Technology, Theatre and Co-Design: Impact and Design Considerations

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Abstract. The paper documents the co-design methodology followed by Northern Stage theatrical company for the design of a theatrical production, rich in digital elements. Drawing on our data from fieldwork, interviews and questionnaires, we initially report on the co-design activities, then using thematic analysis, we review the impact of technology in the co-design activities, the dynamics of using digital technologies in a performance and the limitations for small-medium theatrical companies. Our work extends research and practice on co-design and participatory design in creative industries and their experimentation with technology. More specifically, we contribute by casting light on the nature of activities and the level of digital maturity and readiness. The paper concludes with considerations of co-design and HCI work in attracting a new generation of performers and audiences for the digital era.

Keywords: participatory design, co-design, theatre, digital maturity, technology adoption.

1 Introduction

Co-design and participatory design activities are tightly interwoven with youth theatre, as young people often get involved not only in performing but also in writing, devising and contributing to the design of a theatrical piece. Incorporating technology is often an integral part of youth theatre as it allows experimentation and exploration of new ideas. However, the co-design activities in the theatrical context may differ from the academic perspective. One of the issues with designing and producing a performance is the difficulty of capturing and documenting the multiple interconnections between people and procedures.

In this work, we report on an ethnographic field study on a youth program to develop a digital theatre production. The aim is two-fold. We aim to capture the structure of the co-design approach for the development of a digitally-augmented professional performance with young adults as co-designers and digital performers. We further aim to bring to the forefront ideas from a different field and reflect on the potential uses of technology in a professional theatre, tackling the digital agenda of cultural organizations [8].

2 Related Work

2.1 Co-Design Activities

In the last few years, there has been an evolution in design research from user-centred approaches to co-designing, highlighting the need for a collective creativity [19]. As Sanders and Stappers [19] indicated, co-design reflects a collective effort that spans throughout the whole design process, where both designers and "people not trained in design" work together. The multidisciplinarity of the area, blending work from design, psychology, computer science, led to the generation of different paradigms and approaches for practice [11]. Researchers have used co-design practices extensively in domains where democratising a process is crucial, and there is a need to give the power to the end-users and communities with interest to design products or services that they will use [15].

Involving users as partners instead of subjects of study may improve the end product [1], build ownership reducing the risk for the product to fail [12] and encourage sustainable engagement [16]. Co-design and participation empowers users and creates a secure space for design experts and non-experts to equally contribute to the final product [2]. For instance, Penuel, Roschelle and Shechtman [17] brought together teachers, researchers, and developers to collaboratively design an educational assessment tool. Co-design activities are also often explored in cultural venues, such as museum settings allowing visitors or museum volunteers to contribute towards creating digitally augmented and interactive exhibitions [5][6] encouraging audiences to engage with art, culture and heritage.

Furthermore, when working with young participants as in our case study, researchers adapted the co-design approaches to meet the needs of the specific population [13]. For example, Weiss et al. [22] situated the design workshops in the context of investigation (shopping area), that increased the creativity of young participants, allowing them to make context related reflections. Instead of bringing the participants to the context, "Living Labs" explored the use of construction kits, bringing the makers' environment to the participants [18]. Children and young people used the tools in the construction kit to build prototypes of their ideas, making their thoughts and views tangible, highlighting the need for hand-on activities and scaffolding to structure the co-design activities.

2.2 Theatre Practice & Technology

In an attempt to reinstate audience engagement in theatrical performances, researchers have also explored the use of co-design approaches during production and marketing activities. For instance, Dima [7] involved participants in pre-production activities of a theatrical play to build a storytelling application, namely Mobile Stories, to engage audiences before a performance. Schofield et al. [20] provided a set of workshops for a year-long participatory design process, with the goal to create and present a theatrical performance mixing technology, monologues and visuals. The design process incorporated introductory, technical, and design workshops to allow the young adults to learn the basics of directing and performing with technology.

However, existing literature on co-designing in theatrical productions is limited to either experimental groups for one-off theatrical performances [20] or co-design of pre-performance promotional material for sustainable engagement [7]. To the best of our knowledge, results have not been reported on co-design activities in a technology-augmented professional production with the involvement of young members of the audience. This paper not only documents the process used to engage young adults in a professional theatrical production through co-design and digital augmentation, but further provides a case study of technology use, adoption and limitations of technology in a professional theatre, focusing on a sustainable future for theatre and audiences.

