INTERNATIONAL CONFERENCE ON ENGINEERING AND PRODUCT DESIGN EDUCATION
8–9 SEPTEMBER 2022, LONDON SOUTH BANK UNIVERSITY, LONDON, UK

CRITIQUE: A WORKSHOP TO ESTABLISH SHARED UNDERSTANDING AND CLEAR RESPONSIBILITIES BETWEEN DESIGN STUDENTS AND THEIR LECTURERS

Lore BROSENS[1,3], Ellen DE VOS[1,2,3] and Marina EMMANOUIL[1,3]
[1]Design.Nexus research group Ghent University, Belgium
[2]imec-mict-UGent, Belgium
[3]Department of Industrial Systems Engineering and Product Design, Ghent University, Belgium

ABSTRACT
With the new industries on the horizon, where design engineers will become facilitators of innovation that need to keep up with an array of new technologies, it is essential that our students are equipped with skills in line with this new role. From literature describing emerging paradigms (Skills for Industry 4.0, and 21st century skills) it becomes clear that students need life-long learning skills, which have been linked to reflective thinking and learning during critique. However, at our university we noticed that students needed to be assisted in this. Students seem unable to translate the discussion points during critique sessions to design actions or challenge teachers' feedback with counter arguments. Therefore, it is important to establish clear goals and consistency of actions between teachers. This paper will report on the development of such goals through a critique workshop with lecturers and focus groups with students. The outcome of the development is a template with responsibilities for both the feedback-giver (lecturer) and recipient (student). These responsibilities are categorized in actions before, during, and after the critique is given in an effort to trigger reflection at various moments. With this template we hope to provide different anchors for both student and lecturer to have insightful critique moments. By sharing our experiences, we wish to inspire other design engineering lecturer teams to try to come to their own shared understanding of what critique should entail and how responsibilities between lecturers and students are divided.

Keywords: Critique, feedback, life-long learning skills, reflection, template

1 INTRODUCTION – THE IMPORTANCE OF CRITIQUE FOR LIFE-LONG LEARNING SKILL DEVELOPMENT
One of the greatest challenges for design engineering are the current changes in industry triggered by new technologies that are rapidly evolving. Correspondingly, the roles of design engineers are also changing to become facilitators of innovation within multidisciplinary teams [1]. In order to take up these roles, design engineers need to be equipped with the skills to update their knowledge during their career on new emerging technologies. Schneorson and her colleagues [2] confirm this by stating that design engineers must adapt to an open-minded approach of life-long learning. So, in order to prepare current students for a successful career, even when future technologies are largely unknown, we must prepare them to keep updating their knowledge and skillset as they go. Furthermore, this rationale is not only found in literature, but is also highlighted in the discussion at this conference on the professional and pedagogic roles of design and engineering.
As researchers [3–5], and the design engineering community as a whole, come to an understanding that design curricula should change and we inquire what these changes should encompass, the question remains how design engineering education should actually support students in developing these skills. Paulsen [6] shares some findings in his book and states that life-long learning skills have been linked to personal mastery, design engineer identity development, and an open-mind towards new ideas and challenges. Tracey and her colleagues [7] add to this by stating that the aforementioned competences are better acquired when students engage with reflection during critique or feedback sessions. The

importance of these critique sessions in cognitive competence development is again stressed by Scagnetti [8], who finds that critique is where independent thinking is developed and reflection is grasped. Building on these arguments it could be said that supporting students in learning during feedback sessions or critique is very important for their designer identity development and their ability to continue to learn during their career.

2 BACKGROUNDS

Zooming in on these highly important critique moments, previous research points out that this is a very complex way of transferring knowledge [9]. This is mainly due to the fact that critique needs to be adapted for every student for maximum student benefit. So, educators have to be creative in order to personalise their means of educating [10]. This is in-line with recent developments of looking at critique as a consulting, tutoring, feedback, or even coaching moment. However, these new ways of looking at critique also opened the discussion within our field of what the specific role of critique is.

A first perspective is that of critique as an assessment moment where the student and teacher gain an insight into the level of quality of the work [11-12]. However, recently some curricula and teachers have started moving away from this view on critique towards more informal critique. When not communicated clearly, this shift leads to confusion on the students-side [13]. Students are unaware of the level of formality of the critique, which relates to their level of preparedness. Also, a lecturer in year one might have a very informal approach, which confuses students later in their studies if they encounter more formal critiques. Therefore, it is important to establish clear goals and consistency between teachers.

