IMPROVING INFORMAL LEARNING EXPERIENCES FOR DESIGN STUDENTS: AN INNOVATIVE PROGRAM OF THE SCHOOL OF DESIGN OF POLITECNICO DI MILANO

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Abstract

In 2018, during a period characterised by significant transformations in the labour market, wherein the convergence of technological competencies, creative skills, and critical thinking became increasingly crucial [1], Politecnico di Milano embarked upon a steadfast commitment to adopt constant innovation through new interdisciplinary and flexible approaches. These approaches were founded upon a heightened interplay between technology and sciences, alongside the development of innovative teaching initiatives. The university pursued this reflection on innovation by implementing a three-year plan to innovate various aspects of educational activities, targeting curricular and extracurricular teaching through infrastructural and procedural interventions.

Among the various activities undertaken, Politecnico di Milano launched an initiative named "Passion in Action - PiA," a catalogue of freely participatory educational activities offered to all students. The primary objective of the PiA is to foster the development of cross-cutting competencies, soft skills, and social skills, thereby encouraging and facilitating personal interests and attitudes. These integrated activities implemented the formal curriculum and are acknowledged in the diploma supplement that certifies the students' educational journey.

The School of Design of Politecnico di Milano, known for its longstanding teaching and learning approach rooted in the "epistemology of praxis," wherein field experimentation and international openness intertwine with an "Italian approach" [2], has wholeheartedly embraced the university's vision of educational innovation. The School of Design wishes to offer a personalised educational path through an informal learning approach within the PiA initiative. Informal learning represents an interactive and highly socially collaborative type of learning embedded within meaningful activities, initiated by the learners' interests or choices, and exempt from external evaluation [3], where participants refine their pre-existing knowledge and skills and innovate, developing new ideas and skills [4].

In this paper, the author intends to illustrate the implementation of the PiA initiative by presenting a case study named "Design Explorer – DE," developed by the School of Design in the academic year 2019/2020 and still being offered within the innovative educational paths promoted by the school. DE is a program that pursues three distinct objectives. Firstly, it aims to provide a rich program of events and activities to stimulate students to explore design in its diverse forms. Secondly, it invites students to venture beyond the formal confines of the campus and discover the city of Milan, renowned as the global capital of design [5], along with the places, also found in other cities, dedicated to the design context and the associated cultural and disciplinary contexts also in other cities. Lastly, it aims to enhance individual passions and aptitudes by enabling the realisation of their informal educational path.

Furthermore, this paper describes the program construction, promotion, participation, and certification system, adopting specific communication tools and involving various academic and institutional stakeholders. The author hopes that recounting the implementation protocol of this program can be valuable to all design educational institutions aspiring to develop innovative and informal educational paths.

Keywords: Informal learning, teaching and learning innovation, educational programs, design education.

1 THE CONTEXT

In constantly changing social contexts, there is a growing demand for design practitioners with the broad vision necessary to tackle diverse challenges. Considering the growing multifaceted and complex problems humans and non-humans face, design is bound to be part of the problem or solution. With its transformative nature, design can have a significant role in dealing with these challenges [6].

Technology-related soft skills, creative skills and non-cognitive skills are becoming increasingly crucial in tandem, and there are significant opportunities for innovative and creative partnerships between educational institutions, businesses, organisations and others to experiment and invest in new types of innovative education and training that will be more useful to individuals in the new labour market context. In particular, it emphasises the need for organisations to recognise the impact of “non-cognitive soft skills,” enabling people to harness their uniquely human and creative abilities [1].

The topic of new skills and innovative teaching has always been central to the planning of Politecnico's strategic actions. As early as 1991, a reflection on technological innovation in learning activities was initiated, resulting in the “Libro Azzurro” [7]. This report outlines the characteristics of experimentation on innovation, and the computerisation of teaching carried out through the experiences gained individually and those promoted through the Politecnico's initiatives. After almost 30 years and several experiments at different levels of learning, the Politecnico di Milano has continued this reflection on innovation with a three-year program, starting in 2017, to innovate various aspects of teaching activities, with an investment of three million euros. The Politecnico aimed to innovate curricular and extracurricular teaching with interventions at infrastructural and process levels. The objective linked to extracurricular education is to intercept students' passions while enhancing teachers' passions by trying to innovate traditional pedagogical approaches. With these aims in mind, the Politecnico di Milano has launched the “Passion in Action” initiative, which offers opportunities and occasions to enhance students' passions and aptitudes transversally outside curricular activities. PiA provides a catalogue of educational activities designed and managed by teachers and is free and encouraged to participate for students from various schools of the Politecnico di Milano. PiA aims to foster the development of transversal, soft and social skills to encourage and facilitate personal interests and aptitudes. They are, therefore, educational paths outside the strictly curricular activities but recognised and mentioned in the student's academic curricula.

