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Fostering a culture of collaboration through playful Design Jams



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ABSTRACT

This paper explores the potential of playful design jam as a complement to the formal education to foster a culture of collaboration in an informal learning environment. The literature is reviewed to explore the concept of collaboration capability, the model of team development and the theory of play, and identify the processes and variables that enable playful collaboration. The collaborative path within design jams is mapped, and playful moments and critical moments for an increased motivation for collaboration are identified. By reflecting on nine design jams conducted as part of Global Jam events, activities, tools, methods and environment to facilitate effective collaboration among the participants are discussed.

Keywords: Collaboration Capability, Team Development, Playful Collaboration, Design Education, Design Jams

INTRODUCTION

Design is most often a collaborative process. Contemporary design practice, situated within a global economy is beginning to shift from project-specific collaboration to ever-more collaborative models, where professional designers collaborate within interdisciplinary teams of various experts and stakeholders to address multifaceted, wicked problems. Given that project requirements have become increasingly more complicated, it could be argued that professional designers collectively view collaboration as essential to contemporary design practice (Larsson, 2003), and team-working skills as being a vital part of the design graduate portfolio (Tucker, 2016). However, the very acceptance of this idea has in some ways led to the greatest challenge for education. Norman (2010) has pointed out the deficits and challenges of design education that today's designers "are woefully under-educated for the task". Designers are poorly trained to "understand the complexity of the issues and the depth of knowledge already know" (Norman, 2010). This has resulted in a question being raised about how universities could develop collaboration capabilities in design students to meet the industry's demand for professional practice in teamwork.

Indeed, concerns have been expressed about an increasingly wide "gap" between teamwork skills and capabilities of graduates, and the requirements and demands of the work environment in addressing systemic wicked problems (Gavilanez et al., 2016). Interdisciplinary teamwork, although well practised in industry, is not always implemented effectively in education (Design Council 2007). The mere occurrence of teamwork opportunity in higher education curricula has as of yet proven insufficient in ensuring the successful development of capability for effective collaboration (Head 2003). Gavilanez et al. (2016, p29) identify that "exposure to teamwork experiences does not guarantee student knowledge about effective teamwork practices". Particularly because in the formal learning context, team-working skills are still often viewed as generic skills that are not necessarily assessed and reported, students do not see them as important. Furthermore, the higher education environment often seeks to "norm-referenced" grading, where student work is graded based on compari-

son with peers' work. Students compete for grades, so that some may feel that poor teamwork grades would impact higher degree aspirations, and subsequently their future career (Schinske and Tanner, 2014). This perception may also come to influence the collaborative process, and lead to a high level of resistance to collaborative learning in graduate students. Not surprisingly, many students are feeling less motivated to engage in collaborative projects, "especially high achievers, group work is not a term to swear by, but rather one to swear at" (Isaac, 2012, p. 83). Similarly, study with interior design students shows that upper-division students report a more negative attitude toward collaborative learning than the lower-division students. Given that upper-division students are close to entering the workforce, negative attitudes toward collaboration could have a significant impact on the success of the emerging professionals (Gale et al., 2014). Webb and Miller (2006) argue that the simple act of engaging in teamwork during one's college education may not be enough to increase favourability.

This paper explores the potential of playful design jam as a complement to the formal education to foster a culture of collaboration in an informal learning environment. The literature is reviewed to explore the concept of collaboration capability, the model of team development and the theory of play, and identify the processes and variables that enable playful collaboration. The collaborative path within design jams is mapped, and playful moments and critical moments for an increased motivation for collaboration are identified. By reflecting on nine design jams conducted as part of Global Jam events, activities, tools, methods and environment to facilitate effective collaboration among the participants are discussed.

BACKGROUND LITERATURE

Collaboration Capability

Discussion and research of collaboration capability is fragmented across diverse disciplines such as management, business, marketing, education and psychology. Collaboration capability is a multi- and cross-level concept, and can be used to understand and analyse relational interaction on different levels: individual, team, intra-organisational, organisational and inter-organisational. Based on the review of 14 studies on collaboration at different levels of analysis, Blomqvist and Levy (2006, p39) define collaboration capability as: "the actor's capability to build and manage network relationships based on mutual trust, communication and commitment". Each of these aspects is closely related to and affects each other. According to Blomqvist and Levy (2006), trust is based on beliefs about the other party's competence for the specific task and context, and has been identified as a threshold condition for partnerships. Literature of Blomqvist and Levy (*ibid*) shows that commitment, the second component of the collaborative relationship, consists of two dimensions: instrumental and emotional. The former is based on the evaluations and expectations about the future potentials, while the latter provides status and meaning of the relationship, and enhances the actors' willingness to engage in the collaboration. Communication ensures that every actor knows what they are doing and when they have to do it, enhances the level of trust and promotes collaborative processes.

