Design for Outdoor Education: Redefining Schooling Through Design-Oriented Experimentation in Outdoor Contexts

Carlotta Belluzzi Mus, Sapienza University of Rome, Italy

The Barcelona Conference on Arts, Media & Culture 2022 Official Conference Proceedings

Abstract

In the redefinition of the world's equilibrium in the post-pandemic context, it has become increasingly necessary to invest in the search for alternative or improved design systems of the educational experience with respect to remote learning. In the near future, therefore, innovative pedagogical practices oriented towards sustainability and safety, such as Outdoor Education - aimed at making outdoor space an educational environment - could meet the new needs for revision and redesign of educational experiences. Starting from this premise, the contribution intends to report the results of a research project financed by the funds for the Research of the Sapienza University of Rome and carried out in collaboration with the "Bosco Caffarella" outdoor kindergarten in Rome, Italy, which is currently being tested. By setting up a network of interdisciplinary cultural exchange between Design and Pedagogy, the research project set out to undertake an action-research path for the design of designoriented educational actions and tools aimed at children in the 3-6-year age range. Using a wide range of methodologies from Design Thinking and User-centered Design, such as Double Diamond, Context Inquiry and UX Analysis, it is being possible to produce an effective output in terms of usability, design and pedagogical impact. The objective of this experimentation is to propose a reinterpretation of the use of educational services and to provide a first demonstration of how this disciplinary intersection would make it possible to facilitate the transmission of cultural values, catalyse knowledge, foster creativity or convey messages and emotional responses.

Keywords: Design for Education, Outdoor Education, User-Centered Design, Action Research, Interdisciplinarity



Introduction

The research presented in this contribution stems from the lockdown period linked to the COVID-19 pandemic. In this context the world of School had to rapidly adapt to a dematerialisation of classrooms, which soon became places of a digital city (Belluzzi Mus et alii, 2021), symbolising the possibilities of a digitalised and multimedia pedagogy, but also of the social criticalities that may arise from the transfer of educational services to a virtual and connected reality. Adapting to this new normal spaces, it wad increasingly clear that, in a post-pandemic world, Schools' biggest constraints would have been their own walls (Stolzoff, 2020).

Starting from this experience, therefore, new needs have emerged for the revision and redesigning of educational experiences (MIUR, 2021) in the near future, as well as a strong need to invest in the research of design systems for the educational experience (Di Michele, 2021) that can be alternative or better than Distance Learning.

The contemporary schooling system, inserted in the post-pandemic context and therefore in continuous expansion with respect to methodologies, teachings and experiences, would require an interdisciplinary approach in its rethinking. Interdisciplinarity, in fact, by its very nature is an essential element for the co-construction of complex knowledge (De Vitis, 2020) and would therefore favour a balancing of the parameters of multimedia, inclusiveness, safety and well-being required by the system in favour of a qualitative as well as quantitative growth of the languages of the School.

A possible vision, inserted in this paradigm of change, implies an implementation of services, spaces and learning tools through a design-driven approach, which premises the design of the educational experience on a careful analysis of the users, of the context to which it is addressed.

The following paragraphs, therefore, will describe a case study linked to the abovementioned vision: a research and experimentation pathway, currently underway, linked to the identification of the role of the designer as well as of the project culture within the design of the learning systems belonging to one of the most forward-looking scenarios - albeit diverging from the digital model - of the post-pandemic School: Outdoor Learning, also known as Outdoor Education.

In particular, a first part of the contribution will highlight the intrinsic relationship between Design and Pedagogy, as well as the relevant features and reasons why Forest Schools today constitute an interesting opportunity for design-driven innovation, especially in Italy. Secondly, a practical example will be outlined of how, in this context, the methodologies linked to Design Thinking and User-Centred Design, in synergy with the main pedagogical methodologies in use today in Outdoor Learning, can provide an enhancing boost to the self-designing processes of scholastic activities and to the learning of soft-skills linked to the educational objectives of pre-schools.