2 GOALS OF THE DESIGN EXPLORER PROGRAM

Founded in 1993 within the historic Politecnico di Milano, the School of Design promotes learning based on the “epistemology of praxis,” where field experimentation and international openness combine with an “Italian approach” to technology filtered through the humanities and with a growing hybridisation with craft processes [2]. Today, after some 30 years, the School of Design is already a centre of excellence on the national and international scene. Following the university's footsteps, the School has embraced new changes and carefully followed the evolution of teaching and learning activities.

Therefore, the School of Design has set up the Design Explorer program to respond to the Politecnico di Milano's request to introduce innovative forms of teaching into its educational offerings, capable of enhancing its students' diverse passions and aptitudes. The program has several objectives.

✦ *The first objective*

To allow students to explore the discipline and dimension of design by experiencing places, encounters and activities outside the university campus. In addition, the customisation of an educational pathway creates a pathway according to one's learning goals and preferences [8]. According to Souleles et al. [9], triggers and variables that have the potential to enhance creativity can be categorised into three primary groups:

- The influence of the environment, including external inspirations and triggers, as well as methods that can enhance the creative process, such as collaboration and ideation;
- The internal factors and attributes that contribute to the ability to be creative, such as personality traits, curiosity, and attitude;
- The interplay between internal and external factors in fostering creativity.

Initially, the intention was to encourage the discovery of the city of Milan (recognised as the world capital of design) through its dedicated and design-related places [5], [10]. At a later stage, the program broadened its horizon by proposing opportunities throughout Italy and the world.

✦ *The second objective*

To allow the informal training built on one's curiosity and passions. The DE program straddles the line between informal and non-formal learning pathways. "Informal learning is defined as experiential learning and can be understood to some extent as incidental learning. It is not structured in terms of

learning objectives, learning time and/or learning support," expressed Colardyn and Bjornâvold. “Non-formal learning consists of learning embedded in planned activities that are not explicitly designated as learning, but which contain an essential element of learning. Non-formal learning is intentional from the learner's point of view [11].” According to UNESCO, informal learning is incidental and can be called experiential learning since it focuses on learning from experience. Moreover, through the process of recognition, validation and accreditation, acquired skills can be made visible and contribute to qualifications and other credit. In some cases, the term experiential learning is used to refer to informal learning that focuses on learning from experience [12], [13]. Also, non-formal learning can be structured in an educational and training manner. Still, it is more flexible than formal learning and is partly intentional and partly incidental [12], [13].

Furthermore, non-formal learning is considered emancipatory because it assumes that learners exercise control over their knowledge when it takes place outside formal educational institutions [14]. Finally, informal learning plays a vital role in competence building in young people. This is because it supports development by helping to transform potential, creativity, talents, initiative and social responsibility through acquiring related knowledge, skills, attitudes and values. It is often community-based and outside formal institutional settings [15].

✦ *The third objective*

To foster the development of creative skills. Creativity is interconnected and intertwined with many different actors, levels and spheres of life. Regarding education, the boundaries between formal, non-formal and informal education must be deconstructed because creativity fundamentally needs all spheres [16]. The potential of creative skills in design is intriguing: harnessing designers' existing skills and training new ones could significantly contribute to designing for richness of meaning [17].

The Design Explorer program thus posits an informal learning pathway that fosters experiential and incidental knowledge outside the institution and considers some important aspects of non-formal learning, such as a semi-structured offering and the presence of certification (albeit extra-curricular). Therefore, the DE program offers a rich palimpsest of events and activities to stimulate students to explore Design in its most varied forms and enhance individual passions and aptitudes.

The selection of events is both top-down and bottom-up. In the top-down selection, there is the synergetic intervention of the School's program and course managers. The school program managers put on the program events of general character and strategic interest concerning certain institutional partners acting within the design discipline. Course leaders put on the program events with a disciplinary interest and related to didactic themes in the courses.

In the bottom-up selection, students can propose appropriate or relevant events. To do so, they must submit the events to the student representatives of their course, who in turn contact the school offices responsible for the program. If the event is deemed suitable, it is included in the general schedule.

