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# Using Team Roles Orientation to Improve Accounting Project-Based Learning Outcomes

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## Abstract

**Purpose** – Previous studies have shown inconsistent findings on how team roles influence students' learning outcomes. This study uses Belbin's Team Roles Theory to examine how team role orientations relate to students' performance in Project-Based Learning (PBL) in Accounting Information Systems education.
**Design/Methodology/Approach** – A quantitative approach was applied to 34 students enrolled in an Accounting Information Systems course. Students' dominant team role orientations were identified through a questionnaire. Multiple regression analysis using SPSS was then conducted to examine the relationship between People-, Thinking-, and Action-oriented roles and project-based learning outcomes.
**Results** – The findings show that Thinking- and Action-oriented roles were significantly related to project outcomes, while the People-oriented role was not significant. When the three orientations were considered simultaneously, their relationship with project and case scores was also not statistically significant. The model explained 16% of the variation in project outcomes.
**Originality** – This study extends the application of Belbin's Team Roles Theory to accounting education by examining team role orientations in PBL. The findings indicate that cognitive and task-oriented roles may be particularly relevant to students' project performance.
**Research limitations/Implications** – The study is limited to 34 students from one Accounting Information Systems course. Future research should involve larger and more diverse samples across accounting courses and learning contexts to provide a broader understanding of how team roles support collaborative learning.

**Keywords: Accounting Education, Belbin, Team Roles, Project-Based Learning**



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## Introduction

Project-Based Learning (PBL) has been the best practice method in academic standard for modern accounting education through the shift from traditional textbook teaching to hands-on learning experiences in the business industry. PBL requires students to work on projects related to finance that demand technical skills and the ability to work well in a team. In higher education, however, the formation of student teams is often left to chance. Such arbitrary groupings can result in unclear roles, interpersonal conflicts, lack of participation and unequal effort, all of which can destabilize the group and adversely affect learning outcomes. This issue emphasizes the importance of assigning functional roles to a team, a notion that is embedded in Belbin's Team Roles framework (M. Belbin, 2015; R. M. Belbin, 2012), which stresses complementary Action, People and Thinking orientations.

Although PBL is widely used in accounting education, there is still a limited understanding of how specific Belbin team role dimensions contribute to team success in PBL (Rehman et al., 2024). Previous studies have reported different perspectives. Some emphasize the importance of people-oriented roles in supporting communication, collaboration, and psychological safety within teams. Others suggest that thinking-oriented roles may be particularly important in technical disciplines such as accounting, where analytical reasoning and problem-solving are central to learning and task completion. Action-oriented roles, in contrast, may be important in turning ideas into concrete outcomes and ensuring that project activities are carried out effectively. However, much of the existing research has focused on qualitative assessments, resulting in relatively limited quantitative evidence regarding how different team role orientations are associated with students' actual academic performance. To address this gap, this study applies Belbin's Team Role framework within an accounting Project-Based Learning (PBL) context. The analysis combines descriptive statistics of the Belbin role dimensions with linear regression to provide a more comprehensive view of students' team role orientations. This approach makes it possible to assess whether students' observed role orientations are consistent with the expectations of Belbin's framework and to examine how these orientations relate to their project performance.

Against this background, the study focuses on identifying which team role orientations are associated with project performance and exploring why the strengths typically attributed to particular roles may not always lead to better team outcomes during the implementation and coordination of PBL activities. Accordingly, the study has two main objectives. First, it examines the distribution of Belbin's Team Roles among accounting students. Second, it investigates the extent to which each role orientation is associated with team performance, as reflected in project grades. Theoretically, this study contributes to the broader discussion of the relative roles of cognitive, interpersonal, and action-oriented characteristics in knowledge-intensive learning environments. Practically, the findings may provide educators with a basis for moving beyond random team assignment and considering students' role orientations when forming PBL teams. Such an approach may also help students develop a better understanding of their individual strengths and contributions within a team, potentially supporting greater engagement and more effective participation in Project-Based Learning.