A second view is that of critique as a learning moment where the focus should be more on feedback giving. Usually, this means that students present their in-progress work and they receive input to continue their design processes [8], [10]. The goal is that the feedback-giver and feedback-receiver come to a shared understanding [13]. Additionally looking at critique as feedback can benefit students on multiple other levels. Students have the opportunity to learn new skills [10] and refine their way of thinking about design [15-16]. However, many instructors did not realize that looking at critiques as a learning moment can have all these impacts. They seem unaware and it seems unclear as to how they can make sure students benefit the most from the time spend on critiquing [14]. This accentuates the need for lecturer support in order to deliver a high-quality level of feedback to every student.

Third, many design lecturers refer to their critique moments as open-ended discussions [9] or a dialogue between an experienced designer and a less experienced designer [18]. Clearly, seeing critique as a discussion is a perspective that is moving away from the more formal ways of looking at critiquing, beyond feedback, towards an informal discussion. Strikingly, when critique becomes less formal, so does the term evolve to a ‘crit’ [10]. Although the setting is less formal, researchers have found that the goal is still to come to a shared understanding of what is and what could be [16], and initiating reflection [13]. However, the same issues occur here as well. Prompting students to reflect in order to develop problem solving skills requires a personal approach to critique and teachers are in need of support [17].

Fourth, by looking at critique as a moment to develop designer identity, teachers tend to focus on the end goals of the design engineering curriculum. These include: development of design expertise, communication skills [12,10], independent thinking [8-9], decision making, and finding your voice as a designer [10,18]. These outcomes are important to instructors as they are aiming to transfer these capabilities to students. By focussing so much on the end goal, teachers tend to neglect students immediate needs in order to continue their creative process [9]. Additionally, the capabilities listed above need to be trained over time, and moreover trained through a scaffolding process. Therefore, teachers should first assist students a lot, and then, gradually, support them less. If every student is on a different learning path, that requires a very flexible approach to critiquing.

Lastly, critique moments are also seen as reflection triggering moments. Researchers state that when students are encouraged to take part in critique, they stop for a few minutes and think about what they know, do not know, did, did not do, and which choices they made [17]. But, reflection can also be generated after the critique [13], by thinking about the judgements and disagreements. Researchers add that students can benefit from listening to recordings, away from the moment and pressure, in order to start developing this skill.

3 TOWARDS A SHARED UNDERSTANDING OF CRITIQUE

Building on the above-stated rationale, and our own experiences within the Industrial Design Engineering programme at Ghent University, we see a two-fold deficiency in the way critique is currently approached. First, it is important to come to an agreement of how curricula, courses, or even individual lecturers implement critique in their classes. Students are easily confused on the level of formality of a critique and consequentially might not prepare it adequately. Students would benefit from a consistent approach in critiques from all lecturing staff. Second, both lecturers and students need to be supported in the roles they have during a critique. Lecturers need to be assisted in delivering high quality, personalised, and scaffolded critiques. Students need to be assisted in reflections prompts both before, during, and after the critique. Our students are taught through weekly critiques from the first year. However, we noticed that students do not succeed in processing the given critique towards an answer, neither in words, nor in (design) actions. Engaging with reflection will benefit students' actions, designer identity development, communication, problem solving, and decision-making skills. Surely, this focus on reflective thinking and learning during critique should be introduced in a scaffolding way.

This paper shares our experiences on filling both gaps. Although everyone sees the importance of critique, the requirements concerning these critique-sessions are not consistent among different lecturers. There is no coherence in the shared expectations, which are often not properly communicated and leave the students uncertain about the goal and type of critique. Therefore, we set out to create a workshop for a team of design engineering lecturers to come to such a shared understanding. Additionally, we also hope to develop a template that can distinguish the different roles of a lecturer and student, and assist students in reflection before, during, and after a critique. With this template we hope to provide different anchors for both student and lecturer to have insightful critique moments.