3 HOW THE DESIGN EXPLORER PROGRAM WORKS

To reach a broad range of participants, the School of Design introduced several communication actions:

- Newsletter: every month, the offices responsible for the program email all students (around 4500 students) with the latest events on the program schedule.
- Communication for specific events: some events of strategic interest to the school can be communicated through dedicated e-mails or specially designed communication tools, indicating all helpful information and the score reserved for the event.
- School of Design website (https://www.design.polimi.it/en/students/opportunities/design-explorer): the Design Explorer program has a dedicated web page (Fig. 1) on the School of Design's website containing all the indications on how to carry out the activity, the files needed to perform the steps described below and the schedule of events divided into events without a deadline and events with a time slot (monthly).

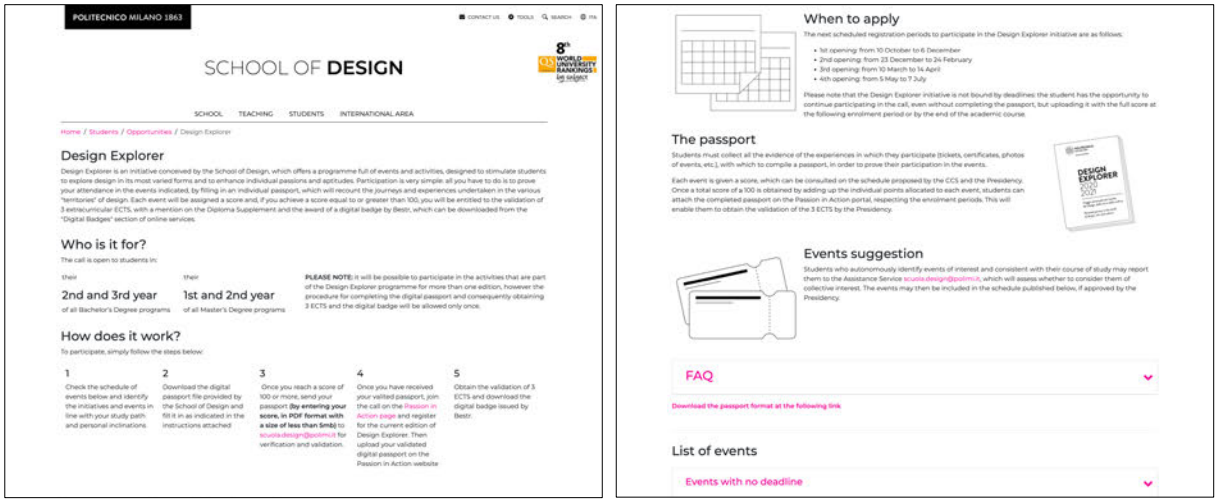

Figure 1. Web page with program description.

- Information during welcome days: to inform newly enrolled students of the possibility of participating in the program, the responsible offices prepare appropriate information annually during the welcome activities for the first-year students on the first days of the semester. In addition, a brochure and a gadget (a pin) bearing the program's motto, “I'm a Design Explorer,” are also handed out to reinforce the communication made and as a word-of-mouth tool among students (Fig. 2).

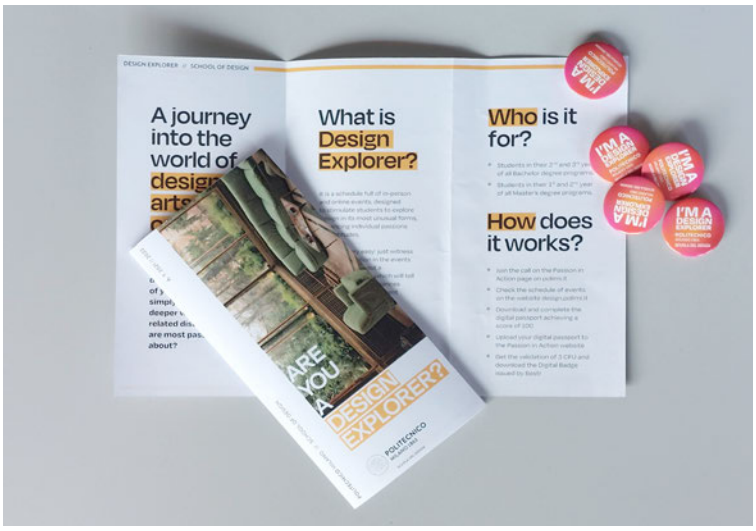

Figure 2. Communication tools: brochures and pins.