Team Development

The development of student collaboration capability is not a linear process (Riebe et al., 2010). To foster a culture of collaboration, Riebe et al. (2010) highlight the important role of the facilitator in developing effective teams and student collaboration capability. In this study, Tuckman's model of team development is used as a conceptual framework in order to ensure delivery of skills. Drawn from an extensive review of relevant research, Tuckman (1965) identifies four stages of progression and Tuckman and Jensen (1977) add a fifth stage, which is summarised in Table 1. Crowther et al. (2016) suggest that the enhancement of group cohesion, and hence trust and confidence in the group can be achieved by increasing emotional engagement and enjoyment within the context which the collaboration takes place. Both the task activities and their emotional responses are considered in this project to engage students in collaborative projects.

Forming (TTM1)	Feature: Testing and dependence	Activities: Orientation to task	Emotional responses: Hesitant participation (Yalom, 1970); anxiety, guardedness and a mixture of curiosity and confusion (Spitz and Sadock (1973); fears and fairly strong positive expectations (Lacoursiere, 1974);
	Description: Groups initially concern themselves with orientation accomplished primarily through testing. Such testing serves to identify the boundaries of both interpersonal and task behaviours. Coincident with testing in the interpersonal realm is the establishment of dependency relationships with leaders/ trainers/ facilitators, other group members, or preexisting standards.		
Storming (TTM2)	Feature: Intragroup conflict	Activities: Emotional response to task de-	Emotional responses: An increasing sense of frustration, depression and anger (Lacoursiere, 1974); conflict, domi-

	mands		nance, and rebellion (Yalom, 1970)
	Description: The stage is characterised by conflict and polarization around interpersonal issues, with associated emotional responding in the task sphere. These behaviours serve as resistance to group influence and task requirements.		
Norming (TTM3)	Feature: Development of group cohesion	Activities: Open exchange of relevant interpretations	Emotional responses: Mounting frustration, hostility (Braaten, 1975); the period of beginning trust, cohesiveness, interdependence (Spitz and Sadock, 1973); high affection (Dunphy, 1968)
	Description: Resistance is overcome in this stage. Ingroup feeling and cohesiveness develop, new standards evolve, and new roles are adopted. In the task realm, intimate, personal opinions are expressed.		
Performing (TTM4)	Feature: Functional role relatedness	Activities: Emergence of solutions	Emotional responses: Intimacy and cohesiveness (Yalom, 1970; Braaten, 1975);
	Description: Interpersonal structure becomes the tool of task activities. Roles become flexible and functional, and group energy is channelled into the task. Structural issues have been resolved, and structure can now become supportive of task performance.		
Adjourning (TTM5)	Feature: Separation and termination	Activities: Terminal review	Emotional responses: Disengagement, anxiety about separation and termination, and positive feelings toward the leader (Spitz and Sadock, 1973); sadness and some self-evaluation (Lacoursiere, 1974)
	Description: Teams should be given a chance to recognise and discuss their achievements, "disengage and consciously move on" (Staggers et al., 2008, p. 485, cited in Riebe et al., 2010).		

Table 1 Stages of team development (adopted from Tuckman, 1965; Tuckman and Jensen, 1977)

Motivation (M) for Collaborative Group Learning

Willingness to participate in the group learning begins by identifying the positive interdependence among the students. According to Johnson et al. (1995, p.31), positive interdependence occurs "when one perceives that one is linked with others in a way so that one cannot succeed unless they do (and vice versa) and/or one must coordinate one's efforts with the efforts of others to complete a task". Consequently, students encourage and facilitate each other to complete tasks and reach the group's goals (Johnson et al., 1995). Olsen and Kagan (1992, cited in Dörnyei, 1997) have identified five principal ways to achieve positive inter-dependence: (M1) Structuring the goal of joint performance; (M2) Rewarding the group's overall production, in addition to the individual; (M3) Assigning different roles to each group member; (M4) Limiting the resources or giving out resources which need to be fitted together; (M5) Setting rules that emphasize the shared nature of responsibility for the group outcome. Additionally, group cohesiveness is considered to be one of the most important attributes of the successful cooperative learning that has a positive impact on further motivation to learn collaboratively. Dörnyei (1997) draws on the literature related to cooperative language learning and cooperative learning, and summaries the following factors that can enhance affiliation: (M6) Getting to know the group members, e.g. by spending time together and sharing genuine personal information; (M7) Proximity or physical closeness; (M8) Contact in situations where individuals can meet and communicate (e.g., cafeterias and other relaxation areas); (M9) Interaction in which the behaviour of each person influences the others'; (M10) Cooperation between members for common goals; (M11) The rewarding nature of group experience for the individual; (M12) Successful completion of group task and a sense of group achievement; (M13) Joint hardship and common threat (M14) Intergroup competition, e.g. to bring together members of small groups; (M15) Group legends to pump up "group pride", e.g. through giving the group a name and inventing characteristic for the group; (M16) Investing in the group to create cohesiveness; (M17) Public commitment to the group to strengthen a sense of belonging. All of the factors summarised above are needed for students to engage with collaborative group learning.

