

## *A Multidisciplinary and Collaborative Approach: From the Academy to the Community*

Carla Cadete, Lusófona University, Portugal

The Asian Conference on Media, Communication & Film 2023  
Official Conference Proceedings

### **Abstract**

This article describes a co-creation practice between bachelor students from different courses for the community. An annual event organised by the 3rd-year undergraduate students from the Audiovisual Multimedia Communication at Porto Lusófona University since 2018. The yearly edition of the event *Multiplex – Cycle of Moving Images* in a collaboration between the Lusófona University of Porto and a local theatre – *Teatro Municipal do Porto/Rivoli*, with the presence of a national or international guest filmmaker. After Agnés Varda, Victor Erice, Manoel de Oliveira, Nan Goldin and others, in 2023 Sarah Driver. The films created by the finalist students will be presented in the first moment, followed by an interactive discussion with the audience in attendance. In the second moment, the guest gives a Masterclass followed by a retrospective cycle of his work organised in partnership with *Teatro Municipal Rivoli* and, for the first time this year, in *Cinema Batalha*, a newly renovated cinema in Porto. A collaborative practice in which undergraduate Communication Design students from the same university annually create the entire graphic image of the event. The project, supported by the City Hall, aims to promote culture and make it accessible to the entire community at no cost. This initiative provides a unique opportunity to equip students from different fields with the necessary skills to succeed in their future careers. Additionally, students from both degree programs can holistically apply their acquired knowledge. This an excellent example of a successful co-creation initiative that benefits higher education students and the local community.

Keywords: Multiplex, Cinema, Culture, Co-creation, Collaborative Practice, Academy, Lusófona University, Porto Community

**iafor**

The International Academic Forum  
[www.iafor.org](http://www.iafor.org)

## **Introduction**

Multiplex is an annual project organised by the Audiovisual Communication and Multimedia program at Lusófona University. Since 2018, the course leader has initiated a collaboration with the Communication Design program to create the logo and event design. This collaboration was well-received as it offered a valuable opportunity for students from both courses. Every year the audiovisual course could benefit from a graphic design image of his event coordinated by a Design professor. Also, it could have a range of solutions to select the best one. In contrast, Design students had the chance to see their proposals selected and implemented. The project is part of the second-year bachelor in Communication Design II subject. It is carried out by small groups of students, typically in pairs, who collaborate on generating ideas. The final selection of the logo and design was made jointly by the Design Professor and the event organizer, who also is the course leader of the Audiovisual and Multimedia Communication bachelor program.

A multidisciplinary and collaborative approach through a powerful way to bridge the gap between the academy and the community. By bringing together different disciplines and stakeholders, this approach can lead to innovative solutions and positive impact.

The academy catalyses knowledge and expertise in such an approach, bringing together students, educators and professionals from various fields. The focus is on addressing real-world challenges and engaging with the community to understand their needs and aspirations.

Through collaboration, diverse perspectives are brought to the table, enabling the exploration of complex issues from different angles. This interdisciplinary exchange fosters creativity, critical thinking, and the generation of new ideas that can address multifaceted problems effectively. The collaborative approach extends beyond the academic realm and involves active engagement with the community. This can take the form of partnerships with local organisations, businesses, government entities, and community members. By working together, the academy and the community can co-create relevant, sustainable, and beneficial solutions for all stakeholders.

Such collaborations provide valuable opportunities for students to apply their knowledge and skills in real-life settings. They gain practical experience, better understand the community's needs, and contribute to positive change. Furthermore, this approach transfers knowledge and expertise between academia and the community, fostering mutual learning and capacity building.

In summary, a multidisciplinary and collaborative approach that involves the active participation of the academy and the community can lead to innovative solutions, positive impact, and the cultivation of a strong partnership. It promotes a dynamic exchange of ideas, fosters practical learning experiences for students, and offers a better quality design product to Theatre and the community.