The “Design Explorer” program is therefore aimed at Bachelor students (2nd and 3rd year of all courses) and Master students (1st and 2nd year of all courses) and is structured in four steps:

3.1 Step 1

The students consult the proposed program schedule and identify the initiatives and events in tune with their study path and personal inclinations. They must then choose one or more of the events proposed in the schedule. Each event is assigned a certain point (from 5 to 100). The events are posted on the School of Design's website on a particular web page, which is constantly updated (Fig. 1). They are divided into events “with no deadline” (events that do not have a time limit but are always available, such as public or corporate museums, trade fairs, etc.) and events to be concluded within a specific date that can be consulted month by month (seminars, exhibitions, workshops, hackathons, etc.).

For each event, there is helpful information for the student to make an informed choice of their informal educational pathway (Fig. 3):

- Name of the event;
- Sponsoring institution;
- Brief description;
- Dates and place of the event;
- Points awarded;
- Possible in-depth weblink.

Futurliberty. avanguardia e stile

Evento promosso da: Museo del Novecento

La mostra esplora il movimento futurista e il suo impatto sulle arti applicate. Organizzata dal Museo del Novecento e Palazzo Morando | Costume Moda Immagine in collaborazione con Liberty e la casa editrice Electa, la mostra si sviluppa in due sedi a Milano. Al Museo del Novecento, l'attenzione è sull'influenza delle avanguardie, in particolare del Futurismo e del Vorticismo, nella vita quotidiana. Opere di artisti futuristi come Giacomo Balla, Gino Severini e Umberto Boccioni si mescolano a dipinti vorticisti di artisti inglesi contemporanei. L'esposizione presenta anche manifesti, abiti e tessuti che hanno ispirato designer come Bernard Nevill. A Palazzo Morando, l'accento è sulla creatività di Liberty e dei suoi designer, con dipinti, disegni, arredi e una vasta selezione di materiali dall'archivio di Liberty, incluso il lavoro di collaborazione con William Morris. La mostra offre uno sguardo inedito sull'influenza delle avanguardie nella vita quotidiana e sull'impatto stilistico di Liberty.

Informazioni utili
P.za del Duomo, 8, 20123 - Milano
Fino al 3 settembre 2023

Punteggio attribuito
20

link evento
link

Figure 3. Example of an event information sheet.

3.2 Step 2

The students must testify their attendance at the events indicated by completing an individual passport (Fig. 4). The passport can be downloaded from the program's main web page as an Adobe Indesign® file with instructions for its correct use. In the passport, as evidence of their attendance at the events, pictures of their entrance ticket must be inserted, as well as a selfie or photo or any other visual element that “certifies” their participation. The passport must be filled out indicating the event's name, the date and the points awarded.

3.3 Step 3

To complete the passport, the students must achieve at least 100 points (adding up the individual points awarded for each event or even a single 100-point event). They may exceed 100 points if they add more events to their passport. Once the passport has been completed, the students must send it in PDF format and with a size of less than 5 MB to the school's offices by email to the appropriate mailbox for checking and validation. The validated passport (countersigned by the School staff) will be sent back to the students for proceeding with the following steps.

