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STRATEGIC DESIGN RESEARCH JOURNAL

An adaptive and strategic human-centred design approach to shaping pandemic design education that promotes wellbeing

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ABSTRACT

Positive student wellbeing is intrinsically connected to positive learning outcomes. Students learn more when they feel well, and the way we shape education influences the way students feel. The COVID-19 crisis has forced us to radically change our design education and is having a large impact on student wellbeing and learning. While some students manage well to adapt to the new circumstances, others struggle and face challenges such as risk of burnout, lack of motivation, and social isolation. In this paper we describe how we approached this challenge by applying methods and principles from strategic human-centred design and systems thinking. The strategic design approach included researching values and patterns in student and staff experiences. The systems approach meant that we saw the university as a complex adaptive system, which focused our activities on connecting staff and students who were and are running multiple creative experiments to promote student wellbeing. This approach is strategic because it supports continuous design and implementation of initiatives to promote wellbeing. While this is work in progress, we here present a number of design principles that we developed through this work that enable future designs that promote student wellbeing in (pandemic) higher education.

Keywords: Design Education, Learning, Teaching, Wellbeing, Systems Thinking.

INTRODUCTION

The health and wellbeing of students while at university has gained more attention over the past decade, with various universities adopting a health promotion strategy and implementing policy and programs to promote wellbeing (Okanagan Charter, 2015). Wellbeing is a holistic concept, encompassing mental/ emotional, physical and social health elements, as described in various frameworks such as the positive psychology of self-theory (Seligman & Csikszentmihalyi, 2000) and the Wheel of Wellbeing framework (Wheel of Well-Being, 2013).

While many universities tend to enable student wellbeing through 'separate services' such as student psychologist and health programs, we argue that the way we shape education is a key factor to promote the flourishing of students, and teachers too. Positive student wellbeing is intrinsically connected to positive learning outcomes. Students learn more when they feel well, and the way we shape education influences the way students feel. This intersection is shown diagrammatically in Figure 1.

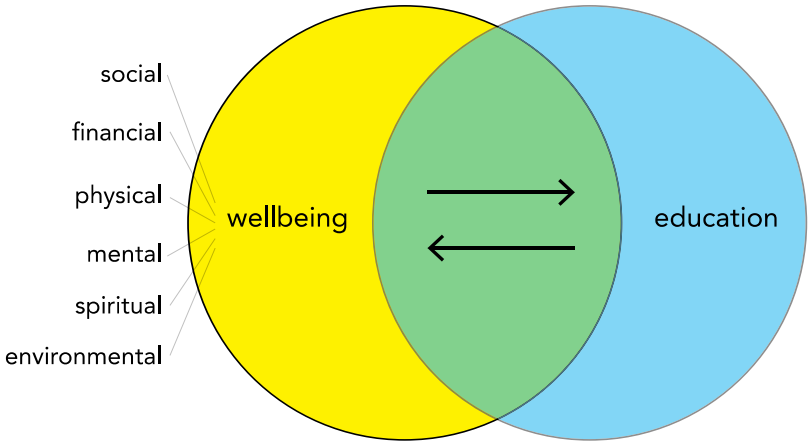

Figure 1: Wellbeing is a holistic and multi-faceted concept, encompassing social, financial, physical, mental, spiritual and environmental aspects. Student wellbeing is intrinsically connected to education

With mass scaling of higher education and the increased focus on academic performance, the wellbeing of students is considered already at risk (Fernandez et al., 2016). The COVID-19 outbreak has further exacerbated the health and wellbeing situation of some of our student groups. While many students have been able to cope well and adjust to new online educational settings, many others have experienced and are experiencing wellbeing challenges such as stress, anxiety and social isolation. A broad range of factors such as worries related to COVID-19 itself, worries about family who might live abroad, financial worries, difficulties studying from home and lack of routine contribute to these experiences.

In response to this wellbeing challenge, we - researchers and teachers in a large design faculty - initiated an ongoing project to promote student wellbeing in our faculty and university. In this paper we propose a strategic human-centred design and systems thinking approach to tackle this challenge. This article presents our achievements thus far, from applying these approaches.

