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TLIC PAPER

AI-Supported Identification of Project Managers' Communication Focus and Style

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ABSTRACT

In companies engaged in project business, effective communication is crucial for successful projects implementation. However, project communication is not only limited to the management and leadership of the individual projects, but also encompasses factors related to the broader business environment. Therefore, effective communication requires not only understanding different perspectives but also identifying and adapting communication styles to different situations and stakeholders. This paper describes an exercise developed to identify the communication styles and focus areas of the project managers. The exercise is based on the principles of active learning, and it uses artificial intelligence to provide personalized feedback to the users. With the help of feedback, users identify the characteristics of their own way of communicating and possible development areas in their professional communication skills.

KEYWORDS

project management, communication, active learning

1 INTRODUCTION

Effective communication is the cornerstone of strong leadership. It fosters trust, aligns team goals, and ensures that everyone understands their roles and responsibilities. Leaders who communicate clearly and consistently can better inspire, motivate, and guide their teams and other stakeholders. In project management, every manager uses their own personal communication style, based on their earlier experiences, personality, and leadership approach. Some may be naturally more direct and task-oriented promoting clarity and quick decision-making, while others might use more collaborative styles, encouraging open dialogue and consensus. In addition, project managers emphasize and focus on different aspects of management, and therefore use different methods e.g. to set goals, give feedback and resolve conflicts. Recognizing their individual styles and focus area is important for the project managers and helps them to improve their communication skills.

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This paper presents a learning exercise developed at a Finnish university of applied sciences for identifying the project managers' communication styles and focus areas. The approach integrates principles of active learning with the capabilities of artificial intelligence to provide feedback and thus support self-awareness and professional development. The structure of the paper is as follows: Section 2 provides a short literature review on project management and project communication. Next Section 3 discusses key learning aspects applied in this experiment including active learning, learning goals and the formation of the students' attitudes towards learning. The study design and results of the experiment are reported in Section 4, and the paper ends in conclusions of Section 5.

2 PROJECT MANAGEMENT AND COMMUNICATION

Historically, project management was mainly used to schedule and allocate resources in a few sectors like the military and construction [1]. Today, project management plays a vital role globally in almost all industries serving as a structured approach to achieving goals of the organizations. The goals of projects naturally vary but typically project success has been evaluated from the following perspectives: scope, time and costs [2]. Following this tradition, Project Management Institute has created the following definition of project success: "a project can be considered successful if it delivers value that is worth the effort and expense [3]". However, both theory and practice have clearly indicated that relying solely on technical project management competencies is not enough to ensure project success, but in addition soft skills are needed [4]. Soft skills refer to abilities that are not tied to specific tasks or technical functions. Instead, they are essential in all professions because they relate to how individuals interact and collaborate with other people [5].

2.1 Soft skills, hard skills and competencies

Scholars have studied the importance of soft and hard skills in different professions [e.g., 6, 7]. In the field of project management, researchers have investigated especially the relationship between project managers' competencies and project success [8]. Competencies combine hard and soft skills together, and they are considered to be more holistic, covering not only skills but also behaviors, attitudes, and knowledge that contribute to effective performance.

There are many classifications and lists of project managers' competencies, but in this paper the following competence areas defined by the International Project Management Association (IPMA) are used [9]:

- People: which define personal and interpersonal skills required
- Practices: which contain the technical aspects of projects
- Perspective: which connects projects to the broader context, including e.g., organization's mission, vision, and strategy.

According to IPMA, three competence areas are further divided into multiple competence elements listed below in Table 1.

