

Promoting critical thinking and higher order learning through written feedback on students' thesis – key principles to consider

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Introduction

As a supervisor of bachelor students during their final project and bachelor's thesis, I have consistently found that written feedback is an influential way to support student learning during the thesis process. The supervision of undergraduate theses involves not only guiding students through the complexities of academic research and writing, but also helping them develop the competencies such as independent inquiry, critical analysis, and scholarly communication. In this context, written feedback serves as a key method through which students receive guidance, clarification, and encouragement (Carless, 2006; Carless & Boud, 2018).

However, despite the good intentions and careful attention supervisors often give to formulating written comments, my colleagues and I have observed that students do not always make productive use of the feedback provided. Some incorporate suggestions without deeper reflection; others overlook key points, misinterpret critical commentary, or express confusion about expectations. These common challenges led us to question how written feedback can be improved in its clarity, relevance, and pedagogical value.

A key motivation for this project is the need to distinguish and optimize the use of formative versus summative feedback in thesis supervision. While summative feedback typically serves an evaluative function, it might be the formative feedback, provided throughout the drafting stages, that holds the greatest potential for influencing and facilitating student learning (Nicol & Macfarlane-Dick, 2006; Hattie &

Timperley, 2007). Feedback on drafts, when delivered intentionally and constructively, can shape not only the quality of the final product but also students' understanding of academic standards and conventions, and their own learning process. Yet, formative feedback can sometimes be overly focused on superficial aspects (such as language or formatting), while missing opportunities to prompt deeper cognitive engagement, like refining an argument, clarifying a theoretical framework, or rethinking methodological choices.

My motivation for choosing this topic and project is aimed at enhancing the educational value of formative written feedback during the thesis writing process. I aim to explore how different types, tones, content and structures of feedback influence students' revisions, learning strategies, and enables higher-order learning such as critical thinking. Specifically, I am interested in identifying how supervisors can design and deliver written feedback that not only correct and direct, but also stimulate reflection, self-assessment, and critical thinking, core aspects of higher-order learning.

Furthermore, this project also aims at individual professional development. As a supervisor, I want to improve my understanding of how my feedback practice impact student learning, and how I can adapt them to better support each student in improving their ability to achieve higher-order learning competencies and recognising signs of both regression and progression in learning through written feedback.

Methods

Design

The scope and format of this project yields a qualitative design, applying a case study approach to explore how written feedback, provided by a supervisor during the bachelor's thesis writing process, supports or hinders students' academic development and which mechanisms might be effective to support higher learning and critical thinking. The study focuses on a single thesis group consisting of four undergraduate students working collaboratively on a joint bachelor's thesis. By concentrating on a small group, the project aims to gain in-depth insights into how students

interpret, respond to, and utilize written supervisor feedback during the later drafting stage of their thesis.

Participants and Setting

The participants in this study are four final-year undergraduate students enrolled in the bachelor's degree program 'Bachelor of Science in Occupational Therapy' at University College Copenhagen. The students are carrying out their bachelor project and writing their thesis under the supervision of their main co-supervisor at University College Copenhagen. The project is exploring long-term consequences of cancer in a subgroup of patients using a survey and framework for activities of daily living and quality of life. My own primary area of supervision in this context is the written feedback on their thesis. All four students gave informed consent to use their feedback data and anonymised sections of the thesis drafts for the purpose of analysis in this project. Ethical approval was not required as I refrained from using and publicising their data-material and results.

Data collection and analysis

First, written feedback was provided on the thesis draft. I aimed to explore different forms of feedback and deliberately chose different styles, wording, formats, taking inspiration from the key principles in the 'DUT guide for supervision' (Wichmann-Hansen, 2021) - and suggestions from 'Text in supervision - supervising on texts' (Jørgensen & Rienecker, 2015) on how I provided the written feedback, to explore the differences. I also took inspiration from 'The Questioning Wheel' to distinguish higher and lower order aspects and used it as a framework for providing feedback (Wichmann-Hansen, 2021, p.99, Appendix, figure A). The students were encouraged to write a 'cover letter' if they had any specific areas, they wanted feedback on, and in that case, what kind of feedback they would find useful, and also to describe where the group were in the process as well as any needs they would like to be addressed in the feedback (Wichmann-Hansen, 2021; Jørgensen & Rienecker, 2015).