Characteristics of Play (CP), Learning and Collaboration

Play has been identified as a powerful mediator for learning, and appears to be an applicable "motivating strategy" (Rieber, 1996), particularly to developing positive attitude toward learning (ibid.) and facilitating ontological change with students in constructivist (Rice, 2009) and social constructivist (Marone, 2016) learning environment. Most applications of constructivism theory address the way students construct their own conception of knowledge based on their interpretation of their personal experiences. In the constructivist paradigm of learning, students are provided with problem-solving tools and exposed to the multiplicity of views. As opposed to passively receiving information, they learn through sharing and conveying knowledge in a collaborative learning environment, and collaboration as individuals behaving in a way that benefits each participant differently (Head, 2003). While social constructivism involves the way students learn through social interaction and mutual process, and the learning activity focuses not only on benefits for individuals but all. Often this

learning leads to a deeper level of collaboration, in which the group has become a community, creating a shared understanding of the goal of the group and a common sense of mutual benefit. Meyer and Land (2006) argue that students might feel challenged and lost, since this processes of learning require a transformation in the student – one must change oneself, and thus lose part of one’s old self. Integration of play into these processes could be helpful in which learning and effective collaboration can be achieved through playing with students’ preconceptions, conventions or breaking their habitual behaviour (Rice, 2009). Brown (2009) discusses functions of play beyond the fun factor, such as promoting social cohesion: “when people play, they become attuned to each other” and groups pull together in pursuit of a common goal” (p. 134); offering a protective context where people can practise new skills, challenge themselves and others and undertake risky experiments without the fear of the real-life obligations and consequences, which can result in surprising discoveries; and modulating “deep psychological fears and insecurities that threaten emotional closeness”, since “there are a variety of play behaviours that allow us to open up safely” (p. 163).

In this research, play is defined as a series of playful characteristics that can integrate into instructional design and make learning and collaboration experience more appealing. From reviewing the literature related to play (Levy, 1978; Henricks, 1999; Brown, 2009; Khazaei, 2014) and the use of humour in learning (Kher et al., 1999; Pentaraki and Burkholder, 2017), characteristics of play to create a positive experience are summarised in Table 2.

Playful aspect	Characteristic	Strategies	Focus	Source of positive emotions
(CP1) Childhood memories	Connecting adults with childlike play	Using kids toys and atmosphere to express and recreate childlike play	Object; Environment	The material of the project and environment
(CP2) Fantasy	Temporary separation from the ordinary situation	Creating a desired imaginary world out of present reality	Meaning	Meaning associated with the object and environment
(CP3) Playthings	An unusual humorous interpretation or use of objects	Manipulating objects to produce something new or using ordinary objects in the play which acquire new meanings to suit the purpose of the task	Use	Using or interacting with the objects
(CP4) playful movement	The joy of physical movement	Enriching and facilitating interactions	Activity	Physical activity
(CP5) playful attitudes	Encouraging a different attitude toward a common situation	Using appropriate humour and simple jokes to reduce tension and increase moments of joy	People	The effect of the playful people’s attitudes and behaviour
(CP6) light hearted funny message	Responding to humour	Using audio broadcasting and visual aids to assist in the creation of a positive climate	Message, (audio, visual aids)	The effect of the message

Table 2. Characteristics of play to create a positive experience in learning.