## Literature Review and Hypothesis Development

Belbin's Team Role Theory emphasizes that team effectiveness is shaped not only by members' technical skills but also by the way their behavioral characteristics complement one another within a team (M. Belbin, 2015; R. M. Belbin, 2012). The theory identifies nine team roles, which can be broadly classified into three behavioral orientations: People-Oriented, Thinking-Oriented, and Action-Oriented. People-Oriented roles comprise the Coordinator (CO), Resource Investigator (RI), and Teamworker (TW). These roles are generally associated with communication, relationship building, and fostering cooperation among team members. In contrast, Thinking-Oriented roles include the Plant (PL), Specialist (SP), and Monitor Evaluator (ME), which contribute to team performance through creativity, specialized expertise, and critical assessment of ideas and alternatives. In contrast, Action-Oriented roles, represented by the Shaper (SH), Implementer (IMP), and Completer Finisher (CF), focus on putting ideas into practice, maintaining progress, and ensuring that tasks are completed carefully and on time.

Belbin's framework has also been applied in higher education, particularly in collaborative and Project-Based Learning. Previous studies suggest that greater awareness of team roles can support collaboration, reduce interpersonal difficulties, and contribute to student performance in business-related education (Flores Ureba et al., 2022). In PBL settings, team composition has also been found to be relevant to project quality and academic outcomes, particularly when students' complementary characteristics are considered rather than relying solely on ad-hoc or self-selected groups (Aranzabal et al., 2022). Other

studies have combined Belbin's team roles with psychological assessment approaches, such as the MBTI framework, and have examined the relationship between team role profiles and achievement in engineering and business-related projects (Bullen & Wood, 2006; Gutiérrez et al., 2019). Overall, these studies indicate that effective teamwork may depend on the interaction of social, cognitive, and task-related contributions.

People-Oriented roles are closely related to the interpersonal and social dimensions of teamwork. Students who demonstrate these characteristics may contribute to a supportive team environment by facilitating communication, encouraging cooperation, and maintaining constructive interactions among team members. In collaborative case studies and project-based assignments, effective coordination and the ability to manage differences or conflicts can help teams stay focused on their common objectives (Flores-Parra et al., 2018). Positive interpersonal relationships may also encourage knowledge sharing and make it easier for students to respond to differences in opinions, perspectives, and working approaches. Based on this reasoning, the following hypothesis is proposed:

H1: People orientation in team roles has a significant positive effect on project grades.

Thinking-Oriented roles may be particularly relevant in knowledge-intensive disciplines such as accounting and finance, where students are required to analyze information, evaluate alternatives, and develop solutions to complex problems. Students with stronger Thinking-Oriented characteristics can contribute analytical perspectives, specialized knowledge, and critical evaluation when working on group assignments (Gutiérrez et al., 2019). These contributions may improve the depth and quality of the analysis and reasoning reflected in project work. Therefore, the following hypothesis is proposed:

H2: Thinking orientation in team roles has a significant positive effect on project grades.

Action-Oriented roles focus on translating ideas and plans into concrete actions and completed tasks. Within a Project-Based Learning environment, generating good ideas is only one part of the process; students must also organize activities, meet deadlines, coordinate responsibilities, and ensure that the expected outputs are delivered. Students with strong Action-Oriented characteristics may therefore help maintain project progress and minimize problems arising from delays or ineffective task coordination (M. Belbin, 2015). Since effective execution is essential for fulfilling project requirements and meeting assessment criteria, the following hypothesis is proposed:

H3: Action orientation in team roles has a significant positive effect on project grades.

Beyond examining the three behavioral dimensions separately, this study also considers students' primary team role orientation. A student's dominant orientation may shape how they contribute to group activities and respond to project responsibilities. When students' role characteristics are appropriately matched with the demands of a task, teams may experience less role ambiguity and more effective coordination (Aranzabal et al., 2022). Based on this perspective, the following hypothesis is proposed:

H4: Primary team role orientation alignment has a significant positive effect on project grades.

Finally, Belbin's framework emphasizes the importance of complementarity among different team roles rather than relying heavily on one particular behavioral orientation. A team with strong analytical abilities, for example, may still encounter difficulties if it lacks members who can organize and implement the agreed plans. Similarly, strong interpersonal relationships may not be sufficient when analytical and execution-related contributions are limited. Thus, the combination of People, Thinking, and Action orientations may provide a more balanced basis for teamwork and project completion (Aranzabal et al., 2022; Rehman et al., 2024). Accordingly, the following hypothesis is proposed:

H5: People, Thinking, and Action orientations in team roles simultaneously have a significant effect on project grades.

