

Thesis Writer 2.0 – a system supporting academic writing, its instruction and supervision

Abstract

In this demonstration we present a bilingual writing platform called Thesis Writer (TW), designed to help student writers with their first or second thesis and its supervision (<https://thesiswriter.zhaw.ch>). TW responds to problems arising of the Bologna reform with a first research-based paper due after only three years where students often are not sufficiently prepared yet. Thesis Writer provides a digital workspace that combines a word editor with several help functions, such as Tutorials, Examples, Phrasebooks, Corpus search tools, an Outline function, Note cards, and a Reference Manager. It has been implemented as Software as a Service (SaaS), enabling a significant number of users to work simultaneously and even collaboratively.

1. Background academic writing research and thesis supervision

In today's information age, writing competence is a central element of literacy. In higher education, writing is used in many ways as a means of teaching, learning, assessment, reflection, communication, and as the main documentation of academic research (Nesi & Gardner, 2012). Students need to acquire high level discursive mobility so as to understand the different genres, registers, communicative purposes, and rhetorical means of these discourses, and to acquire the necessary process-based writing skills to be able to produce them. The capstone writing experience of almost every degree programme is the thesis, which is used to assess the ability of research-based collection and processing of data or other materials, and to structure them according to one of the available process-genres (Swales, 1990).

With the Bologna reform, the amount of time granted for students to develop thesis writing skills was reduced to three years, leading to significant issues rooted in a lack of practice and insufficiently developed writing skills specifically at the undergraduate level (Samac, Prenner, & Schwetz, 2009) which TW targets in particular. While doctoral dissertation supervision has been extensively studied (Berman & Smyth, 2015; Dysthe, Samara, & Westrheim, 2006; Kamler & Thomson, 2006; Maxwell & Smyth, 2011; Vehviläinen, 2009; Vehviläinen & Löfström, 2016) the same does not hold for undergraduate thesis supervision (Roberts & Seaman, 2018; Stappenbelt & Basu, 2019).

2. Academic Writing Tools, Thesis Writer

Advances in computational linguistics and informatics in recent years have led to the rapid development of systems supporting all kinds of writing, as well as in various sub-processes (Allen, Jacovina, & McNamara, 2015; Strobl et al., 2019; Williams & Beam, 2019).

2.1 Conceptual basis of Thesis Writer

TW is based on a process approach for supporting students in the following stages: 1. Orientation, planning, and focus, 2. Writing the proposal of a thesis, 3. Collecting data and materials, 4. Revising, editing, submitting the thesis. TW has a comment-ed template (a proposal wizard) to help support the development of a thesis structure, and is based on an extended version of the well-established IMRaD structure (Introduction, Methods, Results, and Discussion – Swales, 1990), which supports writers in creating their first idea of a thesis proposal. This initial proposal forms the basis for exchange with the supervisor before the actual research is carried out and the thesis developed.

The main focus of TW is to help students master the conceptual, rhetorical, communicative, and organisational requirements of thesis writing, and at the same time, to acquire the respective skills needed for successful academic writing. In addition to the production and storage of text, TW supports writers in four principal areas (see Figure 1): (1) Project management, (2) Instructions, (3) Collaboration, and, (4) Knowledge management.

tw How Thesis Writer supports the writing process			
Project management	Instructions	Collaboration	Knowledge managemt.
➤ Subdivision of workflow into four steps	➤ Context-specific tutorials	➤ Document sharing system for group work	➤ Flexible outline-generator
➤ Instructions for every step (roadmap)	➤ Rhetorical / language support (phrasebook catalogue, corpus-queries in real-time)	➤ Feedback: adding comments function	➤ Note-card system
➤ Project management and planning tool	➤ Sample texts	➤ Forum: community of practice	➤ Simple citation management

