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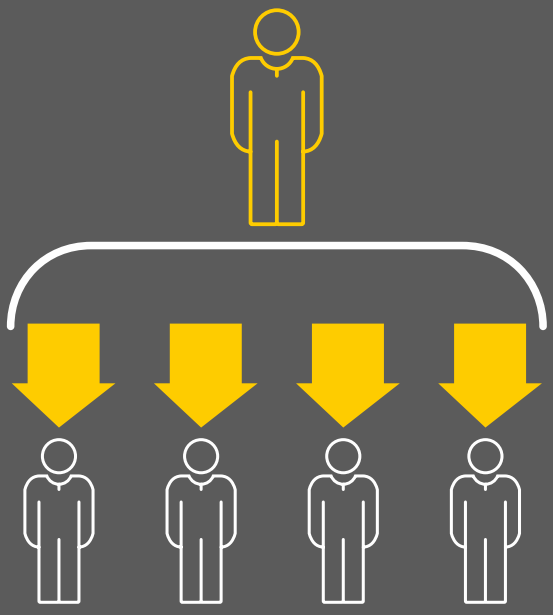
PRACTICAL LESSONS LEARNED FROM UNIVERSITY STUDENTS



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Practical lessons learned from university students

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Content

Were all instructors to realize that the quality of the mental process, not the production of correct answers, is the measure of educative growth, something hardly less than a revolution in teaching would be worked.

John Dewey,
Democracy and Education, 1916

Introduction

This book features the competences and skills that the university students as future leaders should acquire in order to work in virtual teams. Virtual teams have become the basic unit for many organizations. Combined work using different technology, places, time zones, persons of different cultures requires knowledge and skills to lead this team. Unreflective teaching methods can cause a lower level of efficiency and effectiveness. The gap knowledge about todays students' skills of virtual work may be interesting for university lecturers to improve the quality of university leadership programs, and also for HR practitioners to develop managerial competences.

This book focuses on leading and developing virtual teams in the process of shaping their competence for the new (prospects) organizational requirements. The effective strategies and clever techniques to improve leadership and management skills are needed in the virtual environment. The premise of this book is to pay attention how to lead and develop virtual teams by providing more directed tips to improve the quality of a university program and thereby develop effective leaders within their organization. The better the leadership, the better the virtual teams.

The book consists of four chapters. The first chapter presents an overview of the characteristics of virtual teams and shows the specificity of multicultural virtual teams. The various methods used by university lecturers in order to develop students' multicultural and virtual teamwork skills and the factors which influence whether these methods are used or whether they are efficient are tackled. Acknowledging these factors can help lecturers understand how the teaching of multicultural and virtual teamworking skills leads to the growth and development of students for the current job market requirements, and how to better plan their courses and materials in accordance to the methods used. The second chapter focuses mainly on leadership to better understanding how to be an effective virtual leader. This part presents definitions of e-leadership and e-leader competences that are needed in the digital era to work better, faster, and effectively in virtual environment. Next, e-leadership skills among university students are presented with the practical tips for education to e-leaders in a virtual team. The third chapter pays attention to managing performance in a virtual team with strategies to improve it. Identifying efficient mechanisms to improve the virtual team's performance is undoubtedly a major interest for the scholarly research. The fourth chapter presents the teaching strategies and tools for virtual team work in order to develop the education programs.

The recommendations for the implementation of a virtual teaching method are indicated in the book.

The book was written as part of the project titled "BUT InterAcademic Partnerships" (No. PPI/APM/2018/1/0003) funded by the Polish National Agency for Academic Exchange (NAWA). The aim of NAWA is to foster the development of Poland in the area of science and higher education. The subproject "Cross-cultural teamwork" under „ BUT InterAcademic Partnerships" was carried out by Bialystok University of Technology (Poland) in cooperation with Babes Bolyai University (Romania). The aim of the research in this project was to identify the readiness, requirements and motivation to work in traditional and virtual multicultural teams by university students and academic teachers and to present the recommendations for developing the quality of education programs.

Three-stage, quantitative and qualitative, research was conducted in this project. The quantitative survey involved 2,100 students (1,121 from Poland and 979 from Romania) and 119 teachers (62 from Poland and 57 from Romania). At the first stage, a questionnaire was addressed to students, at the second to academic teachers. The study adopted a questionnaire administered online in order to reach the largest possible group of respondents. The results obtained in this way allow us to know the opinion of a given group of respondents on the research topic and to use them to form certain generalizations. An invitation email containing a link to an online survey was sent to all classes from the bachelor and the master programs of all specializations and academic teachers.

The questionnaire addressed to students referred to issues related to working, motivation and involvement in multicultural teams. The respondents were asked about their experience and the level of satisfaction associated with such activities. Later, the researchers focused on necessary competences that determine the success of a multicultural team. Another important issue entailed benefits that can result from such cooperation and barriers that the participants of a given team must overcome. The second part of the questionnaire covered the issue of working in virtual teams. Apart from issues related to experience, motivation and benefits, students were asked about their knowledge of particular programs and technical solutions. The third part concerned cultural intelligence, trust and leadership. An important element was to determine language proficiency of the respondents.

The questionnaire addressed to academic teachers concerned the role of teaching and methodology used in shaping competences necessary to work in multicultural and virtual teams and its effectiveness. The respondents were requested to refer to the issue of usefulness of applying these skills in professional life. An important element of the research was also the comparison of work in traditional teams with work in multicultural teams and in virtual teams with a focus on the respondents' experience in this area. The researchers as well referred to the challenges related to the management of such groups of people and the role of a leader in achieving team success.

The questionnaire for students and academic teachers was applied in the native language (i.e. Polish and Romanian language). In the both questionnaires the 5-point Likert scale was used. The applied research questionnaires are included in the attachments. The whole questionnaires or their parts can be used to diagnose the profile of students, their predisposition to multicultural stationary and virtual work.

The last stage of the research was devoted to initiating work in virtual and multicultural teams. The one-week workshop was held in Cluj-Napoca (Romania) in September of 2019 with selected students from both focus groups (12 from Poland and 11 from Romania). Participants of different nationality, gender, age, year of study, faculties (Faculty of Engineering Management, Faculty of Economics and Business Administration) and specializations (management, logistics, service management and engineering, production management and engineering, economy, administration) took part in the workshop. During workshops, students gained knowledge on issues related to culture, leadership, values and personality traits that are needed to work in a team. Both lecturers from Poland and Romania shared their knowledge and experience related to this issue. Subsequently, students in multicultural teams worked on the spot and virtually. In performing tasks, they expressed their thoughts on the quality of cooperation. During workshops, the participants completed numerous questionnaires. Additionally, apart from quantitative studies, the researchers conducted a non-participatory observation of the work of the created teams.

The specific chapters present detailed information about the results of project activities with practical recommendation for academic lecturers to develop quality of a university program, and also for HR practitioners to improve managerial competences of younger generations.

Chapter 1. Evolution of virtual teamwork – an historical perspective

1.1. Characteristics of virtual teams

Teamwork and the concept of collaborating in order to achieve high productivity levels or boost quality and competitiveness of products and services have been recently widely adopted throughout organizations, regardless of the domain, country or culture. However, in recent years, traditional face-to-face teamwork has been slowly replaced by virtual collaboration tools, where space and occasionally time constraints are removed completely, bringing many advantages such as: enhanced access to global markets (Cascio, 2000), greater flexibility and responsiveness (Hunsaker and Hunsaker, 2008; Piccoli et al., 2004; Powell et al., 2004), opportunities to reduce travel, relocation, operating and capital costs (Dulebohn and Hoch, 2017; Geister et al., 2006).

From a historical perspective, the advantages mentioned by the first studies published on this topic were: flexibility, responsiveness, lower costs and improved resource utilization (Ratcheva and Vyakarnam, 2001 after Peters, 1992; Steward, 1994). We notice that some of the advantages mentioned right from the beginning of the researches are still valid today, even though the field has evolved greatly.

As mentioned above, there are many benefits that virtual teamwork can bring to an organization, which have to be deeply analyzed by managers and decision makers in order to ensure that the benefits will increase the well-being and the performance of employees and naturally, the organization's competitiveness and performance. Due to its benefits, many companies from specific domains have adopted virtual teamwork as early as possible, due to the nature of their work: software companies or business process outsourcing (BPO) companies that are usually located in low-cost regions and have to collaborate with their customers through information and telecommunication technologies in order to achieve the desired integration of the processes.

However, many companies from domains that traditionally did not rely on virtual collaboration have taken steps into digitization as a means of responding to the increasing demands associated with rapid environmental changes, globalization, and heightened technical complexity (Schaubroeck and Yu, 2017), digitization that often involves

collaborating regardless of space and time, between people that have various skill-sets and located in different regions.

The influence of the information technologies has increased rapidly in the last two decades and has changed the way many companies function and interact with their consumers, other companies or even the environment, with the major benefit that they speed up the flow of information and communication (Mitic et al., 2017). Due to this influence, more and more technologies have been brought to market that enable virtual teamwork, as an addition to the tools that companies have in order to collaborate and communicate efficiently.

Globalization, a term that describes a complex, vast connection between people, organizations and nations worldwide, enhances the welfare of an open-economy in general via channels of capital flows, foreign direct investments and international trade (Gozgor et al., 2020), and is a great contributor to the development and growth of virtual teamwork. Globalization has been manifested by multi-national corporations that operate on a global level and they have been early users of the tools that enable virtual teamwork. Strategies are developed in order to coordinate geographically dispersed units, to manage complex tasks that are implemented on a global scale and which are heavily influenced by each nation's culture but nonetheless, managing people, including their social interaction needs, performance and objectives.

