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CREATIVITY IN PROJECT MANAGEMENT TEACHING: THE EVIDENCE FROM SYSTEMATIC LITERATURE REVIEW

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Abstract. This paper presents a systematic literature review of the empirical studies on project management teaching in higher education, examining to what extent teaching methods are oriented towards creativity. The systematic review is based on an analysis of relevant papers published between 1983 and 2019 and extracted from the electronic the *ProQuest* database and *International Journal of Project Management*. Literature suggests diverse benefits creativity can bring about to project environment including communication, conflict management, goal setting, and addressing increasing complexity of projectification impacted environment. However, the systematic review revealed that creativity is virtually not addressed at all in teaching of project management in higher education, even though overall diverse teaching methods and learning methods are used in the education of future project managers.

Keywords: creativity, future, higher education, project management, teaching methods.

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1. Introduction

Changing societies and rapid technological development reshapes skill set required for job market (McGuinness et al., 2023). Specifically, Fourth and Fifth Industrial Revolutions prioritize different personality characteristics in today's workplace than before, such as critical thinking, decisions making, and flexibility (Xu et al., 2021). This situation raises the question whether current challenges are reflected in higher education sector, specifically in teaching methods and content employed?

Different study disciplines emphasize particular aspects in the educational process in this regard. For example, technical studies focus on content of taught subject, meanwhile education science has firmly established that the way we teach is of utmost importance, with yet other disciplines, *e.g.*, business an organizational science, surrounded by some ambiguity in this regard. It is imperative to find alternative teaching methods and essential profession-specific content that produce significant improvement in students' performance, in order to cater effective teaching (Ali, 2011). A lecture is among the oldest instructional formats and today it is still the most common form of teaching (Hrepic et al., 2007). However, learning outcomes such as profession-specific skills, knowledge-creation capacity, and theoretical knowledge are bases for teaching, its construction and evaluation. Researchers have indicated that there is

continuing divergence between business practitioners and university lecturers regarding the importance placed on each set of attributes in the educational development of students, and consequently in the selection of new graduate employees. Furthermore, profession-specific learning outcomes often get overlooked in light of generalizations in this vein of research.

Project management teaching in higher education is certainly facing at least three types of pressures. One is increasing impact on professional field by organizations, such as Project Management Institute, United States, and International Project Management Association, Netherlands. These professional associations provide industry-specific, tailored, and compact education for project management professionals, with world-wide recognized certification. Meanwhile, those embarking on project management study in higher education institutions are committing to 1 to 2 years Master programs, anticipating to acquire broader strategic perspective on project management, supplemented with profession-specific competencies upon graduation.

The second challenge is the continues legitimization of the project management field as scientific field of inquiry. This challenge originates from the prevailing bias that management is not a legitimate scientific field and is something that should be practiced rather than researched, making it "puristically" applied study (Bothello & Roulet, 2018). If management is considered the most applied discipline in social sciences, then project management perhaps is the most applied within management disciplines. Therefore, educators of project management in higher education, are left with daunting task, namely, to resolve the tension between demand made by industry for applied knowledge and the need to ground project management as legitimate field of study in theory.

Third type of pressure originates from continues calls for innovation (Davies et al., 2018), which tent to emerge from creative thinking (Paulus & Nijstad, 2003). For a long time, project was and arguably still is associated to engineering and hence, increased focus on technical side of managing projects (*e.g.*, budgeting, scope analysis, *etc.*) (Larson & Gray, 2020). However, today body of literature recognizes the importance of so-called sociocultural dimension of project management, which includes such people-focused and more challenging to manage processes as teamwork, leadership, and problem solving (Kampf et al., 2023; Larson & Gray, 2020). More obvious choice in responding to call for more creativity in project management, would be to assign creativity to sociocultural or people-focused domain. However, evidence suggests that project practice (*e.g.*, *Kaizen* in Lean management) provide ample of space for process innovation through creative thinking of people, in this way combining both domains. Therefore, the issue here lies not in lack of opportunities for creative thinking and innovation, but rather explicit emphases and communication regarding desirability of creativity in project management.