## **Literature Review**

Education professionals face complex daily problems that cannot efficiently address by single and disconnected approaches (Costa et al. 2019). Nonetheless, overcoming barriers and building bridges between diverse knowledge areas are effective approaches to intervene in complex problems (Bernini & Woods 2014).

Studies indicate that active learning strategies are crucial in higher education. Active learning methods can boost student performance and enhance academic achievement (Ruiz-Primo et al. 2011; Freeman et al. 2014). In addition, it is clear which student's understanding of the role that higher education institutions play in propelling the development of the fundamental skills future professionals are required to master once in the job market, even though the individual role is also perceived to be quite important. Many students would describe active learning strategies as engaging, often defined with words like participation, motivation, energy, action, direction, and connection (Cleveland, 2011; Russell, Ainley, and Frydenberg, 2005). As states Ginting (2021, p.215), one of the most important determinants of successful learning is student involvement, "Student engagement, in general, refers to active participation in a variety of academic and co-curricular or school-related activities, as well as a commitment to achieving learning objectives."

Nowadays, individuals face numerous challenges, especially in the competitive job market. Equipping students with the necessary skills ensures they are well-prepared to tackle these challenges effectively. In the first cycle of studies in Communication Design, our focus is on providing comprehensive training that enables students to respond to the diverse areas in which Communication Design operates today.

According to Goodyear, "Teaching can be understood as any activity which is undertaken with the intention of helping somebody learn. Teaching is not restricted to giving instruction. It also involves creating situations that are conducive to learning." (2015, p.30). Collaboration practices in an educational context open new avenues for learning and furthering a multiplicity of aims within the academy. Some of the advantages of collaborative working: (i) a greater resource than just the individual upon which to draw, (ii) several, rather than only one, potential 'leads' to maintain the momentum of your project and to refresh the initiative with new ideas and energies; (iii) Cross-fertilization of ideas and enthusiasm, (iv) the satisfaction of realizing a significant project that would have been unthinkable, and less enjoyable, without the support of others (Walsh & Kahn, 2010).

Adopting a multidisciplinary and interdisciplinary approach that incorporates real-world projects into the curriculum is crucial to adequately prepare students for the job market. Lusófona University acknowledges the significance of maximizing the potential of all courses to enrich students' knowledge and equip them with the necessary skills for the professional world. Particularly in the design field, creating new project briefs that involve authentic scenarios is of utmost importance. These projects enable students to gain practical experience and apply their skills in real-world situations. By tackling genuine design challenges, students enhance their problem-solving abilities, learn to work within constraints and develop a profound understanding of the design process.

Universities must review their programmes to equip students with innovative skills by integrating learning across disciplines and co-working with other courses and stakeholders, "Learning and innovation skills are increasingly being recognised as the distinguishing factors that separate students who are prepared for the complex life and work environments of the 21st century from those who are not" (Mansilla & Gardner, 2007).

To further enhance their capabilities, we prioritize the development of transversal skills. These skills enable students to apply their knowledge and expertise across different disciplines and contexts. By fostering interdisciplinary projects, we encourage students to explore connections between various areas of knowledge and apply their design skills in

diverse contexts. Participatory projects play a crucial role in our curriculum. We believe in the importance of collaboration and cooperation with stakeholders, which allow students to gain real-world experience and understand the practical applications of their work. By engaging in teamwork models and working closely with industry professionals, students develop a deeper understanding of the challenges and opportunities within the field of Communication Design. Furthermore, we encourage students to participate in international competitions. These competitions provide a platform for students to showcase their talents on a global scale, gain exposure, and receive recognition for their work. Participation in such competitions builds confidence and enables students to benchmark their skills against their peers worldwide, fostering a spirit of excellence and continuous improvement.

In alignment with these ideas, some universities have been developing some interdisciplinary design courses to improve students' abilities to operate across disciplines, and therefore contribute to them being better prepared for the job market (Harrison et al. 2007).