1. DESIGNING FOR COMPLEXITY

The work we describe in this paper is related to the ongoing trend of applying design to complex challenges outside the traditional design domain. Many have recognized that the complex challenges that the world is facing, require new ways of working and thinking. Design practices have been proven beneficial in these contexts (see for example Dorst, 2015). These design practices include elements such as integrating analysis, solution and implementation; reframing the problem; starting by understanding user needs; testing iteratively, and; engaging teams and departments in collaboration across silos (UK Design Council, 2013).

In our work we are applying a strategic human-centred design approach. Rather than a traditional user-centred design approach that is focused on incremental innovation and improvement of existing products and services, this approach is aimed at a more radical reframing of the challenge at hand by gaining a deep understanding of different stakeholders' experiences and values (van der Bijl - Brouwer & Dorst, 2017). These deep understandings we refer to as 'themes', the patterns and meaning we find in stakeholders' experiences about their needs and aspirations, often closely related to core human needs. In addition, we also draw on value-based design (Vermaas, Hekkert, Huits, & Tromp, 2014). This approach acknowledges that just as designers can actively introduce moral values such

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as safety, privacy and equality into the design of products and services (ibid, p192), design educators might, consciously or subconsciously, introduce such values into their design education.

At the same time, we acknowledge that design practices on their own are not enough to tackle complex challenges such as promoting wellbeing in pandemic education. Complex challenges require inter- and transdisciplinary approaches in which various disciplines and ways of knowing are integrated (Jantsch, 1972; OECD, 2020). In particular, systems thinking has been suggested as a useful set of theories and practices to complement design in tackling complex challenges (Sevaldson & Jones, 2019).

From a systems perspective, complex challenges do not have one-off solutions or quick fixes. Complex challenges emerge from what is often referred to as a complex 'problem situation', a system of interrelated elements and challenges, where solving one problem might lead to the emergence or amplification of other problems. Therefore, complex challenges are best addressed using a systems change approach. This approach can be described using the Cynefin framework, developed by Snowden and Boone (2007). The framework explains how different types of contexts require different types of responses. In a complicated context, problems can be solved by breaking them apart, solving each of the sub-problems by using advanced expertise, and based on knowledge of the interrelatedness of those parts, bring them together into a functioning whole. In a complex context, this approach does not work because cause and effect cannot be predicted. Instead, Snowden and Boone recommend to 'probe, sense, and respond'. This approach includes running experiments to intervene in the system, amplifying these experiments if they show a positive effect and dampening them if they don't. By continuously running such experiments, the system evolves in a desirable direction. The result is a process of continuous (social) innovation.

Our shared interest to promote wellbeing in our university are based on this idea of continuous social innovation. Rather than quick fixes or one-off solutions, we sought to establish an approach that would promote long-term innovation efforts, and as a result long term impact on student wellbeing. In the next section we further detail our approach.

2. RESEARCH METHOD

The context of the research is the Faculty of Industrial Design Engineering at Delft University of Technology. The Faculty offers three master programs in design, one bachelor program, and is home to over 170 fte (full time equivalent) academic staff members and more than 2000 students.

We adopted a continuous design and innovation approach in which we combine building an understanding of the challenge at hand through research and sensemaking, with generating prototypes for initiatives to tackle those challenges. Rather than a linear approach of prescribing a research methodology, collecting results, interpreting results, drawing conclusions and creating designs, we went through iterative loops in which the research objective, method, insights, and designs co-evolved. Such a 'co-evolutionary' approach is common in design (Dorst & Cross, 2001) and is also common practice in social innovation more generally (van der Bijl - Brouwer & Malcolm, 2020). Table 1 describes the various sub-studies and initiatives we have undertaken so far, and importantly the people that have been involved with our work. The 'prototypes' in this work are both design proposals to tackle the challenge at hand, as well as means to make sense of that challenge.