In a manner of summary, it can be argued that in the project management discipline the development of profession-specific skills is more important for the industry and thus teaching methods that target the development of those skills seem to be more appropriate (Ali, 2011). Based on the above-outlined context, we raise following research questions: how project management is taught in higher education and to what extent teaching methods are oriented towards creativity? To answer these questions, we carried out systematic literature review on existing empirical literature, on teaching and learning methods used in project management discipline in higher education.

2. Creativity in the project management: theoretical underpinnings

Our extensive literature review indicated that creativity topic is scarce in project management literature. Furthermore, the concepts have been seen as oil and water – impossible to mix in domain of project management (Warner, 2012). Creative tasks are often seen as wandering away from project management or seen as an excuse when avoiding, *e.g.*, quality control tasks (Warner, 2012). Moreover, in project management world, creativity is at times seen by senior management as counter-productive for the progress and success, particularly when managing closing phase of large projects (vom Brocke & Lippe, 2010).

However, considerable body of literature suggests that there is space for creativity in project management. Specifically, it is noted that creativity can help in addressing notoriously solution-resistant issues, such as communication. Communication in project management literature has been referred to as corner stone of success (Zulch, 2014) or even lifeblood of a project. However, project management tends to overuse some of communication forms, *e.g.*, numerous meetings with powerpoint presentations, which might make at times difficult for attendees to keep focus and stay motivated. Warner (2012) suggests that creativity and creative techniques are remedies in enhancing communication and improving its effectiveness.

Chen (2006) addressed specific aspect of communication, namely conflict, during project life cycle, and investigated how conflict as contextual variable influences team creativity process in different task types of project teams. Research data indicate that in service-driven project team interpersonal conflicts negatively affect creativity, but task debates do improve best-fit or high-quality ideas and decisions by bringing diversity of views and helping to generate new ideas, grasping depth of issues, more complete understanding of problems and finding alternative solutions. Szabó (2016) enhance rationale of looking at project life cycle by advocating for particular benefits of creativity in the beginning of the project, namely, in goal setting. Two types of creativity within research projects have been identified: creativity of the technical project led to create and manage the project vision, and creativity of the subject matter experts to generate research results. The research participants described this phase as the most creative, together with the beginning of the execution phase. They described the collaborative development of the research vision and technological and scientific objectives as requiring a large amount of creative thinking. Most interviewees named the definition of innovative scenarios and their translation into technical requirements, architecture, and concept development as creative phases during execution (vom Brocke & Lippe, 2010).

Hallo and Gorod (2019) turn focus from project life cycle, and propose looking at project types, according to complexity level, suggesting different manifestation of creativity in different type of project: simple, complicate, complex, chaotic. When advocating for importance of creativity in project management, authors go as far as attributing project failures (*e.g.*, going over budget) in big part to lack of investment into innovation and creativity in companies.

Agile methodology and agile teams represent distinct body of literature in project management research (Patrucco et al., 2022). Creativity appears to hold more favourable place in Agile project management literature as opposed to the standard above-described project life cycle-based approach. Aldave et al. (2019) argue for the necessity of creative thinking for requirements elicitation within agile software development, as means for bringing about innovation and flexibility to intensifying demanding software. Furthermore, research revealed

that empowering creativity in requirements elicitation develops products that better meet user demands (Aldave et al., 2019). The implementation of Agile project management principles in education settings have also demonstrated positive effects on emergence of creativity. Furthermore, Agile work mode introduced to students, resulted in increased psychological safety, better team-performance, group learning, and interpersonal communication (Marder et al., 2021). This indicates the paths importance of integrating creative as desired outcome in learning process, as well as project management methodologies, namely Agile, which are more favourable for creativity to emerge.