Table 1. Competence elements [9]

Competence Area	Competence Elements
People	Self-reflection and self-management; Personal integrity and reliability; Personal communication; Relationship and engagement; Leadership; Teamwork; Conflict and crisis; Resourcefulness; Negotiation; Result orientation
Practices	Design; Requirements, objectives and benefits; Scope; Time; Organization and information; Quality; Finance; Resources; Procurements and partnership; Plan and control; Risk and opportunities; Stakeholders; Change and transformation; Select and balance
Perspectives	Strategy; Governance, structures and processes; Compliance, standards and regulations; Power and interest; Culture and values

2.2 Project managers and communication

Projects are complex entities in which a wide range of people from diverse backgrounds and organizations work, and they all have their own goals and expectations for the project. The success of project management depends largely on the project manager's ability to recognize, negotiate and bring together the various constraints and perspectives involved in the project [10]. Therefore, project managers spend a lot of time communicating with the project team and other stakeholders like customers and sponsors. It has even been suggested that 90% of a project manager's time is spent on communication [11].

Just as each project is unique, so are its stakeholders. Therefore, the traditional approach of project communication, based on regular reports and meetings, is typically not enough. Instead, a project manager must use effective and flexible communication strategies which consider the differences between all people benefiting from or working on the project [12].

2.3 Communication styles

As stated above communication, coordination, and collaboration are at the heart of each project and project managers can use different styles while interacting with other project participants. Communication style refers to the distinctive way individuals exchange information, express thoughts, and engage with others through verbal and non-verbal means. It encompasses elements such as tone, language choice, emotional expression, turn-taking, politeness strategies, and cultural norms [13].

There are many ways to categorize communication styles. Probably the most quoted communication style classification is based on three styles, which are: aggressive, passive, assertive [14]. An aggressive communicator is typically a poor listener and has difficulties seeing other people's points of views. A passive communicator instead is indirect and prefers to agree and avoids conflicts. Whereas an assertive communicator is an active listener, states expectations but not judgments, and actively checks others' feelings. The model has later been extended with the passive-aggressive style in which a person does not directly communicate his or her feelings but holds on to negative emotions and lets those affect his or her actions [15].

While studying communication styles, it is also possible to pay attention to the way messages are sent. In this case communication can be seen as linear (one way), interactive (feedback) or transactional (simultaneous and complex) [16]. In addition, it is possible to analyze the communication style based on its orientation i.e. is the communicator more concentrating on tasks or people or in other words does the person focus more on content than relational dimension [17].

It is also important to note that people may change their communication style according to the situation and the specific role they are playing. For example, someone might use a more direct approach when acting as a project leader but a more collaborative approach when on a social team. In project context we often separate internal and external communications. Internal communication exchanges information within the project team and organization, and external communication involves sharing information with parties outside the organization. Earlier studies on communications in project management have indicated that projects often lack good communications beyond the boundaries of the project team [18] or the organization [19].

3 LEARNING METHODS AND STUDENT ATTITUDES

The previous section looked at project communication and highlighted its goal-oriented nature. During recent years, this same emphasis on ambition has also emerged in education. There has been a significant shift in higher education from traditional content-focused instruction to outcome-driven learning [20]. This has led to the introduction of many active learning methods. This section provides a short introduction to active learning and to a contemporary educational development method known as backward design which is often used to create active learning exercises.

3.1 Active learning

Like many other concepts, active learning can be defined in many ways. However, the starting point for definitions is often doing, which is expressed for example as "an instructional activity involving students in doing things and thinking about what they are doing [21]." Scholars have extended the definition to various forms of activity, such as communication and reflection [22], higher-order thinking, and teamwork [23].

It is important to notice that most students fail to be active learners unless they are provided with opportunities to do so. The most common strategy to promote active learning is discussion [24]. However, the personalities of the students influence the way they get involved in class discussions. For example, the different traits between extrovert and introvert students affect how they perceive knowledge during the learning and how actively they participate in the learning process. To support all kinds of learners, educators have created and used multiple forms of active learning. In the exercise presented here, the case study method is employed. A case study involves an in-depth examination of a single subject within its real-world context, with the aim of gaining insights applicable to similar cases [25].