For all that has been pointed out, our first cycle of studies in Communication Design focuses on comprehensive training, equipping students with the ability to respond effectively to the multifaceted nature of Communication Design today. By emphasising transversal skills, interdisciplinary projects, participatory approaches, teamwork models, and international competitions, we ensure that our students are well-prepared for the challenges and opportunities they will encounter professionally.

### **Collaborative Practice and Value**

In our Communication Design Bachelor program, we encourage collaboration and multidisciplinary practices between different courses and also through guest lectures, workshops, and studio tours. These additional opportunities enhance our curriculum and contribute to our student's success. At our university, we aim to use the unique resources and expertise of each course and field of study by encouraging student collaboration. By working together, we can achieve more comprehensive and successful projects. The co-creation practice described in the article, where bachelor students from different courses collaborate on an annual event called Multiplex - Cycle of Moving Images, exemplifies a successful initiative that benefits the students and the local community.

The collaborative practice of Multiplex - Cycle of Moving Images offers numerous benefits and valuable experiences for design students, including:

- **Real-world project experience:** Participating in Multiplex allows design students to work on a tangible project with real outcomes. They can apply their design skills in a practical setting and see the impact of their work.
- **Interdisciplinary collaboration:** Collaborating with students from other courses, such as Audiovisual Multimedia Communication, exposes design students to different perspectives and approaches. This interdisciplinary collaboration fosters creativity and allows them to see how their design work fits into a broader event organisation and promotion context.
- **Networking opportunities:** Working closely with students from other fields and professionals from the theatre and guest filmmakers enables design students to expand their professional network. Connecting with industry professionals can lead to future job opportunities, internships, or collaborations.
- **Client interaction and feedback:** Design students can interact directly with the theatre and event organizers, gaining insights into client needs and preferences. This

experience is valuable in understanding how to communicate effectively with clients, manage feedback, and make design decisions based on client requirements.

- Portfolio enhancement: Creating the graphic image for Multiplex provides design students with a valuable portfolio piece. Being associated with a reputable event like Multiplex and showcasing their work in a real-world context can impress potential employers and clients in the future.
- Exposure to event management: Involvement in Multiplex exposes design students to event management and organization processes. They can understand how design plays a role in creating a cohesive event identity and promoting it effectively, giving them a well-rounded perspective on their profession.
- Teamwork and leadership skills: Collaborating with other students and working on a complex project like Multiplex helps design students develop teamwork and leadership skills. They learn how to contribute effectively to a team, communicate ideas, and take on leadership roles when necessary.
- Community impact: Being part of an initiative that benefits the local community and promotes culture can be personally rewarding for design students. Contributing their skills to a meaningful project like Multiplex allows them to see the positive impact of design in a broader social context.
- The participation of Erasmus students in Multiplex can serve as motivation for students, as they have the opportunity to work on actual projects. Furthermore, having their work chosen and showcased in the city's theatre is a testament to their impressive graphic work, boosting their confidence and motivation. Participating in Multiplex offers valuable opportunities for personal and professional growth as a future designer.
- Participating in Multiplex offers design students valuable personal and professional growth opportunities as future designers. It enhances their skills, expands their networks, and provides practical experiences to benefit them in their design careers.

## Methodology

The Multiplex project has evolved, changing venues and expanding its reach. From 2018 to 2021, the movies were showcased at Cinema Rivoli, followed by Teatro São João in 2022. Since 2023, the event has found a new home at Batalha Centro de Cinema.

In the first year of the partnership, in 2018, the Design course class created the Multiplex logo, which has remained unchanged. The logo was designed by Pedro Barros, an undergraduate student, and features the Kust typography. To keep it fresh, the logo can be updated with a new colour symbol each year, adding a touch of variety (Figure 1).

