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ORIGINAL ARTICLE

Exploring the Role of Art in Stimulating Creative Thinking and Problem-Solving within Interdisciplinary STEM-Dominated Student Groups: Insights from Art-Related Activities at CERN IdeaSquare

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ABSTRACT

Art as a form of creative expression is increasingly recognized as a tool to break through creative barriers in the innovation process. However, there has been little research on the impact of artistic endeavours on the creative thinking and problem-solving abilities of groups comprised mostly of STEM students working on an innovation project, and how art influences the development of novel ideas and solutions. This study explores the impact of four art-related activities - creating visuals, dancing ice-breakers, listening to background music and working within the uniquely designed CERN IdeaSquare environment - on creativity and the innovation process of members in different interdisciplinary teams. A survey was conducted to assess the activities' effects on motivation, focus, imagination and divergent thinking. The study specifically examines how students from predominantly STEM fields perceived the role of art in innovation and creativity. These activities took place during a two-week course. The paper highlights visual art as a primary driver of creative thinking, whereas other artistic activities that did not directly contribute to the end goal are considered hindrances in the creative process.

Keywords: Art in innovation; creative thinking; creativity and innovation; art strategies; problem-solving within groups.

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INTRODUCTION

Throughout history, art has appeared in various contexts, such as to provide personal enjoyment, or to allow and facilitate an improvement in thinking, reasoning, and even understanding emotions. When combined with science, art can fuel the advancement of society, which was prominently seen during the Renaissance (Hindi, 2016). Beyond this period, as Bast et al. (2015) describe, art has been a precursor to various scientific and technological advancements. Examples include the first invention of Alexander Graham Bell's – multiplex telegraphy – inspired by his pianist hobby; the development of one of the first pacemakers, based on a musical device; and Marvin Cohen's contributions to superconductivity theory, which stemmed from his collaboration with a choreographer. Moreover, Bast et al. (2015) concluded that society requires arts and arts-based innovation to advance in a sustainable and balanced way.

Lately, more focus has been put on artful practices in the context of fostering innovation, creativity, and team building. Most existing studies examine the integration of art in medicine and healthcare (Williams, 2002) (Hilliard, 2006) (Bell et al., 2014) (Sheingold et al., 2014) (Acai et al., 2016) (Mukunda et al., 2019) (Paul et al., 2023). Other fields studied for the incorporation of art to enhance the performance and well-being of participants include pedagogy (Walker, 2010) ("Chapter 4: Innovation and Creativity," ca. 2011) (Isaak, 2022) (Paul et al., 2023) and group art therapy (Bradborn, 2010) (Walker, 2010) (Sheingold et al., 2014) (Isaak, 2022), which are often interlinked. Here, art was validated as a medium to communicate more easily without having the barrier of language (Bradborn, 2010), as a catalyst for adolescents to acquire a more critical mindset, be more creative, and have a sense of self (Walker, 2010), and as having a therapeutic effect on the individual and the collective mood of a group (Isaak, 2022).

Several reviews have analyzed the influence of art on organisations, business models, and innovation-driven frameworks (Barry & Meisiek, 2010) (Dalton, 2015) (An & Youn, 2018). Consistent with these studies, art was found to significantly enhance participants' creative thinking, a key element of innovation (Dalton, 2015).

It is apparent that art can positively influence creativity on an individual and group level in different fields. Existing research is mostly about art used in the medical field or as a therapeutic tool to communicate with others. However, these applications of art are in fields where the expertise levels of the participants differ – which is one of the components that can influence

creativity according to Amabile (1996). Moreover, the art has different functions depending on the application. In Hilliard (2006), music therapy is used as a tool for medical professionals as interdisciplinary teams to increase efficiency, whereas Paul et al. (2023) used art pieces to foster open discussions among students in the setting of a museum. Then, Bradborn (2010) used tactile, observational, and generative art in the context of support groups.

These examples show a great variety of art forms and applications, but usually, the effect of only one art form is observed instead of comparing different art forms against each other. Additionally, little to no research has been done on how innovation is affected by exposure to art. Thus, there is an opportunity to study how various art activities influence creativity specifically in the innovation process of groups of students in a mostly STEM-dominated field. By studying these groups, the insights could be of value in the academic context where students are in a learning environment, collaborating in groups where creative thinking and problem-solving are essential.

