

# UNLOCKING CREATIVE PROBLEM-SOLVING WITH ARTIFICIAL INTELLIGENCE

**Jarosław Orzechowski, & Daria Kamińska**  
*SWPS University, Wrocław Faculty of Psychology (Poland)*

## Abstract

Artificial Intelligence (AI) is increasingly used to facilitate creativity. Zoddy is an AI-assisted platform designed to help users generate innovative ideas and collaborate on creative projects. It offers a suite of tools that make creative processes much more efficient. For individuals, Zoddy makes it easier to come up with creative ideas and collaborate with others. For businesses, Zoddy can provide a competitive edge as it can help them to generate innovative ideas and collaborate on projects, saving time and money. We will present a case study of how to use Zoddy for business solutions. A problem-solving approach is taken that demonstrates how to move from problem identification to planning the implementation of developed solutions. Clearly, AI technologies can enhance human creativity and innovation. However, we also point out that this can have both positive and negative effects on the development of humanity.

**Keywords:** *Creative thinking, Artificial Intelligence, innovation.*

---

## 1. Artificial Intelligence and creative problem-solving

Creativity is essential in many areas, from art and design to business strategies and problem-solving. Recent advances in AI can provide tools that drive creativity, improving problem identification and solution generation (Amabile, 2020; Ali Elfa & Dawood, 2023; Esling & Devis, 2020).

AI-powered tools for ideation and brainstorming transform the way individuals and organizations approach creative problem-solving. AI's learning algorithms and data assessment capabilities enhance innovation by providing contextual insights and fresh perspectives for complex problems. For instance, Generative Pre-trained Transformers demonstrate AI's capability to stimulate human-like text generation that can inspire a flow of innovative ideas in brainstorming sessions (Zhu & Luo, 2021). AI reduces cognitive load by processing a vast amount of information efficiently. It weaves structured ideation paths from unstructured data collection, allowing for quicker decision-making (Gandhi et al., 2023).

AI-enhanced tools make the brainstorming process more time-efficient and can help to remove cognitive constraints, thus enabling a greater flow of new and original ideas (Haefner et al., 2021). AI tools like idea generators use semantic networks to facilitate the spread of activation of concepts in memory. By connecting different knowledge areas, these generators feed users with prompts that can lead to novel ideas quickly (Beaty et al., 2014). Moreover, AI can eliminate psychological hindrances such as social loafing, evaluation apprehension and production blocking, frequently encountered during brainstorming sessions. There is less pressure to conform, which leads to a greater diversity in the ideas produced (Rosenberg, 2015). AI helps users evolve their ideas by iterating and combining them on the basis of selected criteria (Chen et al., 2019). Research also suggests that using 'Multi-Criteria Decision Making' methods with AI technologies helps rank generated ideas according to predefined criteria, like novelty or feasibility, thereby saving considerable deliberation time (Ali et al., 2023).

## 2. The Zoddy platform, supported by Artificial Intelligence

Zoddy is an AI-based platform and suite of tools designed to drive creativity. Zoddy's functions are based on advanced algorithms grounded in Large Language Model principles (Huang & Rust, 2021). The application (now in the prototype phase) propels creative ideas and assist users throughout the collaborative creative process. The AI component of Zoddy is designed to offer insights and alternatives, thereby augmenting the creative capabilities of its users. It guides thinking by applying the Creative Problem Solving model (Parnes, 1967) to suggest subsequent steps in the creative process.

For individuals, Zoddy provides much-needed structure while spurring innovative thought. It empowers users by mitigating common challenges – from overcoming creative blocks to synthesizing collective ideas effectively – thereby encouraging productivity and idea execution.

