Hemingway Editor)<br>▪ Check for unintentional plagiarism (e.g. with Turnitin) |
| Not allowed | ▪ Generation of larger sections of text<br>▪ Editing text to pass plagiarism checks |

Source: Own work.

**Tab. 5: Allowed and not allowed ways of using AI tools**

Short references must be included in the appropriate places in the paper when using AI tools whose use is allowed with referencing. The short references only identify the AI tool used and the date of use. The full referencing of the AI tool used is done in a "List of AI Tools Used", which is inserted after the list of sources at the end of the thesis (but before any appendices inserted). In the list of AI tools used, a 4-line table is inserted chronologically along the paper for each AI use (see, for example, Table 6 and the "List of AI Tools Used" at the end of this guideline).

| | |
|---|---|
| **Chapter, Page** | Chapter 2.1, p. 15f. |
| **AI Tool, Date** | ChatGPT, 2024, July 24 |
| **Type of use** | Research on the types of sources in scientific works |
| **Used prompts / orders / requests to the AI tool** | Which categories of sources are distinguished in academic works in business administration when it comes to the scientific quality of the sources used? |

Source: Own work.

**Tab. 6: Structure of the information on the use of an AI tool**

Finally, it should be noted that the APA has of course also turned to the question of what recommendations should be given for the use and associated citation of AI tools. However, at the time of writing this guideline, there is no separate section on the APA-style website with corresponding hints and examples. However, there is a blog on the APA website in which an article from April 2023 comments on the use of AI tools. It is undoubtedly only a matter of time before the APA will provide further information here.

Short: How to cite ChatGPT (apa.org)
Long: https://apastyle.apa.org/blog/how-to-cite-chatgpt

The Modern Language Association of America (MLA) also publishes citation guidelines for academic work. These are summarized under the name MLA style. The MLA style is more commonly used in the humanities, while the APA style is common in the social sciences. And the MLA has also already described clear guidelines for the use of AI tools, which should be pointed out here:

Short: How do I cite generative AI in MLA style? | MLA Style Center
Long: https://style.mla.org/citing-generative-ai/

We will continuously engage with the recommendations published by the APA and MLA (and other relevant organizations) to further develop our guidelines on the use of AI tools when deemed appropriate.

## 2.4 Use of own text elements from previous works

Project Study Work, Study Work and Master Thesis should build on each other in terms of content (justified exceptions are possible). Therefore, results from the Project Study Work should be reflected in the Study Work and/or the Thesis, and results from the Study Work should be reflected in the Thesis. To this end, important results can be described as a starting point for the work that follows. The following regulations apply:

- Text passages from chapters 1 and 2 of the Project Study Work (problem statement and research question) may be used again without identification both in the introduction of the Thesis and in the introduction of the Thesis. Likewise, text passages from the introduction to the Study Work may also be used again in the introduction to the Thesis without identification. Since this is the description of the starting point of the Transfer Project, this may be done analogously or identically in different works without the need for citation or redesign. It should be noted that the introduction of a Study Work and the introduction of a Thesis cannot be identical, at least in the description of the procedure of the further Thesis, since they will inevitably present different approaches according to their different research questions.
- The situation is different for text passages that were created in chapters 3 and 4 of the Project Study Work or after the introduction in the Study Work. In this case, a transfer of results is only permissible in the form that a summary chapter of max. 3 (Study Work) or max. 5 pages (Thesis) is inserted after the introduction of the respective follow-up work, which presents the results of the preliminary work. In this chapter

– and only there – it is permitted to use text passages or even self-created illustrations or tables from the preliminary work with corresponding self-reference. The cited own source is cited in accordance with the rules for in-text citations and listed as a full reference in the list of sources. This chapter establishes the connection to the content of the preliminary work and enables a direct reference to corresponding preliminary results. However, this chapter is not considered part of the follow-up work. It is therefore not counted towards the number of pages of the Study Work or Thesis and is not taken into account in the evaluation. Similarly, results that have been produced in INSIDER or the innovation project can also be used in a work of the Transfer Project. If preliminary results are to be pointed out in a Project Study Work, this can be done at all points by means of a corresponding self-reference.

A transfer of results from the Project Study Work and Study Work is particularly successful if the central results have been summarized in the respective preliminary work in such a way that these summaries can be transferred 1:1 into the follow-up work. The more imprecise and unspecific the results of a preliminary work are, the more unclear it is which of them should be adopted into the follow-up work. Then, as a student, you have to do something that would have been better done to increase the quality of the preliminary work: Clearly express what the central findings of a scientific paper were and how they should help to support the further research process.

## 2.5 Plagiarism

Plagiarism is when texts or findings from other sources are used in a paper without reference being made to these sources and the texts and findings used therefore give the impression that they are a scientific contribution of the author. It does not depend on the length of the text of the copy or its source type whether an accusation of plagiarism arises. According to the declaration of independence to be completed at the beginning of the written work, no sources other than those identified in the thesis may be used. In order to avoid any misunderstandings here, it should be emphasized:

- External sources are to be used in scientific papers. This is an important feature of scientific quality.
- However, the sources used must be cited and referenced. If this does not happen, plagiarism occurs.