This paper especially focuses on the perception of students on a variety of art activities and the influence of these activities on the student group's creative performance for the innovation process. This paper aims to answer the following question:

"How do participants perceive the impact of different art activities on stimulating their creative thinking and problem-solving within group settings, and how does this influence the development of novel ideas and solutions?"

This study has a more explorative nature by studying which art activities were perceived as positive or negative stimuli by the students. It serves as a stepping stone for academic institutes that want to do further research on which art forms can be implemented to increase creative thinking and problem-solving abilities in group settings.

THEORETICAL BACKGROUND

Innovation and creativity are defined in various ways. For the purpose of this study, in "Chapter 4: Innovation and Creativity" (ca. 2011) innovation is defined as:

(…) new ideas, new ways of looking at things, new methods or products that have value,

and creativity is referred to as:

(…) an active process necessarily involved in innovation.

Creative thinking serves as the foundation of creativity, encompassing the ability to use imagination to generate and connect ideas or hypotheses (Kampylis & Berki, 2014). It is also important to recognize how the environment, particularly group dynamics, can facilitate or hinder creative thinking. Gencer (2019) explains how the group has a significant influence on its members, with the ability to affect the attitude and efficiency of the individuals. Thus, communication, tolerance, and understanding within a team are also some important factors that shape individual creative thinking.

Two key abilities closely linked to creativity are imagination and divergent thinking. Imagination and creativity usually refer to the same concept in the common lexicon, but Stokes (2014) deepens this connection by recognising that imagination stimulates emotions and decision-making, can be accessed voluntarily by an individual, and is not constrained by reality, all of which are crucial for creative thought. Then, Acar and Runco (2012) argue that divergent thinking is particularly important for the innovation process in general, as it describes how to effectively capitalise on ideation.

Amabile (1996) elaborates on the essential components of creativity by using the "three-component model of creativity": expertise within the targeted domain, creative thinking skills, and task motivation. Amabile addresses expertise as a foundation of creative work, and creative thinking skills to some extent as an attribute related to personality characteristics; these skills are applicable in every domain. Both expertise and creative thinking skills are dependent on what an individual is capable of. However, task motivation is crucial to creativity, since without task motivation, the creative task can be deemed as undone. Amabile distinguishes task motivation into two forms, intrinsic and extrinsic motivation. The emphasis is put on stimulating intrinsic motivation, as without it, the activity will not be performed by the individual, unless sufficient extrinsic motivation is satisfied. Both forms of motivation are heavily influenced by social influences, which are present within the group dynamic, but also within the work environment.

In the case of the CERN IdeaSquare, the different team members, other groups, the facilitators, the setup of the week, the environment, and the nature of the tasks given could all contribute to the motivation and in turn the creativity of an individual student to achieve the final goal of the given innovation process (turning a technology into a valuable application). In light of this understanding of the concepts, the attention will be on observing how art enhances any skill that can contribute to or facilitate creative thinking within a group setting, as several activities of artistic nature were used specifically to enhance creativity. Especially since some art forms might result in a higher task motivation than others, depending on individuals' and groups' intrinsic/extrinsic motivation.

Based on the existing literature, there were identified multiple art integrating strategies that had the purpose of

helping the participants in developing or evolving their creativity. Starting in the medical domain, two relevant strategies are Visual Thinking Strategies (VTS) and Artful Thinking, both analysed by Mukunda et al. (2019). VTS has the goal of increasing observational skills and critical thinking by looking at art pieces and answering three questions related to each picture. Artful Thinking is a more complex program that includes visual art and music, and it entails multiple short activities or routines that stimulate reasoning, observing, and connecting different ideas, amongst other abilities.

Both methods have had successful results and achieved the goal of increasing wellness, team building, and creative thinking. Apart from the visual art approaches, performative arts are also commonly used in training and teaching medical practitioners. Acai et al. (2016) portray one example where participants took an active part in improvisation and enacting of specific scenarios. This has led to an increased feeling of group belonging, the ability to relate, and improved communication skills.

Continuing in the fields of pedagogy and group art therapy, the strategies involved are much more varied than the ones in the medical field. As a case study, Bradborn (2010) illustrates how general creative arts can be used in a sexual assault support group. Although the specific activities are not mentioned, it can be inferred that they were divided into tactile, observational, and generative or creating. When the activities were carefully chosen, art benefited the individuals in expressing their thoughts and feelings more easily, while unifying the group.