## Methods

This study employed a quantitative research design to examine the influence of team role orientations—People, Thinking, and Action—on accounting students' performance in project-based and case-based learning. The sample consisted of 34 students enrolled in an Accounting Information Systems course. Each student's preferred team role was identified using a questionnaire, and teams were subsequently formed based on the questionnaire results. Student performance was measured using project scores. Multiple regression analysis was conducted using SPSS to examine the relationship between students' team role orientations and their project performance.

## Research Results

The analysis describes the overall distribution of students' orientations for their roles in relation to the Project-Based Learning assignment scores for the major in the Accounting Information Systems course.

The orientations for roles fall into three categories: People, Thinking, and Action; each with a score determined by a predetermined description.

The descriptive distribution of respondents' performance indicators, specifically evaluating the scores for People, Thinking, and Action in relation to the final Case project outcomes. The People and Thinking scores follow an identical pattern, ranging from 1 to 6, and appear highly correlated. Action scores fluctuate between 1 and 3, yet correlate more strongly with the project score, while People and Thinking scores show only a moderate association with the project grade. And the final project scores show great variability, ranging from a minimum of 38 to a maximum score of 100.

When analyzing the correlations these individual competencies in People, Thinking and Action as team member to the final Case project scores, the results indicate that high project performance is achievable across diverse skill configurations. In controversial outcome in perfect scores in project grade of 100—are frequently attained not only by respondents with high ratings across People, Thinking, and Action (e.g., 5-4-3 or 6-6-6), but also by individuals with minimal baseline scores (e.g., 1-1-1 or 1-1-3). And the lower case scores (ranging from 38 to 69) appear broadly both low-scoring profiles (1-1-1) and moderate competency profiles (such as 4-3-3). The distribution of scores indicates that students' individual competency tendencies do not necessarily translate into higher project performance in any particular competency dimension. In other words, strong project performance cannot be explained simply by having a high score in a single competency area.

**Table 1**
**Validity and Reliability**

| Indicator (Dimension) | Pearson Correlation (Validity) | Cronbach's Alpha (Reliability) |
|---|---|---|
| **Orientation Teamwork** | | |
| People | 0.953 | 0.852 |
| Thinking | 0.953 | |
| Action | 0.670 | |

**Table Source: Processed Data**

The questionnaire used in this study measured three dimensions of team role orientation: People, Thinking, and Action. Before proceeding with the regression analysis, the instrument was assessed for validity and reliability to ensure that the measures adequately represented the intended constructs and produced consistent results.

As presented in Table 1, construct validity was assessed using Pearson's product-moment correlation coefficient. The analysis examined the relationships among the three dimensions of team role orientation: People, Thinking, and Action. The results showed positive correlations above the commonly used threshold of 0.30 across the dimensions. The People and Thinking dimensions showed strong correlations with the overall team role orientation score, with identical Pearson correlation coefficients of 0.953. The Action dimension also showed a substantial positive correlation, with a coefficient of 0.670. These findings indicate that the three dimensions are sufficiently related to the overall construct of team role orientation. All values exceeded the standard critical threshold, confirming that all indicator dimensions are empirically valid for measuring the construct.

To evaluate internal consistency, reliability testing was conducted using Cronbach's Alpha. The overall scale of questionnaire Orientation teamwork achieved Cronbach's Alpha coefficient of 0.852. The substantially value surpasses the universally accepted benchmark of 0.70, the measurement instrument demonstrates high internal consistency and reliability for further empirical evaluation.