3.2 Backward design of education

The significance of learning goals has become more widely recognized and it is emphasized in the educational development method known as backward design. Backwards design can be seen either from the task or from the coaching perspective. In task analysis we focus on the task and find out a way to get there. In coaching approach, we try to find out what kind of education is needed to master the topic [26]. The backward design typically consists of the following stages [20]:

- Identifying desired learning goals
- Determining the method to evaluate and assess learning and
- Planning learning activities and content.

During the first stage, the focus is to identify what students will understand, know or be able to do after the exercise. The second phase, determining the learning evaluation methods does not need to be limited to the assessment of the teacher but can also include self- and peer-reviews. Finally, on the third step the focus is to create tasks that promote understanding, skills as well as student interest and motivation [27].

3.3 Students' attitudes

Traditionally, learning involves a reciprocal relationship between students and teachers. However, despite the interaction, the relationship is not equal, because teachers are responsible for making multiple decisions on learning methods, materials, tasks, and evaluation criteria. Thus, students do not have freedom of choice but must adapt to the teachers' decisions. According to the self-determination theory the limited autonomy can lower student motivation. Thus, teachers must pay special attention to increasing students' interests and positive attitudes toward the learning tasks.

However, there is no single right answer to the question of what makes a learning task interesting. Information Systems (IS) researchers have thoroughly investigated the factors and processes that affect how users adopt and utilize information technology (IT). They have primarily employed two research approaches: information system success and technology acceptance [28]. Both approaches aim to understand why users accept or reject information systems and how system design features impact user acceptance, though they use different methods to achieve this. This paper focuses on the development of an AI based learning tool and learners' attitudes towards it is analyzed only from the technology acceptance perspective. The central theory of this approach is Technology Acceptance Model (TAM) which is based on causal relationships between perceived usefulness, perceived ease of use, attitudes, users' intentions and actual system usage. According to TAM, perceived ease of use and perceived usefulness are the primary determinants of users' attitudes towards innovation or in this case towards a learning application. Attitudes, in turn, predict behavioral intentions, which are strong indicators of actual behavior [29]. However, in learning TAM cannot be applied fully because as stated above students do not select the tools and exercises, but they just accept the teachers' decisions. Therefore, the use of the TAM is limited here to ease of use, usefulness and attitude constructs as can be seen in Figure 1.

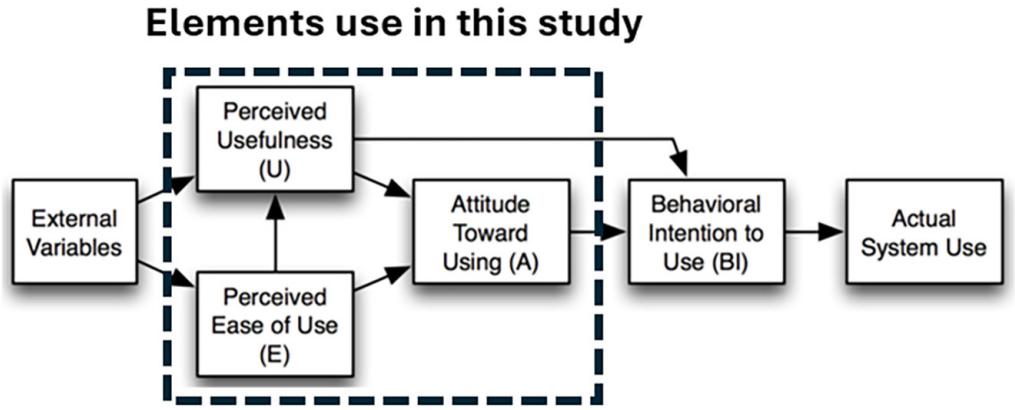

Fig. 1. TAM and its use in this study

4 STUDY DESIGN

This section presents the design and results of the AI-based active learning exercise developed to identify the communication styles and focus areas of the project managers. The main goal of the exercise is to increase the students' self-awareness and thus promote their professional development as project managers. As previously noted, good communication skills are essential for project managers, and they also play a key role when senior leaders are hiring project managers [30].