For the 14th edition of Multiplex, scheduled from May 30 to June 2, 2023, design students were required to work in pairs and develop a proposal for the event's poster. The poster specifications call for a size of 227x180cm. The team chosen to create the poster proposal will also be responsible for producing other graphic materials, such as a Facebook Cover (1200x628 px), a theatre screen version (16:9) with and without programming, an Instagram post (1200x628px), as well as posters of various sizes and uses for the interior and exterior of the Batalha Centro de Cinema.

The creative process for this project followed the *Design Thinking* methodology, consisting of four stages: problem definition, ideation and prototype, prototype testing, and implementation/problem solution (Lupton & Philipps, 2011).



Figure 1 – The Multiplex logo was designed in 2018 by Pedro Barros, who was an undergraduate Design student at that time. It is interesting to note that the logo symbol changes its color every year, which helps in establishing its unique identity.

**Problem Definition:** Participants (students, n=14) from the 2nd year of the Communication Design undergraduate program, was divided into small work groups of two students. Each pair were tasked with analysing all the Multiplex design projects selected since 2019. The objective of this phase was to ensure visual consistency with the event's graphic image.

In this phase, the students focused on studying the films and the artistic journey and work process of the guest director, Sara Driver. This stage played a crucial role in informing and shaping the subsequent phases of the project. The students immersed themselves in the films created by Sara Driver, thoroughly analyzing her artistic style, themes, and techniques.

By studying Sara Driver's body of work, the students gained valuable insights and inspiration for their creative process. They carefully observed and analyzed the guest director's visual language, narrative elements, and aesthetic choices. This deep understanding of Sara Driver's work was a foundation for developing the graphic choices that best align with her artistic vision. The students aimed to create graphic materials that effectively capture and reflect the essence of Sara Driver's films and artistic approach. They paid close attention to the visual motifs, colourer work's visual motifs, colour palettes, typography, and overall atmosphere present in her works. This research and analysis allowed them to make informed design decisions that successfully adapt their graphic choices to complement the guest artist's work.

By incorporating Sara Driver's artistic journey and work process into their design, the students aimed to create a cohesive and immersive experience for the audience. The graphic materials developed would align with the themes and aesthetics of Sara Driver's films, enhancing the overall impact and resonance of the Multiplex event.

This phase served as a crucial foundation for the subsequent phases, guiding the students' design choices and ensuring a cohesive and harmonious integration of Sara Driver's artistic vision into the project.

**Ideation and Prototype:** In this phase, students were required to study and evaluate the works of the guest filmmaker Sara Driver. This analysis served as a crucial foundation for making informed decisions regarding various design elements for the Multiplex event, including the selection of images, colours, typography, and overall graphic composition of the poster.

By closely examining Sara Driver's works, students deeply understood her artistic style, themes, and techniques. This knowledge allowed them to identify the visual and conceptual elements representative of Sara Driver's filmmaking approach.

After this study, students were instructed to create a mind map and mood board. These visual tools helped them organize their ideas and inspiration while exploring different design directions. The mind map allowed students to brainstorm and connect concepts related to Sara Driver's works, identifying key themes, motifs, and ideas that could be incorporated into the design process. The mood board, on the other hand, served as a visual collage that captured the desired aesthetic and atmosphere of the project, featuring relevant imagery, colour palettes, and typography examples.

In addition to the mind map and mood board, students were prompted to identify keywords to guide their design process. These keywords acted as design principles and anchors, ensuring that the resulting graphic materials would effectively communicate the essence of Sara Driver's works. Students harnessed their creativity by engaging in ideation and prototyping activities and using the insights gained from studying Sara Driver's films that inspiration into concrete design choices. This process helped them generate multiple design concepts and experiment with various visual elements, allowing for an iterative exploration of ideas.

The mind maps, mood boards, and identified keywords facilitated the development of well-informed and visually impactful graphic materials aligned with the guest filmmaker's artistic vision and guided their design process.

