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Stray Off-topic to Stay On-topic: Preserving Interaction and Team Morale in a Highly Collaborative Course while at a Distance

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Abstract:

The Covid-19 pandemic has prompted schools and universities to shift their teaching to virtual classrooms from one day to the other. As a unique example, we had to virtualize the second half of a two-semester course on human-centered innovation, which heavily relies on direct interaction of students in small groups. In going virtual, we have found that adapting assignments is only the tip of the iceberg. Despite being familiar with the students, the real challenges were preserving high levels of creative interaction as well as surveying team morale and status. Reflecting on our experiences, we detail solutions related to the lack of creative interaction by fostering off-topic chit-chat and surveying team morale by introducing more explicit communication and seeking team consent. To help teachers adapt to virtual teaching, we discuss how our mitigation approaches, which we developed in an extreme setting requiring close, creative collaboration, may apply to virtual teaching in general.

Keywords: Design Thinking, Practical Course, Virtual Teaching, Interaction, Team Morale.

[Department statements, if appropriate, will be added by the editors. Teaching cases and panel reports will have a statement, which is also added by the editors.]

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1 Initial Situation

As the Covid pandemic unfolded, we were faced with the challenge of virtualizing a unique university course on human-centered innovation, which we run as part of the SUGAR network for Design Innovation, see Wiesche et al. (2018) for an overview of the curriculum. Compared to conventional seminars, the course requires many resources and close, creative collaboration with and within student teams. During nine months, nine students of diverse backgrounds intensively collaborated in two Design Thinking teams to solve real-world challenges posed by company partners. As is typical for Design Thinking, these challenges are "wicked" problems without definitive answers (Buchanan, 1992) and require embracing ambiguity (Leifer & Steinert, 2011). Students perform an entire Design Thinking cycle: gaining an in-depth understanding of stakeholder needs is the foundation for ideating potential solutions, which are iteratively refined based on user testing (Stanford d.school, n.d.; Uebernickel et al., 2020). Teams thus complete diverse tasks from software development to devising business models and have to integrate different perspectives, which is aided by students' diverse backgrounds. Physical prototyping and collaboration with teachers, other students, and external parties for e.g. observations and testing prototypes are essential to the course.

Pre-Covid, the course heavily relied on direct interaction. Each week, we conducted a two-hour lecture for both teams and one-hour team sessions. Since embracing seemingly crazy ideas can foster innovation in Design Thinking (Bushnell, Steber, Matta, Cutkosky, & Leifer, 2013), the course promotes associative thinking, which includes socializing and straying off-topic. While heavily encouraging face-to-face meetings, teamwork had been partly virtual from the outset. Throughout the course, teams shared online documents and cloud storage. Further, teams and teachers communicated through collaborative messaging software between meetings. Using the shares of time and members working virtually and the physical distance between them as criteria to gauge virtuality (Schweitzer & Duxbury, 2010), the course was a hybrid set-up. About 20% of meetings with teachers were virtual with, in some cases, up to 50% of members joining virtually. Physical distance could be neglected since members would mostly join virtually due to e.g. conflicting appointments.

2 From Highly Interactive Face-to-Face Meetings to a Virtual Course

Before the pandemic fully hit, close to six months of the course had elapsed. With an estimated workload of 20 hours for every student per week, teams already weathered through pains of team building, had opportunity to develop routines, and to become familiar with one another, which improves performance (Harrison, Mohammed, McGrath, Florey, & Vanderstoep, 2003).

In early March 2020, both teams presented their latest prototypes at a large event, which included socializing and a joint dinner. Drawing on the collected feedback, teams were supposed to iteratively refine their prototypes based on tests with users. Two days later, we were instructed to shift all teaching to online courses. Instead of the established hybrid format, two out of three dimensions of virtuality (Schweitzer & Duxbury, 2010) suddenly changed to an extreme: Each student and teacher was at a separate location, and 100% of work took place online.

Going virtual constrained the broad array of resources the teams previously had at their disposal. Without unfettered access to physical prototyping tools, testees, or even teachers and teammates, exercises and deliverables had to change. We compensated for the lack of direct interaction by either shifting to online tools, e.g. a collaborative, virtual whiteboard and breakout sessions in video conferences, or adjusting content. For example, prototyping activities now focused on concepts and software prototypes instead of hardware elements. While these changes were an abrupt departure from established ways of teaching, we could keep much of the content and especially its logical flow. Despite being familiar with the students, we found coping with the negative effects of virtualization as they relate to team processes much more challenging.