Flexibility, one more important aspect that organizations search for through virtual teamwork, represents a true asset, a benefit that is required by many employees. Virtual teamwork enables flexibility by not having space or time constraints and enabling employees to manage, to a certain extent, their schedule. In a context defined by constant change, flexibility is greatly valued by employees, value which determines organizations to pursue more and more virtual teamwork for their employees benefit. For example, such flexibility will promote work-life balance of employees and potentially improve their job satisfaction (Liao, 2017; Zuofa and Ochieng, 2017; Acharya, 2019).

In addition to the points mentioned above, one important aspect that led to the growth of virtual teamwork is increasing hardware and software quality, enabling virtual communication and collaboration as easily as possible. Regarding hardware, most modern laptops, desktops and smartphones have integrated high-quality voice and video recorders that provides employees the means to collaborate efficiently. Moreover, software has seen even greater improvements during the last decade regarding virtual collaboration and communication tools, anticipating and then developing software tools that are in sync with the needs of virtual teams, including task management, objective management, performance measuring or enabling social interaction.

Virtual teamwork is becoming an essential part of work organizations, utilizing the skills and abilities of their workforce regardless of where they are located (Schmidtke and Cummings, 2017). Its importance to organizations worldwide has been growing stronger, as we continue to involve information and communication technologies more and more in day-to-day activities, influencing people as well as businesses.

Following recent trends in terms of technology, including automation of repetitive tasks, using robots in manual activities or using Cloud technologies in order to have data permanently available and secure, virtual collaboration is a necessary step in order to achieve the digitization of modern organizations and enable employees to work regardless of time and space constraints. Also, due to the dynamic and competitive environment in which they operate, companies must respond quickly and innovative to market demands. In order to proactively take advantage of time-sensitive business opportunities, intensive communication among team members is needed. In this context, tasks or projects carried out by virtual teams are becoming more and more frequent, especially that globalization and technological evolution are also being experienced. In this context, investments in teamwork skills development and technologies that support online communication and collaboration are crucial. It is not surprising that this topic has attracted the attention of many researchers and practitioners.

A growing number of employees use virtual communication and collaboration tools. More than 60% of multinational organizations use virtual teams as part of their activity (Laitinen and Valo, 2018). In 1991, Kinlaw stated in his study that virtual teams are superior and are high performance teams (Ratcheva and Vyakarnam, 2001). The statement is still valid, but the context has evolved tremendously.

We present below some defining aspects of virtual teams as they have been mentioned in some of the first studies on this topic:

- high performance and superior work teams (Kinlaw, 1991);
- a temporary network of independent companies – suppliers, customers and even competitors, linked by information technology with the goal of sharing information (Byrne, 1993);
- patterns of information and relationships (Davidow and Malone, 1992: 6);
- team members can adapt and respond quickly to changing project needs (Kristof et al., 1995);
- not real teams but linked together electronically to behave as though they were (Galbraith, 1995);
- team members develop a high level of mutual trust in one another (Robbins, 1996; Traunt, 1996).

From a historical perspective, it seems that no single researcher has the title of the inventor of the concept of virtual teams (Hosseini and Chileshe, 2013). Moreover, the factors that led to their emergence are constantly evolving and in consequence, the content of the concept of the virtual team is constantly changing and developing. As a result, there is no definition unanimously accepted worldwide by all researchers (Chen and Messner, 2010; Martins and Schilpzand, 2011; Schweitzer and Duxbury, 2010).

Despite the existence of divergent views on the definition of virtual teams, we can identify some basic characteristics of the virtual teams, as we will present below.

In order to achieve mutual goals and exchange results, virtual teams consist of participants who are *geographically distributed*, *work interdependently*, and knowledge flows between members are facilitated through *communication technologies*. These are the three *main characteristics* of virtual teams, mentioned right from the beginning of defining this concept, in the early 2000s. However, two characteristics truly distinguish virtual teams from face-to-face teams: spatial distance and communication media.

The first characteristic of virtual teams is geographical dispersion of team members. Virtual teams combine experience and expertise of each member without limitations in terms of location or time. In this age of globalization where organizations are trying to reduce costs, virtual teams allow hiring specialists who are not in the same location (organizational or physical), thus eliminating travel or relocation costs. In addition to this major advantage, there are other benefits, such as: opportunity to extend the working day to 24 hours and sharing knowledge across organizational and geographical boundaries.

Therefore, the most important aspect regarding virtual teams is the absence of a personal, physical space where a team can interact socially and collaborate face-to-face, express ideas and cooperate in order to achieve its desired outcome. A traditional workspace environment often involves an office, or an open space room that enables employees to better interact with each other. This aspect may have significant advantages. One such advantage relates to non-verbal cues. Body language often describes a much better picture of the way a certain meeting is evolving, including the engagement of the participants or their opinion on certain topics, elements that may not be present in a digital environment. Moreover, a face-to-face meeting often feels more personal, enabling leaders or decision makers to better engage their employees regarding proposed objectives. Last but not least, teams need to build relationships in order to achieve high performance, as there are often conflicts, complex tasks or personal reasons that often get in the way of collaborating efficiently, reasons that are greatly reduced if there is a strong relationship between the members of a team (Glikson and Erez, 2019).

However, using virtual teams does not necessary diminish all the advantages of face-to-face interaction, as information and telecommunication technology evolves, more and more of these benefits are integrated in an application for employees to use. Software tools have already developed many features that overcome the disadvantages that come with virtual teams: the ability to create communication channels, specific for certain types of information or decisions; the ability to quickly and efficiently manage files and documents; the ability to create video or audio meetings with a high enough quality that does not hinder employees' attention or performance; task management tools that transparently record current tasks and objectives. In addition to these benefits, many software companies develop features that enable personalized modifications in order to create a more personal environment.

Virtual teams by their nature are interdependent. *This second characteristic* of virtual teams, in conjunction with the other two characteristics (geographically

distribution of members and communication through technologies), raise challenges related to shared understanding of common goals and work processes by each member. Shared understanding also ensures that team members efficiently use resources and reduce collective effort. A common opinion among researchers is that, achieving effective knowledge sharing in a virtual environment is more difficult than in a traditional context (Pangil and Chan, 2014).

Regarding the core characteristics of a team, apart from the geographic distribution and interdependence of the team members, Schaubroeck and Yu (2017) have suggested that other dimensions such as: ***skill differentiation, temporal stability and authority differentiation*** may better define a virtual team, dimensions that can be either obstacles or opportunities for these virtual teams. The concept of team virtuality was also mentioned in the study, a concept that describes the extent and value of utilizing information and communication technologies within work teams.

Regarding the dimension-skill differentiation, it defines how specialized the knowledge of the members is and how easily one can substitute members from a specific team. Authority differentiation describes the way decision-making is being made within the team, whether it is centralized, considering everyone's opinion or authorization, or whether it is made by a single person. Nonetheless, temporal stability defines the history of the members regarding working together and the expectations in terms of working together in the future.

These dimensions, described above, provide an excellent starting point in terms of defining the characteristics of a virtual team. Skill differentiation, for example, can define a team by the way their abilities and knowledge complement each other's work and decisions, the way the team as a whole tackles complex problems, combining specific knowledge from its members and gaining insight and creating a more holistic view. Authority differentiation, on the other hand, can describe how decisions are being made, whether the responsibility of a certain decision relies on a certain person or on the team as whole and how power is distributed between the members of a team. Temporal stability is another great aspect brought up by the study mentioned earlier, as it greatly influences the relationship between the members of a team, the way they interact with each other. If there is a lengthy, productive history between the members of a team, the success rate will be higher; on the other hand, if there were no interactions between the members before joining the team, there will be greater risks of conflicts, reduced productivity levels and little social interaction.

The third important characteristic of a virtual team is the way communication occurs between the members of the team using virtual tools. Communication is an essential part of a virtual team due to the fact that it enables all other processes, interactions, planning, and task accomplishment. It can affect the efficiency of these elements and naturally, the performance of the team.

Marlow, Lacerenza and Salas (2017) proposed a communication process framework in virtual teams in order to better understand how a virtual team interacts and how members collaborate (Fig. 1.1).

The framework is considered an integral part in analysing virtual team characteristics. First, as we can observe, team and task characteristics such as virtuality, interdependence and task complexity are influencing the efficiency of transforming inputs into outputs. Virtuality has been mentioned above, defining the extent and the frequency of communicating through virtual tools between the members of a team. Interdependence can be described as the degree in which the outcome of the team can be attributed to the team as a whole, the degree in which a certain outcome depends on the knowledge and actions of several if not all members of the team.

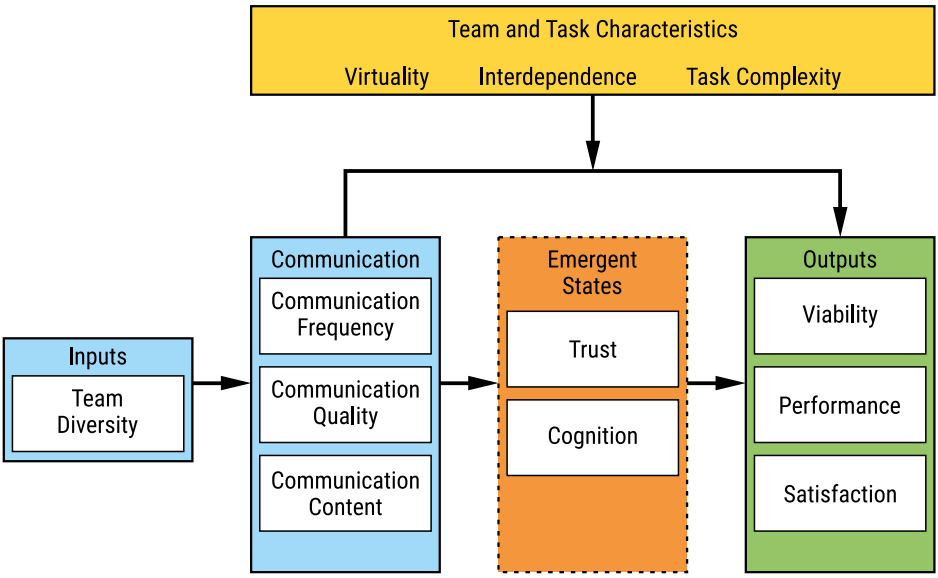

FIGURE 1.1. Communication process framework
SOURCE: Marlow et al., 2017.