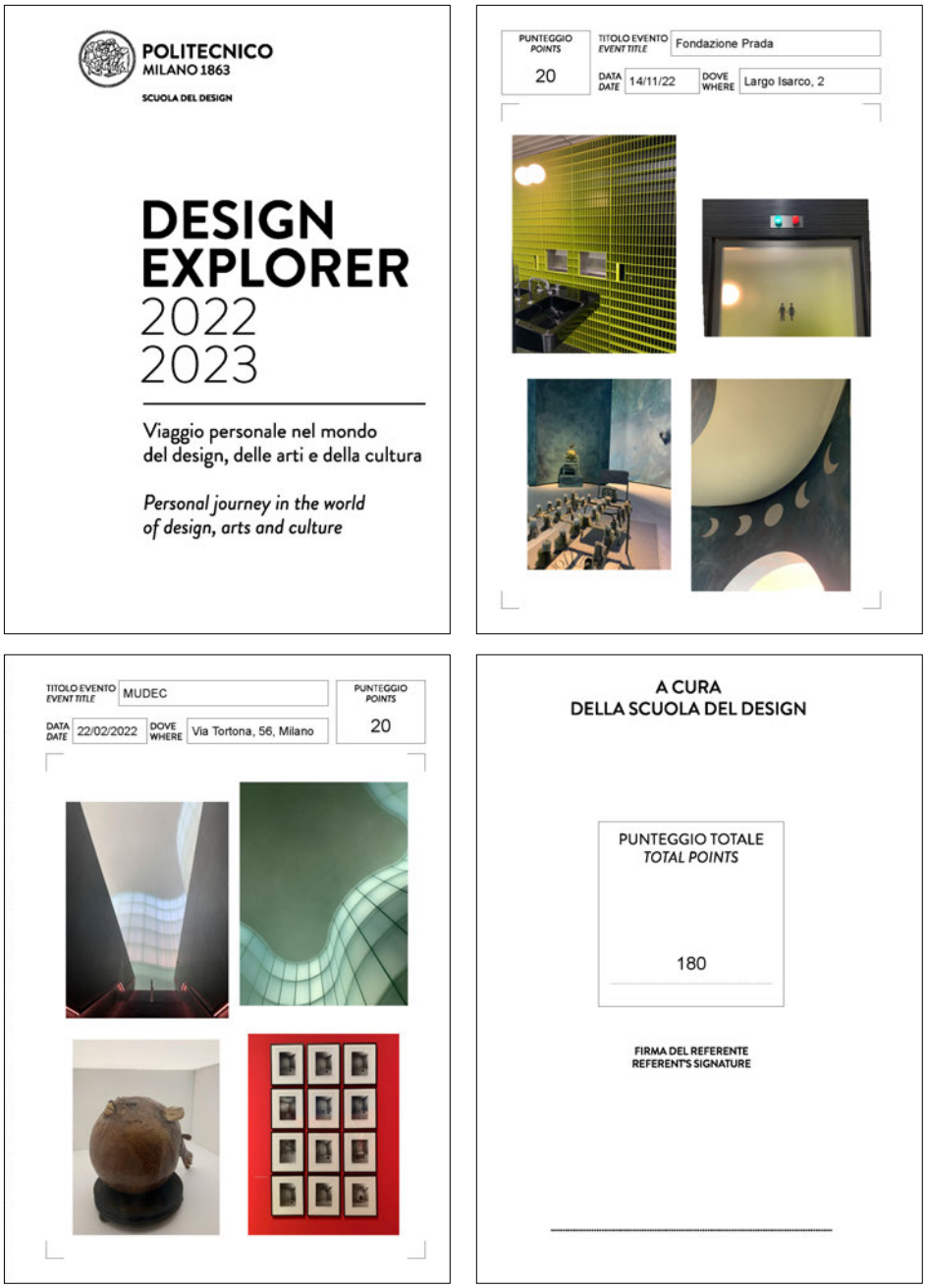

Figure 4. Example of a completed passport with partial and total points.

3.4 Step 4

After receiving the validated passport, the students can register for the current edition of the specific initiative on the university's Passion in Action portal and upload the passport into the computer system (Fig. 5). There are several periods for the initiative's opening during the academic year, which coincide with the month preceding the final undergraduate and master's degree examinations. Once the offices have verified that the student has completed the procedure, three extracurricular credits will be allocated and added to the student's academic career.