Pant and Baroudi (2008) advocate for the need for the project management discipline to place greater emphasis on the softer human skills. Authors suggest that better balance between emphases on hard and soft skills would enhance educational process of project managers. In this vein, Mengel and Thomas (2004) suggest the importance of social competences of project managers, not just technical ones when developing teams that can work dynamically and creatively. Authors argue for the need to move from focusing on the *know what* aimed at training people to follow instructions, to development of the "emotionally and spiritually intelligent" project managers (Mengel & Thomas, 2004), who could be involved in highly complex and unique projects. This can be achieved by integrating creativity and holistic thinking in project management education (Thomas & Mengel, 2008).

An important contextual phenomenon has been receiving increasingly more attention in project management field – namely, projectification. Schoper et al. (2018) define it as the increasing share of project work against the share of "ordinary" work. Inga Minelgaitė (2020–2021) defines it simply as "living and breathing projects". Projectification brings about increasingly higher number and more complex projects around to organizations, societies at large but also private life and requires additional effort where creative plays part in (Minelgaite & Hinriksdóttir, 2022). We are already failing to deliver in projects (Cerpa & Verner, 2009). Increasing projectification might be tempting us to engage in even more rigid and excessive bureaucracy. However, that would lead to stifling of creativity and reduced agility in managing projects in ever-changing environment.

Creativity is typically considered incompatible with classical project management or even a hindrance. However, literature also suggest that creativity might be a long-awaited solution for some of the well-known problems in project management today (*e.g.*, communication) and of challenges of tomorrow (*e.g.*, projectification). As outlined above in this literature review, evidence suggests various benefits of creativity depending on phase in project life cycle, type of project, and type of management approach, with creativity most effortlessly emerging in Agile project management teams. While level and setting of creativity manifestation might vary in project settings, the benefits are evident and call for giving adequate attention to creativity in project management education.

3. Methodology of systematic literature review

The primary goal of our systematic literature review was to map existing evidence on teaching project management. Furthermore, our inquiry aimed at identifying diversity of teaching and learning methods in project management at higher education. Finally, systematic research

was intended at mapping other relevant information, *e.g.*, geography of research on teaching in project management, leading to a more fine-grained overview of gaps in our knowledge regarding teaching of project management in higher education settings. Systematic literature review is acknowledged research method, yielding mapping out available result in little research fields of inquiry (Minelgaite Snaebjornsson & Runar Edvardsson, 2013). In this review process, principles of systematic literature review were adopted, as recommended by Jesson et al. (2011), namely:

1) Mapping the field through a scoping review;
2) Comprehensive search;
3) Quality assessment;
4) Data extraction;
5) Synthesis;
6) Write up.

First, a research plan was developed comprising the research questions of interest, the keywords, and a set of inclusion and exclusion criteria. The *ProQuest* database and *International Journal of Project Management* (*IJPM*) were included in the search. *IJPM* was included in as an addition to the search, in order to thoroughly review articles related to the research question in a leading journal in project management. Search terms were: *project management* AND/OR *teaching*. Main criteria for search were full text, peer-reviewed articles from scholarly journals, and in English language. Pre-COVID-19 pandemic period was investigated ranging from 1983 to 2019. The graphic representation of systematic review process is presented in Figure 1.

ProQuest database search resulted in 333 records and 212 articles, corresponding to selection criteria, were identified from *IJPM*, total resulting in 545. After reading titles and abstracts, the number of articles was reduced, focusing only on those related to project management teaching. After this stage, the number of articles was decreased to 36. Next