Design Jams

Design Jams are variants of Hackathon events where programmers, graphic designers, interface designers and project managers come together and work intensively on a software project (Briscoe and Mulligan, 2014; Vezani and Tang, 2014). Design Jams are conceptually similar collaborative events for designers and other creative professionals. Since 2011, the Service Design and Design for Sustainability communities have applied this format for Global Service Jams and Global Sustainability Jams. The Global Jams are conceived as non-profit events and run by a small group of global organisers who offer inspiration, basic rules and an online central platform to the regional Jams. Regional Jams are run voluntarily by local hosts who are passionate about service design and sustainability, and some of who might receive institutional or community support, but all share an ethos towards providing events that can be freely accessed by the public. The aim of Design Jam is to bring people with different backgrounds, skills and experiences together to learn about and use service design approach and methods, and voluntarily dedicate 48 hours usually from Friday evening to co-designing service solutions to local and global social issues. The local organisers provide refreshments and access to food, while jammers are free to make their own sleeping arrangements. On Friday evening (local time) in each location, a “secret theme” is announced by the global organisers. The theme is usually an abstract concept that requires re-interpretation from the jammers and allows a wide range of practical applications. The jammers are free to choose their projects and teams, and discover, develop and prototype solutions through the event with the guidance from facilitators and mentors who usually have expertise in project management and creative and design related fields. Each team is expected to upload a physical functioning prototype of a service to the central platform, ranging from low tech to high tech, to an action plan to take forward. In this paper, the potential of Design Jams that are taking place in the informal learning context to support student’s teamwork in a form

of a 'playful event' is evaluated.