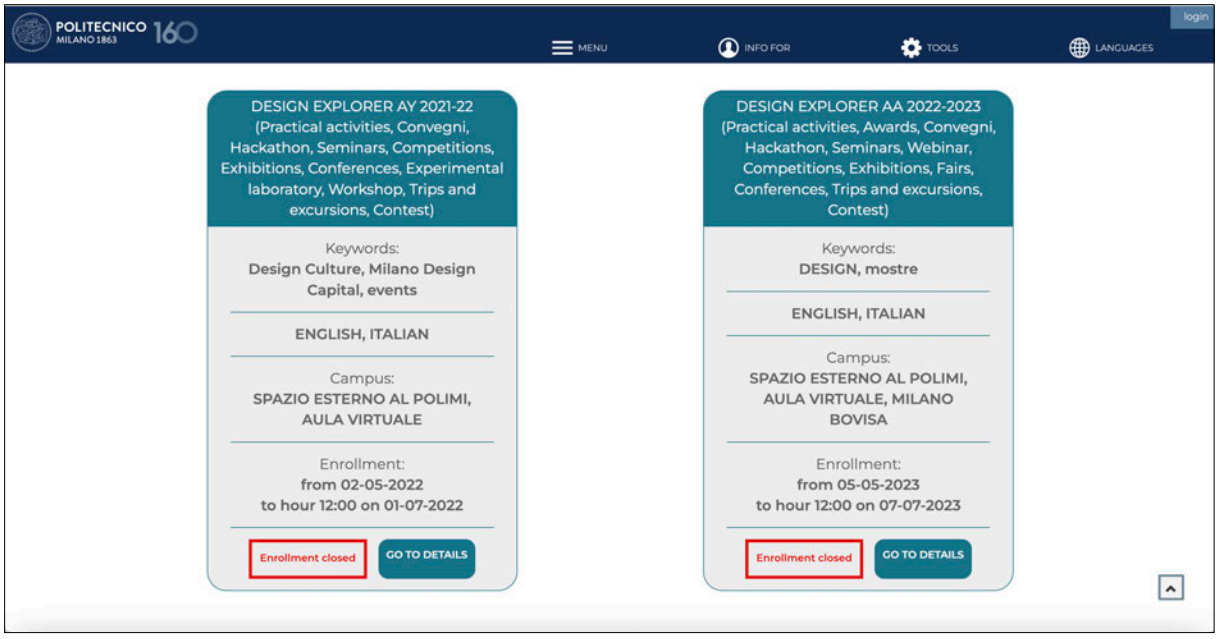

Figure 5. Editions of the DE program on the Passion in Action portal.

4 RECEPTION AND PARTICIPATION IN THE DESIGN EXPLORER PROGRAM

Over four academic years, 212 students have participated in the program, with 636 credits delivered (Table 1).

Table 1. Number of participating students per academic year.

	1st period	*2nd period*	*3rd period*	*4th period*	*Total number*
A.Y. 2019/2020	0	6	4	1	11
A.Y. 2020/2021	0	0	4	27	31
A.Y. 2021/2022	2	8	23	42	75
A.Y. 2022/2023	24	21	25	25	95

As demonstrated in Table 1, there is a steady increase of participants with a stabilisation of around 25 participants per program period (four program periods per academic year). There was a lack of participants in the first period of the 2019/2020 academic year (when the program had just been launched) and in the first two periods of the 2020/2021 academic year (due to the COVID-19 pandemic emergency).

To monitor the program's reception and gather ideas for the implementation, from February 2022, a survey has been sent out (with a request for completion) to all the program participants. A link to a Microsoft form was included in the reply email containing the validated passport and sent by the School's offices. Out of 175 students contacted, 91 responded to the survey.

Some background data on the respondents: 65% were in their third year of degree at the time of participation in the program. 15% were in their second year of graduation, and 14% were in their first year. 6% were in their second year of a Master's degree. None of the responding students were attending the first year of their Master's degree. Table 2 shows the distribution of students in the degree programs and indicates greater participation in the program by product design and interior design students.

Table 2. Distribution of participating students with background courses of study indicated.

BSc	Students
Product Design	43
Interior Design	26
Communication Design	2
Fashion Design	2

MSc	Students
Interior Design	8
Product Design	3
Communication Design	4
Product Service System Design	2
Fashion Design	1

The survey focused on information, communication, and satisfaction with the program.

36% of respondents learned about the program through mailing channels (newsletters and targeted communications), 30% through the School of Design website, 29% through word-of-mouth, and 5% through welcome day activities.

When asked about their motivations for participating (open answer), most students have been attracted by the characteristics of the initiative. They consider the program an opportunity to explore and discover new contexts, nurture curiosity and deepen their understanding of the design discipline and profession. 13% of the students indicated the acquisition of extracurricular credits as their primary motivation. This means a predisposition towards discovering and deepening one's passions as the first driver for joining the program.

A Likert scale was adopted to understand the level of satisfaction with the program, with values from 1-not at all satisfactory to 5-decidedly satisfactory. Different aspects have been investigated, such as the offer of events, ease in finding information about them, ease in consulting the program schedule and finding activities, ease of participation (bureaucratic aspects), coherence with their Course of Studies, and compatibility with their curricular commitments. The students responded by returning about 85% positive values. The only aspects that received lower positive values were the communication of the program (around 58%) and ease of finding information about it (approximately 77%). The results indicate that the School needs to implement more dissemination activities of the initiative by further experimenting with the forms and tools of communication (Fig. 6).