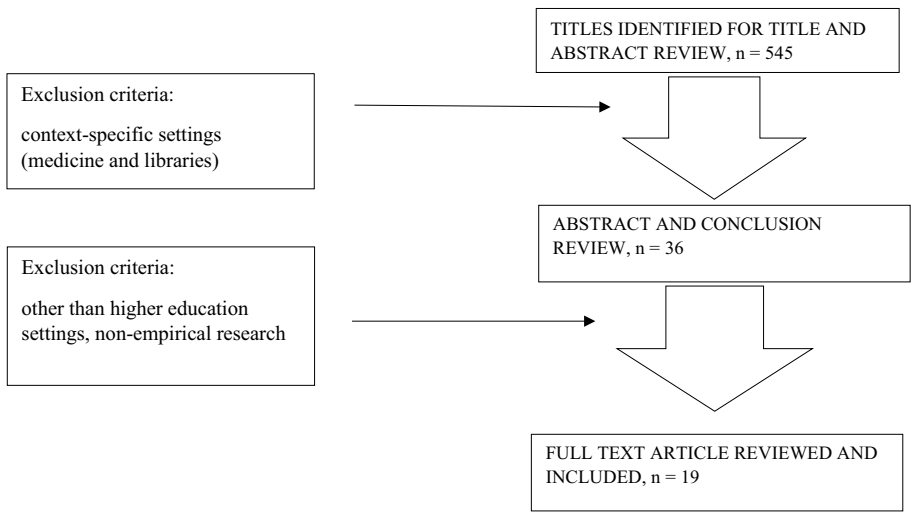

Figure 1. Article selection process in systematic literature review of the research (source: created by authors)

Table 1. Overview of selected articles for final analysis (source: created by authors)

Continent	Country	Source	Research method	Field/discipline	Database
Africa	South Africa	Ssegawa and Kasule (2015)	Quantitative (questionnaire)	Social sciences/ management	*ProQuest*
		Ng'ambi and Johnston (2006)	Mixed	Social sciences/ management	
America	Canada	Mengel (2008)	Qualitative (case study)	Social sciences/ leadership	*International Journal of Project Management* (*IJPM*)
	United States	Rob and Etnyre (2009)	Quantitative (survey)	Social sciences/ business	*ProQuest*
		Kloppenborg and Baucus (2004)	Qualitative (case study)	Social sciences/ management	
		Poston and Richardson (2011)	Qualitative (case study)	Social sciences/ management	
		Elrod et al. (2010)	Quantitative (survey)	Engineering and technology/ engineering	
Asia	Vietnam	Shelley (2015)	Qualitative (action research)	Social sciences/ business	*ProQuest*
	Israel	Zwikael and Gonen (2007)	Quantitative (questionnaire)	Social sciences/ management	
Australia	Australia	Bredillet et al. (2013)	Qualitative (systematic-discursive reflection on several case studies)	Transdiciplinary/ mixed	*IJPM*
Europe	Norway	Rolstadås (2013)	Quantitative (questionnaire)	Engineering and technology/ industry	*ProQuest*
	France	Bayart et al. (2014)	Quantitative (questionnaire)	Engineering and technology/ technology	
	Croatia	Divjak and Kukec (2008)	Qualitative (case study)	Transdiciplinary/ mixed	*IJPM*
	Iceland	Helgadóttir (2007)	Qualitative (action research)	Social sciences/ business	*IJPM*
	Switzerland	Stoyan (2008)	Quantitative (survey)	Transdiciplinary/ mixed	*IJPM*
	United Kingdom	Apsley (2013)	Quantitative (survey)	Engineering and technology/ engineering	*ProQuest*
		Ashleigh et al. (2012)	Qualitative (focus group)	Transdiciplinary/ mixed	*IJPM*
		Ojiako et al. (2011)	Quantitative (survey)	Social sciences/ management	
		Cicmil and Gaggiotti (2018)	Qualitative (reflection)	Social sciences/ business	

stage of systematic literature review was reading not only titles and abstracts, but also conclusions. In order to narrow the number of articles the following exclusion criteria were applied. First, given the context-related scope of this review, the articles had to deal with higher education. Second, due to the nature of our research questions, we only included articles that report on empirical (quantitative and/or qualitative) research. We excluded not empirical, conceptual and discussion papers. After this screening, the number of articles was reduced. Therefore, 19 articles (see Table 1) were included at final analysis.