3 Methodology

3.1 Context

The Production is part of a Northern Stage project for engaging young adults of the region in theatre and empowering them into understanding the use technology in theatre as well as developing their own professional portfolios. The Production aimed to explore co-design activities with young adults in professional theatre and to create a digitally-infused performance to attract young audiences. The role of Researchers was to observe the collaboration, and get immersed in the Production culture.

The recruitment process for the theatrical production resulted in a total of 34 participants (19 female, one transgender, 14 male) aged 16 to 21 (M = 17.2). Participants had the opportunity to enrol in more than one session throughout the co-production activities. That resulted in 16 young adults for Session 1, 10 for Session 2, 18 for Session 3, and 16 for Session 4. During all four sessions, there was a mixture of both new participants and participants from previous weeks. Regarding participants' background and abilities related to theatre, the young adults were a blend of students from secondary schools or sixth-form institutes of the region, or attending universities and colleges with an interest or direction to fine or performing arts. There was also a blend of people who were new to the idea of theatrical productions, and a blend of people who had previous experience with performing. The Creative Professionals team working on the Production - collaborating with the Young Company - included five professional artists as experts in directing, sound editing, movement, filming.

3.2 Data Collection and Analysis

The data from the project were collected through field ethnography at Northern Stage theatre company to gain an in-depth understanding of the co-design activities focusing on understanding the "what", "how", and "why" [10]. The fieldwork included observation of the co-design activities that took place over a period of a month (4 weeks). At the end of the process, the Researchers conducted interviews with Creative Professionals and attended briefing meetings, central to the production. We also conducted an open-ended questionnaire with the young participants focusing on their experience of the co-design process and their role as digital performers to the Production. The interviews and questionnaires were administered on a voluntary basis, collecting a

total of three one-hour interviews with Creative Professionals and eight questionnaire responses from Young Company. The interviews were audio-recorded, transcribed and then the researchers coded the whole data corpus using a thematic analysis [3].

4 Findings

4.1 Co-Design Activities for Digitally Augmented Theatre

In what follows we present the co-design activities the company followed to design a theatrical production, involving young adults. The co-design process, Fig.1, aimed to cultivate a new method for involving young adults in professional theatrical making as a step towards their future development as professional artists. The activities spanned over 4 weeks with each week addressing a different section of the script.

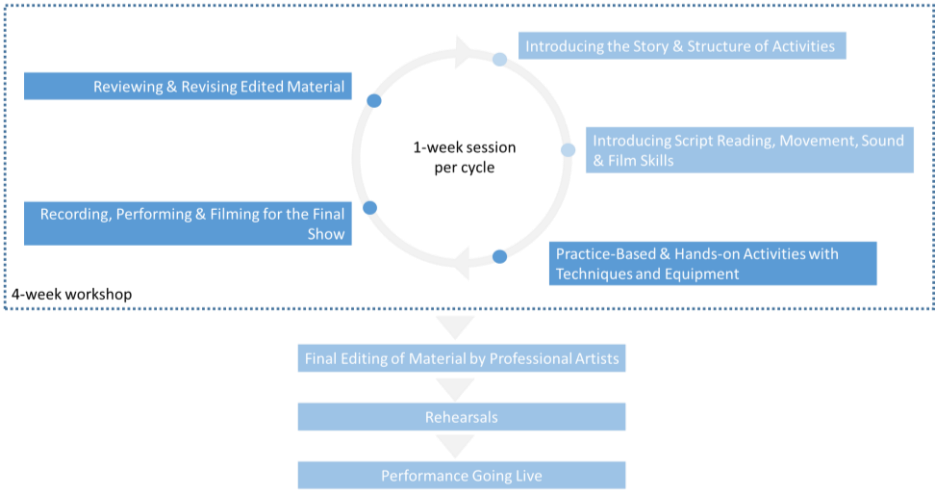

Fig. 1. Procedure for co-design activities for a digitally infused theatrical production