3 Preserving High Levels of Creative Interaction

Keeping high levels of creative interaction was our main challenge in going virtual. In the following, we draw on the notion of social translucence to make sense of our experiences and their practical significance. Social translucence is useful to explore challenges in virtual collaboration (Bjørn & Ngwenyama, 2009; Erickson & Kellogg, 2000) and can enable coherent discussions (Erickson & Kellogg,

2000), which makes it a potential approach to design collaboration systems (Erickson & Kellogg, 2000). Social translucence incorporates three elements: *visibility, awareness*, and *accountability* (Erickson & Kellogg, 2000). *Visibility* allows for perceiving relevant social information, *awareness* means members know of each other's actions, context, and needs, whereas *accountability* implies actions can be monitored and, if necessary, sanctioned (Erickson & Kellogg, 2000).

In going virtual, we noticed a drop in student participation and interaction, both on- and off-topic. During lectures involving both teams, most would keep their camera turned off. In our impression, this greatly reduced interactivity and the visibility of reactions for both teachers and students. When asking questions or seeking input on e.g. prototype ideas, only few would engage in discussions. Moreover, it was hard to discern who would like to speak next. This lack of *visibility* and *awareness* (Erickson & Kellogg, 2000) mirrors long-standing research on how reducing media richness, that is traits of a medium relating to speed and the ability to pick up cues, may present issues due to reduced social presence (Kayworth & Leidner, 2002; Yoo & Alavi, 2001). We were, however, not concerned about changes in *accountability*: Intrinsic motivation to work on the projects and pronounced social bonds in the teams may have created a sense of responsibility. Moreover, graded course deliverables created a need for action.

In sessions with individual teams, which were aimed at discussing the specific progress of that team's project, interaction and discussions were more extensive and open. We noticed, however, a palpable reduction in the speed of interaction. Reduced *visibility* and *awareness* likely caused this decrease: Even with video turned on, the virtual setting restricted interaction by nonverbal cues such as excited grins, pointing at objects, or leaning forward to indicate the intention to speak. Consequently, convergence of thoughts seemed more time-consuming and tedious. In addition, we recount fewer creative ideas than in face-to-face interaction.

Beyond the decrease in media richness and social presence, we noticed how virtual sessions with more off-topic chit-chat and general socializing tended to work much *better* than those solely focusing on project-related topics. Off-topic chit-chat had acted as a catalyst for associative thinking before: An off-topic comment by a team member can propel a new line of ideation. Since pursuing wild and seemingly risky ideas can yield relevant results in Design Thinking (Bushnell et al., 2013), open ideation is very important (Stanford d.school, n.d.; Uebernickel et al., 2020). Whereas in face-to-face interaction straying off-topic occurred naturally, in the virtual setting, we noticed a tendency to strictly focus on content, which meant creative detours had to be encouraged.

3.1 Leading by (Fun) Example

Compared to face-to-face meetings in the lab, we felt students perceived having to act more professionally in the virtual setting. This may be due to the restricted ability to have private conversations with teammates before, during, and after class. To create a fun, open atmosphere, we have found it vital to lead by example–sometimes even establishing a "no shame" approach, for example joking at our own expense. In a basic effort to improve meeting ambiance and to increase the voluntary sharing of video, having teachers turn on their camera was the first step. In addition, we conducted a "Zoom background contest," in which we also participated: the student with the coolest virtual background was to win a muffin from the teaching team. While diverting time from elaborating content, we found this truly joint team activity to create a sense of connection and an opportunity for chit-chat, which in turn aided creative elaboration in the team.

3.2 Drawing on Shared Experiences

To create an open, creative atmosphere, we also drew on shared experiences. Since we had worked with the teams for several months, we knew about some incidents and characteristic traits of students. Occasionally bringing up tales of what we had experienced together helped to get everyone's attention and boost creative work. For example, we brought up funny incidents from prototype testing months ago, which in our impression created a shared sense of purpose in the team.

3.3 Embrace and Plan for Going Off-Topic

In fostering a creative atmosphere, we embraced opportunities and included elements aimed at straying off-topic. At the beginning of team sessions, we conducted mini stand-up meetings and asked team members to summarize what they had been working on. To strengthen personal relations in this content-related exercise, we started sharing funny anecdotes from our personal lives. While already part of the

routine for structuring physical meetings, we found that, in the virtual setting, this practice worked very well to create a relaxed atmosphere. The stand-ups also acted as springboards for spontaneous off-topic discussions, which set the stage for creative associations. For example, one student recommended a whiteboard sticker to work from home. He explained how he used the whiteboard sticker, that is a large piece of adhesive plastic foil, to have a whiteboard on the door of his dorm room. Immediately, this simple product recommendation turned into an improvised enactment of a home shopping show. While not directly resulting in a project idea, the upbeat atmosphere helped everyone to associate elements in the subsequent discussion on deliverables.