Table 1 provides general description of the selected article, namely, geography of the research (continent and country), research method used in empirical part of the research presented in the paper, and source where article was found. As can be seen in Table 1 majority (47.37%) of publications originate from Europe, with most visible presence of United Kingdom (44.44% of all publications from Europe). 21.05% of publications come from United States. Rests of publications are geographically diverse, including such countries as South Africa, Vietnam, Iceland, *etc*.

Qualitative and quantitative approaches are represented almost equally (9 and 9 articles respectively). Mixed method strategy was used in one article. Most common methods were case studies, action research, and focus groups. It should be noticed that qualitative approach is dominant in *IJPM*; meanwhile articles from *ProQuest* database are based on quantitative research.

Most of the studies were conducted in the field of social sciences. Following is engineering and technology. It should be noted that increase of interdisciplinary research is being observed (22% of all publications), combining management and engineering (Divjak & Kukec, 2008), or business and engineering (Bredillet et al., 2013), even computer science, business, and psychology (Stoyan, 2008).

Search period selected in this systematic review is from 1983, however articles with focus on project management teaching start to appear just in 2004. If we look at dataset, we see that project management teaching and learning topic has emerged just during last decade (57.89% of papers).

At the fallowing part of the article the thematic analysis of identified articles is presented.

4. Results of systematic literature review

Below outlined an in-depth analysis of the selected articles is presented, focusing on two points: 1) what teaching and learning methods are used in project management?; 2) what impact/outcomes resulted from the application of these methods in teaching project management in higher education?

As indicated in the analysis of the articles (see Table 2), various student-oriented active teaching methods are used in project management education. In almost half (47%) of the analysed studies, the project method is presented as the most common method of teaching project management. Some of these studies do not focus on a traditional group project, but on a real-life project (*e.g.*, Helgadóttir, 2007; Divjak & Kukec, 2008; Mengel, 2008; Poston & Richardson, 2011; Kloppenborg & Baucus, 2004). The authors argue that real-world projects give students the opportunity not only to apply theoretical project management knowledge

in practice (Poston & Richardson, 2011), but also enables to develop soft skills, such as leadership (Mengel, 2008), communication, and teamwork (Kloppenborg & Baucus, 2004; Divjak & Kukec, 2008). Rob and Etnyre (2009) present how to design a project management course curriculum based on the key concepts of the project-based learning in order to gain students' communication, teamwork, and leadership skills.

Another way to gain and develop practical skills of managing projects is closer collaboration with industry. Four studies (Poston & Richardson, 2011; Bredillet et al., 2013; Cicmil & Gaggiotti, 2018; Kloppenborg & Baucus, 2004) researched and presented ways of collaboration between academia and industry teaching project management in higher education. Identified partnership are enabled through various forms: industry experts, embedded in the learning process of a traditional classroom (*e.g.*, Poston & Richardson, 2011; Cicmil & Gaggiotti, 2018), joint projects with agencies or companies (*e.g.*, Kloppenborg & Baucus, 2004), on site practice (*e.g.*, Bredillet et al., 2013), *etc.*

Another commonly used method for project management education is case studies (*e.g.* Ashleigh et al., 2012; Ssegawa & Kasule, 2015; Elrod et al., 2010; Shelley, 2015). From our analysed sample, the study by Elrod et al. (2010) is exceptional, in which the application of multimedia case studies, rather than traditional case studies, is presented. Elrod et al. (2010) study with 36 students at Master level revealed that multimedia case study, specifically the Laboratory for Innovative Technology and Engineering Education superstar case study, resulted in students' better understanding of the project selection process. Moreover, students gained communication skills with supervisors, project sponsors, and other project stakeholders.

Several studies present new ways of teaching project management. For example, Shelley (2015) suggests to structure project management course as projects with milestones and incorporate the "language of projects" into the course lexicon. Meanwhile, Stoyan (2008) suggests using "train-the-trainer" approach. In other words, use peer-learning, when learners teach other learners. Teaching project management through games is not a new way in project management education and learning practice, but the use of more complex games is still underutilized. In our analyses we have two studies (Zwikael & Gonen, 2007; Bayart et al., 2014), representing how more complex games can develop students' knowledge in project management capabilities and their soft skills.