**Prototype Testing:** During the prototype testing phase, students diverged to converge, emphasizing hands-on exploration and experimentation with various materials and techniques. This approach aimed to foster creativity, encourage innovative solutions, and expand the range of possibilities for the final design choice.

To begin with, students embraced a divergent mindset, exploring a wide range of ideas and solutions. They actively sought out different materials, tools, and techniques to experiment with, pushing the boundaries of their creativity. This phase allowed them to avoid conventional thinking and explore unconventional design approaches (Figures 2 and 3).

By engaging in hands-on exploration, students gained a deeper understanding of the materials and techniques they were working with. They tested different combinations, manipulated materials, and experimented with various methods to discover new and unique possibilities. This process enabled them to uncover innovative solutions that may have yet to emerge through digital means alone.

Throughout the prototype testing phase, students continuously iterated and refined their ideas. They presented their prototypes to their peers, instructors, and potentially other stakeholders, seeking feedback and critiques. This convergent approach allowed them to evaluate the advantages and disadvantages of each potential solution and incorporate feedback into their design process.

By carefully analysing and considering the feedback received, students made informed decisions about which ideas to pursue and how to refine their prototypes. This iterative process ensured that their projects progressed focused and deliberately, gradually converging towards the final design choice.

The prototype testing phase embraced a divergent-to-convergent approach, encouraging students to explore various materials and techniques to generate innovative ideas. Through hands-on experimentation and iterative refinement, students maximised their creative

potential and arrived at a final design choice informed by a comprehensive exploration of possibilities.

By manually exploring different techniques and creative processes, students were able to gain a deeper understanding of their ideas and how they could be realised in physical form. This approach allowed them to consider alternative methods and materials that they might not have otherwise explored if they had solely relied on digital tools.



Figures 2 and 3 – In the prototype testing phase, students diverged to converge, emphasising hands-on exploration and experimentation with different materials and techniques. João Pedro Martins and Gonçalo Iuri student's. Multiplex 2022.

Students presented their prototypes to their peers, instructors, and other stakeholders throughout this design phase. They communicated the advantages and disadvantages of each potential solution, incorporating feedback and critiques into their design process. This convergent approach helped them evaluate and refine their ideas by considering different perspectives and insights. Furthermore, students were expected to analyze and consider all feedback received carefully. They understood the importance of using feedback as a valuable resource for progress and improvement. By critically assessing the feedback, they could identify areas where their prototypes needed refinement or adjustment, leading to iterative development.

Overall, this prototype testing phase encouraged students to engage in a hands-on, exploratory process. It promoted a holistic approach to design by incorporating physical experimentation, critical analysis of potential solutions, and active incorporation of feedback. This methodology aimed to enhance the students' projects' creativity, innovation, and ultimate success.

Stage 4 – During the implementation phase, student groups prepared a 10-minute presentation to showcase their projects, focusing on developing and finalising their solutions. The presentation was delivered to the entire group, allowing each group to explain their creative process and justify the steps they took in their design journey.

The final assessment criteria encompassed several key aspects to ensure a comprehensive and iterative creative process:

- **Creativity:** The designs were evaluated based on originality, innovative thinking, and the ability to offer unique solutions to the given problem. Students were encouraged to think creatively and bring fresh perspectives to their projects.



- **Relevance:** The projects were assessed for addressing the problem or challenge. It was important for the solutions to be directly applicable and aligned with the initial problem statement, ensuring that the proposed designs were relevant.
- **Impact:** The potential impact of the designs was considered. This criterion examined how the solutions could create positive change or solve the identified problem effectively. Students were encouraged to think about their designs' broader implications and outcomes.
- **Hierarchy:** The organisation and structure of the designs were evaluated. Students were expected to demonstrate a clear hierarchy of information and visual elements, ensuring that the most important aspects were appropriately emphasised and communicated.
- **Legibility:** The clarity and readability of the designs were assessed. This criterion focused on how well the information was presented and understood by the intended audience. Students were expected to communicate their ideas clearly, ensuring the design elements and information were easily comprehensible.