In addition to such emerging opportunities, we also purposefully introduced elements for generating off-topic discussions. While humor, which can propel team performance (Lehmann-Willenbrock & Allen, 2014), was part of face-to-face teaching, we found humorous elements to be helpful in attenuating the lack of *visibility* and *awareness* in the virtual setting. For example, to explain current Covid restrictions, we played a hilarious interview with a local politician who failed spectacularly at describing the new rules. The brief diversion created many laughs and helped to get past the solemn topic of restrictions.

4 Surveying Team Morale and Status

Not least due to fewer opportunities for serendipitous interaction, surveying team and member morale was another vital challenge. Pre-Covid, teams worked in one lab during and between lectures. This allowed us to walk by, have spontaneous discussions, and thus gain *visibility* and *awareness* of work and ambiance in the teams as well as potential needs for support. Additionally, we had kept an open-door policy, which allowed for serendipitous encounters with students coming by at our offices for assistance or feedback.

Such observations and serendipitous encounters were not feasible in the fully virtual setting, which reduced communication to two video conferences per week and collaborative messaging. Since teams had experience in virtual collaboration, this did not seem like a challenge at first. Over time, however, we noticed teams were less aligned on responsibilities and where their projects were headed. Moreover, assessing team morale became harder since we lacked *visibility* and *awareness* of each member's status.

We tried to address this challenge by more explicit communication. In addition to offering help when deeming points critical, we now always encouraged teams to seek assistance by reiterating the possibility to contact us either as a team or individually. Moreover, we frequently asked teams about their workflow, the status of deliverables, if there were any issues, or whether they needed support. Knowing that students sometimes hesitate to communicate potential problems, we tried to gain as much *visibility* as possible. For example, we followed up on even slight irritations, e.g. dissatisfaction with the time allocated to certain content, which in a co-located setting we would not have addressed. As a more efficient way to get knowledge of potential issues, we sometimes approached individual team members on their impressions of the status of deliverables and teamwork. Using this approach, we gleaned helpful insights from within the team, for example on task distribution.

While observation was vital for *visibility* and *awareness*, intruding on autonomous teamwork puts team morale at risk. We thus learned to explicitly seek teams' consent. Pre-Covid, teams working in the lab enabled us to naturally approach teams, who would expect and see us coming. In the virtual equivalent of breakout video sessions, we would ask whether they were ok with us listening in. In several instances, teams expressed they wanted to stay private. Thus, we occasionally lost *visibility* and *awareness* but strengthened a trusting relationship, which likely was more positive in the long run.

5 Lessons Learned and Conclusion

Adapting exercises and deliverables was an important aspect of virtualizing our course on human-centered innovation. Despite high levels of familiarity, which could have been expected to boost productivity above and beyond rich media (Yoo & Alavi, 2001), continuing creative work required, supportive measures aimed at safeguarding interaction and surveying team morale. Nonetheless, previous familiarity helped us in implementing the outlined mitigation approaches, for example by being able to anticipate reactions to going off-topic. A common thread of our approaches, summarized in table 1, are open off-topic discussions and general socializing, as opposed to structured exercises. To alleviate the observed lack of *visibility* and *awareness* (Erickson & Kellogg, 2000) in the virtual setting, several approaches draw on more explicit communication and earlier interventions. Relying on very close, sustained collaboration and creativity among a familiar group, we acknowledge our setting is an extreme

case. In the following, we will discuss how the concept of social translucence (Erickson & Kellogg, 2000) can help in identifying issues in virtual teaching and how our approaches, which focus on improving *visibility* and *awareness,* may generalize to other settings with less familiarity or need for interaction.

Our strong focus on team interaction seems to have also resonated with students. In an anonymous course evaluation focusing on virtual teaching, which our department sent out, students reported a lack of direct interaction and pointed to overly lengthy discussions on content. Nobody, however, mentioned too much joking or too many off-topic discussions. While our approaches were quite subtle and students may not have explicitly noticed them, it is reassuring nobody took issue with them. Fostering off-topic chit-chat helped not only with creative elaboration but in our impression also established the course sessions as predictable and much-needed diversions from the hardships of the Covid pandemic.