Second, each of the four students provided written feedback on the feedback on all comments, suggestions and in-text changes. They were encouraged to write any comments or questions they might have.

Third, a second round of written feedback to the students focussing on the method and methodological considerations and limitations was prepared and then provided in real-time during a group interview (in connection with supervision) to gain further insight in to how students perceived and used the written feedback and reflections on the actions they would take.

Data was analysed by the author and discussed with peers and fellow researchers experienced in qualitative research including interviews, content analysis and thematic analysis (Nayar & Stanley, 2015).

Results

The results of the project is based on the oral feedback during the interview with the four students where written feedback was presented and discussed, as well as written feedback on the written feedback from each student. Although not preplanned or protocolised, I was also able to receive additional feedback from the co-supervisor, who participated in the interview and supervision feedback session and interview.

The written feedback could be divided in four overall aspects, inspired by the text from Rienecker and Jørgensen (2015):

- Fact checking and language, grammar and requirements (within the field, the university and research).
- Resources, framework, supporting research and references.
- Research method, design, analysis, results and statistics.
- Discussion and key perspectives.

The main focus of this project was the third and fourth aspect of the written feedback. Within the considerations for giving feedback on the first aspect, was especially the wording of feedback on ‘mistakes’ that needed correcting, these were simply marked in-text as per the introductory letter to the students, using the yellow marker as a flag to draw attention to areas needing their attention. Here I used the key principles “be instructive’ and ‘be specific’, while also prioritising that

this was not something that should be discussed in great length. One student commented:

“It is so nice that you just write it straight forward. We don’t have to guess what it is you’re commenting on or want changed or try to find the literature the supervisor is hinting at but isn’t specific about”

The second aspect was mainly suggesting the use of resources to engage them in deeper analysis and critical thinking, also in relation to the timing of their project and times of supervision. I found the use of “Consider using ...” or “I suggest ...” received positive engagement and feedback from the students, they engaged in the suggested material or references and reflected on how to apply them, both on an individual level and as a group.

Research method, design, analysis, results and statistics

For the third aspect, I prepared and worked with the feedback, prioritising, framing and rephrasing the feedback. I considered what the expected (or intended) learning outcome was on each level of the thesis section and the level of learning I aimed at supporting and finally I prioritised in relation to the following factors:

- Timing (Where in the process are the students at? What is important in relation to the data-collection, analysis, and deadlines? Where is each student in the writing process? And as a group? When is the next supervision and what is the main focus?)
- Content of method, results and methodological considerations (Accuracy? Terminology? References?)
- Intended learning outcome (Is this in line with the intended learning outcome? Is it essential?)
- Overall focus and extend of the feedback.

An example of the supervisor feedback for the method section:

“Good description, these are important considerations regarding the number of potential respondents. A few questions for you to consider: If the calculation gives you 0.5% of the total population

– what are your considerations for representativeness? Have you discussed or are you aware of other calculations or factors that could be included in the estimate? - Which the current method does not account for, and how would that affect the estimate and representativeness".

This comment although I thought it might hold too much information, prompted a great reflective discussion among the students at first and then between the supervisor and students. Indicating reflections and critical thinking/discussions and reviewing their own material and the calculations as well as consequences of their choices. They discussed in the group for 5 minutes before including the supervisor in the discussion to validate what they had discussed and how to apply it. The students commented on this in the interview:

“This was a very useful comment; we had not even thought of all the aspects that a sample size calculation could entail. It was a very productive discussion, and I feel we made real progress and now we actually know why it is important to consider how and on what basis this is needed and what limitations there are. It was kind of an ‘aha’ moment”

The interview took place in connection with the discussion before moving on the next feedback in the thesis. The meta-level worked well during the supervision.