4 TEMPLATE DEVELOPMENT METHOD

4.1 Critique workshop

All team-members (n=15) of the Industrial Design Engineering programme at Ghent University were invited to a workshop on critique during a dedicated education-team day (30th June 2021). A coherent group of fifteen Industrial Design Engineering lecturers, a mixture of professors, (post-)doctoral researchers, and practical instructors gathered physically. No specifications were given before the workshop, however, there was a prior agreement to tackle this subject on the allocated time. Hence, all participants were motivated to engage. English was chosen as the workshop language due to participants from different nationalities.

4.2 Procedure

A pedagogic developer at the faculty of Engineering and Architecture was consulted before the workshop. His team had created a general guideline for lecturers on the topic of feedback to stimulate active learning. They distinguished between feed-back, feed-forward or feed-up. The researchers copied this insight into their workshop preparations. Additionally, the researchers also looked into the state-of-the-art research findings on critique (a synthesis can be found in the background section of this paper). The fifteen participants were divided in five groups with mixed teaching experience based on seniority and type of courses (some courses in the programme are more technically orientated and others more focused on entrepreneurship).

At first, the lecturers were asked to share an anecdote on the subject matter. Most shared something they already had implemented in their course and considered best-practice, others shared problems or struggles they encountered related to critique. Second, a first template, created by the researchers, was given as a starting point for the main exercise. A paper was divided in six parts: vertically, three different times were indicated (before, during and after) and, horizontally, the template distinguished between the student and lecturer (teacher). The teams were asked to select the most relevant excerpts provided by the researchers and locate these on that field of the template where it fits most, according to them. These excerpts were selected by the researchers and originated from the previously developed guideline on feed-back, feed-forward, and feed-up combined with statements from our literature review. Participants could then add post-it notes, arrows, text, or highlights to further elaborate on the excerpts. Subsequently, the participants were asked to indicate (with coloured dots) whether the action mentioned was a basic element of a critique session and should be introduced to the freshmen, or if it was appropriate, for more experienced students. An example of such a filled-out template can be seen in

Figure 1. Lastly, all groups presented their completed templated to the other teams. At this point, questions could be asked. Most participants filled each field of the template. It was, striking to see that some lecturers (two groups) find their responsibility is limited to before and during a critique. They did not indicate any lecturer responsibilities for after the critique is finished.

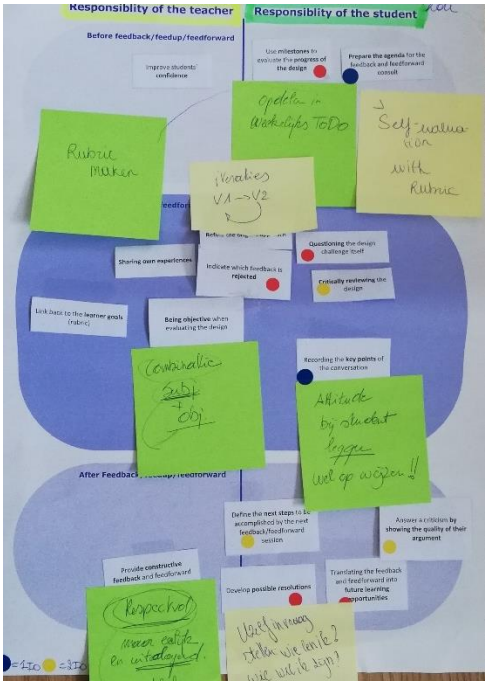

Figure 1. Example of filled out template during workshop

4.3 Incorporating stakeholder insights

After the workshop, the researchers summarized the templates and processed these. During this synthesising, the researchers deliberately looked for similarities across the templates so that we could come to this team-shared understanding on critique. Our synthesis was sent anew to the participants. Due to the close link between the researchers and the participants -they are colleagues- a quick and efficient communication characterized this project. No further comments were made, and several participants agreed to implement the created tool in their course the following year.

Complementary, also the opinion of two external experts was requested. A first expert is the pedagogic developer already mentioned above. He accentuated the cyclical shape of a critique session and suggested to rethink the graphics of the template. Content-wise this loop was already implemented. The second consulted expert, a student psychologist, is evidently more familiar with the interpretation and perception of students. She illustrated among other elements that too much openness makes students feel insecure and can obstruct them in taking action. A particular focus on the preparation and the post-session could help the students.