**Table 2**
**Regression Analysis and Hypotheses Testing**

| Regression | β | Exp. | t | p | Result |
|---|---|---|---|---|---|
| H1: People ->Project Grade | - | - | - | - | Not significant (excluded) |
| H2: Thinking ->Project Grade | 31.866 | (+) | 2.337 | 0.026 | Significant |
| H3: Action->Project Grade | 16.285 | (+) | 2.374 | 0.024 | Significant |
| **F-ANOVA** | | | | | |
| H4: Orientation Teamwork -> Project Grade | | | 1.908 | 0.150 | Not significant |

**Table Source: Processed Data**

While Project-Based Learning relies on hands-on teamwork, our study demonstrates that merely getting along with teammates does not ensure better scores. However, this pleasant dynamic failed to yield top ratings since leadership was rather weak—the coordinator function fell below Team Worker levels—and outside research was limited, with Resource Investigators scoring at only 40%. On the other hand, cognitive capacities showed to be the most crucial determinant for success, supporting our second hypothesis. The results also provide support for the third hypothesis, indicating a positive relationship between Action orientation and project grades (β = 16.285). However, its contribution was smaller than that of Thinking orientation. The distribution of individual roles may help explain this finding. Students demonstrated a relatively strong tendency toward critical evaluation, with the Monitor Evaluator role accounting for 71.4%, the highest proportion among the roles examined. By comparison, the Implementer role was identified in 20% of students, while the Completer Finisher role accounted for 40%. This distribution indicates that students were more likely to demonstrate characteristics related to identifying problems, evaluating alternatives, and considering potential risks than those related to translating plans into action and systematically completing tasks. Such a pattern may present challenges when project activities require students to coordinate responsibilities, maintain progress, and complete tasks within the expected timeframe.

When the three team role orientations were examined together, the regression model did not reveal a statistically significant relationship with project grades (p = 0.150). Therefore, H4 was not supported. This result indicates that the combined presence of different role orientations was not significantly associated with students' project performance in this study. Although Belbin's framework emphasizes the importance of complementary roles within a team, the findings suggest that the contribution of a particular orientation may depend on the nature of the learning task and the way students coordinate their roles throughout the project. In accounting education, analytical and implementation-related characteristics may be more directly reflected in project completion, whereas interpersonal contributions may not necessarily be captured by project grades.

From a practical perspective, these findings suggest that educators could consider students' role characteristics as one of several factors when forming PBL teams, rather than relying solely on random assignment. For example, teams that include students with stronger analytical characteristics alongside those who demonstrate greater implementation-oriented tendencies may be better positioned to address both the analytical and practical aspects of accounting projects. Nevertheless, this possibility should be interpreted cautiously, as the present findings are based on a relatively small sample and a specific learning context. Further research involving larger samples, different courses, and varied PBL settings would be useful to determine whether similar patterns emerge across other accounting education contexts.

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**Table 3**
**Belbin Questionnaire Results**

| **1. People** | | | |
|---|---|---|---|
| **No** | **Role** | **Amount** | **Percentage** |
| 1 | Coordinator (CO) | 17 | 48.60% |
| 2 | Resource Investigator (RI) | 14 | 40% |
| 3 | Team worker (TW) | 21 | 60% |
| **2. Thinking** | | | |
| **No** | **Role** | **Amount** | **Percentage** |
| 1 | Plant (PL) | 21 | 60% |
| 2 | Shaper (SH) | 16 | 45.70% |
| 3 | Specialist (SS) | 11 | 31.40% |
| **3. Action** | | | |
| **No** | **Role** | **Amount** | **Percentage** |
| 1 | Completer-Finisher (CF) | 14 | 40% |
| 2 | Implementer (IMP) | 7 | 20% |
| 3 | Monitor-Evaluator (ME) | 25 | 71.40% |

**Table Source: Processed Data**

The results show that students tended to demonstrate stronger characteristics in critical evaluation. The Monitor Evaluator role was the most prominent, accounting for 71.4% of the students. In comparison, the Implementer role was observed in 20% of students, while the Completer Finisher role accounted for 40%. This distribution suggests that students were more inclined toward identifying problems, evaluating alternatives, and considering possible risks than toward turning plans into action and completing tasks in a systematic manner. In a Project-Based Learning setting, this difference in role characteristics could make it more challenging for some teams to coordinate responsibilities, maintain project progress, and complete activities within the required timeframe.

