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From learners to lead users: co-creation through student coaching

Nikolett Huszak*

Obuda University, Keleti Karoly Faculty of Business and Management, Tavaszmező u. 15-17, 1084 Budapest, Hungary

E-mail: huszak.nikolett@uni-obuda.hu

Monika Garai-Fodor

Obuda University, Keleti Karoly Faculty of Business and Management, Tavaszmező u. 15-17, 1084 Budapest, Hungary

E-mail: fodor.monika@kgk.uni-obuda.hu

* Corresponding author

Abstract: The rise of Industry 5.0 and growing social uncertainty are fundamentally reshaping expectations for innovation management, bringing human-centered and value-driven approaches to the forefront. This study examines the role of student coaching as a structured learning space that elevates students to the position of lead users. The research employs a mixed-methods approach: simulation tasks, focus group interviews, and a quantitative questionnaire survey conducted on a sample of 597 participants. The results show a significant correlation between openness to self-development and the development of innovation competencies-such as empathy, adaptability, and collaborative willingness. The theoretical contribution of the study is the extension of the lead user theory to higher education, while from a practical perspective, it positions coaching as a strategic innovation management tool that enables future professionals to engage in socially responsible innovation.

Keywords: Gen Z, coaching, lead user, co-creation, Industry 5.0, Education 5.0, higher education, innovation competencies, soft skills, primary research

1 Problem statement: Innovation Management challenges in Industry 5.0

Rapid technological change, the emergence of Industry 5.0, and growing social uncertainty are redefining expectations toward future employees and innovators (*Industry 5.0 - Research and innovation - European Commission*, 2024). Innovation management is no longer limited to technological efficiency or market success; it increasingly requires human-centered, socially responsible, and value-driven approaches (Silva and Marques, 2020). The study emphasizes that while innovation literature highlights co-creation, soft skills, and user involvement, empirical evidence on how higher education can

systematically support these competencies remains limited. Universities are under pressure to develop graduates who are not only technically prepared but also capable of empathy, collaboration, reflection, and responsible innovation. In this sense, student coaching is a structured learning space in which students gradually learn the collaborative and reflective patterns necessary for innovation. Innovation here is not an immediate output, but a process of development.

The overall research project started in February 2025 based on an idea, its goal is to create a prototype in a co-creation process with the relevant users to generate lead-users.

2 Current understanding

According to the literature, users often encounter new needs and problems sooner than organizations and therefore possess valuable knowledge about future solutions. This phenomenon was identified early on by Eric von Hippel, who pointed out with his concept of lead user innovation that user-initiated innovations have significant market and social value (von Hippel, 2009; Benkirane and Aiboud Benchekroun, 2025) . It applies Eric von Hippel's interpretation, according to which a lead user is a user who (1) experiences future needs before the majority and (2) expects significant benefits from the development of the solution. In the context of higher education, students can be interpreted as "novice lead users" in this sense: they are early perceivers of their own future professional and innovation challenges, who take an active role in shaping their competence development processes and the coaching program. In recent decades, UDI has become closely linked to co-creation, open innovation, and human-centered design approaches. Research has primarily examined how users can be involved in a structured manner in the various phases of innovation (idea generation, prototype development, testing) in a corporate and industrial context. Based on that, student coaching acts as a support mechanism that promotes self-reflection, empathy, cooperation, and problem awareness-the competencies that are fundamental to the success of user-driven innovation (Dollinger, Lodge and Coates, 2018; *Lego Takes Customers' Innovations Further*, 2023).

3 Research questions

Based on the theoretical frameworks presented, the empirical focus of qualitative research, and business and educational examples, we sought answers to the following questions.

1. How does student coaching contribute to the development of students' lead user role in higher education?

   Hypothesis 1: Based on our assumption, the role of lead user does not yet exist; therefore, the opportunity lies in transforming the students who are the first to use the coaching into lead users.

2. How does a coaching-based learning environment support the emergence and functioning of co-creation processes in education?

Hypothesis 2: Our hypothesis is that, thanks to the presence of core coaching competencies, the learning environment can become more open and, as a result, more creative, while the fear of making mistakes is reduced

3. What is the relationship between students' openness to self-development and their receptiveness to user-driven innovation?

   Hypothesis 3: Our hypothesis is that participants who engage in self-improvement at a higher rate are also more open to innovative (simulation-based) approaches.

