FOSTERING STUDENT CREATIVITY AND FUTURING THROUGH DESIGN JAMS

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ABSTRACT
Design Jams are intensive, collaborative workshops that foster rapid ideation, teamwork, and hands-on problem-solving. This paper presents Design Jams as an innovative educational method to support student creativity in higher education, positioning universities as incubators of innovation. Our Design Jam explored future scenarios for the planned Nyhavna neighbourhood, focusing on young residents. Using creative tools and participatory exercises, the event facilitated discussion, perspective-sharing, and co-creation among around 90 participants, including students, municipal professionals and local representatives. We share insights from running the Jam as part of two design courses and as a standalone event, aiming to inspire collaborative, multi-perspective educational practices.

Keywords: Design jams, creativity in education, futuring, design education, provotypes

1 INTRODUCTION
Though uncertain, the future is shaped by human actions, which in turn depend on how we envision it [1]. Our ability to influence the future is tied to our capacity to imagine desirable alternatives [2, 3, 4]. Given the intensifying climate crisis, universities play a crucial role in fostering sustainable solutions. The Norwegian University of Science and Technology (NTNU) has prioritised sustainability [5] and collaborates with Trondheim Municipality through an initiative and partnership, TRD 3.0, aimed at bridging the gap between municipal practice, student assignment and academic research. This partnership focuses on innovation and capacity building through experimentation and experience sharing. The collaboration facilitates the development of inter-organisational capacities and capabilities and enables new ways of learning and working together. Imagination and future thinking can challenge unsustainable practices; help shift focus to long-term impact [2] and stimulate co-creation of solutions. However, envisioning different futures [6] requires training, as future-related issues are complex and difficult to grasp [7, 8]. Therefore, we explored an innovative method – Design Jams – designed to train students in imagining alternative futures and applying these ideas to real-world contexts [9-12].
This paper presents experiences from our first Design Jam conducted in collaboration with Trondheim Municipality, focusing on the transformation of an urban district (Nyhavna) to become Trondheim's newest, vibrant district over the next 20 years [13]. The area is to cater to various interests and has high sustainability requirements. To ensure that the development meets both current and future needs, it is necessary to explore methods that can contribute to holistic and long-term thinking [13]. The Design Jam brought together approximately 90 participants, including industrial design students, municipal professionals, local community representatives, and researchers. Using creative tools, participants explored future scenarios centred on young residents, engaging in discussions, hands-on activities, and the co-creation of diverse visions. Through this process, the workshop fostered collaboration between academia, public stakeholders, and the local community, reinforcing the university's role as a facilitator of sustainable development across multiple domains.

2 RESEARCH QUESTIONS
Our research questions are: 1) What is the value of using Design Jams as a method to train students in envisioning different futures and applying these ideas on an actual planned case of city development? and 2) How do the different exercises contribute specifically, and how may Design Jams as a method be developed further?

3 THEORY AND METHOD

3.1 Envisioning the Future: A Path to Action

While many people worry about the future, they struggle to envision alternatives beyond dystopian scenarios [4]. Developing a stronger belief in what the future may bring help foster hope and agency [7, 14]. As mentioned, future thinking can also challenge unsustainable practices [2] and help shift focus to long-term impact [6]; but future-related issues are complex and difficult to grasp which means it needs to be learned [7, 8]. Additionally, relying solely on words and numbers may exclude many from shaping the future [15, 16]. If managed successfully, imagining different futures can spark conversations, reveal opportunities, and help avoid pitfalls [17, 18]. According to a report from the UN Global Pulse [19], it is important to address how to change connections, power and agency when addressing the future. For this to be successful, it is crucial that young people are deeply involved: "*When we imagine future scenarios and decision-making processes which will impact on younger generations more than the adult ones that precede them, it is crucial that young people are centred"* [19, p. 19]. Furthermore, inclusive participation strengthens decision-making by incorporating diverse perspectives and fostering co-creation [15, 3]. Unlike traditional public engagement, Design Futures do not aim to produce immediate solutions but rather encourages speculative exploration [20, 17]. This method integrates visual tools to help participants navigate complexity and contribute on equal footing with experts. Kattel and Mazzucato [21] emphasise that the development and establishment of networks and partnerships increasingly focus on finding new, creative, and more effective solutions to achieve targeted societal missions. Collaboration-driven innovation, especially through partnerships with actors working with societal challenges, is an important driver for building capacity. Consequently, the main goal of the Design Jam is not the development of solutions, but to use it as a method to train students in envisioning different futures and – as a learning experience – applying these ideas to a specific case.