The regression analysis also showed that the three team role orientations, when considered simultaneously, were not significantly related to project grades ($p = 0.150$). Consequently, H4 was not supported. This finding indicates that having a combination of People-, Thinking-, and Action-oriented characteristics did not, by itself, result in significantly higher project performance in this study. While Belbin's framework highlights the importance of complementary roles in teamwork, the results suggest that the relevance of each orientation may vary depending on the nature of the learning task and how students actually work together during project implementation. In accounting education, analytical and implementation-related contributions may be more readily reflected in project outputs, whereas interpersonal contributions may not be directly represented in project grades.

These findings also have implications for the formation of PBL teams. Rather than relying exclusively on random group assignments, educators may consider students' role characteristics as one of the factors in designing project teams. Bringing together students who demonstrate stronger analytical tendencies with those who are more oriented toward implementation could provide opportunities to address different aspects of an accounting project, from analyzing problems to carrying out planned activities. However, this implication should be considered within the context of the present study. The relatively small sample and the specific learning environment limit the extent to which the findings can be generalized. Future studies involving larger samples, different accounting courses, and varied PBL settings could provide further evidence on how team role orientations relate to student performance.

**Overview Findings**

Considering the ability to create effective learning dynamism, lecturers are expected to study psychology team roles of students, embrace innovative learning methods, and be receptive to (Hanny et al., 2024). This research investigates team roles using Belbin's framework of People, Thinking and Action and examines the correlation of team outcomes (e.g., performance, effectiveness or project) to these team roles. The regression analysis results provide three key findings: first, the Thinking and Action dimensions have a significant and positive relationship with the dependent variable (project score). Neurocognitive processes, including associative thinking, divergent thinking, executive functions, and predictive representations, play a significant role in shaping the characteristics associated with creativity in doing project. Although creativity in action may lead to potential adverse outcomes, extensive study has firmly established its significance in academic accomplishment (Tzachrista et al., 2023). Second, the People dimension showed a non-significant relationship with project grades, which differs from what might generally be expected from the teamwork literature. Previous research has emphasized the importance of interpersonal relationships in educational settings. Interactions between lecturers and students, as well as relationships among peers, can influence students' learning experiences in higher education. Positive peer relationships have been linked to better academic achievement, while peer rejection may create difficulties for students in their learning process. Similarly, supportive relationships between lecturers and students can contribute to academic success by encouraging constructive interaction and engagement (Deng, 2024).

However, the findings of this study differ from those reported in some previous studies. Sengkey et al. (2022), for example, found that emotional intelligence had a positive and significant effect on student achievement. Their study also reported a positive and significant relationship between social media use and academic achievement among students at a Hospitality Management Community Academy in Indonesia. These differences indicate that the contribution of social and interpersonal factors may vary depending on the characteristics of the students, the learning environment, and the type of academic activity involved.

In this study, the People orientation was not significantly related to project grades. One possible explanation is that interpersonal cooperation by itself may not be enough to improve performance in a structured project-based task. Students may communicate effectively and maintain positive relationships with their peers, but successful project completion also requires coordination, analytical contributions, and the ability to turn ideas into completed tasks. Thus, the role of People-oriented characteristics may be more important for maintaining team cohesion and facilitating communication than for directly determining project grades. This finding also provides a broader perspective on team role composition in academic and project-based settings. In knowledge-intensive activities, interpersonal interaction is important, but its contribution may depend on how effectively it is combined with cognitive and task-oriented behaviours. Thus, the absence of a significant effect of the People dimension in this study should not be interpreted as indicating that interpersonal skills are unimportant. Rather, it suggests that their contribution to measurable project outcomes may be less direct and may depend on the interaction between social, thinking, and action-oriented roles within the team.

## Discussion & Conclusion

**The Positive Role of Thinking-Oriented Team Members**

The major outcome noted in this study is the large statistically significant contribution made by the Thinking dimension. The Thinking dimension comprises roles such as the Plant, Shaper, and Specialist, which are most commonly linked to analytical thinking, creativity, and the ability to identify and solve problems. The theoretical basis for this finding is not consistent with Belbin's view that cognitively related roles are central to generating new ideas to solve innovative problems and tackling complex problems. The high value of the standardized coefficient indicates that Thinking Roles are among the strongest predictors of team success in this model.