4 Research Aim and Conceptual Framing

The model presented follows a mechanism-based approach: coaching -> increased psychological safety and self-efficacy -> active participation and collaborative creativity -> innovation orientation. Coaching does not directly generate "innovation results," but rather acts through psychological and behavioral mediators that are prerequisites for co-creation-based innovation processes (Whitmore, 2009; Kahu and Nelson, 2018). The theoretical background of the model is provided by Self-Determination Theory, according to which supporting autonomy, competence, and relatedness generates intrinsic motivation (Ryan and Deci, 2000). Coaching supports active, self-directed innovation participation by strengthening these basic psychological needs. Students are not passive service consumers, but value-creating co-actors who jointly create development value in the coaching process or they can create the learning space with the institute.

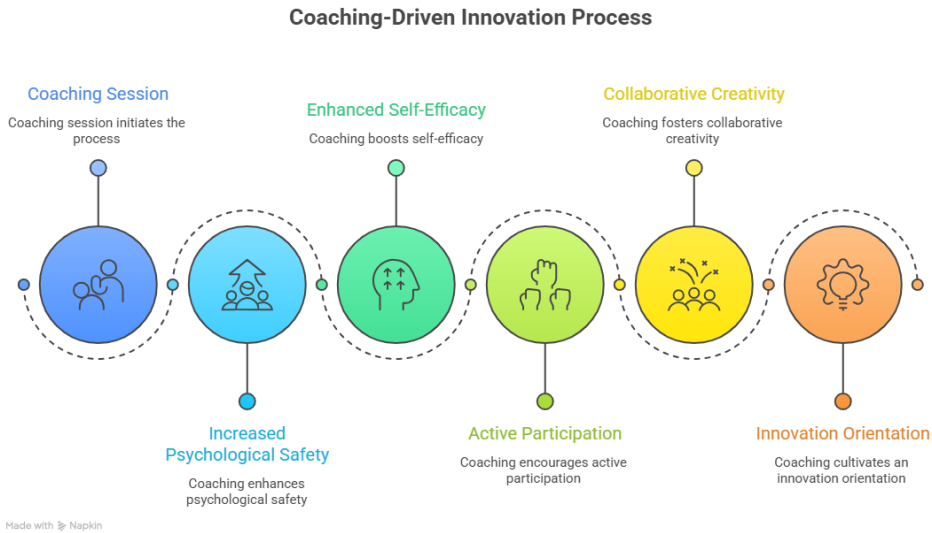

Figure 1 Own figure: Coaching driven innovation process created by Napkin.ai

5 Research design and Methodology

This section points out the mixed-methods research design applied in the study.

Table 1 Research design

February 2025-February 2026	*Phase 1* *Qalitative*		*Phase 2* *Quantitative*
Intervention	Simulation-based Alpha testing	Focus group	Standardised online questionnaire
N	9	9	597

Source: N=597, 2025, primary research

5.1 Qualitative Phase

Simulation Design

The simulation places participants in the role of a product development team advising to a fictional technology company facing an operational and financial crisis. Participants receive extensive company documentation (financial statements, organisational charts, product histories) and interact with AI-embodied stakeholders (Head of Engineering, Head of Marketing Director, Head of Finance) via a chat interface, within a 70-minute window. The simulation is coaching-informed: AI agents respond with open-ended, clarifying prompts rather than prescriptive answers; the human facilitator refrains from directive guidance throughout (Burgues, Goujet and Zaraik, 2024; Bauer *et al.*, 2025).

Participants and Data Collection

Three workshops were conducted at a Hungarian university. Workshop 1 (WS1) involved three student participants (2 male – Gen Z, 1 female; Gen Y). Workshop 2 (WS2) involved two postgraduate students (2 male-Gen Z). Workshop 3 (WS3) involved a mixed intergenerational group of four participants (students – Gen Z and teachers – Gen X), providing an inter-generational and inter-role perspective. All nine participants provided informed consent; sessions were audio-recorded and transcribed anonymously. Immediately following each simulation, a semi-structured focus-group interview was conducted covering: motivation, prior simulation experience, engagement, role immersion, soft-skill usage, teamwork dynamics, simulation design evaluation, and self-reflection. Transcripts were analysed using thematic analysis (Braun & Clarke, 2006), with codes developed iteratively against the three RQs.

5.2 Quantitative Phase

The second phase involves a standardized online questionnaire focusing on attitudes toward coaching and perceived changes in innovation-related competencies such as self-efficacy, adaptability, and innovative thinking. The sampling strategy (heterogeneous snowball sampling) and sample size (597 respondents) are highlighted. Descriptive statistics and correlation analyses using SPSS are outlined as the main analytical techniques. However, it is important to emphasize the current limitations of the research. The results so far are based on self-reported questionnaire data and, due to the nature of the sampling, are valid for the given sample. The cultural context is another limitation, because the data collected during the quantitative research phase came exclusively from a local sample. The subsequent stage will involve conducting a survey of an international sample, followed by a comparison. The research measured attitudes, openness, and perceived development. Measuring actual, observable behavioral changes was not the goal of the research at this stage.