Students' work was guided and supported throughout the implementation phase to facilitate their progress. The evaluation process served as a means to provide feedback and guidance, helping students refine their designs, iterate on their ideas, and make improvements based on the received input.

Students engaged in a comprehensive and iterative creative process by adhering to these assessment criteria. The evaluations helped them better understand their designs and encouraged continuous improvement throughout the implementation phase.

Overall, the implementation phase aimed to showcase and assess the students' final solutions while providing guidance and feedback to foster a comprehensive and iterative approach to the creative process. The assessment criteria ensured that the designs were evaluated based on their creativity, relevance, impact, hierarchy, and legibility, ultimately leading to development of well-considered and impactful projects.

Once the proposals are finalised, they are forwarded to the Director of Audiovisual and Multimedia, who is also responsible for the Multiplex event. The top-performing pair of students then worked on the remaining graphic elements, supervised by the Communication Design professor (Figures 4, 5 and 6).

The involvement in Multiplex exposes students to event management and organization processes and helps them develop teamwork and leadership skills. Finally, contributing to a meaningful project like Multiplex can be rewarding and contribute to a student's personal and professional growth (Figures 7, 8 and 9).



Figures 4 and 5 – Prototype testing phase, students diverged to converge, emphasising hands-on exploration and experimentation with different materials and techniques. João Pedro Martins and Gonçalo Iuri student's. Multiplex 2022



Figure 6 – Batalha Cinema Center website. Erasmus students Gabriela Osóbka and Ivan Večerek, design authors of the Multiplex 2023.



Figures 7 and 8 – On May 30, 2023, at the Batalha Cinema Center, Sara Driver and João Sousa Cardoso, Director of Audiovisual and Multimedia (left photo). Erasmus students, Gabriela Osóbka and Ivan Večerek, design authors of the event with Sara Driver.



Figure 9 – Multiplex 2023, at the Batalha Cinema Center, Erasmus students Gabriela Osóbka and Ivan Večerek, design authors of the event with their poster.

## Conclusions

This article highlights a co-creation practice that involves bachelor students from two different courses, intending to benefit higher education students and the community and provides a range of evidence of the value of co-creation projects in higher education. Named Multiplex - Cycle of Moving Images, this annual event has been organized in Lusófona University since 2019 by 3rd-year undergraduate students from the Audiovisual Multimedia Communication program at Porto Lusófona University.

In the Multiplex event, the responsibility for creating the graphic image is assigned to the Design course students. This co-creation project brings multiple benefits to the Design students and the students of other courses involved, such as Audiovisual and Multimedia Communication. Furthermore, this collaboration adds significant value to the event itself.

A collaborative and interdisciplinary environment is fostered by involving students from different courses in creating the graphic image. This co-creation process allows students to leverage their diverse skills, perspectives, and expertise, resulting in a more comprehensive and innovative graphic image for the event.

This project allows the Design course students to apply their design knowledge and skills in a real-world context. It allows them to showcase their creativity, problem-solving abilities, and ability to communicate visually. Collaborating with students from other courses also enables them to gain insights into different disciplines, broadening their horizons and fostering a multidisciplinary approach to design.

Additionally, the collaboration between the Design course students and students from other courses brings fresh perspectives and ideas. It encourages cross-pollination of ideas, allowing for the integration of different viewpoints and expertise. This synergy between disciplines often leads to more innovative and impactful outcomes.

Moreover, this co-creation project adds value to the Multiplex event itself. By involving students from various courses, the event benefits from a holistic approach to design, incorporating different dimensions of visual communication and multimedia elements. The graphic image created by the collaborative effort reflects a more comprehensive understanding of the event's goals, themes, and target audience.