Outdoor Learning: overview e prospettive Design-oriented

Born in Germany and widely diffused in the Northern European area already for over 50 years, Outdoor Education, intended as a praxis of assuming the outdoor environment as an educational environment (Farnè, 2014) privileged and of important pedagogical relevance

(Guerra, 2015), today continues to exponentially influence European pedagogical currents, also directing several Outdoor Education experiences even on the national territory.

From a pedagogical point of view, Outdoor Education has its roots in hands-on learning practices - defined by Dewey as learning-by-doing - for the development of children, particularly in the 0-6 age group. The project and workshop aspect inherent to active pedagogy constitutes the first of the reasons why Design, or rather, the Project culture, can find an effective and improving role in the design of Outdoor Educational experiences. This affinity between Design and learning had already been pointed out in the famous work of Bruno Munari and Maria Montessori, pioneers with respect to the idea of building an interdisciplinary exchange between School and Design for an education based on tactile workshops (Munari, 1985) on problem solving and on teaching beauty, freedom and practicality.

In those years, there was still no mention of Forest Schools, although they both recognised a key role of nature in the free growth of the child, however, the existence and knowledge of a consistent state of the art, coupled with the observation of an ongoing process of innovation and dissemination of nature-based pedagogical experiences constitutes the second and crucial trigger for the initiation of a critical and experimental discussion on the recovery, identification and redefinition of the role of designers and design practice (Camuffo & Dalla Mura, 2017) in schools of the near future. Many have been, in recent years, the interventions of architects and interior designers in the conscious design of traditional or experimental school spaces, however the contribution intends to shift the focus to another operational field of design, even closer to what Munari and Montessori theorised and realised. Despite the fact that even the natural context is a fertile ground for the construction of stimulating learning environments (Bortolotti, Schenetti & Telese, 2020), in actual fact, an innovative research should extend its boundaries towards the experimentation of the coexistence of Experimental Pedagogy and Product and Service Design skills and knowledge, a coexistence that would allow not only to develop "objects for learning", but also to carry out a methodological transfer that nourishes and renews the Design culture of school didactics (Weyland, 2017).

In Italy, the territory addressed by this study, it is possible to observe how universities, such as the University of Bolzano, have already turned their gaze to this type of innovative interdisciplinary systems for product and experience design, the laboratories, exhibitions and publications pertaining to the EDDES project are a relevant case study in the study of tools and workshops for design-oriented schools, as are the activities of the Reggio Children association in Reggio Emilia, which is part of the Loris Malaguzzi experimental centre. However, the natural context and the unstructured materials connected to it find marginal space and are not always investigated in design terms.

Design for Outdoor Education, indeed, remains unexplored ground, especially from a scientific and evaluative point of view. The contribution, highly original in this sense, through a case study, intends to bring to light how the intervention of the designer in the Design of the outdoor experience can help educators and children to manage the context with its complexity and multiplicity of problems (Dozza & Cardinaletti, 2022) contributing to the development of a practice that "helps to cultivate an attitude of responsibility towards the environment that will last a lifetime" (Charles, 2015).

Design for Outdoor Education: an experience in Rome

The case study that is the purpose of the contribution is a research and experimentation project financed by the University funds for the Avvio alla Ricerca 2021 of Sapienza University of Rome, entitled "Outdoor Education and Design: analysis and experimentation of the contribution of Design to experimental Outdoor Education. Between post-pandemic scenarios and sustainable education'. The project envisages a substantial action-research phase, carried out at the "Bosco Caffarella" kindergarten in Rome, led by PhD student Carlotta Belluzzi Mus under the supervision of Dr. Francesca Lepori, coordinator of the Asilo nel Bosco.

For a better understanding of the activities and outputs related to the project, the objectives of the research can be summarised in three main points:

1. Research into the role of interdisciplinarity in the Preschool system

The first objective that was set, which is broader in scope than the following ones that will narrow the field of investigation incrementally, was to identify a strategic and operational role in the design processes and activities relating to the Infant-toddler Centres. In this sense, since these contexts are linked to the institutional system of the Ministry of Education, it was appropriate to focus on the Italian territory as the main scope of the research itself, since the regulations are different from the international school system.