6 Findings

The study highlights strong student openness toward self-development and innovation-oriented educational solutions. Results confirm a significant relationship between the perceived importance of self-development and openness to coaching and simulation-based learning.

Qualitative insights show that students interpret self-development as both an adaptive response to labor market uncertainty and a strategic resource for innovation. Key competencies identified include empathy, communication, teamwork, creative problem-solving, adaptability, and reflective thinking (Carden, Jones and Passmore, 2022).

Co-creation manifested at two levels: within-session collaboration between participants, and a meta-level co-creative orientation toward the simulation design itself (Omland *et al.*, 2025).

Generative dialogue. WS3's intergenerational pairing (student and teacher) produced the richest co-creative dynamics in the dataset:

> "She is older than me, but she was listening to me when I told her any idea... the 70 minutes passed too quickly." (WS3, P2)

The asymmetric status relationship did not inhibit co-creation; the simulation's shared task dissolved conventional hierarchies, enabling genuine generative exchange. Participant 4 confirmed the progression from operation to co-creation in almost textbook terms:

> "At the very beginning it was operation, collaboration, co-creation—we were in the flow, we going to patent our solution at the end of this session." (WS3, P4)

In addition to all this, the results also confirmed that respondents are generally open to trying coaching; they consider it important for coaching services to be available at the university, and they themselves would be willing to participate in a coaching-based self-awareness group (Table 2). Although the average scores do not yet indicate as strong a positive attitude as seen in the assessment of soft skills, in our view, one of the main reasons for this is that, in higher education and teaching, the provision of coaching services and the integration of content related to coaching and self-awareness into

classroom instruction and curricula have not been common practice to date.

Table 2.: Perceptions of coaching services available in higher education

	I would be open to trying coaching in a university setting	I think it is important for the university to offer coaching services	I would love to participate in a coaching-based self-awareness group
Mean	2,80	2,86	2,67
Std. Deviation	0,913	0,873	0,940

Source: own research, N=597 (average, where 1 = strongly disagree, 4 = strongly agree)

When we sought to determine what the experiences have been with various coaching techniques and which technique has generally met with the greatest openness, we found that respondents were most open to experience-based methods (Table 3).
Most people have tried one-on-one conversations and have had positive experiences with them. The second most popular technique, which has been tried and provides a positive experience, is coaching based on the use of visualization and goal-setting tools.
Among the techniques respondents have tried, they reported being most disappointed with group coaching.
The greatest resistance (have not tried it yet, nor would they like to) was toward coaching based on improvisational techniques.
The techniques that respondents have not yet tried but would very much like to try in the future—that is, those that generate the greatest curiosity and willingness to try among the respondents—are coaching based on AI-supported tools, role-playing and simulation exercises, and online, virtual coaching (in our view, the latter was determined primarily by the age characteristics of the respondents).

Table 3.: Openness to various coaching techniques and a willingness to try them out

Coaching techniques	**Yes, and my experience has been positive**	**Yes, but my experience so far has been negative**	**No, and I don't want to participate**	**No, but I would like to participate in the future**
Face-to-face conversations	**48,9**	5,5	26,3	19,3
Group coaching	18,9	**8,2**	31,2	41,7
Online/virtual coaching	15,9	7,7	32,2	**44,2**
Visualization and goal-setting tools (e.g., future map, vision board)	27,8	6,2	37,4	28,6
questioning techniques and feedback workshop	15,9	5,9	37,4	40,9

role-playing and simulation exercises	18,9	7,9	29,5	**43,7**
self-reflection journaling	**20,4**	5,7	32,8	41,0
AI-powered coaching tools	15,2	5,0	34,8	**44,9**
Improvisation techniques	**17,9**	5,7	**39,7**	36,7

Source: own research, N=597

7 Contribution

From a theoretical perspective, the study contributes to innovation management literature by integrating coaching, employee development, and co-creation into a unified framework. It extends the lead user theory into higher education contexts. From a practical perspective, the study highlights implications for universities, educators, and innovation policymakers. Student coaching is presented as a scalable, participatory, and value-oriented innovation management tool that supports sustainable talent development.

8 Practical implications

The conclusion summarizes the study's core contribution: repositioning student coaching as a strategic innovation management practice. It reiterates the importance of developing human-centered, socially responsible innovators. When combined with a simulation tool designed to develop soft skills, it holds great potential for strengthening students' commitment to specific subjects and making their progress more effective.

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