The design of the exercise was based on the three stages of the backward design as follows. The learning goal consisted of two parts: direct and indirect goal. During the exercise, students tried to reach the direct goal by finding out the situation of the project as comprehensively as possible and recording their findings in a status report. The indirect or post-practice goal was to identify the characteristics and orientation of the student's communication style based on the status reports. The findings will help students better understand the strengths and limitations of their communication focus and style, and thereby fostering their professional development as future project managers

The data analysis was based on qualitative content analysis (QCA) of the status reports. In QCA the most important things are categories (codes) and category systems (coding frame) [31]. In this exercise three different categorizations were used. First, the focus of participant's communication was analyzed using the IPMA's competence elements framework presented earlier. Second, the student's communication style was evaluated based on how much he or she handled internal and external issues within the organization. Third, the participant's communication style was evaluated to determine whether it leans more toward task orientation or people orientation.

The experiment took place at the Finnish University of Applied Sciences for the spring semester of 2025. It was attended by 36 post graduate students of a project and sales management degree program. All students were part-time students, as they worked full-time in addition to their studies.

4.1 Procedure and steps of the exercise

The exercise began with the teacher outlining its objectives and providing instructions for how to proceed in the classroom. Then students had their first meeting

with the AI based project manager. The idea was to imitate oral communication, but the technology used did not support it. Instead, students typed their questions, and the AI based project manager also replied in writing. To mimic a normal conversation, both students and AI were instructed to use short dialogs of a few sentences. After the first meeting students came together and expressed their own understanding of the current state of the project with a traditional traffic light model. In addition, they discussed their findings under the guidance of the teacher before moving on to the second meeting with the project manager.

Although the second meeting was held immediately after the group discussion, it was intended to simulate a meeting that would take place two weeks after the first one. Based on discussions with AI, the students prepared brief status reports describing the current state of the project. They uploaded the reports to the learning environment and filled out the feedback questionnaire shown in Table 2, using the five-step Likert scale.

Table 2. Content of the feedback questionnaire

Question Group	Questions
Usefulness	The use of AI in this exercise was not, in my opinion, useful. The use of AI in this exercise contributed to my learning. In this exercise, the pros of using AI outweighed the cons. The use of AI increased my interest in this exercise.
Ease of use	Instructions for this exercise were difficult to follow. I found it easy to do this exercise. I had trouble doing this exercise. The instructions for this exercise were clear.
Attitude	I think the use of AI in studying is a good idea. I think the use of AI in studying is a stupid idea. I like the idea of using AI while studying. Using AI while studying is unpleasant to me.
Self-evaluation	Grade yourself on how well you found out the status of the project when communicating with the AI-based project manager?

4.2 Findings

Data analysis started by examining the students self-reported usefulness, ease of use, and attitude towards the exercise. The normalized scores of these elements and the correlation coefficients between them were calculated. The results suggest that in the AI-based active learning exercise, perceived usefulness significantly influenced students' attitudes ($r = .54$, $p < .01$), unlike ease of use ($r = .01$, $p > .05$). This observation likely indicates that the benefits of a learning task shape students' attitudes towards it, and they do not expect to learn without effort.

The achievement of the direct learning goal of the exercise was analyzed using learners' self-assessment and the grades given by the teacher. The average self-assessment score (on a scale of 1–5) was 3.74 (SD 0.59), while the average teacher's grade was 3.63 (SD 0.66). Results indicate that both the students and the teacher felt that the students were able to determine the status of the project well (verbal equivalent for grade 3) or very well (verbal equivalent for grade 4).