Interdependence can greatly influence the frequency in which virtual team members communicate with each other, due to the collaboration needed in order to accomplish tasks. A lower interdependence, however, can also reduce time needed to complete tasks, as each member works independently without input from other members. However, this is not desired when dealing with complex tasks that need specific knowledge from several different members, knowledge that has to be merged into a single solution.

Task complexity is another factor that greatly influences virtual teams. A task that is complex usually requires input from several members of a team, facilitating collaboration and social interaction, often leading to innovative and productive findings.

The framework proposed earlier by Marlow et al., describes inputs as the diversity of a team. The fact that diversity was chosen as an input can be interpreted in many

ways. On the one hand, diversity can provide input due to the different backgrounds of the people involved, leading to different perspectives for the same problem and hopefully to innovative ideas that combine shared knowledge. On the other hand, it may describe cultural differences if we refer to multinational companies, differences that have been analyzed by Hofstede proposing 6 dimensions that define the underlying values of a nation and ultimately the way members interact in a team.

As we can observe, the first step of transforming inputs into outputs, is communication. Because communication is a broad subject, the authors of the framework proposed three parameters that need to be examined. First, communication frequency, determines the rate at which the members of the team communicate with each other. Each team has an optimal rate that depends on the history, expertise and knowledge of the members. A high rate will hinder their ability to concentrate and a low rate will not be enough for members to share knowledge or interact socially.

Communication quality on the other hand, can be a more subjective concept. We may consider communication quality the efficacy of the messages that are being communicated, whether the messages have achieved the desired outcome, which could represent sharing knowledge, building a relationship, building trust, sharing personal experiences or ideas.

Content is another important aspect of communication. Content can differ greatly depending on the scope of the message transmitted, which can vary, as we explained above. If the content relates to tasks, a few common principles can be applied such as: being concise, thorough, simple, clear, relevant and choosing a right medium.

In a virtual team, these elements can be crucial to its success. Communication frequency is often a problem regarding virtual teams, as time is less fixed in comparison to face-to-face interactions. Frequency can depend on the regions where members are located, on the schedule that each member will follow during the day. Due to these reasons, the interaction between members has to be planned, keeping in mind each member's schedule. This fact may be a disadvantage, in comparison to traditional teams, as it requires thorough planning and coordination in order to ensure that frequency remains at an optimal rate.

Communication quality is another aspect that may be hindered for virtual teams. Virtual teams rely on technological tools to communicate, and the quality of the video and audio features provided by these tools may differ due to many reasons: internet connection, software problems or hardware problems.

Nonetheless, communication content can heavily influence the success of a virtual team. Often, software tools used by virtual teams provide features for task management and file management that increases the quality of the content, offering support for the collaboration between members.

In order for communication to be effective, there has to be trust between members. Trust can manifest itself in different ways. On the one hand, if there is trust, members will accept much more quickly information that is new, will be more motivated to achieve their desired outcome, even if it is challenging.

Last but not least, outputs can be seen as the performance of the team, the efficiency and efficacy of their actions, whether the goals have been achieved. In addition, output must be seen as the level of satisfaction regarding members of the team in order to ensure that future collaboration will be taking place and that there will be initiatives for future projects.

Laitinen and Valo (2018) have analyzed communication technology, as an essential part of virtual teams. Technology-related communication episodes were identified from team interaction and then analyzed by means of frame analysis. They found four frames, which can describe technology in virtual teams: a practical frame, work frame, user frame and relational frame.

As technology plays a crucial role in virtual teams, being the sole enabler of communication and collaboration through software tools, these four frames provide a proper basis for understanding the technological characteristic of virtual teams.

The practical frame describes conversations between the members of the team that have the role of better understanding and exploring features of the platform that they are using, but also different problems that occur during video and call conferencing, and ways of solving them. This is an integral part of virtual teams, understanding the practical frame of the meetings can mitigate platform related problems, ensuring that all features of the platform are used properly and efficiently.

The work frame captures technology as a tool used by members in order to coordinate tasks and accomplish proposed objectives. Whether we refer to task management such as recording the status of each project, deadlines or responsibilities for each member, or calendars that integrate multiple schedules and deadlines, these tools offer the basis for collaboration. Understanding the work frame can reduce the amount of time needed to coordinate tasks, as these tools offer features that help manage responsibilities.

The user frame describes all the actions that members of the team are performing on the platform. These actions are usually described as fast, slow, intuitive, useful, and depend on the quality of the platform as well as the members' technological experience and competences. Through collaboration, user actions can be done efficiently by sharing knowledge regarding the way these actions must be completed.

Regarding the relational frame, which is often a part that virtual teams are lacking, involves building relationships and trust between the members by sharing personal experiences, ideas or creating a bond between members.

Although relationships are harder to build due to the physical distance between the members and the lack of face-to-face interactions, members can use their virtual workspace as a replacement for the traditional physical space and use the features provided by the software tools available in order to maintain and reinforce team relationships.

1.2. Types and roles of virtual teams

Although there is no explicit consensus of virtual team types, there is an emerging consensus regarding the core characteristics that underlie different types of teams: short-term project teams, extreme action teams, self-managing teams (Schaubroeck and Yu, 2017). Further studies highlight other types of virtual teams: inter-organizational teams and distributed ad-hoc task groups (Espinosa *et al.,* 2007; Malhotra and Majchrzak, 2014). In addition, some studies mention that team members may belong to the same organization or multiple organizations; thus, virtual teams may be transnational or global and multiorganizational (Gibson and Cohen, 2003, p. 4).

Furthermore, some teams are completely virtual and have never met face to face, while others are slightly virtual in which team members primarily interact face to face. However, we must agree with Gibson and Cohen (2003, p. 5) which stated that "*just the use of technology does not make a team virtual, because all teams use technology*" nowadays. It is hard to imagine in today's workplace environment teams whose members do not use electronic communication media to some extent.

Also, some studies emphasize that instead of classifying a team as either face-to-face or virtual, we should analyze the level of virtuality (Driskell et al., 2003; Griffith et al., 2003) and its consequences for management (Bell and Kozlowski, 2002). Virtuality is a concept that describes any team in terms of multiple dimensions such as the degree of reliance on ICT (Gibson and Gibbs, 2006), informational value (extent to which communication technologies send or receive communication, information or data that are valuable for the team members) and synchronicity (Kirkman and Mathieu, 2005).

Furthermore, Cascio and Shurygailo (2003) suggest a classification of virtual teams in terms of number of locations and number of managers involved:

- teleworker, working mostly on his/her own at a single location;
- remote team, consisting of a single manager of a team in many locations;
- matrixed teleworkers of multiple managers of a team in a single location;
- matrixed remote team consisting of multiple managers across many locations.

Lipnack and Stamps (Bal and Teo, 2000 after Lipnack and Stamps 1997) classify virtual teams with reference to organization, space and time dimensions, as we can see on Table 1.1 We observe that there are only three types of virtual teams, since collocated teams are conventional ones.

From a practical perspective, one particular and increasingly important type of virtual team is the *partially distributed team* that interact both virtually and face-to-face. They are a hybrid of the virtual and co-located face-to-face team that has at least one co-located subgroup and at least two geographically-dispersed subgroups and communicate using ICT (Huang and Ocker, 2006; Eubanks et al, 2016, p. 556 after Huang and Ocker, 2006). Based on these characteristics, these types of virtual teams have the tendency to establish subgroup identities based on their location due

to the increased interaction and information sharing that occurs (Armstrong and Cole, 2002, Buchan et al., 2002).

Related to the typology of virtual teams, we also need to bring into discussion the concept of *global virtual teams*. Global virtual teams are groups that are identified by their organizations and group members as being a team, are responsible for making and implementing decisions important to the organization's strategy, use technology-supported communication more than face-to-face communication and work and live in different countries (Pinjani and Palvia, 2013). Members of global virtual teams have no history of cooperating and collaborating with each other and may not have the right skills, abilities and aptitudes required to work adequately with individuals with different background, culture, in various time zones and utilizing different or contradictory frameworks. Studies show that global virtual teams, compared to partially distributed teams, find it more difficult to create common norms, rules, protocols, and routines (Mattarelli et al., 2017). Also, it is not infrequent to have "missing" teammates who do not cooperate effectively (Tullar and Taras, 2017). Despite the difficulties that may arise, organizations use global virtual teams in order to gain better performance, while taking advantage of cost differentials across countries and gaining access to global expertise (Caya et al., 2013, Gupta et al., 2009).

TABLE 1.1. Classification of virtual teams.

Spacetime	Organization Same Different
Same	Collocated Collocated Cross-Organizational
Different	Distributed Distributed Cross-Organizational

SOURCE: Bal and Teo, 2000 after Lipnack and Stamps, 1997

Even if there is no consensus regarding the typology of virtual teams, most scholars agree that managing virtual teams is more difficult than managing collocated teams (Davis and Bryant, 2003; Hoch and Kozlowski, 2014) and require different managerial approaches and techniques. Moreover, any failure in identifying, resolving and taking effective action to resolve the inherent challenges would jeopardize any organization's efforts and investments to implement virtual teams in whatever form/type it selects (Chang, 2011).