The findings are consistent with the more extensive theories of organizations and management, in which cognitive diversity and intellectual capital are two of the most important factors affecting a team's performance. Teams that develop strong analytical skills tend to be more effective at accurately identifying problems, creating strategic solutions, and managing uncertainty when using analytical skills. In an environment driven primarily by knowledge, performance is less a function of how well an organization executes its routine tasks and more a function of how well an organization generates new ideas and critically evaluates them. Therefore, the significant contribution of thinking roles in student teams suggests that teams benefit greatly from members who can challenge assumptions, propose alternatives, and synthesize complex information when completing project tasks.

Moreover, the high descriptive percentages for roles such as Plant (60%) indicate that the team already has a strong cognitive foundation. This reinforces the regression finding and suggests that the presence of such roles is not only statistically significant but also practically observable within the team's structure. The results show positive correlations between critical thinking and academic performance, with a stronger relationship between critical thinking and academic performance (Guamanga et al., 2024). A smart classroom environment directly enhanced students' critical thinking and creativity. In turn, these cognitive skills positively influenced their problem-solving abilities and academic performance. Furthermore, improved problem-solving skills had a direct positive effect on their academic performance (Almulla, 2023). First-year students and seniors translate various forms of engagement into academic success differently. Additionally, certain institutions are more effective in transforming student engagement into enhanced performance on critical thinking assessments (Carini et al., 2006). The findings support the idea that employing independent, course-based research in undergraduate science enhances the academic performance of students, including those not majoring in science (Caruso et al., 2016).

**The Positive Role of Action-Oriented Team Members**

Action-oriented roles are important in carrying a project through to completion, as they have a statistically significant partial effect on project scores, as indicated by a good KAT score. Alignment between individual role orientations and corresponding task responsibilities reduces role ambiguity and enhances personal self-efficacy. This alignment consequently results in increased overall team productivity and improved individual learning outcomes (Aranzabal et al., 2022).

The actions of a group project task team are essential for successful project execution, offering both distinct advantages and challenges. On the other hand, effective teamwork leverages diverse expertise to yield innovative, high-quality solutions while cultivating creative problem-solving and collaboration skills (Bechelova et al., 2024). Additionally, well-structured teams can strengthen mutual accountability and motivation, which may contribute to better project outcomes. However, group dynamics can also create challenges. One such challenge is groupthink, which may occur when strong cohesion discourages members from questioning ideas or critically evaluating decisions. Coordinating group activities can also require considerable time, while unresolved interpersonal conflicts may disrupt the workflow and negatively affect team performance (Bechelova et al., 2024). Therefore, effective team management is needed to make use of diverse skills and shared responsibilities while reducing the potential for conflict and differences in perceptions.

**The Paradox of People-Oriented Roles**

One of the more unexpected findings of this study is the insignificant effect of the People dimension. This dimension includes roles such as Coordinator, Resource Investigator, and Teamworker, which are generally associated with communication, collaboration, and interpersonal relationships within a team. At first glance, this result appears to be counterintuitive. The existing literature generally emphasizes the importance of interpersonal cohesion and collaboration in achieving team success. However, several theoretical and contextual explanations can account for this unexpected result. Middle schoolers' SCT is related to both their social support systems and their educational performance in a statistically significant way. Moreover, social support positively influences educational performance indirectly through learning engagement and self-efficacy. Results of this study also highlight the vital role of self-efficacy in mediating the relationship between social support and academic performance. This research provides valuable insight into how social support impacts academic performance for Chinese middle school students; specifically, through its effects on their levels of learning engagement and self-efficacy (Y. Zhang & Wen, 2017). These relationships can profoundly influence students' academic performance, with peer acceptance showing a positive correlation and peer rejection showing a negative correlation with academic achievement among adolescents (Deng, 2024).

A high concentration of people-oriented roles may lead to an excessive focus on maintaining harmony and avoiding conflict. While cohesion is important, excessive emphasis on agreement can suppress critical debates and reduce decision quality. This phenomenon is often linked to groupthink, in which teams prioritize consensus over optimal solutions. This helps to clarify the complex ways in which social support, self-efficacy, learning engagement, and academic success relate to and impact upon one another.