The term "plagiarism" is used partly with a narrower meaning and partly with a broader meaning. This is to be explained using the following variants of an impermissible use of external sources (based on ChatGPT, July 4, 2024):

1. Direct Plagiarism:
   - Definition: Copying texts verbatim without citing the source.
   - Example: Copying a paragraph from a book or article without citation.
2. Self-plagiarism:
   - Definition: Reuse of one's own previous work without appropriate labeling.
   - Example: Submission of the same research paper for several courses without appropriate marking. (In chapter 2.4 we have named an exception that is permitted within the Transfer Project.)
3. Paraphrasing without citing the source:
   - Definition: Rewriting other people's texts without citing the source.
   - Example: Reproducing ideas or data from an article without citing it.
4. Incorrect citation:
   - Definition: Citing sources that have not been used or misrepresenting the cited sources.
   - Example: Specifying a source that does not support the information contained in the text.
5. Ghostwriting:
   - Definition: Hiring someone else to write the work and passing that work off as their own.
   - Example: A student has a paper written by a professional service and submits it under his name.
6. Use of software-generated texts:
   - Definition: Using texts created by software or AI without specifying it.
   - Example: A student uses a text generated by an AI tool and passes it off as their own work.

Only the first two of these six variants of an impermissible use of external sources bear the name of plagiarism in their name. They are considered plagiarism in the narrower sense. Regardless of this, all six variants are plagiarism – but now also in the broader sense of this term. When we speak of plagiarism in the following, we use this term in its broader sense, which includes all six variants of an impermissible use of external sources.

All scientific papers submitted to S-Next are checked for the various variants of plagiarism with the help of software-supported test procedures. If this examination reveals a suspicion of plagiarism, the plagiarism commission of the department will examine whether this suspicion could be justified. If the suspicion of plagiarism is confirmed during this second examination, the present work will not be directly evaluated. Instead, a written statement from the student on the corresponding suspicion of plagiarism is first requested. As soon as this statement is available, the plagiarism commission decides on the further course of action on the basis of the statement and its own analyses. The plagiarism commission may also distinguish between intentional and non-intentional plagiarism. The following further steps and consequences are conceivable as a result of the review:

- The accusation of plagiarism is dropped. The work is passed on for evaluation.
- The accusation of plagiarism remains. The plagiarism commission documents this accusation on the basis of the documents. Depending on the severity, one of the following consequences is drawn:
    - Points are deducted from the assessment and evaluation of the paper.
    - The work is graded as failed in the first attempt. It can be corrected for a second attempt according to the specifications of the plagiarism commission or it must be recreated for a second attempt.
    - In the case of serious or repeated plagiarism, the plagiarism commission can exclude the student from the examination altogether. Then the work is finally failed. This can mean exmatriculation and, if necessary, mean that the degree program in question cannot be continued at another university.

If the accusation of plagiarism is made and consequences are drawn, the student concerned can submit an objection to the plagiarism committee within 4 weeks. The latter examines the objection. If the objection is not granted, the case will be referred to the examination board. The latter makes a final decision.

If the suspicion of plagiarism arises only after the assessment or only after completion of the entire degree program, a certificate of achievement as a result of plagiarism can also be retroactively assessed as failed and, in the case of severe plagiarism, the degree obtained can also be withdrawn retroactively.

# 3 Regulations from previous guidelines

Guidelines for scientific work continue to develop and lead to changes. These changes are not always valid for all students from now on. Anyone who has started the preparation of a scientific paper with reference to an earlier guideline may of course complete this work in accordance with the regulations applicable there. In the following, we would like to point out two changes and we explain in each case the conditions under which the regulations of the former Guidelines for Scientific Work still apply.

1. Citations with footnotes
2. Templates for PSW, SW, and MT

*Ad 1: Citations with Footnotes*

In the previous guideline for scientific work, it was recommended that short references should not be made as in-text citations, but in footnotes. Students who are currently writing a scientific paper with footnotes for citations may of course still finalize and submit this thesis with these footnotes. The use of footnotes for citations is – as is the APA style – a formally correct citation method. However, we now want to make the APA Style, which is much more widespread internationally, the standard for the S-Next.

*Ad 2: Templates for PSW, SW, and MT*

With the publication of this guideline, the templates provided in the OnlineCampus for Project Study Work, Study Work, and Master Thesis will also be updated. Again, students who are currently writing an scientific paper with one of the previous templates may of course still finalize and submit this paper with these previous templates.

## List of Sources

Eurostat. (2024). Key Figures on European Business. European Union.

European Union. (1996). Official Journal Nr. L107/4.

Schein, E. (2016). Organizational Culture and Leadership (5th. ed.). Wiley.

# List of AI tools used

| | |
|---|---|
| **Chapter, Page** | Chapter 2.1, p. 15f. |
| **AI Tool, Date** | ChatGPT, 2024, July 24 |
| **Type of use** | Research on the types of sources in scientific works |
| **Used prompts / orders / requests to the AI tool** | Which categories of sources are distinguished in academic works in business administration when it comes to the scientific quality of the sources used? |

| | |
|---|---|
| **Chapter, Page** | Chapter 2.5, p. 25f. |
| **AI Tool, Date** | ChatGPT, 2024 July 28 |
| **Type of use** | Research on the types of plagiarism in scientific papers |
| **Used prompts / orders / requests to the AI tool** | Are ghostwriting and the use of software-generated texts that have not been identified as such in scientific papers considered a variant of plagiarism? Or are they considered separate forms of illicit use of external sources? And how can the variants of the inadmissible use of external sources in scientific works be systematized as a whole? |