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Table 1. Research & innovation methods

Method	Details	Purpose
Analysis of student surveys	We received access to the results of various student questionnaires that were distributed amongst students by other university partners.	To investigate student experiences and wellbeing in relation to COVID19 and the shift to online learning
Student motivation survey	100 respondents from across Bachelor and Master of Science degrees in Industrial Design Engineering	To investigate what motivates students and which challenges they face in relation to motivation
Teacher survey	Online questionnaire distributed among design teachers. 71 respondents	To investigate teacher experiences and needs with regard to online education and supporting student wellbeing
Wellbeing working group meetings	Fortnightly online meetings with informal working group of design teachers and students, ranging from 5 to 10 participants	To qualitatively make sense of student and teacher experiences and develop a wellbeing intervention framework (see results section 2.1)
Wellbeing in education workshop	2-hour online workshop, evaluated in an online survey, participants included 4 students, 10 teachers, and 2 academic counsellors	To connect students and teachers to share experiences and strategies (see results section 2.2)
Prototype: Graduation supervision workshop	2-hour online workshop, evaluated in an online survey, participants included 10 teachers and 2 student members of the working group	To connect teachers to share experiences and strategies for graduation supervision
Prototype: Graduation workshop	2-hour online workshop, evaluated in an online survey, 10 participating students	To connect graduation students to share experiences and strategies, and investigate their needs for support

In our design approach we paid particular attention to student and staff experiences using a strategic human-centred design approach, that explores structures and patterns underlying those experiences (van der Bijl - Brouwer & Dorst, 2017). To further understand these experiences, we drew on a value-based design approach, recognizing that different teachers and different students might be guided by different human values. This became most explicit in a value-based model that we developed for the workshops (Figure 2). Using this model, participants were asked to discuss and identify the values and principles that underlie desired educational tools and structures (what) and practices and methods (how). For example, an open 1-hour walk-in online meeting was organized by a course coordinator, applying the principle of 'co-creating education' which is based on valuing 'diversity and mutual learning'.