Lastly, in order to incorporate insights from all relevant stakeholders we organised a focus group with students. The focus group consisted of eight students, two from each year of our three-year bachelor's programme and two students from our one-year master's programme. What was found during this focus group is that students found the language used in the template hard to understand. They suggested to either rephrase the statements to be more 'hands-on' and to introduce the template together with an explanation of what everything means. Most students in the focus group found that the practical tips in the template were the most valuable (e.g., if a student struggles with taking notes during a critique, a solution could be to bring a peer to take notes or ask if you can record the session). Lastly, students stated that if they had to commit to every single aspect of the template for every critique they have, it would overload them with a lot of extra tasks. Therefore, it would be best for teachers to indicate which aspects of the template they find most important within their course context. Additionally, students are prepared to put in the extra work, but then expect a prepared lecturer as well.

4.4 Dissemination

After synthesising and incorporating all the comments of stakeholders (team-members, experts, students), the template was presented to all Industrial Design Engineering students during a kick-off event at the start of the academic year 2021-2022. The template can easily be found by this target group on the university's online platform. In addition, the students can find a visualization of the tool as a poster on the campus walls. At any moment, the researchers can be contacted for further information both by teachers and students. Furthermore, a pilot-study is currently in progress in several courses of the programme: freshmen, sophomores, graduating bachelor and master's students are at least in one course employing the template. The responsible teachers accentuate some of its topics to match with their study content and approach. Also, the use of the template is adjusted to the expected maturity of the students.

5 OUTCOMES AND DISCUSSION

In this paper we presented our strategies and experiences of coming to a team-shared understanding of critique and to develop a template that could clarify the different expectations between a lecturer and student. By engaging with this workshop our team agreed that we see critique as a feedback moment, where students and lecturers have a discussion. By introducing a common critique session template, we merge the most relevant aspects of such a discussion without narrowing down the options lecturers have to emphasize certain parts. However, the template itself is only a means in order to create routines where, if successful, the use of the template will eventually become redundant.

Multiple stakeholders involved, saw benefits of structuring the responsibilities of critique. Especially because students are now also encouraged to express expectations towards the lecturer instead of being subjected to a one-sided information stream. Our aim was to develop a template that can bring clarification and objectivity in the discussion without ignoring that critique can impact one's feelings and unavoidably containing some subjectivity. Therefore, we included prompts for lecturers like: *"Check whether the student interpreted the comments as you intended. You can validate how the feedback was reformulated and if it was rejected or not. Maybe if the student is not comfortable yet, they will share this in the consult documentation."* But also, towards students: *"Show your uncertainties by explicitly stating the challenges and difficulties you are experiencing. It is important to show unfinished work and dare to fail. You do not have to prove yourself, instead an honest and transparent communication about your work will stimulate useful dialogue*."

The pedagogical developer found it inspirational that the template did not only state how critiques should be tackled, but also what attitudes we expect both parties to bring to the conversation (e.g., students taking ownership, lecturers being supportive and formulating constructive critique). In order to create space for reflection and the designer's interpretation of the given project and its context we added prompts like: *"How will you adjust your approach? Define the next steps, judge what is good to bring forward, and prioritise. Reformulate the assignment by the next critique and refine your design approach.."* In order to avoid vagueness, we included calls-to action to pronounce different interpretations like: *"Judge what is good to bring forward and prioritise. Reformulate, in your own words the critique."* Lecturers pointed out this would increase their confidence that their message had been understood.

5.1 In-progress and future work

Besides implementing the template in multiple courses and testing it out, we are also sharing our experiences thus far. One of those sharing platforms is this conference and also as part of a university-wide workgroup on feedback. We hope to inspire other courses that might not be as familiar with teaching through critique. In parallel to implementing the template in multiple courses, the students, who took part in the focus group were approached again and were keen to organise a student event dedicated to training on critique sessions. Our template could be showcased and act as the start of a debate.

ACKNOWLEDGEMENTS

We would like to thank the Industrial Design team (our colleagues) for their input into developing this template, and their willingness to test it in their courses. We would like to thank Lander Cnudde (pedagogical developer) and Annick Eelbode (student psychologist) for sharing their expertise. Lastly,

we would like to stress that this template is a discussion between lecturers and students, so we, without their insights, would not have been able to develop it.