In terms of roles attributed to virtual team members, Townsend et al. (1998) suggest that they will often be significantly more dynamic than in traditional settings. Virtual team members can be expected to perform multiple tasks and fill in different positions to deal quickly with a specific project, circumstance or problem. Virtual team members would also need to be good at adjusting to a number of team

situations or roles and thus creating a more flexible organizational framework. When tasks are less complex, the roles of virtual team members are more interchangeable – team member can play multiple roles, without affecting the performance of the virtual team. When tasks are more complex and require a high level of experience, specialization and expertise, it is expected that a certain team member will play a fixed role (Bell and Kozlowski, 2002).

This situation in which the virtual team members hold multiple roles might cause certain role conflicts, such as: ambiguity in the responsibility of carrying out a certain task by certain team members, risk of diminishing the motivation of the work or possibility of diminishing work involvement and engagement.

This brief description of the typology and roles of virtual teams has the function of presenting the complexity of this filed, so that the aspects that will be presented in the following chapters can be better understood.

1.3. The specificity of multicultural virtual teams

The main benefit that virtual teams bring is the ability to work interdependently through the use of information and telecommunication tools even though the members are geographically dispersed.

This advantage has caused multinational organizations to use more and more virtual teams in order to coordinate shared efforts between employees located in different countries and regions and lower costs by reducing travel, relocation and overhead.

One of the key aspects that define multinational virtual teams is culture, more exactly, the differences in cultural values between the members of a team. The term cultural difference describes the dissimilarities in basic aspects of culture, such as core values, beliefs, customs and rituals, as well as legal, political and economic systems (Shenkar, 2001). Hofstede (1981) defined culture as "the collective programming of the mind which distinguishes members of one human group from another". In a broad meaning, culture can be defined as a set of values, beliefs, norms, social behaviour that are shared by a group of people. As we can see from the definition proposed by Hofstede, culture can vary significantly between two countries, leading to different ways of thinking, different beliefs of what is "true" and what is "wrong". In a virtual team, culture can greatly influence the way members of a team interact with each other, the level of trust between members, the strength of the relationships and more.

Culture can positively or negatively impact the members of a team depending on the attitude and cultural knowledge of the members. If employees are willing to adapt to new experiences and maintain an open attitude regarding the cultural differences between members, culture can influence the team for the better.

Hardin et al. (2007) argued that cultural differences at the national level influence the way people interact in virtual teams and as a result, team outcomes

may be influenced. Furthermore, Shachaf (2008) has analyzed how cultural diversity and information and communication technology impacts on global virtual teams. The findings of the study conducted by Shachaf concluded that the negative influence of cultural diversity can come from language and culture differences that result in miscommunication, a reduced level of trust, cohesion and team identity.

Communication is a crucial part of collaborating and negative impacts on communication can greatly affect the success of a team. A multinational team presents greater risks of miscommunication because of the different styles of communication associated to different countries. For example, in high-context cultures, shared experience makes certain events or thoughts understood without them needing to be stated explicitly and rules for speaking and behaving are implicit.

On the other hand, in low-context cultures, the exchange of facts and information is emphasized and meaning is expressed explicitly. We can see that such differences in communication can easily lead to miscommunication and reduced cohesion between members of a multicultural team. Moreover, there could be differences between a more direct style of communication and a more indirect style. Members that use a direct style of communication have a preference for explicit one- or two-way communication, including conflict management. An indirect style of communication, however, describes a preference for implicit communication and conflict avoidance. We can observe that such differences could affect the way a team collaborates and shares knowledge in order to achieve its goals, leading to a reduced level of performance.

Recognizing and analyzing these differences in communication styles is the first step to mitigating and resolving them. In order to be able to solve them, members need to have an open attitude and willingness to understand why these differences occur and then adapt accordingly.

If there is a shared effort between members to mitigate these problems, culture does not impose a threat but an opportunity, leading to innovative solutions that incorporate different perspectives and professional backgrounds.

Also, in the context of multicultural virtual teams, we need to bring into question the studies that identified differences in patterns of e-mail use between eastern and western cultures (Lee, 2002). Also, Massey et al. (2001) found significant differences in the position of task technology fit between virtual team members located in the USA, Asia and Europe.

We have described possible problems that may appear when organizations use multinational virtual teams, however, we have not discussed factors that contribute to the success of a virtual team or at least reduce significantly the disadvantages that come from using a multinational virtual team, such as: different communication styles, different cultural values, technological problems, different cultural perspectives on specific tasks, performance or expected behaviour.

Cheng et al., (2016) have identified two trust factors: collaboration process and clear tasks, as being the major contributors that remove the differences between

a multicultural group and the associated disadvantages mentioned above and a unicultural group.

On the one hand, having a clear, uniform collaboration process that is used across the whole organization will set clear expectations from all employees regarding the coordination process and thus, removing any disadvantage that would come from the differences that come from a face-to-face interaction versus an online, technology mediated interaction.

On the other hand, clear, concise tasks provide the basis for removing ambiguity, not leaving room for interpretation, especially in a multicultural environment, where miscommunication and mixed signals can often happen without due diligence. Thus, providing clear tasks regardless of the cultural diversity of a team creates the starting point of a successful collaboration.

In order for virtual teams to be successful there needs to be effective communication. Usually, multinational teams are responsible for solving complex tasks, tasks that involve a variety of skills, abilities and knowledge. Marlow et al., (2017) posited that highly virtual teams are capable of achieving high levels of performance on complex tasks if members are sharing knowledge and work interdependently.

Nonetheless, multinational virtual teams need to impose certain rules, norms and detailed processes in order to avoid ambiguity and communicate efficiently. Although it requires an increased effort in the beginning, expectations will be set for a longer period of time along with an increase in productivity by avoiding redundant and irrelevant decisions or actions.

Given the challenges and difficulties of working in virtual teams, as previously presented, but also the orientation of many companies to increasingly use virtual teams, it is necessary for employees or future employees to have excellent skills and competencies to work in virtual teams. In this sense, university lecturers who prepare future graduates play a decisive role. In this context, we want to find out what is the attitude and perception of the lecturers from two universities located in Romania and Poland regarding the actual methods to develop such competencies.

1.4. Methods for developing multicultural and virtual teamwork skills – research results

In this chapter we will tackle the various methods used by university lecturers in order to develop students' multicultural and virtual teamwork skills and the factors which influence whether these methods are used or whether they are efficient. Acknowledging these factors can help lecturers understand how the teaching of multicultural and virtual teamworking skills leads to the growth and development of students for the current job market requirements and how to better plan their courses and materials in accordance to the methods used.

The most important factors that influence lecturers to use methods focused on developing students' skills for working in virtual and multicultural teams are: students quality and interest (Mean = 3.97, SD = 1.085, very high importance for 34.5% of respondents), size of the class (Mean = 3.71, SD = 1.270, very high importance for 33.6% of respondents), knowledge and experience in virtual and multicultural team working (Mean = 3.77, SD = 1.168, very high importance for 31.1% of respondents), access to resources and tools (Mean = 3.76, SD = 1.125, very high importance for 29.4% of respondents) and heavy workload (Mean = 3.66, SD = 1.285, very high importance for 29.4% of respondents), as we can see in the table 1.2.

TABLE 1.2 Factors with very high importance that influence university lecturers to use methods focused on developing students' skills for working in virtual and multicultural teams

Factor	Percent	Importance
Access to resources and tools	29.4	very high
Size of the class	33.6	
Heavy workload	29.4	
Students quality and interest	34.5	
Knowledge and experience in virtual and multicultural team working	31.1	

SOURCE: own research.

On a scale from 1 – "Low influence" to 5 – "Very high influence", both Polish and Romanian respondents believe that the quality and interest of students strongly influence them to use methods focused on developing students' skills for working in virtual and multicultural teams. The influence in regard to the quality of students may come from the fact that success rates in both virtual and intercultural teams will increase considerably if the members are goal driven, cooperative and are willing to work alongside teachers towards a successful outcome. Interest could strongly influence the amount of information assimilated and might even represent a turning point in how various students make career choices, by realizing the significant impact that digitization and team virtuality has had on the work field. This impact consists of constant exposure between people from anywhere in the world, sharing efforts to accomplish common goals. Globalization has made work-related relocations extremely easy and, as a result, cultures and ethnicities collaborate frequently.

The size of the class is considered as having a very high importance by 33.6% of the respondents. The mean of 3.71, on a scale from 1 – "Low influence" and 5 – "Very high influence" on using methods focused on developing students' skills for working in virtual and multicultural teams, shows that any increase over the optimal number of students will not only make it difficult for the lecturer to monitor each individual's

evolution, but also a decrease in the amount of time each student receives from the coordinator in order to receive clarification on the problems they may encounter.

Knowledge and experience are essential, according to 31.1% of respondents, as not understanding the bases of working in virtual or intercultural teams can lead to inefficient course materials, subjects that may be irrelevant to a specific virtual team environment and overall a diminished quality of the skills that students will acquire. Having to work with more cultures at the same time involves an understanding of these cultures, as well as respecting the differences in mentality. While knowledge is mostly related to passing down the information that one has acquired, experience can help better organize materials and topics in order for students to better assimilate information and retain the most relevant subjects regarding multicultural and virtual teams. Such attributes are of great value when it comes to training students, as they will most likely require assistance, especially at the beginning, and the goal is to be able to assist them and provide them with solutions that will answer their current questions, as well as be useful for them in the long term.