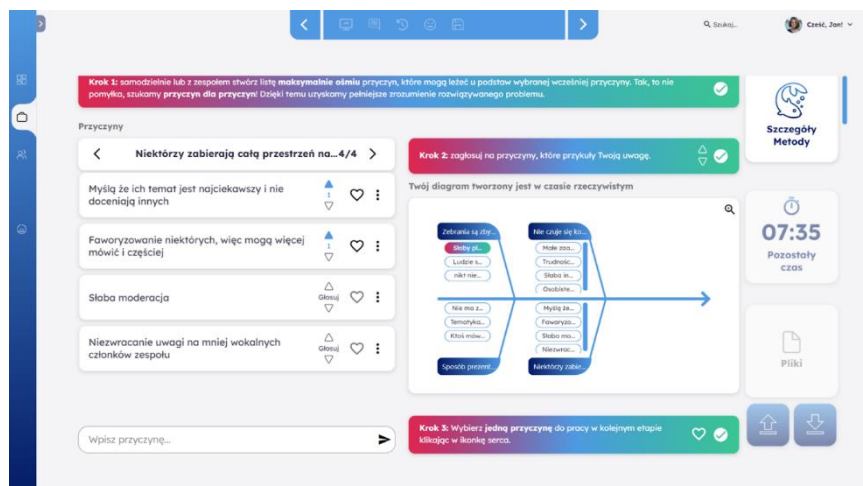
When it comes to business innovation processes, Zoddy can give organizations a competitive edge by means of swift ideation capabilities and efficient project collaboration. Using the features offered by Zoddy’s platform, businesses could benefit from saved time and costs associated with traditional brainstorming methods, all while boosting their innovative output.

Zoddy incorporates the aforementioned principles in order to help individual creatives or corporate teams bypass the common roadblocks that are often encountered in creative collaboration. There is already evidence showing how organizations that implement such technologies can improve efficiency while boosting their innovativeness (Füller et al., 2022).

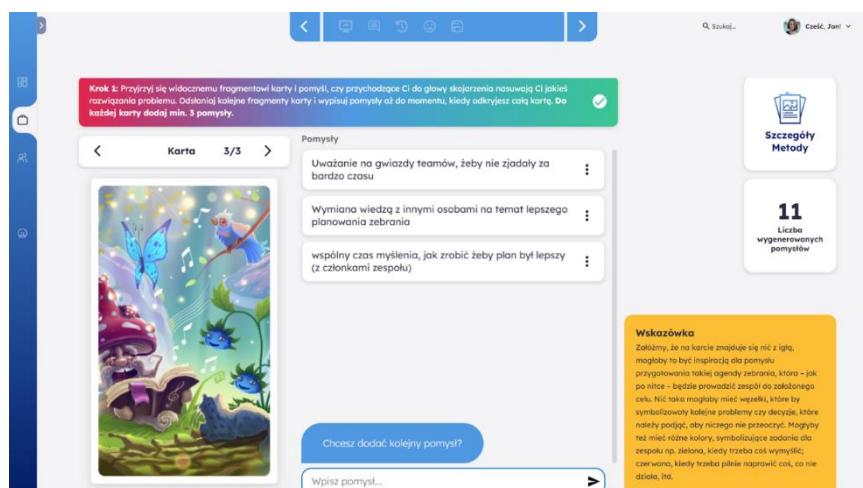
### 3. Case study – utilizing Zoddy for innovative business solutions

A case study demonstrating the practical application of Zoddy reveals its utility as an intelligent problem-solver within a business context. The creative process addresses the problem of *how to increase the effectiveness of team meetings?* Zoddy uses Basadur’s Simplex model (1999), which is structured as follows:

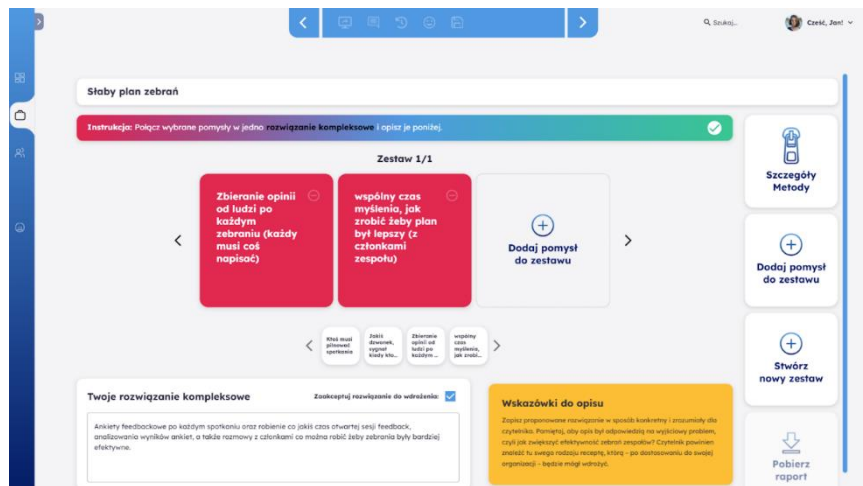
(1) the first phase involves problem-finding (identifying the challenge), fact-finding (accumulating relevant information related to the identified problem), and problem-definition (narrowing down to the most promising problem). The main method used in this phase is the Ishikawa Fish Diagram.