In the innovation world, art has not been used almost at all as an aid for individuals engaging in creative processes. However, there is one example by Dalton (2015), where organisations within a specific area in New York City were provided creative help by an art programme (i.e., the Innovation Institute). This strategy entails a facilitator + artist combo that leads the participants in activities involving

> (…) making, sharing, presenting, critiquing and discussing art.

Thus, the focus was mostly on visual art. The result was overwhelmingly positive, with multiple participants who finished the program having changed their work approach within their organisation, with a heightened sense of creative thinking. The program also helped in ending periods of creative burnout.

Overall, the different applications described share the direct implication of team members in artistic endeavours. Some parallels can be drawn to the activities happening within the environment of CERN IdeaSquare, such as the art forms used in the studies or the pedagogic purpose of the art activities with the purpose of increasing creativity. Nevertheless, these examples do use a clear measuring tool for creativity; moreover, it is important to note that the creative endeavours analysed are diverse, covering visual, performative and music-based art.

METHOD AND DATA

To answer the research question about how participants perceive the impact of different art activities on stimulating their creative thinking and problem-solving within group settings, and how this influences the development of novel ideas and solutions, a survey was conducted (see Appendix A for question details). During the Summer School, participants mutually agreed to contribute to the scientific paper while retaining the freedom to decide whether to complete the survey. The Google Forms survey ensured anonymity, as no personally identifiable data was collected, apart from participants' study background. All responses were securely stored in Google Forms, accessible only to the researchers conducting this study. The survey link was shared exclusively within the CERN IdeaSquare Summer School 2023 cohort. The final sample size consisted of N=12 students from Dutch universities who participated in the program. Most of the students were from Delft University of Technology, but there were a few students in the Summer School from Erasmus University in Rotterdam and the University of Amsterdam. Students attend the Summer School to take advantage of the opportunity to work on technologies and business ideas generated in or related to CERN. The innovation process used at the Summer School of CERN IdeaSquare was based on the Design Thinking methodology, a continuous process of reframing, ideation, and testing with a human-centred attitude (Dam, 2024).

Over the course of a week, students collaborated in teams of 4-6 students to develop innovative applications and business models for emerging technologies. Students engaged in various art-based creative activities selected by IdeaSquare facilitators as part of their daily schedule. The survey assessed the participants' attitudes towards the art activities and their impact on creative thinking and problem-solving.

The art forms were creating visuals for a presentation or a poster, a dancing ice-breaker, music in the background, and the interior design of CERN IdeaSquare. They capture the broadness of the 'art' term and were experienced by all participants during the summer school. These modes of creative expression were selected by the facilitators of the Summer School program. By their own admission, the selection was made on a random basis, based on the materials, equipment and working space that was available to them at the IdeaSquare compound. The facilitators provided verbal instructions for creative activities and selected the music for listening, while the participants had to perform and take the lead in the dancing ice-breaker.

The survey was administered online by sharing a link with course participants (see Appendix A - Spark Survey). The survey began by asking participants' academic background. This was followed by a brief explanation of the format of the questions. Afterwards, four questions were asked with each question addressing a different art activity. For each of the four art-based creative activities, participants could evaluate how, if at all, it affected their motivation, focus, imagination and divergent thinking. These parameters were chosen because motivation is one of the main pillars of creativity according to Amabile (1996), and focus because the art activity could either contribute to the attention span of an individual or deplete this. Imagination and divergent thinking are parameters that can indicate whether creative thinking was affected by the activity and also are related to the design thinking process, specifically in the exploring phase where creativity is needed to devise novel design solutions (Dam, 2024). Asking only about creativity in the survey could have caused ambiguity in the meaning of the term, thus it was split into two parts. Imagination referred to how novel the participants perceived their ideas to be (Imagination, 2024) and divergent thinking to how many unique ideas the participant was able to generate (GmbH, 2020).

A variation of the Likert scale was used to assess participants' opinions, attitudes, and behaviours regarding the activities. According to Bertram (2006), it is easy to read and complete for participants and can be readily translated to numerical values. The applied 5-point scale is: highly impaired, impaired, not affected, improved and highly improved. Participants were asked to provide detailed written feedback on at least two of the art-based creative activities. Participants were also asked to optionally share if they experienced any other forms of art during the program and relate whether it affected their teamwork.

After the responses were collected, the dataset was inspected for validity and outliers. Given the small sample size and the variability in responses, no data points were excluded from the dataset. To facilitate quantitative analysis, the Likert scale was centred at 0, ranging from -2 to 2. All numerical responses were then averaged and the standard deviations were computed. These could then be analysed to determine how well an activity performed on motivation, focus, imagination and divergent thinking.