Overall, the collaboration between Design course students and students from other courses in creating the graphic image for the Multiplex event brings multiple benefits. It fosters a collaborative and interdisciplinary environment, provides valuable learning experiences for all students involved, and enhances the overall quality and impact of the event.

In conclusion, the co-creation practice of Multiplex - Cycle of Moving Images is an outstanding example of a successful initiative that benefits higher education students, the theatre, and the local community. This collaboration between the university, the theatre, and the City Hall creates a significant impact by promoting culture, fostering interdisciplinary collaboration, and providing practical learning opportunities.

This collaborative practice can offer design students many benefits and valuable experiences. By working on Multiplex, students can practice their design skills and see their work's real-world impact. Collaborating with students from other fields, such as Audiovisual Multimedia Communication, provides fresh perspectives and encourages creativity. Erasmus students can also benefit from participating in Multiplex by gaining experience and showcasing their work in a real-world context, which can boost their confidence and motivation. Participating in Multiplex is a valuable experience for design students and can help them grow personally and professionally. Additionally, working closely with professionals in the theatre industry can lead to future job opportunities, internships, or collaborations. Students can also gain insight into client needs and preferences, which is crucial for effective communication and decision-making in the design profession. Creating the graphic image for Multiplex is a great addition to any design student's portfolio, and being associated with a reputable event like Multiplex

can impress potential employers and clients. Furthermore, involvement in Multiplex exposes students to event management and organization processes and helps them develop teamwork and leadership skills. Finally, contributing to a meaningful project like Multiplex can be rewarding and contribute to a student's personal and professional growth.

### **Acknowledgements**

This study was funded by the Foundation for Science and Technology – FCT (Portuguese Ministry of Science, Technology and Higher Education), under the grant UIDB/05380/2020.

## References

- Alexandra R. Costa, Mafalda Ferreira, Ana Barata, Conceição Viterbo, José Salgado Rodrigues & José Magalhães (2019). Impact of interdisciplinary learning on the development of engineering students' skills, *European Journal of Engineering Education*, 44:4, 589-601, DOI:10.1080/03043797.2018.1523135
- Ananiadou, Katerina and Claro, Magdalen (2009). *21st Century Skills and Competences for New Millennium Learners in OECD Countries*. Working Paper. OECD, Paris.
- Bernini, Marco, and Angela Woods. 2014. "Interdisciplinarity as Cognitive Integration: Auditory Verbal Hallucinations as a Case Study." *Wiley Interdisciplinary Reviews: Cognitive Science* 5 (5): 603–612. doi:10.1002/wcs.1305
- Cleveland, B.W. (2011). *Engaging spaces: Innovative learning environments, pedagogies and student engagement in the middle years of school* (Doctoral dissertation). Retrieved from: <https://pdfs.semanticscholar.org/e602/1e9e1df68311a7374a600c9ec3fb69a9b700.pdf>
- Ginting, D. (2021). Student Engagement, Factors, and Methods Affecting Active Learning in English Language Teaching, *Veles*, Vol. 5, No. 2; October 2021 E-ISSN 2579-7484 Pages 215- 228 DOI: <http://dx.doi.org/10.29408/veles.v5i2.3968>
- Goodyear, P. (2015). Teaching as design. *Herdsa review of higher education*, 2(2), 27-50.
- Harrison, Gareth P., D. Ewen Macpherson, & David A. Williams. (2007). "Promoting Interdisciplinarity in Engineering Teaching." *European Journal of Engineering Education* 32 (3): 285–293. doi:10.1080/03043790701276775
- Ruiz-Primo, M. A., Briggs, D., Iverson, H., Talbot, R., & Shepard, L. A. (2011). Impact of undergraduate science course innovations on learning. *Science*, 331(6022), 1269–1270. <https://doi.org/10.1126/science.1198976>
- Walsh L., & Kahn, P. (2010). *Collaborative Working in Higher Education – The Social Academy*. New York and London: Routledge, Taylor & Francis Group.