Access to resources and tools, with a mean of 3.76, is considered as having a high importance by 29.4% of the Polish and Romanian lecturers that participated in the study. The reason why resources and tools greatly influence the developing of students' skills for working in virtual and multicultural teams is related to the geographic dispersion of the members, which require communication to be made with the help of software tools and other resources. Without such tools which enable collaboration and communication in the absence of common, physical space, virtual teams would not be able to function.

Although we discussed what the 119 respondents believe to be the most important factors related to methods used in developing students' skills for working in virtual and multicultural teams, we should additionally consider what *the least influential factors* in regard to this matter are: age (Mean = 2.55, SD = 1.313, very low importance for 30.3% of respondents), a clear university strategy on the role of multicultural team working (Mean = 2.77, SD = 1.224, very low importance for 17.6% of respondents), career trajectory (Mean = 3.01, SD = 1.305, very low importance for 16.8% of respondents), standards and evaluation criteria for adopting & developing virtual teamwork (Mean = 3.01, SD = 1.161, very low importance for 11.8% of respondents), and training/support for teaching skills for multicultural team working (Mean = 3.34, SD = 1.311, very low importance for 11.8% of respondents), as we can see in table 1.3.

It seems that 30.3% of Polish and Romanian lecturers involved in the survey consider age of very low importance in this particular situation. As age does not necessarily equal a teacher's level of competence, nor his/her ability to properly use the technological means to coordinate a virtual team, the given answer could easily be understandable.

Another aspect which is considered by the respondents to have very low importance regarding developing students' skills for working in virtual and multicultural teams involves a clear university strategy on the role of multicultural team working.

This belief is shared by 17.6% of those involved in the survey and could be the illustration of the fact that the methods used by teachers are highly adapted to the situation at hand, depending on the particularities of the class. Moreover, the role of multicultural team working depends on the domain chosen by students, as some economic activities are performed locally whereas some require collaborating with people located in different countries or regions. In addition, university lecturers may use methods for developing students' skills for virtual and multicultural team working in order to better prepare them for the current job market requirements and not due to constrains imposed by the university policies.

TABLE 1.3. The least influential factors for university lecturers to use methods focused on developing students' skills for working in virtual and multicultural teams

Factor	Percent	Importance
A clear university strategy on the role of multicultural team working	17.6	very low
Standards and evaluation criteria for adopting & developing virtual teamwork	11.8	
Training/ support for teaching skills for multicultural team working	11.8	
Your age	30.3	
Your career trajectory	16.8	

SOURCE: own research.

Standards and evaluation criteria for adopting and developing virtual teamwork were also considered to be less of a priority when it comes to using methods focused on developing students' skills for working in virtual and multicultural teams, with a mean of 3.01 and considered as having a very low importance by 11.8% for respondents. This might happen because of the fact that virtual team working is adopted by organizations depending on their specific needs such as the geographic dispersion of the members, the lack of specific skills/knowledge in a certain region/ country or domain specific issues. Thus, a more adaptive approach is needed and standards or evaluation criteria may be less significant for such varying situations.

Last but not least, training/support for teaching skills for multicultural team working had a mean of 3.34 in terms of the degree of the importance, from "Low influence" to "Very high influence" on the use of methods focused on developing students' skills for working in virtual and multicultural teams and considered as having a very low importance for 11.8% of respondents. This result may come from the fact that teaching skills related to virtual and multicultural team working come from self-study, personal experience and knowledge accumulated in such specific teams and less from trainings.

Our findings reveal notable differences between respondents from Poland compared to those from Romania in terms of factors that influence them to use methods focused on developing students' skills for working in virtual and multicultural teams (Tab. 1.4); the independent t test shows significant values p<.05 for the following factors: a clear university strategy on the role of multicultural team working (t = 2.93; p = .004), standards and evaluation criteria for adopting & developing virtual teamwork (t = 5.81; p = .000), training/ support for teaching skills for multicultural team working (t = 2.79; p = .006) and heavy workload (t = 2.35; p = .021).

TABLE 1.4. Influencing factors: mean values, SD, and independent sample *t* test between university lecturers from Poland and Romania

	Mean	SD	Mean Poland	Mean Romania	Differences (t test)
1. A clear university strategy on the role of multicultural team working	2.77	1.224	2.47	3.11	**2.93****
2. Standards and evaluation criteria for adopting & developing virtual teamwork	3.01	1.161	2.48	3.58	**5.81*****
3. Access to resources and tools	3.76	1.125	3.65	3.89	1.21
4. Training/ support for teaching skills for multicultural team working	3.34	1.311	3.03	3.68	**2.79****
5. Other colleagues' teaching methods and achievements in teaching virtual and multicultural team working	3.28	1.112	3.10	3.47	1.87
6. Size of the class	3.71	1.270	3.74	3.68	.24
7. Heavy workload	3.66	1.285	3.92	3.37	**2.35****
8. Students quality and interest	3.97	1.085	4.10	3.84	1.26
9. The level of your technical skills	3.62	1.017	3.71	3.53	.98
10. Your pedagogical skills	3.83	.986	3.77	3.89	.67
11. Your knowledge and experience in virtual and multicultural team working	3.77	1.168	3.81	3.74	.32
12. Your age	2.55	1.313	2.44	2.68	1.03
13. Your career trajectory	3.01	1.305	3.06	2.95	.48

SOURCE: own research.

When we compare the answers between respondents from Poland and Romania, we can observe that one common factor that greatly influences the use of methods focused on developing students' skills for working in virtual and multicultural

teams is students' quality and interest, with the mean of answers, being, for Romania 3.84 and for Poland 4.10.

As we mentioned earlier, students' quality and interest, whether we refer to students' abilities, knowledge or skills that relate to virtual team working, highly impacts the efficiency of the courses and materials provided by lecturers by students assimilating the required knowledge much faster and for a longer period of time.

However, one aspect which differs between the two countries, is the fact that lecturers from Poland consider "heavy workload" as being the second most influential factor for developing students' skills for multicultural teamwork, with the mean of the responses being 3.92, whereas in Romania being 3.66. Thus, lecturers from Poland embrace virtual and multicultural team working as an opportunity to increase the efficiency of their work and reduce the workload. Virtual team working can reduce the workload by removing the need for travelling to a classroom, by various evaluation processes offered by the tools available or by the ability to offer feedback in a faster way.

Below we have a chart 1.1 that presents the answers of the 119 respondents from Romania and Poland regarding methods for multicultural and virtual teamwork used when teaching and trying to develop students' multicultural and virtual teamwork skills.

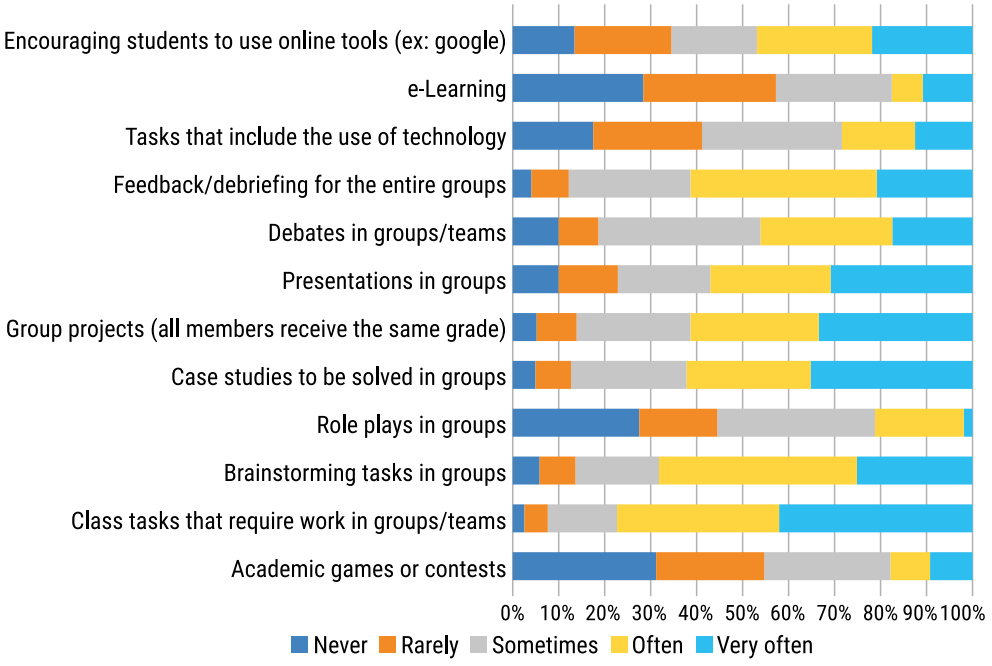

CHART 1.1. Methods for multicultural and virtual teamwork used when teaching and trying to develop students' multicultural and virtual teamwork skills

SOURCE: own research.

As we can see on the chart, the methods that are used very often by both Romanian and Polish lecturers relate to activities that involve a group. Whether it is a presentation, a case study or class tasks, virtual teamwork needs to involve several students that share efforts in order to achieve a desired outcome. Although some group activities take place face-to-face, they involve skills that are often used in virtual teams as well, such as collaboration, conflict management or coordination and prioritization of tasks. Thus, they contribute to the growth of the students' multicultural and virtual teamwork skills.

However, we can observe that certain aspects that define virtual teams are rarely or never used by the lecturers: online tools and e-Learning. Both aspects are essential to virtual teams because of reasons which we explained in the first chapter, aspects that may have to be reconsidered and included among the methods used by lecturers in order to develop students' multicultural and virtual teamwork skills.