RESULTS

The numerical results of the survey are presented in the matrix form. Table 1 depicts the mean of the responses of the relation between the art and team dynamics. Under the used scale from -2 to 2, the positive value pertains to the positive relation and the negative value means the negative relation. The magnitude corresponds to the strength of the relation, where zero means no relation.

Overall, creating visuals and interior design had the most significant influence on creativity. On the other hand, the most affected aspects of team dynamics were motivation and imagination. Students generally noted that having the freedom to choose their workspace gave them a sense of ownership, similar to running their own enterprise, and boosted their motivation. One participant stated: *"It was motivating to be in a hyped up start-up ~2010 Silicon Valley inspired environment"*. They regarded the space as a suitable environment that emulated the feeling of being in a start-up company.

Furthermore, participants were using their imagination to think about how the artists or constructors decorated the space around them. One participant mentioned highlighted aspects of the space: *"The IdeaSquare Space has many different spaces: the glass boxes, the bus, couches. The glass boxes were by themselves also customizable. Such space allows for people to easily and quickly change their surroundings which quite likely has had a positive effect on divergent thinking."* They were not the only ones noticing how the environment created affordances that enhanced motivation and creativity: *"When I am in a creative space that allows me to use different tools and move around, I find myself being more motivated and also more creative. For instance, the whiteboards really helped to explain ideas to others. I just get more excited when the space is interesting compared to a dull space."*

Many more participants emphasised how the interior of CERN IdeaSquare boosted their motivation and creativity. However, two participants noted that they got distracted or lacked divergent thinking due to the environment: *"There was a lot of stuff to look at, which at times facilitated procrastination"* and *"My divergent thinking got worse I think because the IdeaSquare was basically a container. So I felt a bit more restricted."*

Particularly, the effect of creating visuals on the imagination had the highest score of 0.92.

Table 1. Matrix of mean responses to the effect of art forms on aspects of team dynamics.

	Motivation	Focus	Imagination	Divergent thinking
Creating visuals	0.67	0.42	0.92	-0.08
Dancing	0.25	-0.08	0.17	0.17
Music	0.50	-0.08	0.33	0.00
Interior design	0.83	0.08	0.67	0.50

Provided explanations mention that while making visuals students were wondering how to present graphics to the audience and how they will be received. One participant mentioned the following: *"It is quite*

motivating to create a poster so that others can see how great your idea is. Furthermore, it also boosts imagination to find ways to efficiently communicate your ideas to others." The presentation of their ideas through a poster had a motivating function for them. There was a participant who rated motivation lower, but the imagination higher: *"Due to my academic and general background, creating visuals for posters or presentations is not my strong suit, therefore my motivation is quite impaired when it comes to it. However, specifically for poster design with the purpose of presenting to the other groups, my imagination was greatly improved, since I would try to make the poster feel as visually appealing, stimulating and 'fresh'. Having this goal in mind made me try to think as much outside the box as possible, even though I wouldn't be completely successful in it every time."* The lack of motivation was due to their perceived skill level in making a poster design, but they did consider multiple elements to make a visually appealing poster to the other groups which strengthened their imagination. It can also be inferred that having a clear end goal provided motivation for the task.

However, the negative effect was achieved in three cases: music and dancing affecting focus and creating visuals relating to divergent thinking. For music the reactions were relatively mixed and depended on the individual whether they usually worked with music in the background or not: *"I usually work with music in the background, and it does motivate me to work better"* while another participant mentioned: *"I cannot really focus well with music in the background. This also affects my creativity if I cannot focus on the task at hand."*

Regarding the dancing ice-breakers one participant commented: *"Dancing as an ice-breaker was definitely a nice thing to do, but it definitely drew my focus away from the tasks at hand. So in the end, it made it more difficult to go back to work"* or another participant commented: *"It is a significant change in environment allowing you to some extent to get in a different state of thinking. However, anxiety from dancing could lead to the opposite effect."* While most participants perceived the activity as a fun experience, most claimed that because the activity was not oriented towards the main task, the activity had a distracting effect on them.