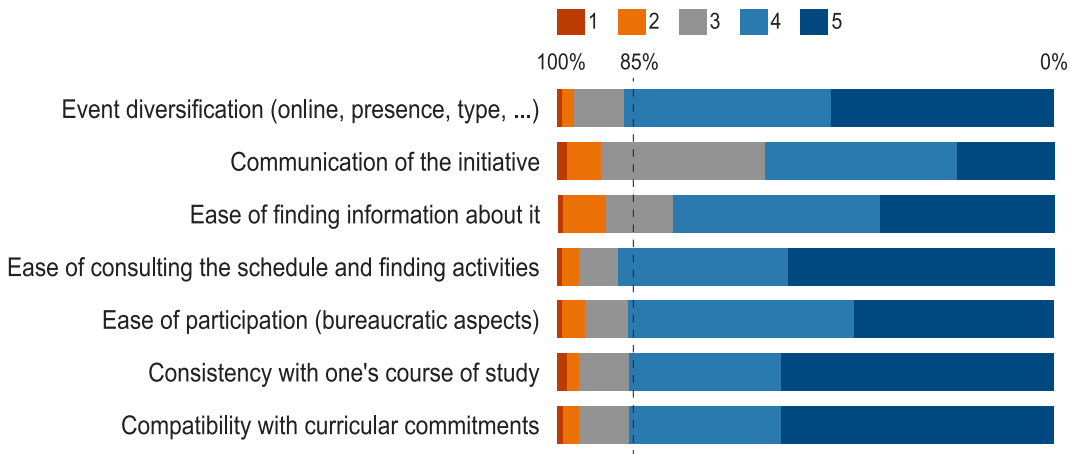

Figure 6. Evaluation of the level of satisfaction.

The “passport compilation methods” have also been evaluated positively, with a positive average of 85% (Fig. 7).

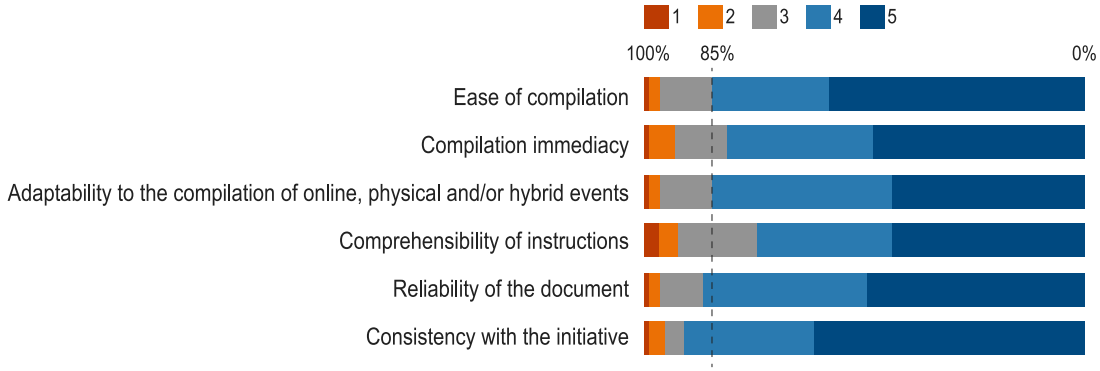

Figure 7. Evaluation of passport compilation methods.

5 DISCUSSION AND CONCLUSION

The Design Explorer program is an example of educational innovation that allows students to realise an informal didactic learning experience built from their passions and curiosities. In this article, the author has recounted the creation and development of the program and emphasised the importance of informal learning, as well as the creation of a personal learning experience as an integral part of the design education process and the refinement of the design student's creative skills, since the primary objective of design education is to equip learners with the capacity to approach and resolve complex problems that lack clear definitions [18]. Furthermore, learners must cultivate the ability for synthesis by comprehensively examining divergent design approaches and employing critical and timely decision-making to converge different concepts.

Students can create experiential pathways to navigate the range of events to learn, investigate and acquire new skills. In this sense, design education is crucial in cultivating design students' necessary skills and abilities, enabling them to thrive in a rapidly evolving, interconnected, and multidisciplinary design environment [9]. From this point of view, the DE program proposes an innovation that expands the campus's boundaries, enters the territory (local, national and international), and involves various cultural and corporate stakeholders.

The program is proving to be of great interest to the students at the School of Design. This is demonstrated by the continuous increase in the number of participants and the demand from students for new events (bottom-up selection). The data on perceived quality and ease of participation and execution are comforting and provide a solid base for future implementations.

The creation and development of the program suggest the need to deepen informal learning contexts to develop design students' design skills. The program represents a first step towards formalising a new approach in the development of creative skills that considers the complexity of self-determined learning experiences by converting them into "dynamic learning environments" [19] that interact with each other in a way that stabilises and destabilises the formal system and allows for the continuous evolution of the educational system as a whole.