(2) the second phase is problem-solving, which includes idea-finding (generating numerous solutions), evaluation and selection (applying judgment criteria to assess potential solutions and determine which should be implemented). In this case, the Superposition technique is used to find ideas.



The Zipper technique is used to evaluate and select the problem-solution.



(3) the third phase is solution implementation, which includes action-planning (developing specific actions for the implementation of previously generated solutions) and gaining acceptance (overcoming resistance from others to the proposed changes). Here, the Implementation Planning technique is used.

#### 4. Summary

Using AI in creative problem-solving, we can fundamentally transform the way we approach complex challenges. AI is poised to become an invaluable partner in unlocking unprecedented levels of ingenuity across various industries. However, this has certain ethical (e.g. a bias in AI algorithms, privacy and data protection, transparency and accountability) and developmental implications. The pros and cons of AI's impact on humanity are a reminder of this complex relationship between machines and human progress.

Platforms like Zoddy demonstrate how intelligently used technology can propel creative problem-solving through easy collaboration on projects amongst individuals and organizations while saving time and money. They stimulate divergent thinking and amplify creative outputs by minimizing the roadblocks to creativity. As such technologies enter our lives, we need to have ongoing discussions about policies safeguarding individual rights while embracing tech-enabled progress.

#### References

- Ali Elfa, M.A., & Dawood, M.E.T. (2023). Using Artificial Intelligence for enhancing Human Creativity. *Journal of Art, Design and Music*, 2(2), 106-120.
- Ali, R., Hussain, A., Nazir, et al. (2023). Intelligent Decision Support Systems – An Analysis of Machine Learning and Multicriteria Decision-Making Methods. *Applied Sciences*, 13(22), 12426.
- Amabile, T.M. (2020). Creativity, artificial intelligence, and a world of surprises. *Academy of Management Discoveries*, 6(3), 351-354.
- Basadur, M. S. (1999). *Simplex: A Flight to Creativity*. The Creative Education Foundation.
- Esling, P., & Devis, N. (2020). Creativity in the era of artificial intelligence. *arXiv preprint arXiv:2008.05959*. <https://doi.org/10.48550/arXiv.2008.05959>
- Füller, J., Hutter, K., et al. (2022). How AI revolutionizes innovation management – Perceptions and implementation preferences of AI-based innovators. *Techn. Forecast & Soc. Change*, 178, 121598.
- Gandhi, T.K., Classen, D., Sinsky, C.A., Rhew, D.C., Vande Garde, N., Roberts, A., & Federico, F. (2023). How can artificial intelligence decrease cognitive and work burden for front line practitioners? *JAMIA Open*, 6(3), ooad079.
- Haefner, N., Wincent, J., et al. (2021). Artificial intelligence and innovation management: A review, framework, and research agenda. *Technological Forecasting and Social Change*, 162, 120392.
- Rosenberg, M. (2015). *Society and the adolescent self-image*. Princeton University Press.
- Zhu, Q., & Luo, J. (2021). Generative Pre-Trained Transformer for Design Concept Generation: An Exploration. *Proceedings of the Design Society*, 2, 1825-1834.

*Disclaimer:* This paper is an overview and does not represent a specific endorsement or promotion of any products mentioned. The Zoddy application is currently a concept that uses AI in an innovative and ethical way to support humans in creative problem solving.