All of these relations have a substantial impact upon the academic performance of students, as peer acceptance has a positive association with, and peer rejection has a negative association with, academic success in adolescents; whereas the teacher-student relationship has a bi-directional effect upon academic performance. In addition to direct influences, the development of interpersonal relationships also impacts

academic success through intermediate mechanisms of motivation, sense of belongingness in schools, and levels of academic engagement (Deng, 2024; X. Zhang & Qian, 2024).
Teams dominated by interpersonal roles may allocate more time to communication and relationship building than to task execution and problem solving. This imbalance can reduce efficiency, particularly in environments that require high productivity and analytical output levels. According to the research study, there are five categories of factors related to dynamics of power on interprofessional healthcare teams: team-specific factors (the lack of equal allocation of space/time and respect of medical hierarchy); role-specific factors (lack of support/recognition, lack of definition of roles/responsibilities, lack of trust in others' abilities/competency); communication-specific factors (the nature/tone of communication, receptivity and responsiveness); trust and respect; and individual-specific factors (positive/teamwork attitude).

The study also identified ways to address the contributing factors associated with power imbalances, including: collaboration (i.e., developing an atmosphere that promotes equality/safety) with an open-door policy; open/direct communication; education and mentoring of each other; and utilizing a merit-based allocation of leadership roles for team members (Okpala, 2021).

High collaboration within teams often triggers social loafing, a phenomenon where members reduce personal effort and rely on peers, ultimately lowering individual accountability and team performance. This issue is compounded by unbalanced team roles; for example, an overconcentration of People-oriented roles (like Team Workers, who make up 60% of the sample) fosters support but fails to drive outputs without strong execution and analysis. Although Action-oriented roles, such as Implementer and Completer-Finisher, are important for completing tasks, their contribution to project performance may be limited in highly standardized environments. When tasks are guided by established procedures, individual differences in execution may have less influence on the final outcome. In addition, action-oriented efforts may be less effective when they are not supported by clear planning and direction from Thinking-oriented roles.

The combination of descriptive Belbin data and regression analysis provides a more detailed view of the relationship between team role orientations and project performance. The results show that students were distributed across the People, Thinking, and Action categories, with relatively high representation of Teamworkers, Plants, and Monitor-Evaluators. However, only the Thinking and Action dimensions showed a statistically significant positive relationship with project performance, while the People dimension was not statistically significant. This suggests that the presence of a particular role orientation alone may not be sufficient to explain team performance. Rather, effective project work may depend on how different strengths are combined and coordinated within the team. This finding is broadly consistent with Belbin's view that effective teams benefit from complementary roles, where different behavioral strengths contribute to planning, collaboration, and task completion.

**Theoretical Implications**

This study makes multiple contributions to the current body of literature by: 1) revisiting the impact of collaborative efforts that have normally been seen as beneficial. However, this article suggests there can also be negative consequences due to increased attention to interpersonal roles (i.e., collaboration). Furthermore, this article goes against the traditional assumption that increased collaboration will always lead to improved results in doing project learning case in accounting education. Additionally, the problems associated with team selection are widespread and apply to all kinds of industries (e.g., education, sports and general business). One of the key challenges for team leaders is determining which team members to choose because of the difficulty of creating a well-balanced, cohesive group that performs at a high level (Flores-Parra et al., 2018). 2) Setting the Context for Belbin's Theory Many of the results seem to show that different styles of team roles have their effectiveness in a particular context. In environments where there are high demands on knowledge, cognitive team roles may be much more important than either relational or execution styles. 3) Importance of Role Balance: the findings empirically support the notion that team effectiveness is reliant on a balanced distribution of roles, rather than the predominance of any single dominant role.

This discussion highlights two important points about teamwork and the role of team composition.