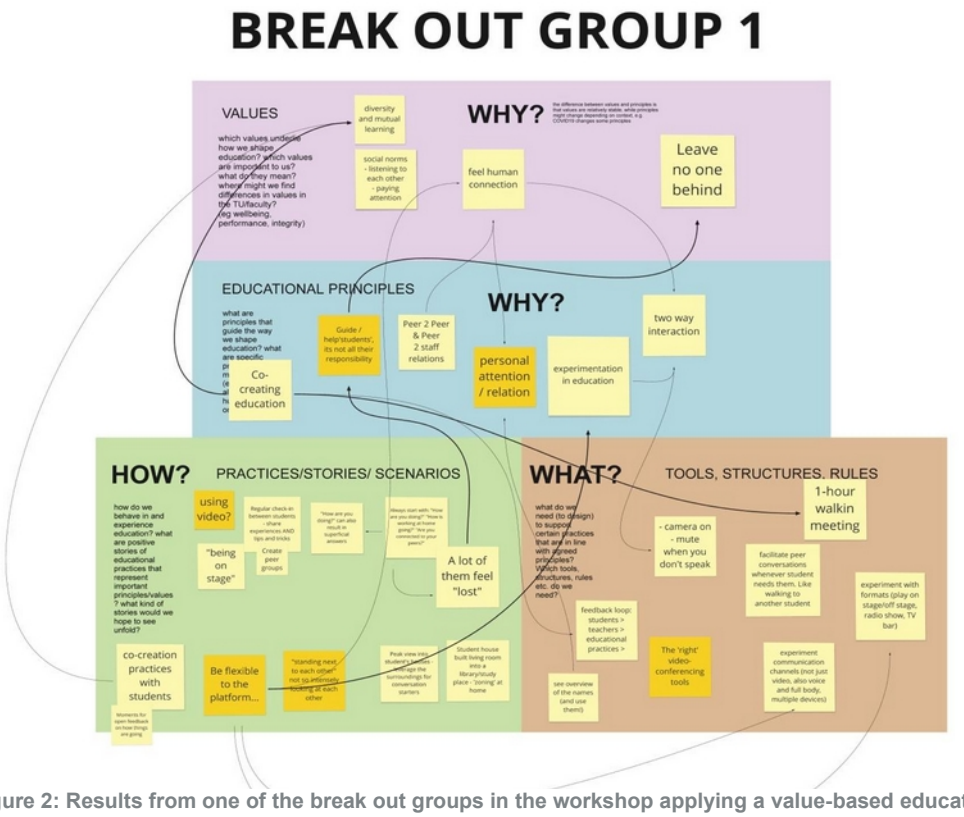

Figure 2: Results from one of the break out groups in the workshop applying a value-based educational design model

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3. RESULTS

As we are engaging in a continuous innovation approach, we are gathering insights while at the same time experimenting with new initiatives. Here we share insights that we have gained so far, and that are relevant to the (strategic) design community.

The next section first describes a framework for strategic intervention in our educational system to promote wellbeing. This is followed by our main systemic design strategy which is based on a complex adaptive systems perspective of the challenge. Finally, we describe how we used the strategic human-centred design approach to draw out a number of themes, values and principles that provide input for the design of initiatives that promote student wellbeing.

3.1. A framework for designing for wellbeing in higher education

One thing that became clear early on in our design process, is that student wellbeing is a very broad topic and that there are many people and groups across Delft University of Technology who were aiming to tackle this challenge. While it was good to find out that the topic was high on the agenda of many decision-makers and working groups, it also made it challenging for us to decide where and how we could best contribute. To clarify our position as teachers when it comes to wellbeing, we therefore developed a framework to design for wellbeing in higher education.

The framework (Figure 3) is based on the IASC intervention pyramid (IASC, 2020), a model developed by an interagency committee established by the United Nations that describes how to address mental health and psychosocial aspects of the COVID-19 outbreak. We translated this framework into the model presented in Figure 3 for application in an educational context.

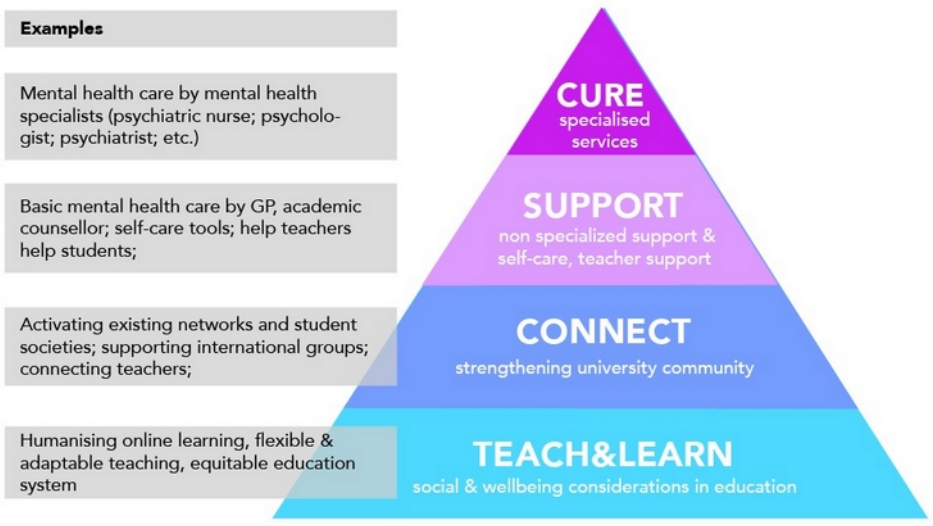

Figure 3: We developed an intervention pyramid to support wellbeing in universities to frame where we can intervene as teachers when it comes to student wellbeing

The top or 'cure' level considers specialised psychological support for students and staff with mental health problems. Below that, the 'support' level is about informal mental health care, such as self-care programs, aimed at supporting those who struggle, and preventing that they develop more severe mental health issues. The third level considers strengthening the university community, within and outside curricula, for example the student associations that have been organising all kinds of online social events. The bottom layer is where

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wellbeing becomes part of the way we shape education, for example through learning activities, the (online) learning environment, and applying principles such as humanizing online teaching (Raygoza, León, & Norris, 2020). The model is a pyramid, because we like to keep the tip small and focus on prevention rather than cure. To clarify, we are not defining a cure for COVID-19, rather the treatment of wellbeing related issues.