As the analysis indicates, various information and communications technology tools (Ng'ambi & Johnston, 2006; Elrod et al., 2010), virtual learning environment, and e-learning are being employed in teaching project management (Rolstadås, 2013; Divjak & Kukec, 2008; Ojiako et al., 2011; Ashleigh et al., 2012). Rolstadås (2013) argues, that in today's reality the training based on a combination of on-campus and web-based is an effective approach. Other authors (*e.g.* Rolstadås, 2013; Ojiako et al., 2011) point out that the effective use of e-learning environments is more crucial for students who are less skilled at managing their studies independently. In addition, the full or partial transfer of project management teaching/learning to online learning corresponds better realities of a modern workplace (Divjak & Kukec, 2008).

To sum up, our analysis reveals, that diversity of teaching and learning methods, real-life examples and application of project management principles in learning tasks, not just "outside cases", develop students' professional (*e.g.*, knowledge and skills of management) and personal competencies (*e.g.* leadership, self-assurance).

Table 2. Teaching/learning methods and its impact/outcome in project management (source: created by authors)

Source	Number of students and study level	Project management teaching/ learning	Impact or outcome
Ssegawa and Kasule (2015)	17, Master of Arts (MA)	A learning and teaching technique, called *Prayer*, that requires students to identify mini-cases containing project management concepts and issues in order to present and discuss them with peers in class	▪ Time management skills; ▪ Communication skills; ▪ Research and scientific communication skills; ▪ Deeper understanding of project management concepts.
Ng'ambi and Johnston (2006)	140, Bachelor of Arts (BA)	Teaching using information and communications technology (ICT) tool *Dynamic Frequently Asked Questions*	Critical thinking skills
Mengel (2008)	23, BA	Outcome-based learning approach. The "real" project: 1) initiate and plan a leadership project (submit a project plan); 2) execute, control, and close a leadership project (submit a project report).	▪ Leadership competence; ▪ Competence in project management.
Rob and Etnyre (2009)	BA, MA	Project-based learning approach (group projects). Knowledge and concepts are gained through lectures, group projects, group presentations, documentations, research papers, classroom writing, and discussion	▪ Communication skills; ▪ Teamwork skills; ▪ Leadership skills.
Kloppenborg and Baucus (2004)	MA	Problem-based learning approach of "real world" group projects in non-profit organizations	▪ Specific set of skills, *e.g.* proficiency in using *Microsoft* project; ▪ A track record of effective teamwork; ▪ Communication skills.
Poston and Richardson (2011)	–	Collaboration with industry organizations: ▪ guest lecture series; ▪ project team mentoring; ▪ project contest panel.	"Real world" project experience (application of class concepts to project management issues in an actual organizational setting)
Elrod et al. (2010)	36, MA	Multimedia case study, specifically the Laboratory for Innovative Technology and Engineering Education superstar case study.	▪ Understanding of the project selection process; ▪ Communication skills with supervisors, project sponsors, and other project stakeholders
Shelley (2015)	15–40, MA, Doctor of Philosophy (PhD)	▪ Course structuring as projects with milestones and incorporating the "language of projects" into the course lexicon; ▪ Reflective case studies; ▪ Interactive games and role plays.	▪ Concepts embedded within a language of project management develops richer insights into the soft and hard skills; ▪ Incorporate and reflect theories in practice.