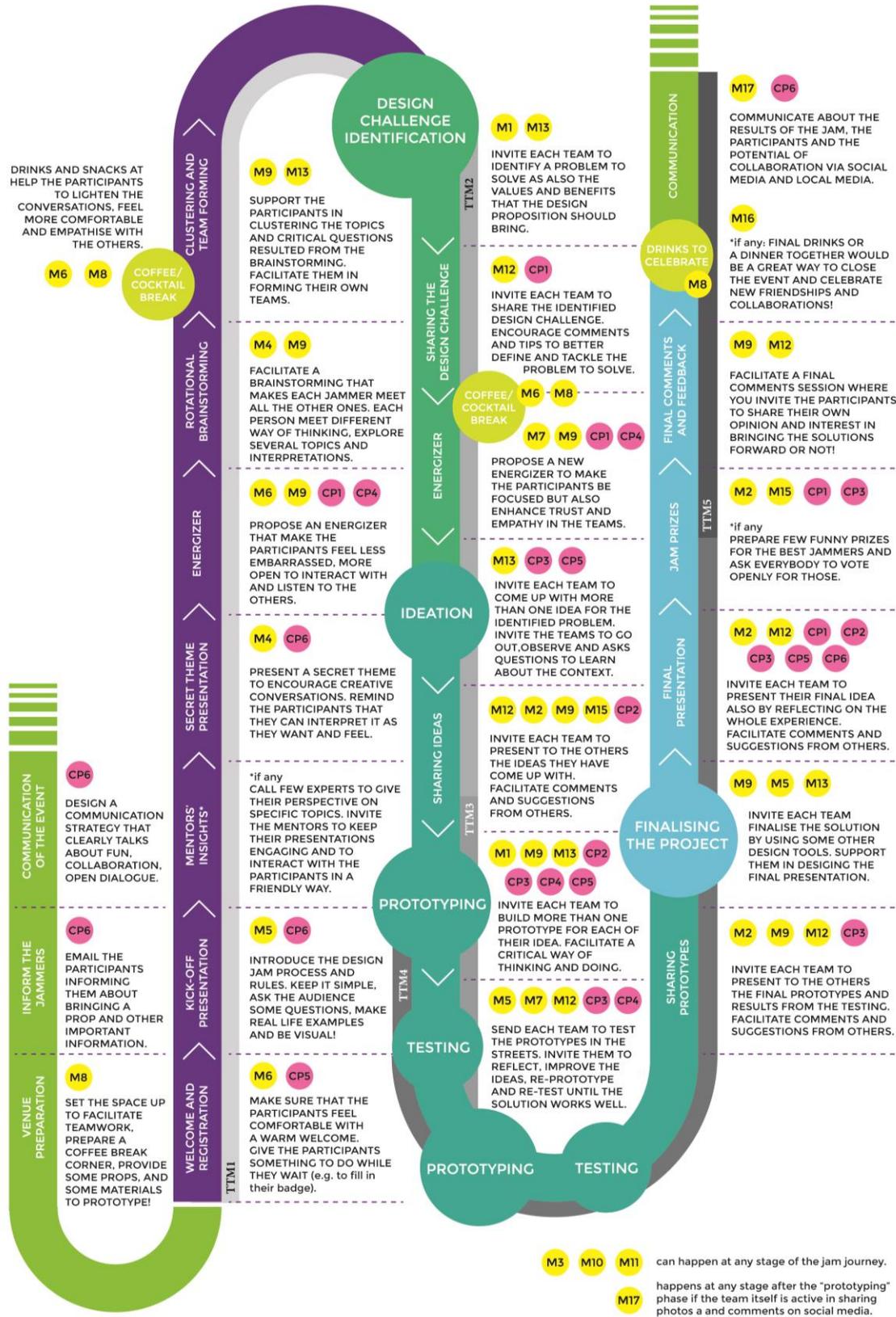


Figure 1. Playful design jam process

DESIGN JAM AS A PLAYFUL SOCIAL SPACE TO PROMOTE A CULTURE OF COLLABORATION

Whilst playful activities allow a wide range of possibilities, this paper applies an approach to collaboration that

requires some physical engagement and experiential learning through the Design Jam (explained later). The jam involves the iterative design process that combines with Tuckman's model (Tuckman, 1965; Tuckman and Jensen, 1977) of team development and Kolb (1984)'s experiential learning theory. Rice (2009, p.97) stressing the importance of critical reflection in the cycle of learning that "playful approaches in education may require activity and sensation, but experience alone is not sufficient for learning always to be achieved". Therefore, the process of critical reflection must be integrated in order to turn the experience into learning and cultivating positive attitudes toward collaboration, which is inherent in Kolb (1984)'s learning cycle and Tuckman and Jensen's (1977) adjourning stage of team development. The collaborative path within design jams is mapped onto Tuckman's team development model in Figure 1. Playful characteristics and critical moments for an increased motivation for collaboration are also illustrated.

RESEARCH METHODS AND ANALYSIS

Action research is chosen to explore the building of a culture of collaboration through Design Jams. This paper refers to the nine design jams taking place in Leeds, UK and Madeira, Portugal between 2013 and 2017 as case studies to explore, understand and reflect on the role of Jams in this regard. Participants of different ages, educational and cultural background, study and work experiences have been observed during the events. Their behaviours and thoughts have been recorded in activity templates. Questionnaires have been conducted with jammers to evaluate the impact of design jams on their personal and professional lives before and just after the jams (Q2). The questionnaire starts with some closed-ended questions that require Likert scale responses from "strongly disagree" through to "strongly agree". At the end of the questionnaire, semi-structured questions are employed to allow students to respond holistically on their experience of the Jam. Semi-structured interviews (I) have been conducted several months after the events. Due to the purpose of this paper, the responses from 63 students participated in the Q1, 44 in Q2, and 12 in the interviews are selected for the analysis. All the participants enrolled in either undergraduate or postgraduate courses in the creative arts and design fields. Although the results do not reach statistical significance because of the small sample size, they give some indication of the value of playful collaborative events, and provide the basis for further investigation. Three main analysis methods, coding, matrix and mapping and clustering are adopted to deal with the data, carrying out the three analysis activities, data reduction, data display and conclusion drawing and verification (Miles and Huberman, 1984).

RESULTS

Student Perceptions of the Team Development

When asking to rate their experience during the process in Q2, students considered that the collaboration worked better in the rotational brainstorming (55%) and ideation (32%) in the forming (TTM1) and storming stages (TTM2) of Tuckman's model. During these stages, students were guided to form the teams according to their interests, a design challenge was identified and the setting of team norms was introduced for the first time through the ideation in terms of work standards and communication. Prototyping and testing, brainstorming and sharing ideas phrases and the jam schedule and deadlines assisted groups to achieve a shared vision of what to do and how to do it, evidenced by 91%, 66%, 59% and 50% agreement rate respectively. In general, 81% agreed that different points of view were encouraged, and 91% noted that each member talked about their expectations when working in a group, with a further 4% citing that everybody's opinions and contributions were respected. Significantly, all of the responses agreed that collaboration among team members was encouraged and well supported. Students noted the following when commenting on about their journey through the team development process. "We assisted and collaborated with each other and also exchanged ideas in order for the project to be successful. Also, we learned from each other, and from the mentors [in the forming TTM1] who presented different projects" (Q2_44). "It was a really interesting experience to collaborate with students in other departments or disciplines of design" (Q2_20). "I love it because I meet new people and in a very short period of time create and develop a lot of ideas and prototypes, and the final result" (Q2_06).