REFERENCES

[1] Augsten A. and Gekeler M. *From a master of crafts to a facilitator of innovation. How the increasing importance of creative collaboration requires new ways of teaching design*. The Design Journal, vol. 20, no. sup1, pp. S1058–S1071, 2017, doi: 10.1080/14606925.2017.1353049.

[2] Schneorson D., Persov E. and Bigger R. *Designing Your Future - 21st Century Skill-Set for Industrial Designers: The case study of Israel Design Field*. Design Journal, vol. 22, no. sup1, pp. 243–259, 2019, doi: 10.1080/14606925.2019.1595862.

[3] Norman D. A. *When You Come to a Fork in the Road, Take It: The Future of Design*. She Ji, vol. 2, no. 4, pp. 343–348, 2016, doi: 10.1016/j.sheji.2017.07.003.

[4] Findeli A. *Rethinking Design Education for the 21st Century: Theoretical, Methodological, and Ethical Discussion.* Design Issues, vol. 17, no. 1, pp. 5–17, 2001, doi: 10.1162/07479360152103796.

[5] Meyer M. W. *Changing Design Education for the 21st Century*. She Ji: The Journal of Design, Economics, and Innovation, no. February, pp. 13–49, 2020.

[6] Paulsen M. B. Higher Ed Book, vol. 31.

[7] Tracey M. W., Hutchinson A. and Grzebyk T. Q. *Instructional designers as reflective practitioners: Developing professional identity through reflection*. Educational Technology Research and Development, vol. 62, no. 3, pp. 315–334, 2014, doi: 10.1007/s11423-014-9334-9.

[8] Scagnetti G. *A dialogical model for studio critiques in Design Education*. The Design Journal, vol. 20, no. sup1, pp. S781–S791, 2017, doi: 10.1080/14606925.2017.1353024.

[9] McDonald J. K. and Michela E. *The design critique and the moral goods of studio pedagogy*. Design Studies, vol. 62, pp. 1–35, 2019, doi: 10.1016/j.destud.2019.02.001.

[10] McDonald J. K., Rich P. J. and Gubler N. B. *The Perceived Value of Informal, Peer Critique in the Instructional Design Studio*. TechTrends, vol. 63, pp. 149–159, 2019, doi: 10.1007/s11528-018-0302-9.

[11] Christensen K. S., Hjorth M., Iversen O. S. and Blikstein P. *Towards a formal assessment of design literacy: Analysing K-12 students' stance towards inquiry*. Design Studies, vol. 46, pp. 125–151, 2016, doi: 10.1016/j.destud.2016.05.002.

[12] Gray C. M. *Democratizing assessment practices through multimodal critique in the design classroom.* International Journal of Technology and Design Education, vol. 29, no. 4, pp. 929–946, Sep. 2019, doi: 10.1007/s10798-018-9471-2.

[13] Oak A. *It's a nice idea, but it's not actually real: Assessing the objects and activities of design*. International Journal of Art and Design Education, vol. 19, no. 1, pp. 86–95, 2000, doi: 10.1111/1468-5949.00205.

[14] Yilmaz S. and Daly S. R. *Feedback in concept development: Comparing design disciplines*. Design Studies, vol. 45, pp. 137–158, 2016, doi: 10.1016/j.destud.2015.12.008.

[15] Miceli L. and Zeeng L. *Reconstructing the critique. Using inclusive formative feedback in face-to-face and online communities of practice to improve knowledge acquisition in design education.* The Design Journal, vol. 20, no. sup1, pp. S1250–S1259, 2017, doi: 10.1080/14606925.2017.1352654.

[16] Rodgers P. A., Innella G. and Bremner C. *Paradoxes in Design Thinking*. The Design Journal, vol. 20, no. sup1, pp. S4444–S4458, 2017, doi: 10.1080/14606925.2017.1352941.

[17] Welsh A. A. and Dehler G. E. *Combining Critical Reflection and Design Thinking to Develop Integrative Learners*. Journal of Management Education, vol. 37, no. 6, pp. 771–802, 2013, doi: 10.1177/1052562912470107.

[18] Christensen B. T. and Ball L. J. *Dimensions of creative evaluation: Distinct design and reasoning strategies for aesthetic, functional and originality judgements.* Design Studies, vol. 45, pp. 116–136, 2016, doi: 10.1016/j.destud.2015.12.005.