REFERENCES

[1] Centre for the New Economy and Society, *The Future of Jobs Report 2018, Insight Report*. World Economic Forum, 2018.

[2] L. Collina, “Scuola del Design, Politecnico di Milano,” *Domus,* 1010, February, 2017.

[3] M. Callanan, C. Cervantes, and M. Loomis, “Informal learning,” *Wiley Interdisciplinary Reviews: Cognitive Science*, vol. 2, no. 6, pp. 646–655, 2011. doi:10.1002/wcs.143

[4] B. Rogoff, M. A. Callanan, K. D. Gutiérrez, and F. Erickson, “The Organization of Informal Learning,” *Review of Research in Education*, vol. 40, no. 1, pp. 356–401, Mar. 2016, doi: 10.3102/0091732x16680994.

[5] A. Sacchi, Milano capitale del design, edizione da record: oltre 300 mila visite, stranieri da 181 Paesi e 223 milioni di euro d'indotto, 24 Aprile, 2023. Retrieved from https://milano.corriere.it/notizie/cronaca/23_aprile_24/milano-capitale-del-design-edizione-da-record-oltre-300-mila-visite-stranieri-da-181-paesi-e-223-milioni-di-euro-d-indotto-65d83443-99dd-43d9-8971-78e6a987dxlk.shtml

[6] D. Wilde, "Design research education and global concerns," *She Ji: The Journal of Design, Economics, and Innovation*, vol. 6, no. 2, pp. 170–212, Jan. 2020, doi: 10.1016/j.sheji.2020.05.003.

[7] A. Colorni, and L. Marescotti, *Libro Azzurro*. Politecnico di Milano, Milano, 1991.

[8] A. H. Nabizadeh, J. P. Leal, H. N. Rafsanjani, and R. R. Shah, "Learning path personalization and recommendation methods: A survey of the state-of-the-art," *Expert Systems With Applications*, vol. 159, p. 113596, Nov. 2020, doi: 10.1016/j.eswa.2020.113596.

[9] N. Souleles, V. Clemente, and N. A. G. Z. Börekçi, "Design Education: a trend in the right direction...," in *Springer eBooks*, 2022, pp. 255–260. doi: 10.1007/978-3-030-86596-2_19.

[10] F. Codignola, "Culture and Creativity Management: Milan as a global capital for value creation," *Symphonya*, no. 2, p. 108, Sep. 2017, doi: 10.4468/2016.2.10codignola.

[11] D. Colardyn and J. Bjornavold, "Validation of Formal, Non-Formal and Informal Learning: policy and practices in EU Member States1," *European Journal of Education*, vol. 39, no. 1, pp. 69–89, Mar. 2004, doi: 10.1111/j.0141-8211.2004.00167.x.

[12] UNESCO, UNESCO GUIDELINES for the recognition, validation and accreditation of the outcomes of non-formal and informal learning, 2012. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000216360

[13] Linguistic Integration of Adult Migrants (LIAM), Formal, non-formal and informal learning, Accessed 4 September, 2023. Retrieved from http://www.coe.int," https://www.coe.int/en/web/lang-migrants/formal-non-formal-and-informal-learning.

[14] G. A. Straka, "Informal learning: genealogy, concepts, antagonisms and questions," *Internationales Jahrbuch Der Erwachsenenbildung*, Jan. 2005, doi: 10.7788/ijbe.2005.3132.1.27.

[15] Expert Group Report, *Developing the creative and innovative potential of young people through non-formal learning in ways that are relevant to employability*. European Commission, 2014

[16] J. Niermann, L. Pizzuti, A. Duchateau and C. Rossi, with C. Bachmann, "Innovation, formal and informal education: can universities nurture the creativity of students?," *UNICA STUDENT CONFERENCE proceedings 2010.*

[17] A. Trotto and C. Hummels, "Designing in Skills - Nurturing Personal Engagement in Design," *Proceedings of IASDR 2013*.

[18] B. Lawson and K. Dorst, *Design expertise*. Architectural Press, Oxon, 2009.

[19] S. A. Barab and D. Kirshner, "Guest Editors' introduction: Rethinking Methodology in the Learning Sciences," *The Journal of the Learning Sciences*, vol. 10, no. 1–2, pp. 5–15, Apr. 2001, doi: 10.1207/s15327809jls10-1-2_2.