Student Perceptions of Playful Aspect of Design Jams

All of the students in the Q2 enjoyed the process, with the 86% who stated that Design Jams were very playful. The inclusion of playful characteristics into the intensive learning process elicited positive responses. Q2_07 felt that "it was hard work, but still great fun and rewarding". Q2_21 "thoroughly enjoyed the playfulness and being forced to create solutions under pressure". Some attended the jams more than once, because they "enjoyed the first one" (I_01) and they "would ...have a good challenge but have a lot of fun" (I_04), "meet wonderful people" (I_07) and "learn a lot and could ... apply a lot in [their] study" (Q2_23). Students identified the

“GIF images” (CP6) used in the kick-off presentation and the “icebreaker/energiser” (CP4) in the forming (TTM1) and norming (TTM2) stages of Tuckman’s model as the enjoyable aspects of their experience. In the interviews that are conducted several months after the events, many raised that the “great working environment, appetite for new ideas, general excitement” (I_01) as memorable aspects of the event. The Jams provided “the atmosphere” for “having a good time, experimenting new situation and being requested to think lot” (I_08) and an unexpected funny way” to “learn and improve skills” (I_10).

Development of Collaboration Capability

All the students rated that team-working skills, such as active listening and being open-minded developed throughout the process, and majority considered “sharing ideas, a clear and effective communication” and “a good capacity of cooperating to execute any agreed and organised activity” as enablers for collaboration, which reflects the “communication” and “commitment” of the collaboration capability defined by Blomqvist and Levy (2006).

Additionally, the most profound outcome of attending Jams was an ontological change in the students with regards to their attitudes toward learning, design and collaboration. “It was a great opportunity to work with a set time frame. I couldn't believe that in 48 hours all the groups would be able to achieve all of these. It was for me also a challenge to do something differently. It felt great to prove to myself I can do it. Working in a team was fun and good, because the project grew thanks to our joint effort” (Q2_33). “The final result is not just what we did for the [design] challenge, in the end, we are better, faster and more open minded” (Q2_06). The process “altered my perception of collaborative learning across different disciplines (I_01), developed “a different attitude toward design (I_04) and adopt “a fun and happy way” to “go forward with work and life”(I_01). Now the teamwork “is getting easier every Jam (I_03), and they are “more patient” and take time to “listen and understand others (I-11). These transformative moments correlates with Rice’s (2009) reflection that learning is not simply a cognitive but an affective process. The learning process required a fundamental change in their preconception of collaborative projects that Q2_07 described it as “rewarding”. However, a few reported feeling “shy” (I-02) and “challenged” (Q2_33; I-04; I-07), since they have to get out of their shell (I_01). These reflect the claims in the literature on emotional responses associated with transformative learning (Meyer and Land, 2006) and team development (Tuckman, 1965).

Student Perceptions of Collaboration after the Attendance

The overall playful and collaborative environment was created and maintained at the Jam, which helped teams to stay motivated. Most of the participants in the interview identified the jams as a playful environment and approach to learning and working in teams, which they did not experience in the formal educational settings (I_11). All felt strongly about the importance of collaboration after attending the Jams. General comments also indicated a greater awareness of benefits of collaboration and teamwork: to ensure better productivity (I_10), often higher quality, more creative output (I_06), more in-depth knowledge (I_08), greater efficiency and faster delivery (Q2_06).

DISCUSSIONS and CONCLUSION

Play represents one of the instructional approaches most closely matching these motivational factors for collaborative group learning. Constructivist learning and group work can be more or less playful according to the extent to which they include playful characteristics, each of which can influence learning and collaboration experience in a particular playful manner.

The ability to collaborate – and its direct impact on continuous knowledge creation and innovation - has been made so consistently and conclusively that collaborative approaches have become a common feature of the design industry. Professional designers collaborate within interdisciplinary teams of expert and stakeholders throughout the entire project in addressing complex problems. Jams not only provide a safe environment to experiment new ideas but also access to new design methods and skills, meet new people and learn from professionals or other professional disciplines. Design Jams are playful environments where students evolve on a cognitive level (*learning-by-doing* process), but more importantly on an affective level. Working playfully and collaboratively opens their minds, allows them to see problems and solutions with different eyes and embrace new positive attitudes and behaviours. Students were more confident with exploring knowledge from multiple perspectives and working in interdisciplinary teams.

The study filled a relevant gap between design education, play and collaboration in an informal learning context by empirically developing and testing the process and methods for supporting collaboration within design jams. The findings contributed to valuable theoretical and practical implications that can promote student

engagement in collaboration and teamwork.

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