Continue of Table 2

Source	Number of students and study level	Project management teaching/ learning	Impact or outcome
Zwikael and Gonen (2007)	185, MA	Project execution game, which focuses on the execution phase of a project. The game provides the "players" with a set of realistic, but unexpected events that occur during a project. The game is designed for either one or several teams competing among themselves.	■ Problem-coping capabilities; ■ Decision-making skills; ■ Project management knowledge (most improvement was of integration); ■ Team working skills; ■ Encourages participants to try out new behaviours; ■ Understanding the consequences of their decisions.
Bredillet et al. (2013)	BA, MA, PhD	Interaction of academic and practitioner (collaboration between industry and academy)	Project management content knowledge
Rolstadås (2013)	Basic and advanced levels of programme	The hybrid approach of teaching. Virtual session is split in three blocks: 1) Lectures which are done by reading assignments, video lectures, slide-shows, computer games, *etc.*; 2) Group work in a virtual environment using advanced ICT; 3) Client lectures which is mostly reading assignments group project.	Not specified
Bayart et al. (2014)	114, BA	Serious games	■ Project management knowledge; ■ Management skills.
Divjak and Kukec (2008)	PhD	■ Real-life situations; ■ Group work on an actual real-life project; ■ Clear learning outcomes.	■ Self-Assurance in Project management; ■ Interpersonal skills; ■ Transversal skills.
Helgadóttir (2007)	32, MA	■ Small groups on real project; ■ Analysis of own work from an ethical perspective using a provided conceptual framework.	Ethical thinking
Stoyan (2008)	160	■ The train-the-trainer approach (learners teach other learners); ■ Every student is constantly active in role play, group work, homework, project work or reflections in between.	■ Soft skills (leadership and communication); ■ Active project management and leadership skills.
Apsley (2013)	188, BA	The autonomous line-following robot project	■ Employability and workplace skills; ■ Technical skills (*e.g.* microcontroller programming, sensor circuit or radio communications design); ■ Team-working skills; ■ Report writing skills; ■ Oral presentation skills; ■ Requirements analysis and design specification skills.

End of Table 2

Source	Number of students and study level	Project management teaching/ learning	Impact or outcome
Ashleigh et al. (2012)	81, BA, MA	▪ Group work; ▪ Case studies; ▪ Decision-making games; guest lectures by industry professionals.	▪ Project management module appeared abstract and misaligned with reality, and as a result did not enhance the development of much needed transferable skills, which were essential to the development of their creativity as practitioners; ▪ The need for more practicality and relevance to the real world when learning project management.
Ojiako et al. (2011)	194, BA, MA	Active learning (methods are not specified)	▪ Interpersonal skills; ▪ Time management; ▪ Critical thinking; ▪ Communication skills.
Cicmil and Gaggiotti (2018)	MA	▪ Practitioner guest speakers; ▪ Study visits to live "projects" and projects based organizations; ▪ Project/project management practice in their workplace.	New possibilities for alternative action in the workplace emerge and are taken into consideration.

5. Discussion and conclusions

The aim of this article was to unveil how project management is taught in higher education and to what extent teaching methods are oriented towards creativity. The results of systematic literature review are in a way controversial, and that deserve further discussion.

Research results indicate that none of the selected articles (with exception of Ashleigh et al., 2012) did not explicitly focussed on creativity as one of the core learning outcomes of future project managers. Analysis indicated that main emphasis in project management education is put on effectiveness, typically through management of project life cycle (PLC). The question emerges here as to how creativity can emerge in different phases of classical PLC (initiating, planning, executing, monitoring/controlling, and closing)? Is creativity distinct competence or should it be context-specific in every phase of PLC?

The field of project management is not an exception when considering the particularities and diversity of imperative skills and competencies for the future. There is no doubt that project success is directly connected with manager's competences (Geoghegan & Dulewicz, 2008). According to Cartwright and Yinger (2007), project manager competence consists of three dimensions – knowledge competence (knowledge about the application of processes, tools, and techniques for project activities), performance competence (application of project management knowledge to meet the project requirements), and personal competence (attitudes, and core personality characteristics). Use of checklists of competencies for recruiting

project managers has been identified as an effective strategy (Udo & Koppensteiner, 2004). Krahn and Hartment (2006) research suggests that the most important project manager skills and competencies (*e.g.* people skills, leadership, balances priorities, listening, verbal communication, conflict management, problem solving, *etc.*) depend on project characteristics (such as being very large or having a high level of risk). In other words, apart from having content specific knowledge, project manager needs also to possess transferable skills. Precondition for project success is effectiveness of project manager, where creativity could serve as an enhancing tool (Merla, 2010).