Figure 1: Areas where TW provides support

2.2 Main workspace and core functionality of Thesis Writer

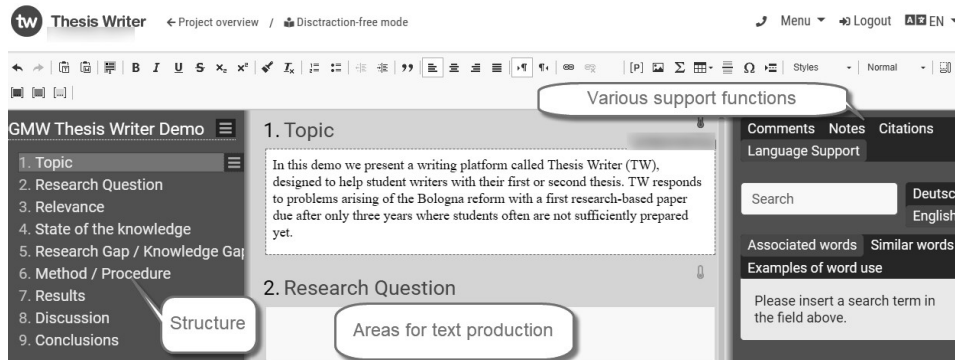


Figure 2: Main workspace of Thesis Writer

The main working area of TW is displayed in figure 2. On the left side the structure of the document is displayed and can be developed, altered. Furthermore, export to MS Word is integrated in one of the menus. The middle window is the area for text production. As software as a service TW runs in a web browser. Text can be written as in similar online word processors. Users can jointly work on a document (e.g. a group of students for a joint assignment or student and supervisor). Support functions are provided in the right plane.

The main support functions provided by TW are:

- **Comments** can be added similar to MS Word. They appear in real-time using socket server technology and can therefore also be used as chat when multiple people work in a document.
- An **index card system** for knowledge management is included (similar to Luhman's Zettelkasten). Cards can be searched and tagged.
- A rudimentary **reference management** system was included. When the document is exported to MS Word a reference list is attached.
- **Language support:** An English and a German corpus with roughly 20.000 scientific texts each is integrated in TW. Three different search functions are provided which can be used in order to explore the two background corpora for similar words, collocations and concordances.
- A **bilingual phrasebook** is integrated providing roughly 1.000 phrases for typical rhetorical moves in research-based papers and research proposals (Figure 3).

