# USING MYERS-BRIGGS TYPE INDICATOR (MBTI) FOR ASSESSMENT SUCCESS OF STUDENT GROUPS IN PROJECT BASED LEARNING

Vicente Rodríguez Montequín, Joaquín Villanueva Balsera
José Manuel Mesa Fernández and Javier De Cos Juez

*Area de Proyectos de Ingeniería, Universidad de Oviedo, C/Independencia 13, 33004 Oviedo, Spain*

Keywords:     Project management, Project based learning, Collaborative projects, Learning through projects, MBTI.

Abstract:     One of the most used teaching methodologies nowadays is project based learning: organizing students in small groups and provide them with a real-life project to manage with. Group work on a real-life project is a very interesting teaching instrument since groups act as project teams and the project ideas are close to the student field of professional interest. In addition to the technical skills, there are other aspects influencing the result under this paradigm: management and personality. The students should work in a collaborative way in order to achieve the best outcomes. This methodology is very effective for learning and a high student motivation and satisfaction could be reached, but usually conflicts between group members arise, resulting in poor results. The source of conflicts could often be found in the different personalities among group members. The Myers-Briggs Type Indicator (MBTI) has become one of the most widely-used psychometric instruments for assessing personality characteristics regarding work environment. It postulates that four different behaviour stiles give rise to four separate but interrelated ranges of personal preferences or natural tendencies in a given situation. The MBTI suggests that every personality type has a behaviour that could be used to explain some kind of conflicts. Knowing more about the personality of the team members and how different personalities compliment or conflict with each other can be useful information for building and leading a students' group. The results of this study have implications for assessment the success of student groups working in collaborative projects.

## 1 INTRODUCTION

Group work on a project is a very interesting teaching instrument, since student groups act as project teams and the project ideas are close to their field of professional interest. This paradigm is often called Project-based learning (PBL), that is an instructional methodology in which students learn important skills by doing actual projects. Students apply core academic skills and creativity to solve authentic problems in real world situations. Students use a wide range of tools and the culminating projects are tangible and observable artifacts that serve as evidence of what the students have learned. This paradigm is commonly used in technological studies, mainly in Higher Education, and it is becoming even more important in relation to the Bolonia new teaching methodologies. Students learn best when they are actively involved in the process. Researchers report that, regardless of the subject matter, students working in small groups tend to learn more of what is taught and retain it longer than when the same content is presented in other instructional formats. Students who work in collaborative groups also appear more satisfied with their classes. Project-based learning is based on the constructivist learning theory, which finds that learning is deeper and more meaningful when students are involved in constructing their own knowledge. Students are given the opportunity to select a topic that interests them within the required content framework and then they are responsible for creating their project plan. Rather than a lecturer, typically, the teacher's role is that of an academic advisor, mentor, facilitator, task master and evaluator.

Usually the achieved outcomes are very good, and the level of involvement of students is very high. But, despite considerable potential, project-based learning is not without its challenges. One of

the most important is that members should work in a successful collaborative way. Under this situation, many conflicts among members could arise, mainly due to human aspects, for instance, different personalities and students' emotions. These conflicts could turn a successful project into an unsuccessful one, disabling the collaborative work. After several years using project based learning in the engineering environment, it has been observed that some kind of conflicts appear more frecuently when some combinations of personalities coexists in the group. The Myers-Briggs Type Indicator (MBTI) could be useful finding this kind of combinations, and so forming an assessment tool for the group success.

## 2 THE MYERS-BRIGGS TYPE INDICATOR

The Myers-Briggs Type Indicator (MBTI) has been, for more than fifty years, one of the most trusted and widely used instruments in the world for determining the personality type. This tool was developed by Isabel Myers and Katherine Briggs (Myers and Briggs, 1980), based on Carl G. Jung's work (Jung, 1988) of psychological types. This theory explains that differences in human behaviour are simply the result of a few variations in mental functioning. These differences relate to how people prefer to use their minds, and particularly how they perceive and make judgments, which are called functions. There are four groups, each one consisting of two opposite preferences:

1. Focus of Attention:
   - ➢ Extrovert (E): Those who relate best to the outer world. They are comfortable in talking and sharing with others. They gain their energy from working with groups.
   - ➢ Introvert (I): Those who relate best to their inner self. They are comfortable in working quietly alone. They drain their energy from interactions in a group.
2. Seeking Information:
   - ➢ Sensing (S): Those who rely on facts, reality and no nonsense. They focus on the details. When asked to review a document, they like to find typographical errors and misspellings.
   - ➢ Intuitive (N): Those who use intuition, speculation, possibilities and imagination. They focus on the big picture. When asked to review a document, they like to identify

problems in how the topic in the document was developed.
3. Decision-Making:
   - ➢ Thinking (T): Decisions are made by using sound principles, laws, policy and criteria. Thinkers are analytical, logical, and objective.
   - ➢ Feeling (F): Decisions are made by values, devotion, sympathy, and harmony. Feelers will take the emotions and opinions of others into consideration when making a decision. They have a strong need to maintain harmony within a group.
4. Relationships with the World:
   - ➢ Judging (J): They are outcome-oriented, regulated, and decisive. They make decisions quickly. Judging members like to get things settled or come to a closure.
   - ➢ Perceiving (P): They are process-oriented, flexible, and open-minded. They make decisions slowly. Perceiving members like to get additional information or consider a new possibility.