Next, the focus of communication was analyzed using the IPMA's Individual Competence Baseline which provided both the categories and coding frame needed

for the QCA. The findings clearly indicate that students mainly concentrated on the practice area and its elements. Most of the students (30 out of 36) concentrated more on the practice aspects of the project, such as time, costs, and scope, rather than on people related elements. Table 3 lists all the elements that were mentioned directly or indirectly by at least 10% of the participants. The most often mentioned elements were time (mentioned by all 100% of the participants), resources (mentioned by 92%), plan and control (mentioned by 88%), and finance (mentioned by 83%). It also worth mentioning that all these four elements belong to the practices area of the framework.

The results also point out that perspective competences were almost completely ignored. The only perspective element that exceeded the 10 per cent threshold was culture and value. The limited attention perspective received was likely due to the brief description of the exercise's content. The focus was almost entirely on the specific project, without connections to other company functions or its overall strategy.

Table 3. Focus of communication

Competence Element	Competence Area	Share of Responders
Culture and values	Perspective	13%
Relationship	People	38%
Leadership	People	33%
Result orientation	People	29%
Conflict and crisis	People	21%
Teamwork	People	17%
Time	Practices	100%
Resources	Practices	92%
Plan and control	Practices	88%
Finance	Practices	83%
Change and transformation	Practices	79%
Risk and opportunities	Practices	67%
Stakeholders	Practices	54%
Plan and control	Practices	50%
Quality	Practices	42%

Next the following coding principles were used when analyzing if the status reports indicated internal or external communication style. Internal communication was intended for project team members or other internal stakeholders within the organization and external communication was directed toward clients, partners, vendors, regulators and end-users. According to this classification, the communication styles of the respondents concentrated mainly on internal communication (74%) and external matters received less attention (26%). The most often mentioned internal topics were personnel changes, resource management, budget and communication. In these cases, the communication covered operational information flow, situation updates and maintaining the motivation and commitment of the personnel. Communication with external stakeholders instead focused on the customer's

attitude towards the project and possible sanctions. Surprisingly, end-user matters were not mentioned in the reports at all.

Finally, students' communication styles were also analyzed using the coding frame presented in Table 4 to determine whether they were more task-oriented or people-oriented. According to the reports, all participants had both task- and people-oriented features, but the total share of task-oriented comments was 60 per cent of all comments and 40 per cent were classified as people-oriented.

Table 4. Coding of the people and task orientation

People-Oriented Topic	Task-Oriented Topics
Efforts to keep team members engaged	Deadlines and schedules
Interpersonal relationships	Budget and costs
Support and development	Technical issues
Manager supporting the team	Performance metrics

At the end of the exercise, all students received an AI-generated personal feedback. The feedback pointed out the focus areas of the status report and indicated whether the report was more people or task-oriented and how much the report dealt with internal and external matters. The feedback also emphasized the importance of both hard and soft skills for successful project management. It was also highlighted that the imbalance of internal and external communication can be detrimental to project success and lead to a loss of trust among stakeholders.

5 CONCLUSIONS

The focus of the paper was on an AI-based learning exercise developed at a Finnish university of applied sciences. During the exercise, students communicated with a virtual project manager and tried to figure out the status of the case project. In addition to this direct learning goal, the exercise aimed at identifying participants' communication focus and style in project management context.

Although both the students and the teachers assessed that the students succeeded well in identifying the status of the project, there is a lot of room for improvement. The study has, at least, the following limitations. In the exercise data was collected only at the end of the exercise. If the data were collected also during exercise, it could reveal interesting details on the development of communication. In addition, the exercise did not provide sufficient description of the organization but was almost exclusively limited to the case project without larger context. In the future the exercise should be modified to better link the case project to other functions of the company. Finally, the study had a relatively small sample size with only 36 students from one single degree program.

Even with these limitations the study provided some interesting results. First, perceived usefulness significantly influences students' attitudes towards learning exercises. Therefore, it is extremely important that learning exercises are relevant and useful. Otherwise, students do not have positive attitudes towards them which has negative effect on learning. Second, the exercise was able to provide valuable feedback and increase self-awareness of the participants and promote their professional development as project managers.

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