By providing criteria for classification, the concept of social translucence (Erickson & Kellogg, 2000) may be a helpful **tool for identifying issues in virtual teaching**. The relative importance of the dimensions may, however, differ based on the context. Having *visibility* of other's actions or circumstances can be seen as a basic enabler to gain *awareness* of needs and concerns (Bjørn & Ngwenyama, 2009; Erickson & Kellogg, 2000). In courses requiring less creativity and close collaboration, such as lectures or large-group seminars, *visibility* and *awareness* are relevant for short-term, operational considerations such as whether students are at ease and can follow along. Courses involving prolonged, intense collaboration may additionally require *visibility* and *awareness* of team functioning and social processes to ensure productive collaboration. Concerning *accountability*, we expect an inverse pattern. Long-term, intense collaboration can lead to deep social bonds, which in our case made teams self-reliant-*accountability* was thus not an issue. Conversely, in courses not requiring close collaboration, *accountability* may be of central concern. If there are no or only shallow social bonds, one may have to assure *accountability* using formal measures, such as strict rules and reports, which relates back to gaining *visibility* and *awareness* of operational considerations. We hope this short elaboration can help teachers to, first, reflect on their course requirements and, second, gauge whether issues can be traced to mismatched levels of *visibility, awareness*, or *accountability*.

Leading by (fun) example may apply to all settings, albeit to different extents. Actions not taking extra time and not likely to spark discussions, such as teachers turning on their cameras to encourage video sharing, may make for a more relaxed and personal experience in any setting. Our more extensive approaches, such as the "no shame approach," for example joking at our own expense, or background contest may be reserved for when high levels of creativity and interaction are more important than conveying course content. In courses with shallower social bonds and short-term collaboration, it may especially be inappropriate to reduce the perceived need to act professionally.

We would ***draw on shared experiences*** in all settings, even though it may not be possible to bring up joint experiences from the course. Mentioning jointly known places, events or rituals, such as campus life or sporting events, likely works well as an icebreaker. Such icebreakers are important in building rapport in face-to-face teaching, but we found them really decisive in a virtual setting. They ameliorate the limited ability to get to know others and their habits through e.g. body language. For us, reports on shared experiences made teachers more relatable and thus can increase student participation and satisfaction.

Table 1 Overview of Mitigation Approaches

Mitigation Approach	Example	Effect	Applicable to
Leading by (Fun) Example	Having teachers turn on camera	Relaxed, personal atmosphere	All settings
	Zoom background contest	Off-topic diversion, Sense of connection, creative interaction	Collaborative creativity
Drawing on Shared Experiences	Bringing up funny incidents from previous meetings	Relaxed atmosphere, Shared sense of purpose	All settings
Embrace and Plan for Going Off-Topic	Stand-Up Meetings	Increased visibility, awareness; Relaxed atmosphere	Close collaboration

	Building on off-topic comments and encouraging creative deviation	Creative elaboration, associative thinking	Collaborative creativity
	Adding humorous off-topic elements	Visibility and awareness, relaxed atmosphere	All settings
More Explicit Communication	Encouraging feedback seeking	Visibility and awareness	All settings
	Inquiring on status and impediments	Visibility, awareness, and accountability	All settings, especially close collaboration
Seeking Team Consent	Asking for permission to listen in on team meetings	Good personal relations, trust	Close collaboration

Embracing and planning for going off-topic may apply to different extents. Analogously to drawing on shared experiences, we see integrating humorous elements, such as personal anecdotes, as universally applicable to create a relaxed atmosphere. What is an appropriate diversion likely depends on the course setting, characteristics of the student group, and preferences of the teacher. If a course does not require high levels of interaction or associative creativity, we would suggest limiting discussions by curtailing student comments on funny elements. Similarly, if individual performance takes precedence over collaboration, stand-up meetings may require strict time-boxing or may not be worthwhile at all.

Encouraging feedback-seeking may be vital in all virtual teaching to increase *visibility* and *awareness* of student needs. **Inquiring on status,** which additionally can increase *accountability*, may be most relevant for prolonged, intense collaboration. While increasing the need for *visibility* of team status, long-term collaboration allows for better judgement of potential biases in student reports. ***Seeking team consent*** to join meetings may only be relevant for close collaboration. In most settings, students working in breakout video sessions set up by teachers would likely expect them to join eventually.

In our set-up requiring much creativity and close collaboration, our measures worked to increase the level of engagement in the course. However, we acknowledge straying off-topic is not without perils. In a more conventional setting or with less intrinsically motivated students, some approaches may be inappropriate. Adding to the rich body of research on the role of media in virtual teams, our propositions are foremost a practical example of results on how the *use* vs. the characteristics of different media have to be considered (e.g. Bartelt & Dennis, 2014; Espinosa, Nan, & Carmel, 2015). We encourage teachers to not only adapt content but to also emphasize atmosphere and team dynamics in going virtual. Hopefully, our proposed measures stimulate experimentation how performance in virtual classes, especially when seeking creativity, can be fostered.

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