Using the MBTI, every individual's personality type can be described through four variables of two opposite states, which makes up a total of sixteen possible personalities (figure 1). For example, if a person takes the MBTI test and the type reported is ISTJ, means that has preferences for Introversion, Sensing, Thinking and Judging.
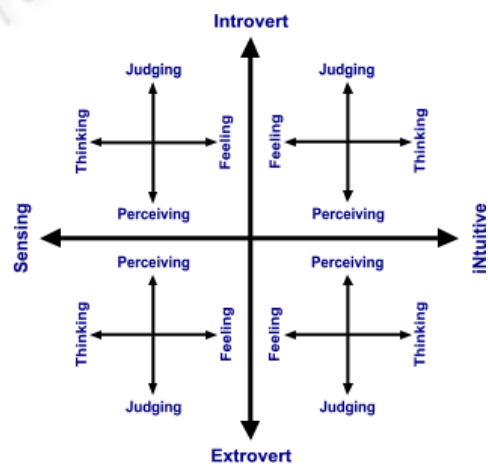


Figure 1: MBTI grid (Source: Max Wideman).

Knowing more about the team member personality and how different personalities compliment or conflict can be useful information in building and leading a project team. For example, MacDonald (MacDonald et al., 1986) highlighted the characteristics of design teams that include

leadership, conflict, communication, size, team maturity, coordination, and cohesiveness. Prince (Prince A., Brannick, Prince C. and Salas, 1992) identified six skills of team process behaviours: leadership, assertiveness, decision-making, mission analysis, situation awareness, communication, adaptability and flexibility. Sundstrom (Sundstrom, DeMeuse and Futrell, 1990) emphasized the important factor to be an effective team, such as organizational structure and culture, mature communication, group stability over time, experience, small group, and personality traits. The flexibility and involvement of teamwork also help ensure the quality of team performace (Campion, Medsker and Higgs, 1993) (Stinson, 1990). The Myers-Briggs Type Indicator, that has become one of the most widely-used psychometric instruments for assessing personality characteristics regarding to work environment, could be very useful performing an assessment of those features.

Keirsey and Bates (Keirsey and Bates, 1984) have identified the distribution of personality types through the sixteen cells of the four by four MBTI grid. By using this as a basis for comparison, we can gain an interesting insight into the availability of people suited to various roles in project work. The personality styles and their preferences represented by each cell in the grid reflect the interaction of various combinations of temperaments, rather than the individual temperaments on their own. The descriptions provided by the MBTI give valuable insight into the differences between regular people. These differences can be the source of much difficulty in understanding and communication, attributes that are so important in project teamwork. The most effective teams should have a good combination of personality types.

To ensure a successful team, it is important to understand the characteristics of team members. To build a successful project team, teamwork capability of team members is needed by taking their experience, communication skills, and flexibility in job assignment into account. Personality profiling using Myers-Briggs type indicator serves as the basis of assessing each team member's abilities to work with others.

But inside the team not all the members have the same relevance. In project based learning, there is usually a student playing the role of project manager. The behaviour of this student is very important because he is responsible for coordinating a leading the group. The team performance depends most of the times on the leadership style of this key role. The MBTI theory has also applied for featuring the personality of project managers. Shenhar and Wideman (Shenhar and Wideman, 2000) reported on the personality characteristics of project managers. Their analysis shows that indeed many MBTI types might be suited for project managers while others are not. However, they state that the ESTJ type is a favored type of project managers. Smith in his research (Smith, 2001) confirmed Shenhar and Wideman's work and found the four outer quadrants of the 16 types in the MBTI table as suitable for project management. Mills (Mills, Robey and Smith, 1985) using the MBTI also found that traditional managers were either ESTJ or ISTJ, the S being the dominant characteristic for project managers. Black and Slaker (Black and Seaker, 2004) found that NT (intuitive thinking) types had greater leadership tendencies.

Wideman and Shenhar (figure 2) also state that there is a relationship between some type of personality types and their leadership style (coordinator, administrator, explorer or driver). These styles could be translated to the well known Blake-Mouton Managerial Grid descriptions.
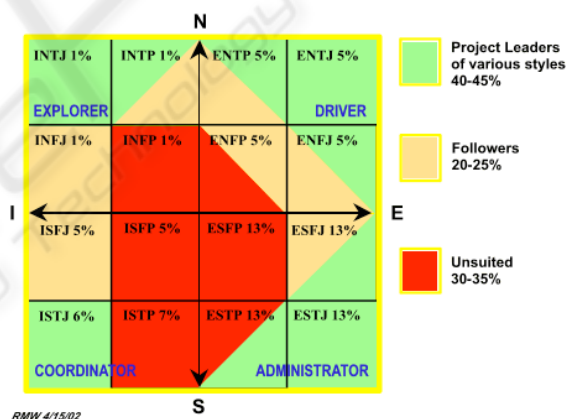


Figure 2: The MBTI Grid and Suitability to Project Management Teamwork (Source: Max Wideman).