Discussion and key perspectives.

For the fourth aspect, I prepared feedback that aimed to support students critical thinking and reflection. This section of the thesis allows for the students to explore and discuss, and I aimed to provide feedback to support that. An example:

“Great discussions of the process so far. Have you considered how your use of former patients in the development of the questions and information affects the respondents?”

One student commented in the written feedback on the feedback:

“I hadn’t even thought of this, but of course, it might have changes or affected the wording and phrasing of the questions and information. I wish we had thought about writing that it was co-developed with peers, but we can include that in the methodological discussion”

Suggesting that the feedback had made her reflect on their design and method in a different way. I had not intended for a specific direction, so it was a response that indicated a level of critical thinking.

As described, I explored different types of feedback, and similar for those receiving poor feedback from the students: “I don’t understand this comment”, “I don’t know if I need to act on this comment”, and “what do you mean??”, was that they were first draft feedback. The initial response without use of any principles or theory, reframing or rephrasing. An example of this type of feedback: “why would respondents not eligible answer the questionnaire?”, “how did you account for the timing and why only 5 years?”.

Discussion

Some key considerations for using written feedback to promote higher learning through formative feedback are preparation, context, prioritising, being specific on the content and actions required and framing the feedback, aligning the expectations and allowing for the students to give feedback or discussing the feedback.

The preparation and final style of the written feedback for the third and fourth aspect was in accordance with the guidelines and key principles. It was clear that the feedback that was not well-prepared or kept in line with the literature and principles was less useful and caused some frustration.

Although not the main focus, the use of the key principles presented in the DUT guide, when giving feedback that is of a factual nature, seemed to provide the students with a sense of relief. The comment

“it is so nice that you just write it straight forward. We don’t have to guess what it is you’re commenting on or want changed or try

to find the literature the supervisor is hinting at but isn't specific about"

Similar statements were discussed passionately in the interview. I think sometimes as a supervisor, you don't want to 'give the answers' or take away the students' opportunity to reflect and find the solutions through learning, however sometimes with some feedback, this might open the opportunity for the students to do just that with the next piece of feedback. So, the ability of the supervisor to 'prioritise' where the students zone of proximal development is or in which area of the thesis this zone is for each student seems key (Vygotsky).

For the comments that received poor feedback from the students, it is clear to see the commonalities, they are very direct, no context, no direction, not specific, or instructive. Since the four students knew this was part of a project and my learning as a supervisor, we discussed this after the interview and in the next round of feedback, to ensure there were no frustrations, and any content in the feedback that needed elaboration was discussed.

Methodological considerations

A key consideration on my part was how to detect higher learning through the written format. Although the literature provides cues as to how the students use words indicating higher-order learning, reflective or critical thinking, and the content of the discussions, the pace and engagement also indicate this, it is still difficult to measure to what extent. This is of course a limitation and something to explore further or perhaps with a different method.

Another aspect is to continue the feedback loop to promote reflective and critical thinking, applying a more exploratory approach, for instance using the suggested questions from 'The Questioning Wheel', to create feedback 'loops' – feedback on feedback on feedback (Wichmann-Hansen, 2021). Which creates opportunities to prompt deeper cognitive engagement. These might work better in a direct supervisor-student setting through discussion; however, it would be interesting to explore if it translates to written feedback and supervision.

I could have enhanced trustworthiness and reflexivity in the project by using ‘member checking’, where the students would be invited to review preliminary interpretations of their discussions, feedback and reflections, and confirm or clarify meanings. As I am both the researcher and the supervisor, reflexivity is essential and I was aware of this, but there are more thorough measures to be taken if one wants to formally chart decisions, assumptions, and potential biases throughout the process.