Different stakeholders play different roles within this intervention pyramid. The 'cure' level is the specialist level of psychologists and other experts that provide care for students with mental health issues. On the support level, wellbeing experts can develop one-size-fits-all or generally applicable solutions that are suitable for many students and teachers. For example, in addition to our faculty working group, we were also part of a central university working group which includes policy makers, students and psychologists, that develop guidelines for teachers on how to respond to students who appear unwell. The community level is mostly taken up by student societies and other groups that have community building as their main focus.

As design teachers, we mostly play a role at the 'teaching and learning' level, which is also the level that requires most innovation because we have not developed expertise (yet) to promote wellbeing in pandemic higher education. While professionals working at the cure level can draw on their expertise to support students, this expertise is not available on the teaching and learning level. COVID-19 has resulted in a radically new educational situation that is still changing daily. In this complex and dynamic context, we need the type of 'experiments' that Snowden and Boone (2007) promote in the Cynefin framework, as outlined in the introduction section of this paper.

In our working group meetings, we found that many of our colleagues already started executing such experiments by developing innovative strategies that promote wellbeing. For example, a colleague started an experiment to get students to choose their own deadline so they would have more flexibility in their learning programs. Another colleague gave students the option to research 'student wellbeing during the COVID-19 crisis' in their course on research methodology, and yet another colleague developed a 'wellness check' to monitor student wellbeing.

At the same time, we found through the teacher survey that there were large differences between teachers when we asked them "what actions have you taken or are you planning to take to ensure students are well and/or stay engaged in your course?" While some teachers had clear ideas and strategies, others answered, "None yet. I hope to get instructions. I don't even know how the digital coaching of 25 students at the same time will work."

Moreover, teachers were working in isolation from each other and as such could not learn from each other. If we take a systems perspective on this challenge, we see how such a lack of connection can impact the 'adaptability' of the organization as a whole. This perspective and its consequences are further described in the next section.

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3.2. An adaptive approach to promoting wellbeing in the university

The complex and dynamic nature of the wellbeing challenge requires an 'adaptive' approach, which is a concept from complexity theory. This theory provides an understanding of how a focus on (human) relationships in systems impacts the emergent behaviour of the system (community or organization) as a whole. This pattern of behaviour in complex systems is

called 'self-organization' and explains how systems adapt to their environment through interacting autonomous agents without external force (Hasan, 2014). Often used examples are termites or a flock of birds which show emergent behaviour (the emerging termite structure or shape of the flock) that is not controlled by an outside force, but instead relies on interactions between respectively termites or birds. This principle is often applied in management theories focusing on emergent organizational behavior resulting from (healthy) human relationships, rather than a top-down control of the organization (see for example Stacey (2006)). This emergent organizational behaviour includes creativity and learning, and is explained by Birney, who states that "Humans create novelty through processes of innovation and learning. We are constantly trying out new ideas and actions […], so that we learn, adapt and evolve" (Birney, 2014, p22).

Based on these principles, we argue that if we want to tackle an uncertain and complex challenge like wellbeing in pandemic education, it is important to develop initiatives that strengthen human relationships that contribute to learning and creativity, and through that enable the emergence of new behaviour, learning, and creativity, and the adaptation and resilience of the system as a whole. Such initiatives are referred to as 'social infrastructures', a process or structure to bring people together that enables the generation of new ways of working (van der Bijl - Brouwer, 2017).

The key to adaptation is then two-fold:

- We run continuous experiments to promote wellbeing from which we learn, and;
- We connect people who are running these experiments in social infrastructures, so they can learn from each other and collectively create new initiatives.