a. The importance of using team roles appropriately
   Although teamwork and collaboration are generally considered beneficial, an excessive focus on team roles does not necessarily lead to better performance. In some situations, relying too heavily on particular role characteristics may even create challenges for the team. For example, Coordinators, formerly referred to as Chairmen, may be effective in organizing team activities but may not always be strong negotiators because interpersonal and emotional dynamics can affect their decision-making. Similarly, Resource Investigators are typically energetic and outgoing, but these characteristics do not necessarily make them effective negotiators. Understanding the strengths and potential limitations associated with different Belbin roles can help teams combine members more effectively. For example, pairing an assertive Shaper with a creative Plant may provide a balance between task execution and the generation of new ideas (Macrosson & Hemphill, 2001).
b. The effectiveness of team roles depends on the context
   The contribution of different team roles may also vary according to the nature of the task and the working environment. In knowledge-intensive settings, Thinking-oriented roles may be particularly important because they emphasize critical thinking, analysis, and problem-solving. In addition, a balanced distribution of team roles may support group performance, particularly during the early stages of a project, although this benefit may become less evident as the project progresses. Role balance can also increase the cognitive complexity of a team, but it does not necessarily result in higher perceptions of teamwork quality. Importantly, the effects of role balance are better understood when team roles are considered as an interconnected pattern across the group rather than simply as a count of individual strengths (Meslec & Curşeu, 2015).
c. Research showed that teams perform best when maintaining a balanced mix of roles rather than allowing a single behavioral type to dominate. This concept aligns with findings from a case study on university students using Lego Serious Play and agile methodologies, where the Naira multimodal analysis platform successfully tracked behavioral traces for both Social and Action roles through sociograms and audio interactions (Monsalves et al., 2023). Project-Based Learning tasks—such as producing high-quality team reports—achieve maximum effectiveness when project demands are carefully aligned with the individual personality traits and natural characteristics of the team members (Kamal, 2018).

**Practical Implications**

**Team Composition Strategy**

Effective organizational and institutional teams need to utilize a balance of roles to maximize their effectiveness and promote innovation. Too much emphasis on people-oriented roles within a group could result in a high degree of cohesiveness but may also cause a lack of critical thinking and analysis as well as a failure to execute decisions. It is imperative, therefore, to have an appropriate number of roles for thinking-oriented individuals that provide analytical contributions, problem-solving skills and strategic thought for the team. In addition, action-oriented roles should align their work with the strategic intent of the team, to create purpose, organization, and support for implementer's strategies. This balanced approach facilitates the team's ability to work, combining collaborations, critical thinking and action. This view is also consistent with behaviorist learning theory, which emphasizes that group learning produces behavioral changes through the interaction of stimuli and responses among members, if a member responds negatively to another member's input, the group's learning process becomes less than optimal and can disrupt classroom learning strategies. (Puspitasari et al., 2023).

**Leadership and Decision-Making**

To create a positive atmosphere that promotes positive friction and constructive debate, leaders need to consciously promote an environment that allows for alternative points of view to be shared. Leaders also need to thoughtfully avoid developing a sole reliance upon decisions being made through consensus, as this could create "groupthink" among the group and limit the amount of creativity generated by the group. Leaders should focus more on promoting objective, data-based and analytic decision-making as compared to only using consensus or the notion of interpersonal harmony as a rationale for making a decision. The majority of students, lecturers, and education staff consider the importance of improving hard skills, soft skills, competence, work readiness, learning quality, lecturer capacity, and the achievement of graduate competencies according to future needs, and in this case also related to the role of students in developing leadership in group cooperation (Susilawati et al., 2023).

**Training and Development**
When designing training programs, the main priority should be to support the development of critical thinking and problem-solving abilities; increase the ability to deliver in a way that furthers the strategic goals of the organization; and raising employees' awareness regarding the appropriate balance between their individual roles and those of other team members. Quality learning involves more than simply transferring knowledge. It also helps students develop important attitudes, such as critical thinking, a scientific way of thinking, and a willingness to continuously seek knowledge and understanding. Therefore, lecturers have a role that extends beyond delivering course content. They also help guide students in developing these attitudes and in working effectively with others, which can contribute to the success of student teams (Angela et al., 2017).

## Limitation & Future Research

The study is limited by its accounting education context, relatively limited sample, and focus on Belbin's team roles. Future research should use larger, more diverse, and longitudinal samples drawn from different types of institutions while incorporating motivation, leadership, communication, and team cohesion. Comparative and experimental studies could further examine how team-role composition influences PBL outcomes across different learning contexts.

## Declaration of Generative AI Use

The authors report that generative AI tools were used to assist with language editing, grammar checking, paraphrasing, and improving the clarity of the manuscript. The authors remain fully responsible for all the content, analysis, interpretation, and final version of the manuscript.

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