3.2 Design Jams: Rapid Ideation, Teamwork, and Hands-On Problem Solving

Design Jams are intense workshops in which interdisciplinary teams co-create insights, ideas and prototypes to engage with real-life challenges tied to actual projects or global themes such as urban development or planning [9, 10]. Emerging in the wake of hackathons, Design Jams have, over the past decade, been explored in design education as transformative entry points for addressing sustainable development and social innovation [10-12, 22-23]. Building on this foundation, we introduced *provotypes* – a deliberately provocative form of prototype – as a new element to spark critical reflection, challenge assumptions, and encourage emotional engagement. While prototypes aim to gather feedback on potential solutions, provotypes are designed to provoke and surface hidden needs or values [24]. Our provotypes included a narrative of an actual city plan process which was intended to evoke emotional responses as well as an interactive visual installation called '*Quotes from the Future'* which was used to encourage long-term speculative thinking. This aligns with Buhring & Liedtka's [25] view that envisioning new futures requires more than cognitive understanding — it demands emotional engagement. Provotyping draws from related fields such as critical design, design noir and disruptive communication, where interventions are used to stimulate reflection in co-creative settings [26, 27].

When stepping into the unknown and designing for the future, it is important to provide a safe zone that makes envisioning future solutions more accessible. A concrete case like Nyhavna helps frame the challenge [28], while visual tools support the process by offering a shared language and making complexity tangible. Generative artifacts, such as toolkits and design probes, help express tacit knowledge and bridge different perspectives [16, 29, 30, 31]. Design plays a key role in making future scenarios tangible and relatable, as narratives engage people more deeply than facts alone [32, 15]. Designers use visual and conceptual tools, such as models, sketches and narratives to stretch imagination and explore possible futures [25]. However, while compelling storytelling can inspire action, it must also balance optimism with realism to avoid overwhelming audiences [33, 34].

3.3 Design Jam for Nyhavna as Method

The two-day Design Jam took place at NTNU in a student innovation space, bringing together around 90 participants. These included 48 third-year Service Design (D5) and 22 fourth-year System (Design) (D7) students from a five-year industrial design programme and two-year international master's programme in design, along with municipal professionals, local community representatives and researchers. Participants were invited by the core team (the authors), with the invitation highlighting the event's collaborative nature of the event and the value of diverse perspectives for addressing future

challenges. It included information on the Design Jam's structure, objectives, and expected contributions. The programme consisted of three core exercises (Table 1): *Futures Wheel* (mapping ripple effects of selected signals); *Scenario Development* (developing future narratives); and *Roadmaps* (planning actions to realise preferred futures). In Future Studies, a signal is an observable trend that may indicate societal change [35, 36]. Four signals—Housing, Digitalisation, Mental Health, and Transport—were identified through trend analysis and turned into visually designed signal cards to spark discussion. Participants also used poster templates, LEGO, Polaroid cameras, a 3D-printed Nyhavna model, and other creative materials to support hands-on exploration. An installation, *Quotes from the Future,* was set up in a small room at the venue, inviting participants to reflect on long-term futures. Pre-printed examples with thought-provoking quotes sparked creativity and emotional engagement [27], and participant contributions were displayed and included in a prize draw.

Table 1. Design Jam Schedule

Day 1 (8:30-15:00)	**Day 2 (10:00-14:00)**
Introduction & Workshop Goals • Exploring futures for Nyhavna (focus: young residents) • Introduction to Design Futures methodology • Overview of exercises	**Introduction (30 min)** • Day 2 agenda overview
Exercise 1: Warm-up (30 min) • Get to know the group	**Exercise 4: *Roadmap* (60 min)** • Backcast scenarios into present-day actions
Exercise 2: *Futures Wheel* (45 min) • Explore ripple effects of societal signals	**Group Presentations (100 min)** • 5 minutes per group
Provotyping Presentation • Using provotypes in urban development	**Closing Session (20 min)** • Prize draw and wrap-up
Exercise 3: *Scenario Development* (135 min) • Group work on future scenarios for Nyhavna	*The event also included coffee and lunch breaks, discussions, and the Quotes from the Future installation.*

Participants were divided into 10 groups, mixing students and externals to encourage interdisciplinary collaboration. Tasks were introduced in plenary, with facilitators guiding the process. While the Design Jam focused on Nyhavna as a case, students also worked with the same neighbourhood in their final course projects. The Jam enabled collaboration with external stakeholders and informed students' main project deliverables – proposals for service or systems solutions. The municipality provided planning documents in advance, and students had conducted site visits and stakeholder meetings. Although they entered with prior case knowledge, students were encouraged to approach it as a separate exploratory event, with the option to incorporate co-created material into their final projects. Figure 1 shows scenes and activities from the Jam.

Figure 1. Scenes and activities from the Design Jam (Photos: Maja Langva)

4 PRELIMINARY FINDINGS

Our preliminary findings are based on initial analyses of *observational data*, collected continually throughout the Design Jam, and semi-structured, flexible, on-the-spot *interviews* with Design Jam participants. The basis of these analyses is included in the report of Hoven and Vittersø [35].

4.1 Participant Engagement and Challenges

Students found the Design Jam inspiring and valuable, emphasising gain of new perspectives through innovative methods and collaboration with externals. Group discussions were particularly rewarding, with several students applying insights to their own projects. Among the visual tools, the *Futures Wheel* received most positive feedback for making complex topics tangible, expanding discussions on sustainability across economic, political, and social dimensions. As noted by two students:

> *It was great to talk to external stakeholders. I realised what I knew and what I didn't. It put the task into perspective.* (Student)
>
> *The conversations were the coolest part.* (Student)

However, students also noted challenges: they wanted more time to prepare presentations, smaller group sizes, and greater involvement from external actors.