Regarding the activity of creating visuals, although it had a motivating function for some participants, other participants claimed that their emotional attachment to their effort or provided templates narrowed down the way they were thinking. One of the participants mentioned: *"For us to make the visualisations we had to put some effort in one of the applications, we felt more emotionally attached to one particular field, thus disrupting divergent thinking."*, and another participant mentioned: *"I think divergent thinking was affected because we had a set template for the poster which limited some of my creativity. Bringing everything together in the poster did give me motivation."*

The averages of the responses are accompanied by the standard deviations (STD). The resultant values are presented in the same matrix form in Tab. 2. Higher deviation indicates that the responses were more spread around the mean and that participants had varied experiences. Low deviation signifies low spread and that the students' impressions are more aligned.

	Motivation	Focus	Imagination	Divergent thinking
Creating visuals	0.85	0.49	0.64	0.76
Dancing	0.92	0.95	0.90	0.80
Music	0.76	0.76	0.62	0.41
Interior design	0.90	0.86	0.47	0.65

Table 2. Matrix of standard deviations of responses to the effect of art forms on aspects of team dynamics**.**

The lowest STD is the effect of music on divergent thinking. Next to that, it has a mean equal to zero. The highest spread of answers is achieved for dancing with the effect on most of the forms of team dynamics. The important result is that the standard deviation is lower than the mean value only for creating visuals impacting imagination and interior design affecting imagination. This means that most of the responses lay in a positive relation.

In the last question about other forms of art and their impact, students listed making and watching origami. According to them, it was a relaxing experience and a recharging break during the project work. Furthermore, it allowed certain students to take part in the prototyping process: *"I can't draw, solder or code, but I can fold paper. Origami let me make prototypes without having the skills other students had. The repetition of some steps in the folding was very relaxing, so I would also do it when I needed a time-out…"*. More generally, students appreciated making prototypes as it helped them to stay engaged and thus increased their motivation.

DISCUSSION AND CONCLUSION

Several key conclusions emerge from the collected data. First, the data suggests that creating visuals and interior design – which is to say, activities such as drawing or physical prototyping – have the greatest impact on the self-perceived innovation performance of students. Second, it would appear that the reason these activities in particular enable students to be more innovative on average is that they enable students to empathise better with the users of their technology and better perceive how they would interact with that technology. Third, music and dance were found to have

a merely marginal and, in some cases, even negative impact on the innovation process.

What these three findings suggest is that in certain situations – classes or programs devoted to discussing the topic of innovation – it may be beneficial for the participants to engage in creative activities, particularly those related to visual art. Conversely, activities commonly associated with enhancing creativity, such as background music, may have little to no impact—or even a negative effect—on innovation and should be used selectively..

Key limitations of this study should be acknowledged. First, is the small sample size of the studied population. Second, is the non-representativeness of this population in general. The majority of students came from STEM-heavy academic majors such as nanobiology, applied maths or aerospace engineering. However, this could also be used as an advantage. By having this specific sub-student group, the insights of this study could be used in other STEM-related fields where the innovation process is key.

Second, the expertise level and creative skills in certain activities were less homogenous which could have given some students an advantage in certain art activities over others. Depending on the major, students have to apply their theory to practice in different ways. Some of them possess skills in graphic activities, such as technical drawings or visual prototyping and some of them are way more theoretical in their approach. There was one industrial design student who was already familiar with the design thinking process and could have been more inclined towards creating visuals and interior design as sources of creativity.

Third, there were participants from non-STEM fields - two business students from Erasmus University Rotterdam and one from the University of Amsterdam. The different universities might utilise different educational approaches on top of the differences in academic majors. This means that some participants were at variance with the others in terms of academic background and place of studies. This is further illustrated by the fact that the Erasmus University Rotterdam students were pursuing Master's degrees and so had a longer, more varied academic background than other participants, particularly when considering they may have completed their bachelor's degrees outside of the Netherlands.

Fourth, there is a possibility that the distinct personality traits of the participants may have influenced the way they interacted with the activities. For example, it may be the case that a participant who is shy could be more averse to activities involving a public performance than someone who is more gregarious. A possible direction for future research would be to attempt to study how the differences in personality influence the motivation of participants to take part in such forms of artistic expression.

Last, the paper does not account for differences in the quality of the execution of different activities. The subjective experience of all types of creative activities relies to a great extent on the skill of the facilitator, which can vary widely between individuals. It is theoretically possible that under different circumstances music and dance may be perceived as enhancing creativity for this very reason. With particular regard to music, it is essential to note once more that musical selection was done by the facilitators only. Given that music tastes vary widely between individuals, there is the possibility that had participants been granted the ability to choose the music themselves or listen to their own playlists in private, the results could have pointed to music having a more positive effect on innovation.