Each week began by introducing Creative Professionals as collaborators, constructing a sense of community among the Young Company, and presenting the structure of the daily activities and the story of the play. This introduction served as a warm-up for the Young Company to feel comfortable within the context of work and their peers. As highlighted in interviews and field notes, during this first session, the Creative Professionals also clarified the terms of this co-design Production, communicating expectations clearly to the young adults, a vital step for good collaboration between different parties in long-term projects [14]. More particularly, as one of the creative professionals mentioned, *"managing the expectation of young people to understand that they were part of this project, but they wouldn't be central to the live event in the same way that they would be as live performers." [CP2]*

The next session as seen in Figure 1, was the introduction to technical skills necessary for them to actively contribute to the Production. In this session, the Creative

Professionals, internal or external to the company, would lead the sessions and introduce different skills, such as movement on stage, filming, sound composition, as well as script reading and acting on stage. The session also presented the script that the Young Company was going to be working on throughout the week, serving as a stepping stone to build fundamental understanding about the play and technical language.

The following sessions included practice-based activities to work towards designing and capturing the material for the Production. The Young Company were initially practising different techniques for movement, script reading, creating sound, as well as setting up equipment for filming through hands-on activities. The Creative Professionals covered areas such as filming, sound composition, how to move and perform, and rotated individuals through different roles each time to allow them to understand all the various aspects in each field and how they work altogether.

The activities were designed to strengthen the technical skills of the Young Company as artists and creatives, as well as boost their confidence and trust in their abilities [4]. As one of the external Creative Professionals indicated during the interview, *"these activities followed learning-by-doing approach, such as learning how to handle the camera or frame the shot as first steps towards filmmaking. " [CP3]* This method is often used in technical training emphasising that learning through practice can be more beneficial that recalling only from memory [9]. In this context, the activities took place over an intensive week. However, the Creative Professionals considered this period as short for building deep skills for the Young Company and thus incorporated the practice-based activities early in the process. By fusing the hands-on activities early in the co-design process, they intended to allow the young adults to familiarise themselves with the techniques and equipment, and then build the production material, an approach drawing on fundamental ideas of constructionism [4].

Following the practice-based learning, the next session focused on capturing the Production material. The Young Company took a general direction from the director of the Production and were encouraged to explore and interpret that on their own. At this point, the Creative Professional limited their role as observers and tutors of the Young Company and avoided giving exact directions. For instance, in the case of filming, the Young Company would set the scene based on the director's needs, position the camera, light and other equipment and film the scene. The role of the filming professional was to support, allowing them to apply their new skills.

As a concluding session each week, the group had the opportunity to review the outcome of their work throughout the week, with Creative Professionals encouraging the Young Company to make suggestions for revisions. However, the editing of the raw material, such as sound and film, was only performed by the Creative Professionals as it was a time-consuming and demanding activity, outside the time-limits and scope of this case.

4.2 Thematic Analysis

Participation as Digital Performers expanded the sense of "being on stage". The performance itself had a single female performer, and the stage was set so that the digitally recorded material of the young adults would be projected as a backdrop on

stage, as seen in Figure 2. The protagonist narrates the story and draws the audience into her world, with the digital chorus witness her tale and contribute to its progress. The projections remained in use throughout and aimed to transport the audience "out of the theatre" into a sequence of remembered incidents of the story, pre-recorded with the young participants. The young participants felt they were a significant part of the performance:

"I wasn't digitally on-stage a lot since I only did a week but it did feel weird seeing myself there because it's something new and different. I was quite excited to think that I was technically on-stage and part of such a spectacular performance and people would see me. I think it's a brilliant way to extend the metaphorical 'self-life' of theatre."

Fig. 2. Digital projection of young company recordings in "A Song for Ella Grey"

The technology was felt as an integral and necessary aspect of the play, working towards extending their role. Their role in the performance took the form of a digital Greek "chorus" where the protagonist would be able to talk to and discuss her thoughts with, and thus becoming an integral part of the performance. What was strongly expressed through their post-show questionnaire responses was the ability to feel on-stage without physically being there and the inclusiveness that the technology allowed in such a new format. As individuals voiced:

"It was really cool to see the work that we had spoken about actually in front of you. The digital format worked really well in the show."

"I thought it would be everything I had expected. Despite not knowing how the shape of the show would eventually come together, I was happy with the final outcome."