Comparing the answers between Romanian and Polish lecturers, we can observe several differences regarding methods used in order to develop students' multicultural and virtual teamwork skills: academic games or contests between groups of students ($t = 3.21$; $p = .002$), tasks that includes the use of technology for multicultural and virtual team working ($t = 4.39$; $p = .000$), e-Learning ($t = 4.62$; $p = .000$) and encouraging students to use online tools when working in teams (for example: google docs, Dropbox, Skype) ($t = 2.06$; $p = .042$).

Firstly, we can see that e-Learning is more widely used by Romanian lecturers, with a mean of 2.95, in comparison to Polish lecturers' answers, which have a mean of 1.95 on a scale from 1 – "Very Rare" to 5 – "Very Often". As we mentioned earlier, using e-learning as a method of developing students' multicultural and virtual teamwork skills can be highly beneficial, due to the fact that e-learning involves online platforms which familiarize students with virtual tools widely used by virtual teams.

Moreover, another difference relates to tasks that include the use of technology for multicultural and virtual team working. With a mean of 3.32, Romanian lecturers use these tasks more often than Polish lecturers, whose answers have a mean of 2.37. Including technology in tasks can be a great starting point for developing the skills needed in order to perform successfully in the job market. In addition, as virtual teamwork involves communicating and collaborating through online tools, having a basic knowledge about how technology affects virtual teamwork can be highly advantageous.

Nonetheless, there are differences regarding encouraging students to use online tools when working in teams as well, Romanian lecturers encourage students more often than Polish lecturers (with a mean of 3.47 in comparison to 2.97).

Last but not least, as we can observe in table 1.5., there are no significant differences between Romanian and Polish university lecturers regarding whether employers appreciate the ability to work in virtual teams, the difference in effectiveness between traditional teams and virtual teams, both acknowledging that traditional teams are more effective than virtual teams.

TABLE 1.5. Virtual teamwork perspective

	Mean	SD	Mean Poland	Mean Romania	Differences (*t* test)
1. My teaching is focused on developing students skills for working in virtual teams	2.78	1.136	2.68	2.89	1.043
2. University teaching prepares students to work in virtual teams	3.16	1.008	3.21	3.11	.563
3. Employers appreciates the ability to work in virtual teams	3.82	1.033	3.69	3.95	1.343
4. Traditional teams are more effective and efficient than virtual teams	3.16	.911	3.21	3.11	.623

SOURCE: own research.

Also, there are no major differences regarding whether university teaching prepares students to work in virtual teams as well, both being of the opinion that university prepares students to work in virtual team sometimes. However, given the advantages of virtual teams presented in the previous sections, as well as the orientation of many companies towards the increasing use of virtual teams, the means of responses from Romanian and Polish university lecturers to the item "My teaching is focused on developing students skills for working in virtual teams" do not reflect a favorable situation. Teaching-learning strategies should be more focused on these competencies. In this context, the measures that can be taken in this direction must be identified.

Chapter 2. Leadership in virtual teams

2.1. E-leadership and e-leader competences

Leading any team requires many skills and a number of responsibilities by leaders. They should be able to inspire teams, create a vision for teams, share ideas and passion with teams, and achieve the common goals. This can be more challenging in a case of virtual teams than traditional teams. Leading virtual teams has now become a usual part of leaders' daily work. Considering the challenges of management in virtual teams is the key to better understanding how to be an effective virtual leader. A virtual environment and a virtual team requires a new leadership concept, called e-leadership (Avolio and Kahai, 2003). One of the most significant elements of e-leadership is a virtual team.

E-leadership is to create a new way of leading in a virtual environment. However, e-leadership becomes the routine rather than the exception in our thinking about what constitutes organizational leadership (Gupta, 2011). An E-leader leads virtual teams without physically meeting team members (Trivedi and Desai, 2012). E-leader is management by communication technology (Gheni, 2005). There are several definitions of e-leadership in the literature (tab. 2.1.).

Most of them emphasise communication via IT tools. However, e-leadership is much more than virtual communication. Two fundamental functions of e-leadership are performance management and team development (Abbasenejad, 2002; Hunsaker and Hunsaker, 2008). The authors claim that in order to achieve good performance in virtual teams, e-leaders should set the goals and visions, require the direction of all tasks for team members and establish practices of meetings and ordinary procedures clearly. A virtual team's performance should be assessed by task and objectives and meeting deadlines, not by hours (Cascio, 2003). In order to develop virtual teams, e-leaders have to create opportunities for building trust among followers and encourage incentives through providing the recognition for success. Leaders of virtual teams spend time mentoring the team members, applying rules, and identifying and rewarding individuals and the team (Malchotra, 2007). Socially oriented behaviours, such as showing care and respect for a team member, listening to them are crucial characteristics for a positive impact on team members (Shollen and Brunner,

2016). E-leaders have the same tasks and responsibilities like leaders, but they have to do this in a more difficult virtual environment.

E-leadership is seen as a new way to describe how to better manage and organize work in a digital era, where global changes are generated by the digital revolution. Such changes lead to rethinking of leadership skills and abilities. There are several challenges for e-leadership that should be understood and studied in order to prepare e-leadership to respond to the new rules of competition in the digital age. The most important challenges are:

- Technology,
- Communication,
- Trust.

TABLE 2.1. Definitions of e-leadership

Author	Definition
Wart (2017)	E-leadership is the effective use of electronic communication methods. It infers an awareness of modern ICTs, selective implementation of new ICTs for oneself and the organization, and technical competences in using the advanced communication tools.
Savolainen (2013)	E-leadership is a process of social influence where changes in attitudes, moods, views, behavior and organization are brought about with the help of ICT.
Avolio and Kahai (2003)	E-leadership refers to leaders who mainly communicate via information technology, and whose interaction with team members and collection and dissemination of information is supported by information and communication technology in order to facilitate organizational work.
Avolio, Surinder, and Dodge (2000)	E-leadership is a social influence process mediated by advanced information technology in order to change approaches, feelings, awareness, behavior, and/or performance at individual, group, and/or organizational level.
Kerfoot (2010)	Virtual leadership is leading an organization that is other than physical.

SOURCE: own research.

Rapid development of technology allows working virtually among people that are geographically spread. Organizational patterns are transformed by the digital revolution. E-leadership appears in a virtual environment where it is accessed through IT tools. The rise of virtual teams and virtual work needs a new kind of competencies for both leaders and team members. E-leaders have to adapt to the virtual environment requirements and use technical tools to address new challenges.

Communication between an e-leader and a virtual team is more difficult, compared to a traditional team. The lack of face-to face communication between members can cause that mutual understanding to exist, resulting in misinterpreted

communications that limit communication in the virtual environment (Liu, 2018). It is believed that face-to-face communication is superior to virtual communication. Communication via electronic means is poorer in nonverbal (i.e., visual) and paraverbal (i.e., auditory) cues, minimize feelings of social presence and conversational involvement, is more physically and cognitively taxing than face-to-face communication (Purvanova and Bono, 2009). The misunderstanding between e-leader and virtual team members is often caused by lack of information (Bishop et al., 2010). The consequence is a lack of direct relationships between e-leader and team members. On the other hand, virtual communication is easy and ensures almost "constant contact" (Avolio et al., 2014) with greater frequency of daily interactions (Zaccaro and Bader, 2003) with team members who are dispersed in different units of the same organization, in diversified geographic locations, and in different time zones.

Trust is the next competence that has been extensively studied in virtual teams (Child, 2001). Trust is seen more critical in online teams than in a traditional team and as the necessary condition for successful work in virtual teams (Child, 2001). Trust is based on the belief that team members are dependable, meeting the team expectations by delivering what they promise (Cascio and Shurygailo, 2003). It is easier to build and maintain trust in collocated teams than in virtual teams. Creating and keeping trust in virtual teams requires much more conscious effort from e-leaders.

An e-leader should have a new communication competence such as effectively transmitting their intentions through technology (Eissa, Fox, Webster, and Kim 2012); strong social networking skills; a global, multicultural mindset; and greater empathy towards followers (Trivedi and Desai, 2012). E-leaders are expected to be competent to work in online environment.

The literature generally points out that leadership is much more difficult when an environment becomes more virtualized and indicates several difficulties (van Wart et al., 2017). Among others, there are: problematic issues related to e-leadership involving ICTs, lack of leader support, less impact for an e-leader on team motivation and engagement, poor management of processes and change, or insufficient trust in the leader. The challenges and difficulties in virtual working causes some issues that should be undertaken in the context of leadership:

- Managing the "anonymous" environment and virtual teams,
- Using software tools to enhance team performance and achieve organizational goals,
- Understanding the technology infrastructure to improve virtual communication,
- Giving constructive feedback without nonverbal communication,
- Promoting close cooperation among the e-leader and team members to build trust and motivate team members,
- Working with team members with different cultural backgrounds,
- Learning new competences for e-leaders.

According to these work-related challenges of new ways to organize work between globally dispersed employees, new e-leader competences are needed. The areas in which competence in e-skills were most important included (van Wart et al., 2017):

- e-communication,
- e-technology skills,
- e-social skills,
- e-team building,
- e-trustworthiness.

E-communication is a critical competency for managing virtual team (Hertel et al., 2006; Lin et al., 2008). The ability of effective communication is a crucial skill for any leader but especially for an e-leader who is limited to communicate through technology. Effective e-leaders are "those who communicated regularly, answered team member questions, provided feedback, gave directions, and approached the members with a cordial, yet assertive tone" (Kayworth and Leidner, 2002, p. 22). Electronic communication replaces the "paper and pen" routine (Gheni et al., 2015) and face-to-face meeting. Therefore e-leaders often meet several challenges that are related to other e-competence – *e-technology skills* – to using communication technologies. E-leaders need to learn how to use indirect ways of communication such as e-mail, phone conversation, videoconferences, etc. and need to know which means of communication are suitable for different situations (Cascio and Shurygailo, 2003). E-leaders need to make sense of technology in order to use it in an efficient manner. Lack of understanding and comfort with high-technology communication tools can lead to massive underutilization (Fabris, 2015).