Traditionally creativity is considered an ability to adapt and respond to new situations, to generate new knowledge and manage this knowledge to solve problems (Amabile et al., 2005). However, Cullmann (2013) suggests that we can distinguish at least two different levels of creativity. First level, perception of creativity as a process of idea generation related to invention, innovation, and product development. The second level corresponds to the continuous adaptation and responsiveness to new, unforeseen, or unknown information in a process of permanent change. In the process of project delivery, desired outcomes such as efficient technical process or leading project team can be stimulated by the effective application of creativity tools, which also has a capacity to improve interpersonal skills, enhance relationships within project team members, and project stakeholders (Merla, 2010). Stimulating innovation by application of creativity in the initiation stage of the project leads to more value-enhancing solutions. In execution phase, it can help to overcome performance obstacles and diverse issues.

Success in the project management is vastly contingent on the project manager's ability to recall, and effectively apply relevant principles in various contexts and stages of a project's development. As Warner (2012) suggests that high performing project managers stand out from general population of managers because of higher levels of creativity. Or as Bertsche (2017) stated, the creativity of the project manager, helps to gain a competitive edge in today's business landscape. Firstly, a project manager's creativity can be a catalyst for innovation, enabling teams to devise novel solutions and strategies (Warner, 2012). This creativity is essential in a competitive business landscape where original ideas and approaches can set a company apart. Moreover, as Atkinson et al. (2006) discuss the evolving nature of project management and necessity of management of uncertainty. Project managers who exhibit creative thinking can approach challenges in unconventional ways, leading to breakthroughs and efficiencies. Pollack (2007) presents argumentation about hard and soft paradigms of project management, emphasizing to the increased focus on soft paradigm on project management. The traditional project management method, rooted in control and predictability, often hinders the ability to foster learning, innovation, and creativity (Atkinson et al., 2006; Pollack, 2007). Therefore, creative project managers can play a pivotal role in adopting innovative project management practices, aligning projects with business goals and gaining a competitive edge through strategic project selection and execution. To sum up it can be stated that creativity is crucial in managing projects effectively in increasingly projectified environment.

More importantly, recent theories acknowledge that creativity is a trait that can be cultivated and enhanced, and is not just inherent (Andriopoulos, 2001). Creativity can be taught, unfortunately until now it has received very limited attention because as stated by Amabile

and Khaire (2008) creativity was considered something "unmanageable". Looking at results of this research, we would like to paraphrase Amabile and Khaire (2008) and suggest that in project management education creativity is considered unmanageable.

This study has several limitations that should be addressed. Firstly, the systematic literature review covers the pre-COVID-19 pandemic period and it was deliberately done for several reasons. One of them is that the COVID-19 pandemic has disrupted the traditional ways of teaching and learning in higher education, leading to the emergence of a new normal that involves changes and adaptations to the educational environment (Larsen Svihus, 2024). The other is that the pandemic affected the daily routine of project management and the work of project manager (Müller & Klein, 2020; Waheeb et al., 2023). Based on our research results and evidences from other studies, we see several potential future research directions of project management teaching in higher education: how can creativity be effectively integrated into project management education in higher institutions; investigation on how the integration of agile and hybrid project management methodologies into curriculum design could be done; investigation on how emerging technologies, such as artificial intelligence, machine learning, blockchain, and virtual/augmented reality, can be integrated into project management education.

Secondly, majority of studies in this research present self-reports (as provided by students) when evaluating the teaching methods. Future research could focus on measurements of teaching and learning methods using more complex research designs, *e.g.* quasi-experimental design.

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