According to the classification of the figure 2, group members could be tagged as 'suitable project managers', followers or unsuited.

# 3 PRACTICAL EXPERIENCES

Students from Oviedo University enrolled in the last course of Industrial Engineering have been taking the MBTI personality test in order to assess their personality types for the last four years. More than 30 groups of students have been assessed, with a total of 400 students overall. It has been assessed whether there could be a relation between the

combination of MBTI personality types and the quality of the output works developed by the students. In order to assess the quality of the resulting works, some criteria have been considered:

1. Technical qualities.
2. Quality of documentation presented.
3. Management of team work.

The technical quality shows aspects as the adequacy and scope of the project, fulfillment of requirements, use of innovative techniques, adequacy to a real-life environment, realism in project estimation and detailed planning.

The quality of documentation reflects whether it is well adjusted to the demands of structural documentation for project management, with a clear and smooth writing. Detail and clarity of exposition is also considered.

Work groups work together as a project team, one of them taking the role as the project manager. This project leader takes a secretary as his assistant in management tasks. Groups are formed by 10-15 students each.

The tasks of the professor are of a double nature: speaking both on behalf of the customer, guiding the students on contents and focus of the project, and also from a pedagogical approach as their tutor.

Group monitoring is made through weekly sessions. The aim of this meetings is to present the work already done, discuss possible technical aspects and the planning of due work. Minutes are also a part of this monitoring process, reflecting what has been said and done in every work meeting.

Students have a website at their disposal, to upload work documents, also including discussion forums to communicate with each other and raise any doubt. These forums are also monitored as part of the groups' assessment.

Analyzing the failed projects carried out during these years, lack of internal coordination was detected as the most recurrent cause explaining failure to achieve the expected results in certain groups. A relationship could be observed between the MBTI profiles of the members and some cases of poor coordination and internal conflicts. For example, two of the most conflictive groups were composed with similar types: there were a high number of members with the same profile. In both cases, almost all the members of the group were ISTJ. Also in both groups there were conflicts between members of the groups. Most of the conflicts happened with 'unsuited' members according to figure 2. Nevertheless, other groups reaching a high level result, show more balanced mix of profiles.

## 4 CONCLUSIONS

In this paper, we presented a suggestion about the influence of different personality types over students in Project-Based Learning. MBTI, is one of the most used personality profiling regarding to working relationships. MBTI is a tool with intent not to stereotype, but to allow understanding of individual preferences to facilitate all aspects of life: differences in learning and communication styles, conflict management, and relationships. As presented in the paper, previous experiences of students taking MBTI test and using PBL for several years, show that there is a relationship between the result success and the different member profiles. Considering this situation, MBTI could be useful for the assessment of the team success, or at least to be prepared to face some kind of conflicts depending on the combination of profiles.

## REFERENCES

Black K. and Seaker R., *Project performance: implications of personality preferences and double loop learning*, J Am Acad Bus 4 (1/2) (2004), pp. 292–297.

Campion M. A., Medsker G. J., and Higgs A. C. *Relations between work group characteristics and effectiveness: Implications for designing effective work groups* Pers. Psychology, vol. 46, 1993.

Jung, Carl G., *Psychological Types*, Journal of Psychological Type, Volume 15, 1988, pp. 50 – 53

Keirsey D., and Bates M. 1984. *Please Understand Me: Character and Temperament Types.* Prometheus Nemesis Book Company, CA: 3-4

MacDonad, W.R. et al. *Characteristics of interdisciplinary research teams. Interdisciplinary Analysis and Research.* D. E. Chubin et al. Eds: Lomond, 1986, pp. 395-406.

Mills J., Robey D. and Smith L., *Conflict handling and personality dimension of project management personnel*, Psychol Rep 57 (1985), pp. 1135–1143.

Myers, Isabel Briggs, with Peter B. Myers, *Gifts Differing*, Consulting Psychologists Press, Palo Alto, CA, 1980

Prince, A. Brannick, M. T., Prince, C., and Salas, E. *Team process measurement and implications for training* in Proc. Human Factors Soc. 36th Annual meerint, vol. 2. San Francisco, CA, 1992.

Shenhar AJ, Wideman RM. 2000. *Matching project management style with project type for optimum success.* PMForum internet site at www.pmforum.com, also found at http://www.maxwideman.com/papers/profiles/observa tions.htm.

Smith LW. *The effects of project manager personality profiles on projects*. In: Proceedings of the Project

Management Institute Annual Seminars and Symposium, Nashville, TN; 2001.

Stinson, T. *Teamwork in real engineering*. Mach. Des., vol. 22, Mar. 1990.

Sundstrom E., DeMeuse K. P., and Futrell D. *Work teams, applications and effectiveness* Amer. Psychologist, vol. 45, no.2, 1990.