During the group interview I was able to ask the students about their immediate reflections and understanding of the written feedback in real-time. This was a great opportunity to gain insight into how they perceived and reacted to the written feedback to detect signs of reflective and critical thinking as well as what supported them and what was not helpful or hindered their progress and learning. However, the forum, being a group session, they also reflected on each other’s reflections and comments, and reached other levels of discussions and perspectives, which the written feedback did not promote until discussed. My thoughts on this is that perhaps another key element to review and discuss with students that work in groups is how they use the written feedback in the context of a group. Maybe the shared reasoning and reflections through discussing the written feedback in the group adds to achieving higher-order learning and academic thinking, but perhaps this is not true for all members of the group. This could be a future area to explore.

Conclusion

In conclusion, some key principles and considerations for how to use written feedback have been derived in this project. Drawing upon existing literature and confirming the application of the following principles: Use of cover letter to align expectations, prioritizing, being specific and instructive, inviting for dialogue and evaluating the feedback and adding to that: Preparation, context and aim of feedback in relation to level of learning. These key elements will be incorporated when I give written feedback on a thesis in the future.

How students receive, perceive and respond to feedback in terms of higher learning is of great interest. Written feedback is a format often used throughout the studies and in the final thesis project. It is therefore

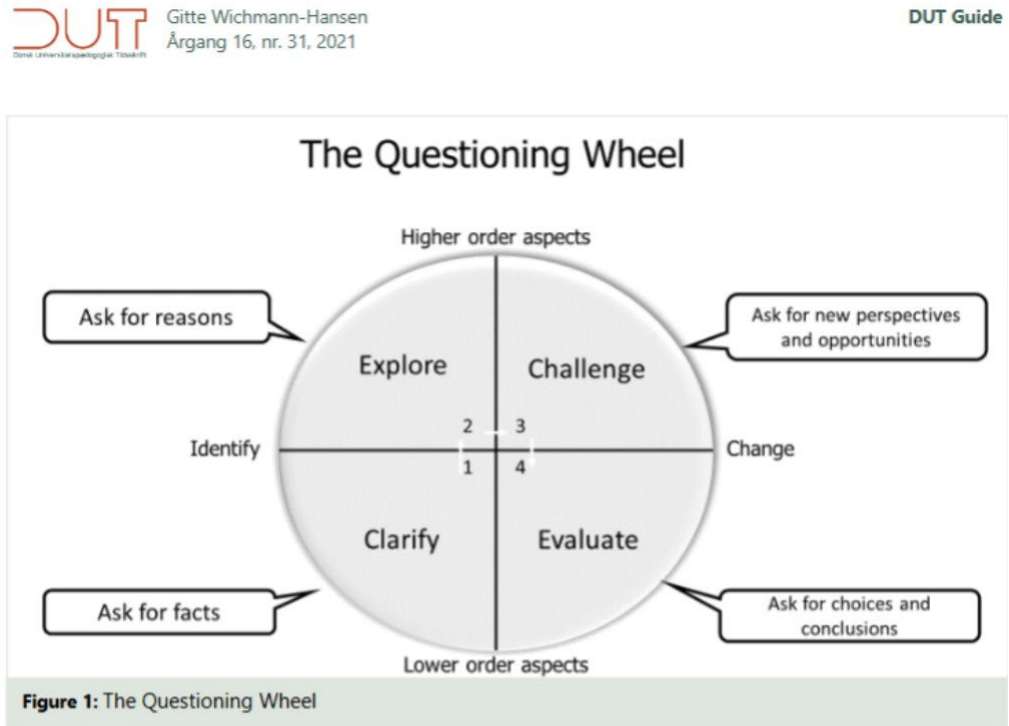
pivotal that we as supervisors carefully consider how this feedback is given in what format and framing as well as the timing, volume and prioritization of content. I hope this project contributes to the growing research field in feedback literacy in higher education, both for students and supervisors. By exploring how written feedback can be more effectively used during the drafting phase of a bachelor's thesis, I hope it will contribute not only to improved student outcomes and higher learning but also to more reflective and impactful supervisory practices.

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Appendix

Figure A:



Copied from Wichmann-Hansen G. DUT Guide on Supervision. Dansk Univ Tidsskr 2021;16(31): 99.