We therefore saw it as our role to bring people together to collectively learn and innovate to promote wellbeing. We chose to do this in a series of online workshops, each with their own theme.

The workshops were intended to help us 'learn our way forward together'. While information was already being shared between teachers through various online platforms and shared documents, we chose a workshop format to promote experiential learning and to promote creativity. While sharing information is useful, we aimed for experiential learning in which teachers share experiences and reflect on those experiences. By inviting students to the workshops, teachers could also gain insights into the student experience and students were able to provide feedback on teacher initiatives. Another advantage of bringing people together over sharing information is that new knowledge and ideas can emerge from such interactions. Post workshop evaluations were for the most part, positive. Participant feedback indicated that future workshops would be recommended to peers or colleagues and that actionable insights had been gained from participating.

3.3. Strategic design to support an adaptive approach

The complex and dynamic nature of the wellbeing challenge requires an 'adaptive' approach, which is a conce

A key element of our approach is to connect teachers, and to connect teachers and students. In addition, we used our experiences as strategic designers, and specifically human-centred strategic designers to 'feed' this creative process. Over time we gathered many insights about

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both student and staff experiences, investigated the patterns in these insights, and discussed underlying values and themes in the workshops. By continuously sharing these insights back to both students and staff in our workshops, we aimed to develop strategic design principles to promoting wellbeing. In this section we present two examples of such themes and principles.

Peer adaptive peer learning communities for students

We identified two themes consistently that showed how working from home alone was impacting students learning journeys. This applied particularly to students who were and are working on individual projects in their final graduation projects (in our master programs these are 20-week projects, often executed for an external organization). The two themes are:

1. Students struggle with being stuck in their design process while at the same time being insecure about their progress and impact, leading to a lot of anxiety. As one student indicated:

   > "The greatest challenge is being enclosed in one space - which is both a work space and living space. There are quite a lot of distractions while working; also lead to procrastination. Plus, not being able to really be in the context makes me feel like whatever I am doing is just based on assumptions and really wonder if it has any value. This proves to be quite the demotivation."

2. Another challenge that students face in a home situation is that they lack a clear routine and find it difficult to set up good study space. Often students would have one room in which they would sleep, eat, and study. Students describe their lives feeling like a 'blurring together' of studying and living:

   > "'Groundhog day' is a good way to describe my graduation experience (sic). I feel the days blur together. I can't see any progress. (…) My graduation (sic) is one big 'mush'. A sense of routine makes a difference."

A principle to tackle these challenges is, similar to what we set up for teachers, create an 'adaptive learning community' for students, in which they share experiences and strategies. For example, making sure students are part of a 'design lab' in which they share their progress so they have a clear point of reference for realistic expectations. One prototype that we created in line with this principle was an interactive sessions in which students share their motivation strategies, for example a daily 'artificial commute' or 'sharing your design work with your peers'. Based on the success of this interactive session we are now experimenting with collective 'weekly check-ins' for graduating students who are working on individual design projects.

Supporting staff to support design students

A challenge that was often mentioned by teachers in our workshops was the dilemma of design coaches, where on the one hand they felt that they needed to challenge, provoke and confront students to help them progress their design work, while at the same time feeling that they needed to support students and not be too tough on them. One of the teachers made a sketch of this challenge in one of the workshops (Figure 4).

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Figure 4: The dilemma of design coaches to choose between 'pushing' students to progress their design work and supporting students (sketch by Dr. Jotte de Koning)

While we don't present a one-off solution here, it was interesting to see that some teachers developed good strategies to deal with this. The basic principle of these strategies is to create a safe space in which it does not feel threatening to receive feedback. This includes showing that 'we are human too'. For example, some of our teachers shared videos in which they explained what it was like for them and their families to live through the COVID-19 outbreak. Another teacher would 'welcome students into their home' by showing them their home before starting their online lessons. Students indicated that a good coach makes time for you, shows genuine interest in your work, regularly checks on you and are clear about expectations. A good coach also gives honest and clear feedback.