As to the limitations presented by the modest sample size, it is prudent to note here that this paper does not claim to be able to provide definitive proof of the influence of creative activities on innovation in all groups and all circumstances. The paper is founded on information gathered from a relatively narrow and small group of people, and to state otherwise would be gratuitous. The aim of the paper is thus rather different - not to make definitive statements, but instead to acknowledge the results of key spontaneous observations which occurred during the CERN IdeaSquare summer school. These proverbial 'eureka' moments are intended to serve not as an endpoint in and of themselves, but as pointers or starting areas for further research.

In summary, this study contributes to understanding how individuals perceive innovation and creativity, as well as the factors that stimulate them. It has helped determine that certain activities may be perceived as more effective because they allow participants to empathise with the needs and usage patterns of the end users of a particular product or technology.

Future research can address the limitations of this study. These subsequent studies could experiment with different application methods of the art forms than how they were used during the CERN Summer School. For example, one could study how sketching during generating ideas compared to writing them down influences creative thinking and problem-solving, and how effective are these ways of communicating. Sketches could be an art form to communicate these STEM-related ideas to others inside the groups but also to people outside the group. The dancing used as an ice breaker could have perhaps been applied at a different stage, not as a warm-up but rather in the middle of the work process to stimulate creative thinking.

Future research could explore how variations in facilitator skill levels and styles influence the perceived effectiveness of these activities. An additional way to observe the influence of external art activities unrelated to the task at hand on the creativity and innovation process is to isolate this external influence and execute blind studies with the different art activities, specifically

focusing on the art forms that scored the highest or lowest and had the least amount of spread.

Another approach could be to remove facilitators entirely and observe groups in natural settings—such as workplaces or schools—to understand how individuals engage in creative activities to enhance innovation. Factors such as study background and how many creative activities these studies use within their curriculum could be observed to determine whether these also have an influence on how many creative tools were used during the innovation process.

In all cases, it is imperative for future research to have a larger sample population to avoid potential biases from participants' backgrounds skewing the survey results. Participants from non-STEM backgrounds may have different responses to different creative activities, so a larger sample size would be essential to evaluate these differences.

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APPENDIX A - SPARK SURVEY

1. Academic background: *

2. Below are four tables and one extra question. All questions relate to your group work during CERN Summer School in Geneva. Answering them takes minimum three minutes. Team Spark will be grateful if you leave explanations to at least TWO answers. *

   Markeer slechts één ovaal.

   ◯ I read the text above.

3. 1. How did the creation of visuals for a presentation or poster affect your: *

   Markeer slechts één ovaal per rij.

	Highly impaired	Impaired	Not affected	Improved	Highly improved
Motivation	◯	◯	◯	◯	◯
Focus	◯	◯	◯	◯	◯
Imagination	◯	◯	◯	◯	◯
Divergent thinking	◯	◯	◯	◯	◯

4. Explanation for one selected row above:

5. 2. How did dancing ice-breaker affect your: *

   Markeer slechts één ovaal per rij.

	Highly impaired	Impaired	Not affected	Improved	Highly improved
Motivation	◯	◯	◯	◯	◯
Focus	◯	◯	◯	◯	◯
Imagination	◯	◯	◯	◯	◯
Divergent thinking	◯	◯	◯	◯	◯

6. Explanation for one selected row above:

7. 3. How did music in the background affect your: *

   Markeer slechts één ovaal per rij.

	Highly impaired	Impaired	Not affected	Improved	Highly improved
Motivation	◯	◯	◯	◯	◯
Focus	◯	◯	◯	◯	◯
Imagination	◯	◯	◯	◯	◯
Divergent thinking	◯	◯	◯	◯	◯

8. Explanation for one selected row above:

9. 4. How did the interior design of CERN Idea Square affect your: *

   Markeer slechts één ovaal per rij.

	Highly impaired	Impaired	Not affected	Improved	Highly improved
Motivation	◯	◯	◯	◯	◯
Focus	◯	◯	◯	◯	◯
Imagination	◯	◯	◯	◯	◯
Divergent thinking	◯	◯	◯	◯	◯

10. Explanation for one selected row above:

11. 5. Is there any other form of art (art is a broad term) you experienced? How did that influence your work in the team? [Optional, but encouraged]

Team Spark thanks you for filling in this form!