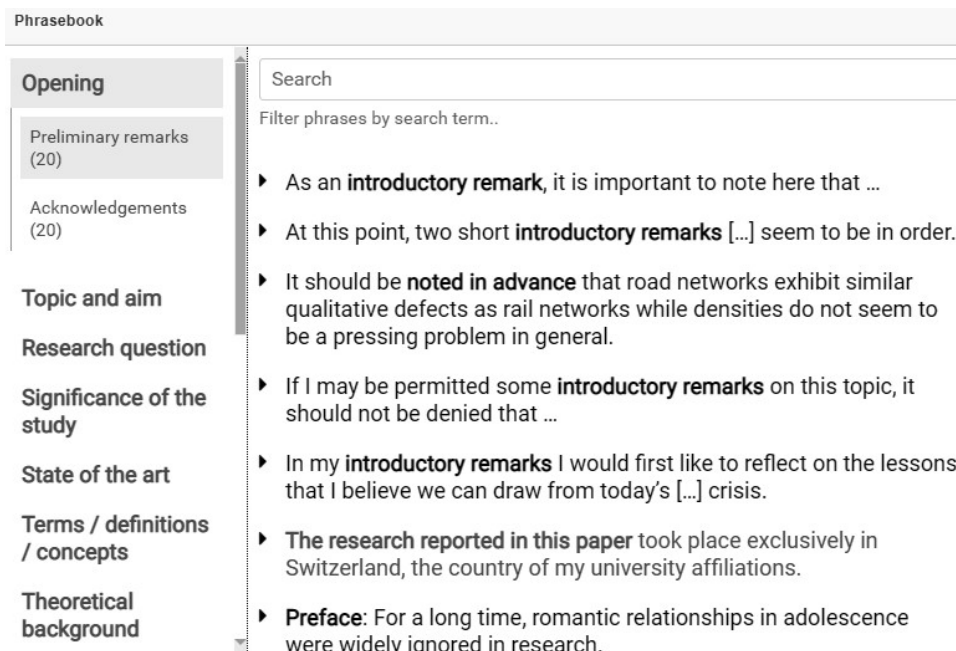


Figure 3: Bilingual phrasebook in Thesis Writer

3. Conclusion

TW was so far used by a couple of thousand students for writing proposals. Different aspects of Thesis Writer have been researched (Rapp & Kauf, 2018). Within an ongoing EU project, we could vastly expand its functionality now fully supporting thesis writing and its supervision. Currently research is carried out on its use, usefulness and effectiveness for thesis writing and supervision. In the demo the system can be tested and experiences with integration in learning, teaching and curriculum integration discussed.

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Literature

- Allen, L. K., Jacovina, M. E., & McNamara, D. S. (2015). Computer-based writing instruction. In C. A. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of Writing Research* (pp. 316–329). Guildford.
- Berman, J., & Smyth, R. (2015). Conceptual frameworks in the doctoral research process: A pedagogical model. *Innovations in Education and Teaching International*, 52(2), 125–136. <https://doi.org/10.1080/14703297.2013.809011>

- Dysthe, O., Samara, A., & Westrheim, K. (2006). Multivoiced supervision of Master's students: A case study of alternative supervision practices in higher education. *Studies in Higher Education, 31* (3), 299–318. <https://doi.org/10.1080/03075070600680562>
- Kamler, B., & Thomson, P. (2006). *Helping Doctoral Students Write: Pedagogies for Supervision*. London: Taylor & Francis. <https://doi.org/10.4324/9780203969816>
- Maxwell, T. W., & Smyth, R. (2011). Higher degree research supervision: From practice toward theory. *Higher Education Research & Development, 30* (2), 219–231. <https://doi.org/10.1080/07294360.2010.509762>
- Nesi, H., & Gardner, S. (2012). *Genres Across the Disciplines: Student Writing in Higher Education*. Cambridge University.
- Rapp, C., & Kauf, P. (2018). Scaling Academic Writing Instruction: Evaluation of a Scaffolding Tool (Thesis Writer). *International Journal of Artificial Intelligence in Education, 28* (4), 590–615.
- Roberts, L. D., & Seaman, K. (2018). Good undergraduate dissertation supervision: perspectives of supervisors and dissertation coordinators. *International Journal for Academic Development, 23* (1), 28–40. <https://doi.org/10.1080/1360144X.2017.1412971>
- Samac, K., Prenner, M., & Schwetz, H. (2009). *Die Bachelorarbeit an Universität und Fachhochschule* [The Bachelor's thesis at university and college]. Wien: Facultas.
- Stappenbelt, B., & Basu, A. (2019). Student-supervisor-university expectation alignment in the undergraduate engineering thesis. *Journal of Technology and Science Education, 9* (2), 199–216. <http://dx.doi.org/10.3926/jotse.482>
- Strobl, C., Ailhaud, E., Benetos, K., Devitt, A., Kruse, O., Proske, A., & Rapp, C. (2019). Digital support for academic writing: A review of technologies and pedagogies. *Computers & Education, 131*, 33–48. <https://doi.org/10.1016/j.compedu.2018.12.005>
- Swales, J. (1990). *Genre Analysis: English in Academic and Research Settings*. Cambridge: Cambridge University Press.
- Vehviläinen, S. (2009). Student-Initiated Advice in Academic Supervision. *Research on Language and Social Interaction, 42* (2), 163–190. <https://doi.org/10.1080/08351810902864560>
- Vehviläinen, S., & Löfström, E. (2016). 'I wish I had a crystal ball': discourses and potentials for developing academic supervising. *Studies in Higher Education, 41* (3), 508–524. <https://doi.org/10.1080/03075079.2014.942272>
- Williams, C., & Beam, S. (2019). Technology and writing: Review of research. *Computers & Education, 128*, 227–242. <https://doi.org/10.1016/j.compedu.2018.09.024>