2. Research into the benefits and possibilities of the designer's intervention in the design of educational experiences in Outdoor Learning

Going into greater detail, the research intends, once the role of Design in the general Italian school system has been identified, to focus attention on the outdoor context, going on to research any specific benefits of the hybridisation between the pedagogical methodologies currently used and the culture of design. This objective also stems from the reflection that a context rich in natural and unstructured materials can benefit a variety of activities if assisted by conscious and creative design.

3. Research into the efficiency of a design-oriented approach with respect to the development of specific skills in a school context

Lastly, the research aims to verify, and possibly assess, whether and to what extent the collaboration of a designer in the conception of activities and tools for Outdoor Education can increase the development of those problem solving and creative thinking skills typical of Design and included among the skills to be developed in the Early Childhood School curriculum. In addition, the hypothesis added to this objective is that a more structured attitude towards problem solving and divergent thinking could be a relevant contribution to the management of the complexity of the context for both children and teachers, as already pointed out in the previous paragraph.

To achieve these objectives, the research followed a progressive approach from Desk Research to Action Research. In particular, during the Action Research phase, the methodologies belonging to User Experience Design and User-Centred Design were experimented in order to identify key points and opportunities for intervention for the development of an efficient and specific design output for the context and target of use. The entire project refers to Design Thinking and the Double Diamond model (British Design Council, 2005) in the sequence of sequential phases to be followed. Starting from this methodological framework, the two macro-phases, respectively of research and project, made use of resources pertaining to the discipline of Design and Pedagogy in order to achieve the desired results. In the first exploratory moments of the Action-Research, for example, specific tools of user observation and analysis, such as the Contextual Inquiry, the Interviews to the teachers and operators of the Forest School, and the Photojournaling allowed a profiling of the activities, actors and scenario with respect to the current state. The observation of this documentation allows to deduce preliminary answers to the research demands; in particular, the dialogue with the teachers and the direct observation of the proposed activities, such as the construction of tactile postcards, pathways and colour wheel exercises, demonstrate an embedded presence of the project's subject matter in the programme proposed to the children relating to nature pedagogy. Not only that, as there are no structured materials and classrooms in which to carry out guided activities, the tools used for play and study moments often turn out to be the result of self-design on the part of the kindergarten teachers and operators; this observation lays solid foundations for validating the hypothesis that awareness introduced by a designer could increase the effectiveness of the tools used.



Figure 1: Exploring and searching treasures in Bosco Caffarella



Figure 2: Seasonal materials collection postcard

At the end of the first research phase, therefore, considering the results of the Desk research and the context analysis, it was possible to have feedback regarding the possibility of establishing a process synergy between designers and schools, even more so where the design aspect is already present and rooted in the behaviour of pupils and educators, as in the case of Outdoor Learning; this first conclusion constitutes the starting point for the product design phase, aimed at responding to the third objective of the research, i.e. to demonstrate and evaluate the effectiveness of the design-driven approach in the design of context-specific tools for Forest Schools.

In this last phase just described, and as of today in progress, the research envisages a strong interdisciplinary approach aimed at the exchange of knowledge and methodologies useful for the development of the final output, consisting of a design-oriented tool for carrying out one of the activities proposed by the Bosco Caffarella kindergarten. In particular, through a Co-Design process punctuated by Brainstorming and Nominal Groups activities, it is intended to proceed operationally by structuring the product starting from the analysis of the users, carried out through the construction of Personas, and then to design an experience on the basis of some application theories belonging to the world of Active Pedagogy and of a laboratory type, such as the methods proposed by Maria Montessori, Waldorf and Loris Malaguzzi (Reggio Emilia Approach).

The following section will describe the output and the application strategy of the methodologies just listed, as well as the validation and experimentation method of the product itself.