Moreover, virtual teams are often related with geographic distance. It means time-related challenges such as lack of overlapping work hours, that may impose coordination burdens on team members (Cummings, 2011). Hence, e-leaders are faced with difficulties with coordinating tasks within virtual teams. Additionally, e-communication often takes place in an international environment that may complicate communication and identification processes and the execution of work (Burnelle, 2012). Such e-leader's activities as supporting team engagement and a sense of membership, taking care about good relationships and communication among virtual team members are more challenging than among members in traditional teams. Different languages, cultures, beliefs, values, and life and work approaches require new competence – *high e-social skills* – to know how to manage diversity. Effective communication across great diversities requires special abilities such as sensitivity, trust-building, creating and maintaining good relationships from an e-leader (Uber Crosse, 2002) by adapting different language and different communication styles. E-leaders have to compensate communication without physical closeness by active and diversified use of IT tools in order to support and motivate team behavior. The cultivating of relationships is a top managerial competency. Managers through frequent communication focus on relationships and can support and encourage collaboration (Linkow, 2008). Distance causes

the lack of social closeness, and cultural diversity may further deepen it. Virtual team members from various cultures can interpret written and oral communication differently according to their own culture (Hunsaker and Hunsaker, 2008) that can have an effect on misunderstandings of team roles, responsibilities and tasks. Therefore, both geographical and organizational cultural differences should be taken into account by e-leaders.

E-team building is related to the proper organizing of teams related to introductory activities, responsibilities, motivation (Fernandez and Jawadi, 2015), care about engagement of team members, find appropriate ways of monitoring, reporting and goals accomplishment (Malhotra et al., 2007) and ensure appreciation, rewards and development (Hunsaker and Hunsaker, 2008; Malhotra et al., 2007).

The importance of *trustworthiness* is highly noted in the team literature (Hertel et al., 2006; Malhotra et al., 2007; Snellman, 2014). Trust is significant for any team, but its significance for virtual teams is much more crucial. It is related with aspects like diversity environment, cultural differences, virtual meetings with limited non-verbal communication. In addition, trust in a virtual team has a strong impact on motivation that allow each member to feel commitment and work hard with good intentions on behalf of the group (Lilian, 2014). Building trust is one of the most significant responsibilities and challenges of e-leaders (Chutnik and Grzesik, 2009; Abasnejad, 2002). Table 2.2. presents the e-competence of an e-leader with descriptions and ways of being an effective e-leader according to van Wart et al. (2017) and Malhotra (2007).

TABLE 2.2. E-competences of e-leader

E-competence	Dimensions of e-competence	Practices of e-leader
e-communication	• Communication clarity • Lack of miscommunication • Management of communication flow	• Set and adjust the norms of virtual communication. • Provide on-going feedback to avoid misunderstanding. • Ensure that ease of communication does not invite excessive communication impeding the ability of employees to get their job done. • During meeting – ensure through "check-ins" that everyone is engaged and heard. • End of meeting – ensure that the minutes and future work plans are posted to team repository.
e-technology skills	• Currency with ICTs • Using traditional and virtual methods • Basic technological savvy	• Knowledge about modern ICTs; investigates ICTs to ensure that those in use are optimally effective. • Use an accurate mix of ICTs and traditional communication tools. • Ensure that all team members communicate through ICTs.

E-competence	Dimensions of e-competence	Practices of e-leader
e-social skills	• Leader support • Diversity management	• Determine members' roles clearly. • Create face time; use various media, especially face-to-face meetings, virtual conferences. • Sensitivity for cultural differences. • Ensure that different opinions can be expressed via electronic means.
e-team building	• Team motivation • Team accountability • Team and team members recognition	• Ensure that team members are motivated and new virtual members are properly introduced and integrated. • Set goals and expectations by planning and motivating team members. • Ensure that team members as an individual are held accountable for participating and contributing. • Ensure that employees get opportunity for recognition, rewards and development. • Appreciate members' contribution.
e-trustworthiness	• Technological security • Trustworthiness in a virtual environment • Work-life balance	• Provide assurance for privacy information. • Create trust by leader's values as: honesty, consistency, fairness and integrity. • Take care technologies do not intrude into employees' private life.

SOURCE: van Wart et al., 2017; Malhotra, 2007.

Beside e-leader competence mentioned above many studies found other issues that may be important for e-leader functioning in a virtual environment. Hamilton and Scandura (2003) examined the concept of e-mentoring in a digital world. Pulley and Sessa (2001) identified e-leadership as a complex challenge that is defined by several paradoxes: swift and mindful; individual and community; top-down and grass-roots; details and big picture; and flexible and steady. This challenge causes an e-leader to lead followers with paradoxes and dilemmas, and with the associated behavioral complexity.

Although e-leadership is a relatively recently emerged concept with continuing conceptual ambiguity, there are significant differences between leading traditional and virtual teams.

2.2. Emotional and spiritual intelligence of a leader

Dynamic changes in the work force, development of technology, progressive industrialization and globalization processes require functions in a world vastly different from that of previous generations. The workforce is now more diverse, not only in terms

of age or nationality but also of virtual environment which makes the world boundaryless. An organization requires its employees to be more committed and have a better cohesive working interrelationship (Chin, 2011). In order to function effectively, individuals and leaders working collaboratively require emotional and spiritual intelligence. Both these intelligences seem to be more important in a virtual workplace environment where relationships can be limited. The integrated definition of leadership pointed out that leadership affects the follower to enthusiastically expend spiritual, emotional and physical energy to achieve the organization's vision and objective (Winston and Patterson, 2006).

In an emerging popularity of a business climate that is characterized by limited face-to-face interactions, emotional intelligence has become an essential personal factor for effective teamwork. This causes an increase in the value of personal interactions that, in turn, requires more than intelligence, it requires understanding of emotions in leaders and teams (Chin, 2019). Collaboration among team members is a process of social relationships, where one can influence the emotional behavior and attitudes of the others. Emotional intelligence is one of the crucial leadership abilities for a socially effective leader, and therefore increasingly influencing successful collaborative results (Chin, 2011).

Emotional intelligence, in brief, is understanding ones own and other's emotions and managing them. Salovey and Mayer (1990) claim that it is important to understand ones own and others' emotions, especially when you lead a team. Emotional intelligence is an ability of a person to understand and control their own emotions, coupled with the ability to understand and manage others' emotions (Alfahid, 2018). In other words, emotional intelligence is a set of competencies for recognising, processing, and managing emotions (Zeidner, Roberts, and Matthews, 2008) to better self-manage and lead other people. It is believed that leaders should have a high level of emotional intelligence to form positive values and principles among team members and implement practices that are consistent and can become a daily work routine for followers (Sarawati, 2018). Although there are several constructs of emotional intelligence (tab. 2.3.), the concept of emotional intelligence is agreed among scholars.

However, emotional intelligence is something more than only the identifying and managing of emotions. It relates to the development of skills of leaders and employees so that they can achieve not only personal, but also organizational goals and objectives in a better and efficient way (Bar-On, 2000). Emotional intelligence as a noncognitive skill impacts on the ability of an individual in dealing many aspects of work (Martinez 2005).

Many researchers suggest positive and significant links between emotional intelligence and many various outcomes. Goleman et al. (2001) found that emotional intelligence plays a very important role in gaining success in work. The individuals with a high level of emotional intelligence compared to the individuals with a low level of emotional intelligence, were more successful (Schutte, Schuettpelz, and Malouff, 2001) and gaining better results (Danquah 2014; Hashem 2010). Goleman (1998) even

defined emotional intelligence as "a learned capability that result(s) in outstanding performance at work" that allows to find not only out individual abilities but also of the team. Emotional intelligence provides a broad range of abilities that may impact performance outcomes in organizations; in particular, those in which successful negotiation, cohesion, and collaboration is desired (Kerr et al., 2006). Emotional intelligence is the ability to be useful in understanding and managing relationships that are at the core of leader-member exchange (Jordan et al, 2011; Sear and Holmvall, 2010). Leaders with high emotional intelligence are successful in negotiating and resolving conflict (Blattner and Bacigalupo, 2007; Anand and Udayasuriyan, 2010). When employees have a compassionate and empathetic manager who understand their strengths and weaknesses, they also have the opportunity to learn and grow with the organization (Dulewicz and Higgs, 2004).

TABLE 2.3. The constructs od emotional intelligence

Author	Construct of emotional intelligence
Mayer and Salovey (1997)	awareness of emotions, management of emotions, emotional understanding, emotional facilitation
Goleman (1998)	self-awareness, self-regulation, motivation, empathy, relationship management
Gartner (2015)	knowing one's own emotions, managing one's own emotions, self-motivation, recognizing emotions of others and handling relationships with others
Zofi (2012)	emotional self-awareness, assertiveness, self-regard, self-actualization, independence, empathy, interpersonal relationship, social responsibility, problem solving, reality testing, flexibility, stress tolerance, impulse control, happiness and optimism
Singh and Chadha (2003)	emotional competency, emotional maturity, emotional sensitivity

SOURCE: own research.