Like we explained above, we need to develop social infrastructures to ensure that teachers learn from each other and from students to develop such design coaching strategies. The underlying values are that we value human connections between staff and students, and we value the promotion of student wellbeing, while at the same time enabling positive design and learning outcomes for students. Strategies are based on principles of 'showing that we are human too,' and 'creating a safe space for learning in which we show we care'.

4. REFLECTION & CONCLUSION

In this paper we presented a continuous social innovation approach in which we constantly learn and constantly experiment with new prototypes and initiatives. We can distinguish the following outcomes of this work:

- Knowledge, frameworks and principles that form a 'fertile ground' for colleagues to shape education that promotes wellbeing. This includes the intervention pyramid and the various value-based design principles. We are disseminating these results via papers, blog posts and presentations. Further, our results are being actioned by university policy makers to inform education policy;
- The design of social infrastructures such as workshops that bring colleagues together to share knowledge and innovation to support an adaptive innovation approach, and;

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- The design of educational initiatives and practices that positively impact student wellbeing in education, such as the 'weekly check ins' that we are currently testing for graduation students based on the principle of adaptive peer learning communities.

In addition to the themes and initiatives discussed above, there are a number of challenges that we have identified that we hope to tackle in future work:

- The COVID-19 outbreak and its implications for higher education impact the complete learning journey of students. This requires we pay specific attention to welcoming new students and making sure that they get to know each other and shape a learning community. At the same time, we need new rituals to say goodbye to our graduating students, because our existing face-to-face graduation rituals are no longer allowed.
- Before COVID-19, there was already an increasing focus on performance and high grades amongst students. Performance anxiety has been exacerbated by the move to online and often 'lonely' learning. At the same time, COVID-19 also offers a context to learn, for example on how to deal with ambiguity or how to adjust your design and research methods to an online mode. How can we help students be more focused on learning, than on performance?
- One of the positive experiences for us as teachers has been that students have shown empathy for our wellbeing, for example asking, "if you're a coach and you are always there for your students, then where is the time for you?" We're aware that we probably receive more of this feedback through our wellbeing work. How can we further scale and enable dialogues between students and staff to discuss strategies and responsibilities when it comes to promoting both student and staff wellbeing?

In addition, there are a number of questions about the presented approach that we'd like to reflect upon:

- The facilitation of workshop initiatives as described in this paper is not part of our job descriptions or those of anyone else in our faculty. How can institutional processes and arrangements support these new ways of working?
- When it comes to the implementation of initiatives that go beyond application in a single subject, it is important to be aware of who is accountable or has a mandate to implement initiatives. How can we better involve decision-makers in these processes?
- We have received interest from other faculties and universities in our approach. To apply a design approach in a design faculty is relatively easy because everyone is familiar with the approach. What would be appropriate approaches for other educational contexts? How might we be able to support and to learn from others?

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In this paper we proposed an adaptive and human-centred strategic design approach to tackling the challenge of student wellbeing during the COVID-19 outbreak, the forced move to online education, and the uncertainty we have been and will be facing in design education until this pandemic is eradicated. The approach is strategic because it does not propose one-off solutions or quick fixes, but instead recognizes the complex and dynamic nature of this challenge which requires an adaptive approach. We argue that a potential role of strategic

designers in this context could be to connect people in the university system (both staff and students) to get them to share experiences and strategies, so we can collectively reflect on what works and what does not, and 'learn our way forward' together. Rather than a 'neutral' facilitator role we do not just facilitate these connections, but also 'feed' the creative process by sharing the human-centred principles and values that underlie successful initiatives. These principles and values for example include, 'showing we (design teachers) are human too', co-creating educational experiences with students, and encouraging students to 'unburden themselves' in their design process by sharing experiences and strategies.

We hope that this approach will contribute to shifting the educational system such that students thrive in their education, regardless of the uncertain circumstances imposed on them and on us, through impactful events such as the COVID-19 outbreak.

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