Materials, Tinkering and Storytelling: the research output

As mentioned above, the briefing on the experimentation of a design output began in the Contextual Inquiry and Interview phase, during which two activities seemed particularly suited to a design-based intervention: searching and storytelling. The activities of the kindergarten in the wood under investigation, in fact, are divided according to a well-defined temporal scheme: in the morning the children are invited to engage in free and exploratory activities, in the afternoon to carry out structured, choral and more static activities. It could be said that in the morning, multisensory inputs, notions and materials are gathered, which in the afternoon are translated into a natural interpretation of the activities proposed by the traditional school. As semi-rigid as this scheme appears, the resulting experience is always different, just because it is the context itself that varies according to seasonality, weather and its own complexity. In observing how this variability is handled by pupils and teachers, two spontaneous behaviours have emerged that are relevant to the project: the collection of materials, natural or otherwise, found during the exploratory phases and the retrospective telling of a story born from the association of these materials with more rational or creative thoughts.

Although these experiences are repeated and provide a pretext for learning concepts and soft skills fundamental to the development of children in the 3-6 year age group, they lack a structured methodology and a collection of outputs useful both for documentation by teachers and for extending the activities over several days. Through knowledge of the mechanisms of storytelling, a design-oriented project could in fact guide the children in the choral construction of a story that stems from the collection of "treasures", inserting a workshop activity capable of making the children learn fundamental concepts through play, as well as facilitating the archiving of the activities carried out by the school operators.

For these reasons, following the initial brainstorming activities, it was decided to structure the output to be experimented with as a box for sorting the materials collected during the exploration of the park. Each section of the box will correspond to an element of the story to be created and will be destined in part to fictional elements, impersonated precisely by the treasures collected (e.g. a rock in the shape of a ladybird, a leaf that becomes a tree, etc.), and in part to structured materials designed to complete the storytelling context (e.g. scenarios, emotions, etc.). In fact, the product design, colours, shapes, images, and graphic elements are all elements with which the designer can guide the child towards more attentive or freer actions (Lupton, 2017). To this concept of Design for Storytelling, through the use of the tool is added the practice of Tinker Boxes, sorting boxes for hands-on exercises akin to Montessori-Waldorf theories for the development of problem solving and organisation skills. Tinkering is in fact defined as a spiral process consisting of five steps: imagine, create, share, reflect (Resnick & Rosenbaum, 2013). This 'tidy imagination' exercise should therefore offer a tool to carry out a structured activity from unstructured materials, enhancing the experience through the ability to reflect through the story on intangible concepts such as the relationship between the self and the other, the distinction of emotions and the ability to tie them to a context, rather than an action.



Figure 3: Example of a Tinker Box

Following the prototyping of the box, which is now in progress, the intention is to test the tool by administering it during the afternoon activities to a sample equal to half the class group; the other half will perform the storytelling activities freely, as in the state of the art.

An evaluation of the usability on the part of the educators and the children, as well as the effectiveness in facilitating the construction of the storytelling and learning, will be collected via an evaluation grid produced ad hoc by the Nominal Group. In this sense, the evaluation is also intended to be interdisciplinary, in order to better validate the hypotheses underlying the entire research. What is expected is to provide not only a new tool to the community of teachers of the Outdoor School, but also a scientific and consultable feedback of the value of the interdisciplinarity between Design and Experimental Pedagogy.

Conclusion

In conclusion, already from an initial on-site research phase, it was possible to observe the presence of an unmet need to manage the complexity of the context and the conscious conception of activities based on unstructured materials. In these terms, as described, it became evident how the designer can therefore find a leading role in the design of the tools. as well as of the experience, offering a significant contribution that can benefit in usability, versatility and beauty of the products and activities themselves, three fundamental parameters for enhancing learning in pre-school children. Not only that, the methodological affinity between the pedagogical theories underlying Outdoor Learning and Design constitute a facilitator and stimulus in the act of knowledge transfer and construction of the interdisciplinary collaboration network; this operational facility responds to the research question concerning the investigation of a possibility of design-driven innovation in Forest Schools, confirming not only its applicability, but also its validity in terms of results. Being a work in progress, it is not possible to draw conclusions regarding the success of the interdisciplinary work, however, the experimentation of the co-designed tools will be able to validate the actual effectiveness of the Design intervention with respect to the Outdoor Learning experiences, achieving the specific objectives set by the research. In this sense, given the premises on the theoretical level and the positive feedback obtained in the first research phases, a result of effectiveness and validity of the product is to be considered very likely.