External stakeholders likewise found the Design Jam engaging, highlighting how the methodological tools, student collaboration, and visual aids supported productive, interdisciplinary discussions. Many appreciated the *Futures Wheel* for helping structure dialogue and clarify design's role in urban development. One stakeholder noted:

> *It was exciting to learn about new techniques that facilitate meaningful conversations. We need good discussions across backgrounds, disciplines, and ages!* (External stakeholder)

Still, stakeholders also pointed out areas for improvement – particularly the need for clearer pre-event information and a more balanced mix of students and externals. Participants overall were highly engaged in the *Futures Wheel*, which required minimal facilitation and sparked dialogue. *Scenario* development was more challenging as translating abstract ideas into tangible outputs proved difficult. Approaches included storyboards, role-play, paper models, and personas, while recurring themes were community and sustainability. Even if the exercises encouraged creativity, most scenarios remained realistic rather than speculative. The *Quotes from the Future*, however, prompted more radical and imaginative thinking, suggesting that earlier exercises may have been too constrained. The final presentations varied in effectiveness, and groups that prioritised key insights over process details tended to be more compelling. Presentations using large-screen visuals also seemed to engage audiences more successfully than those relying solely on paper posters, highlighting how format influences communication of speculative ideas. The transition to *Roadmaps* was challenging, with some groups struggling to move from ideation to feasibility. Knowing in advance they would define action points may have constrained their speculative thinking. A bridging activity might better support this shift in future iterations.

4.2 Contribution of Exercises and Future Development of Design Jams

Each exercise contributed distinctively to fostering speculative thinking. The *Futures Wheel* effectively sparked discussion, with groups applying different approaches – some debated before writing, while others brainstormed individually. Most groups focused on *Housing* or *Digitalisation*, one chose *Transport* and none selected *Mental Health*. *Scenario* development produced varied result. Participants used tools such as storyboarding, personas, photography, sketches, and paper models**.** Common themes included community-driven solutions, sustainability, and resource sharing. Many envisioned new urban concepts, such as social hubs or neighbourhoods with dedicated functions like repair and reuse zones. Several groups proposed new mobility solutions to support public transport and mixed-use spaces. Technology was frequently framed as a positive enabler rather than a dystopian force. These exercises demonstrated that speculative thinking could serve as a bridge between abstract ideas and tangible strategies for urban development. The *Quotes from the Future Box* offered space for reflection. Many revisited it during breaks to read existing quotes and contribute their own. Over time, contributions took on a dystopian tone**,** reflecting concerns about privacy, climate change, and societal values:

> *Remember when privacy was a thing?*
>
> *Remember when we lived in big houses with big gardens, had 2 cars, mountain cabin, summer cabin and 3 boats + jet ski?*
>
> *Remember when we didn't prioritise planet over profit?*

This emotional layer provoked reactions, inspired creativity, and influenced scenario presentations –

demonstrating how emotion can be a powerful driver in future-oriented workshops. *Roadmaps* challenged participants to outline action steps. Economic constraints, maintenance, and conflicting interests were seen as barriers, while sustainability and collaboration were viewed as enablers. Many groups suggested pilot projects to test and validate concepts. Throughout the workshop, visual tools

played a key role in structuring discussions and translating abstract concepts into concrete proposals. While groups worked independently, *Scenario* development proved unexpectedly difficult, suggesting a need for additional scaffolding. A better balancing between structured guidance and open-ended exploration could improve future iterations. The dominance of certain signals also raises the question of whether broader thematic guidance is needed. Additionally, while *Quotes from the Future* encouraged creativity, it also shaped the tone of discussions, highlighting the importance of balancing structure and flexibility in future Design Jams.

5 CONCLUSIONS

Our findings confirm that participants were emotionally engaged in the Design Jam. The use of a real city planning narrative and the *Quotes from the Future* installation fostered this engagement and emphasised the value of inclusive participation. These elements supported speculative thinking by encouraging reflection on long-term consequences and underlying values, addressing the first research question on the value of Design Jams for envisioning alternative futures. Students gained hands-on experience in futures thinking, interdisciplinary teamwork, and applying design tools to complex, real-world urban challenges. The exercises contributed in different ways. The *Futures Wheel* broadened sustainability discussions, while the transition from *Scenario Development* to *Roadmaps* proved more difficult, revealing the need for more structured support, such as templates. Provotypes provoked critical thinking, underlining their value as educational tools. To improve Design Jams, we recommend strengthening the transition from ideation to action, diversifying scenario-building techniques, and ensuring a balanced participant mix. While the *Nyhavna* case provided useful framing, it also limited speculation. Introducing thematic guidance could help extend discussions beyond dominant trends. Ultimately, Design Jams offer strong potential as a pedagogical method – not only for addressing urban development challenges, but also for fostering interdisciplinary collaboration, creative problem-solving, and long-term thinking. We hope to inspire other educators to explore this method further.

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