Technology-infused theatre could modernize theatre and attract young audiences. All of the young adults participating in the co-design activities went to see the performance, with individuals attending more than once. The young participants expressed that the technology in the show also provided a new dimension in the performance, one that the young audience could relate to. As one of the indicated, the show is*"very relatable to teenagers I think, and the use of modern technology kind of made everybody seem connected, since our culture is so heavily influenced by it today."*

What was also expressed was the close connection between what was happening on stage with what was happening pre-production, without always focusing on one's self in the show. As the young participants indicated:

"It was completely surreal, as an audience member I detached myself from the filming/sound, hearing and seeing my voice and face as a part of the piece rather than identifying myself and taking away from the story. It was also incredibly heart-warming as, despite being able to detach, I could really feel the joy within the scene, the same joy I felt filming it."

"It was a different experience because we were still in the show, we were just live on stage. At the start I was really focused on myself and my peers, but as the play progressed I started to become less selfish and actually focus on the actress and the play as a whole."

Technology and resource limitations within the theatre. The company explored a number of ideas before finalizing the plan for this performance, taking into consideration resources, technical knowledge and expertise limitations and possibilities within the timeline of the performance. As indicated by one of the Creative Professionals,

"there was a while were the show was going to be a show that was going to happen entirely on mobile phones, and you turned up at the box office at […] and you download the app on your phone and went out, walked through the city and experience the whole thing on little videos. There was a while where there was going to be a bit that would happen in the theatre and a bit that happens with you walking around, looking at things on your phone. You keep having ideas, and testing this form against the story, and also testing the form against the parameters of what is possible within the time, within the resources, within all of that." [CP1]

5 Discussion

The ultimate goal of the analysis is two-fold: to initially document the co-design practices for a professional and digitally-infused performance, and then provide a means to explore on the framing of technology within the context of theatre and co-design activities. In this section, we reflect on our findings regarding the co-design activities and the nature of participation, as well as the considerations for technology use.

One of the most prominent worries of the professionals was to manage young adults' expectations of what the activities would include and what their role would be in the show. The literature suggests that in practical or long-term projects between young learners and supervisors or facilitators of learning, communicating expectations can improve the quality of collaboration between the different parties [14]. This is particularly true in vocational education and training where the supervising style and learning style are not always a match. However, the use of technology allowed the participants to feel as an integral part of the live performance, extending their role as performers and creators, as well as their legacy as professional creatives.

Further, a number of aspects should be taken into account in a co-design process:

- To what extent do we incorporate technology in the performance? Is the company ready and digitally mature? The use of technology in this performance was limited to projection of pre-recorded video, audio and live streaming of mobile video. However as indicated in the interviews, the resources, technical knowledge and expertise should match the script and storyline of a performance, a tricky balance.
- To what extent do we allow users/audience to influence the final performance? Stages displayed in lighter blue in Fig. 1, indicate sessions where young participants have a passive or no role, with minimal impact on the final performance. While overall the process increased the democratisation of the design of a play, the finality of the play remained in the hands of the creative professionals [20].
- To what extent the co-design activities are beneficial for the participants? The co-design activities developed a sense of belonging in a community, through the hands-on activities or the development of technical skills. Thus the co-production activities, as guided by the basic understanding of what participatory design is all about, also provided a set of technical skills that would benefit the participants in this context preparing them for the digital marketplace [21].
- To what extent is the process sustainable and transferable to future productions? Involving young adults for a young adult performance allowed the use of tools and technologies that would enthuse them and their peers, increasing the engagement of young people with "modern" theatre, an easily replicable process.

Limitations of this work are bound by the limitations of qualitative and ethnographic studies. Ethnographic research is often providing "thick descriptions" that cannot generalize beyond the context of the study, but can be transferable to other settings identifying opportunities for further research. Our aim as future work in this area is to further expand design prototyping in technology-infused theatre and theatre making and explore the influence of the context in co-design activities, working towards creating a sustainability framework for co-designing theatre for the digital era.

6 Conclusion

This case study was an initial step to document the co-design activities in a theatrical context and develop insights into how professionals and amateur youth work together in designing a digitally-infused theatre production. This work provides an opportunity to rethink how to frame co-design approaches in different settings as well as form an exemplary case for technology use in theatre.

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