Once the experimentation is complete, the dissemination of the results will give the project futurity, projecting it towards standardisation to be applied in similar contexts on a national and international scale. For a conscious, sustainable and futuristic design of the education of tomorrow's children.

References

- Belluzzi Mus, C., Caccamo, A., Fazi, R.& Maselli, V. (2021) Digital sociability in Covid-19 era. Service Design for the analysis of emotional involvement in the digital city. *AGATHÓN* | *International Journal of Architecture, Art and Design,* 10, 250–261.
- Bortolotti, A., Schenetti, M., & Telese, V. (2020). L'Outdoor Education come possibile approccio inclusivo. Una ricerca nei servizi educativi zero-sei del Comune di Bologna. *Italian Journal of Special Education for Inclusion*, vol. 8, n. 1, 417–433.
- Camuffo, G. & Dalla Mura, M. (2017). EDDES/1 Design e apprendimento creativo. *Questioni ed esperienze*. Milano: Guerini e associati.
- Charles, C. (2015). Worldwide. In M. Guerra (Ed.), *FUORI. Suggestioni nell'incontro tra educazione e natura*. Milano: Franco Angeli.
- Design Council (2017, January 20). Eleven lessons: managing design in eleven global brands. A study of the design process. Design Council. https://www.designcouncil.org.uk/fileadmin/uploads/dc/Documents/ElevenL essons_Design_Council%2520%25282%2529.pdf
- De Vitis (2020) Interdisciplinarità e pensiero creativo. L'approccio del Design Thinking per un nuovo umanesimo pedagogico. *Formazione & Insegnamento*, XVIII, 1, 713–719.
- Di Michele, F. (2021). La pedagogia della natura come scelta di impegno pedagogico e politico per una relazione educativa di prossimità. *IL NODO. Per una pedagogia della persona*, vol. 25, n.51, 117-126.
- Dozza, L. & Cardinaletti, C. (2022) *Questa è l'Outdoor Education. Un laboratorio di Pedagogia itinerante.* Bergamo: Zeroseiup.
- Farnè, R. & Agostini, F. (2014). *Outdoor education. L'educazione si-cura all'aperto.* Bergamo: Junior.
- Guerra, M. (2015). *FUORI. Suggestioni nell'incontro tra educazione e natura*. Milano: Franco Angeli.
- Lupton, E. (2017). Design Is Storytelling. New York: Cooper-Hewitt Museum.
- Ministero dell'Istruzione (2021, May 4). *Linee programmatiche del ministero dell'istruzione*. MIUR. https://www.miur.gov.it/documents/20182/0/Linee+programmatiche+del+Ministero+dell%27Istruzione+-+4maggio+2021.pdf/b3cbd3ee-722c-457d-a2c4-a4df30dd03d8?t=1620143366992
- Mitchel Resnick, Eric Rosenbaum (2013). Designing for Tinkerability. In Honey, M., & Kanter, D. (Eds.), *Design, Make, Play: Growing the Next Generation of STEM Innovators*, pp. 163-181. Routledge.
- Munari, B. (1985). I laboratori tattili. Bologna: Zanichelli.

- Stolzoff, S. (2020, June 30). *How would you reimagine learning: 5 visions for our Post COVID Future*. IDEO. https://www.ideo.com/blog/how-would-you-reimagine-learning-5-visions-for-our-post-covid-future
- Weyland, B. (2017). EDDES/2 *Didattica sensoriale. Oggetti e materiali tra educazione e design.* Milano: Guerini e associati.

Contact email: carlotta.belluzzimus@uniroma1.it