The role of emotional intelligence in workgroups and teams is very significant and identified as a predictor of team performance in face-to-face teams (George, 2002) and virtual teams (Pitts, Wright, and Harkabus, 2012). In teams, emotional intelligence is the capacity to perceive, recognize, regulate, and manage the emotions of themselves and others in the team (Mayer, Salovey, and Caruso, 2004). The team as a social entity share the common experiences or events. Emotional intelligence creates social interactions characterized by open communication and a sense of trust (Kerr, Garvin, Heaton, and Boyle, 2006). Thus, working teams with recognized interactions of emotional relations encourage members to accomplish the task with enhanced efficiency which consequently influences the performance of the teams (Ghuman, 2016). The team level emotional intelligence facilitates the development

of team synergy and nurtures relationships (Ghuman, 2011). The team emotional intelligence is needed for challenging interpersonal problems like resolving conflicts (Jordan and Troth, 2004). In the virtual team environment where contextual cues are limited, emotional intelligence is crucial to help virtual team members in dealing with many issues. However, many team members in the virtual environment where visual cues and contexts are often missing, do not possess the emotional intelligence ability to handle emotionally-charged events. For example, Ayoko et al. (2012) studied communication among virtual team members to reveal the importance of regulating emotions in events of conflict. Rentsch, Delise, Salas, and Letsky (2010) has found a positive effect on the team performance and team members communication. Virtual team members using communication technology need to be trained to be aware of the communication styles and how it affects performance (Bartelt and Dennis, 2014). Moreover, the mediating role of group-level emotional intelligence on the connection between leader emotional intelligence and team performance indicates the impact of culture on the advancement of the emotional intelligence of the members working in teams (Stubbs, 2005; Stubbs Koman and Wolff, 2008). Thus, team emotional intelligence possessed by members is stimulated through the team culture.

Clearly, emotional intelligence is closely related to the spiritual nature of spiritual intelligence (Sarawati, 2018). While emotional intelligence brings people to keep in touch with themselves and other humans, spiritual intelligence is in fact the highest level because it brings people to maintain a relationship with God.

After a period of fascination with the emotional intelligence of a leader, it is time to consider the term ''spiritual intelligence'' (Burke, 2006; Dåderman, Ronthy, Ekegren, and Mårdberg, 2013). Spiritual intelligence is considered as the foundation of both rational and emotional intelligence (Zohar and Marshal, 2005, p. 57). Spiritual intelligence combines spirituality and intelligence as a new construct (Zohar and Marshal, 2005) and as a quotient of level of spiritual leadership (Amram and Dryer, 2008). While spirituality is the experience of elements of the sacred, meaning higher-consciousness and transcendence (Zohar and Marshal, 2005, p.4), spiritual intelligence is related to the abilities of using spiritual aspects to facilitate everyday problem solving and goal attainment (King, 2008, p.59). Spiritual intelligence is an internal ability, concerned with the inner life of mind and spirit and its relationship to being in the world (Emmons, 2000a). However, this internal ability influences the external ability. Thanks to spiritual intelligence, we can discover a deeper sense and use it to solve complex problems of the present. Spiritual intelligence can develop a constructive trait and be able to make use of the capability to face danger and anger. Someone who has a high level of spiritual intelligence is more tolerant, honest, and full of affection to others in his or her life (Vaughan, 2002). Spiritual intelligence allows us to also draw knowledge from the richness of our heart and the universe. Many authors have reported that it is a kind of intelligence that allows a sense of contact with the whole, a sense of its own fullness, seeing

connections between diverse things (Levin, 2000) and between people and understanding the importance of investing in and maintaining relationships to foster those interconnections (Zohar and Marshall, 2001; Emmons, 2000b). It is a capacity to perceive transcendent dimensions of the self, of others, and interconnectedness (Noble, 2000). Spiritual intelligence is an internal compass between what is internal and what is external, providing a sense of meaning and significance of experiences that we are co-creators. Many authors have pointed to the sense of higher meaning and purpose (Wigglesworth, 2012; King, 2008; Levin, 2000) and the ability to critically contemplate this meaning and purpose both in a general and individual sense (Noble, 2000). One of the most important aspects of spiritual intelligence is a tendency to ask 'why' and 'what if' questions and to seek fundamental answers (Levin 2000). Spiritual intelligence is a self-consciousness that teaches us how to go beyond the sphere of the ego closest to us and reach deeper layers of the potential hidden within us (Levin, 2000) to solve daily problems and seek a better life (Dåderman et al., 2013; Zohar and Marshall, 2001). Many authors have stated the core elements of spiritual intelligence (Table 2.3.).

To sum up the elements of spiritual intelligence, most authors have mentioned very similar core elements, but some of them focus more on 'spiritual' abilities, and others focus more on 'ordinary' abilities, which are useful in daily living. Summarizing these definitions, one of them could be that: spiritual intelligence is the ability to see 'spirituality' in everyday life and follow it.

TABLE 2.3. Components list of spiritual intelligence

Author	Core components list of spiritual intelligence
King (2008)	• The capacity to transcend the physical and material world. • The ability to experience heightened states of consciousness. • The ability to embrace everyday experiences. • The ability to use spiritual resources to solve problems. • The capacity to engage in moral behavior.
Dåderman et al. (2013)	• The capacity to be flexible. • A high degree of self-awareness. • A capacity to face and use suffering. • A capacity to face and transcend pain. • The quality of being inspired by vision and values. • A reluctance to cause unnecessary harm. • A tendency to see connections between diverse things. • A marked tendency to ask 'why' or 'what if' questions and to seek fundamental answers. • Possessing a facility for working against convention.

Author	Core components list of spiritual intelligence
King and DeCicco (2009)	• Developing awareness and knowledge about oneself. • Living with love and trust for oneself and others. • Finding purpose in every experience in daily life, including misery and painful experiences. • Transcending the individual self to an interconnected wholeness. • Developing the attitudes of open acceptance, inquisitiveness, and concern for all things in the world. • Living harmoniously with self, veracity, divinity, and nature. • Developing inner freedom and responsibility for wise behavior.
Zohar and Marshal (2005)	• Consciousness with three capabilities: intuition, mindfulness, and synthesis. • Grace with five capabilities: beauty, discernment, freedom, gratitude, immanence, and joy. • Meaning with two capabilities: purpose and service. • Transcendence with five capabilities: higher-self, holism, practice, relatedness, and sacredness. • Truth with six capabilities: egolessness, equanimity, inner-wholeness, openness, presence, and trust.
Noble (2000)	• Critical existential thinking, which refers to thinking about the essence of reality, the world, and other existential and non-existential concerns in relation to oneself. • Personal meaning production, which refers to finding personal meaning in all experiences and mastering the purpose of one's life. • Transcendental awareness, which refers to identifying the means of achieving transcendence from oneself and the physical world. • Conscious state expansion, which refers to the ability to control how and when to enter higher states of consciousness
Fry (2016)	• Self-awareness • Universal awareness • Self-mastery • Social mastery • Spiritual presence
Amram (2007)	• Finding meaning • Altruistic love • Self-awareness • Visioning • Authenticity

SOURCE: own research.

Spiritual leadership is important for leaders to lead people and create a sustainable workplace for employees in an organization (Samul, 2020). Leadership is a group feature that directly impacts on team identification, fostering group cohesiveness and promoting efficacy in goal attainment (Ruggieri and Abbate, 2013). Some studies indicate several benefits of spiritual leadership at the team level (table 2.4) form increase of life satisfaction (Jeon et al., 2013) to high-performing teams (Ritter, 2014; Yang, Huang and Wu, 2019).

TABLE 2.4. Benefits of spiritual leadership at team level

Authors	Benefits
Hoppe (2005)	higher commitment, and motivation, higher group productivity and performance
Pandey, Gupta and Arora (2009)	a sense of team and community, communication improvement
Zellers and Perrewe (2003)	learning in teams, spiritual climate, team-level innovative behaviours
van Saane (2019), Fry (2005)	higher group productivity and performance

SOURCE: own research.

Kahn (1990) claims that motivation and engagement at work requires meaningfulness, availability (bringing the necessary physical, emotional and cognitive resources to work) and safety (trust others and feel be trusted by others). Spirituality characterized by self-transcendence and sense of belonging supports employees' motivation and commitment in work, and then help them feel being a part of larger social environment. Sense of community, authenticity and respect of team member's behaviour lead to increase frequency of productive interactions in teams (Gupta and Singh, 2013). Spirituality influences learning in teams, spiritual climate and team-level innovative behaviours (Pandey, Gupta, and Gupta, 2019).

Although, some studies pay attention to the spiritual side of teams (Nandana Prabhu, Rodrigues and Pai, 2019), there is a lack of studies that indicate a need of spiritual leadership in a virtual team.

2.3. E-leadership skills among students

The above-mentioned aspects of leading virtual teams have been explored within the joint project of the two universities: University of Babes Bolyai (BBU) and Bialystok University of Technology (BUT).

Trustworthiness

The descriptive statistics (mean, standard deviation, median) of trustworthiness are shown in Table 2.5. The reliability analysis measures by Cronbach's alpha indicated acceptable internal consistency (i.e. alpha = 0.70 or above). Cronbach's coefficient alpha was 0.9281. The descriptive statistics analysis showed that trustworthiness among students of both University of **Babes Bolyai (**BBU) and Bialystok University of Technology (BUT) was assessed relatively low in a 5-point scale (mean_3.474, stand. dev._0.978, median_4). Moreover, the analysis of particular statements indicated that general trust ("I can rely on the students" and "Overall, students at this school are trustworthy") was rated slightly higher than the others. The lowest rated were "team

spirit" and paying attention on others' feelings. This means that students have moderate trust with each other. They have experience to work with each other, because many classes give them the opportunity to work together, so they know that trustworthiness may be a crucial factor for teamworking.

TABLE 2.5. Trustworthiness among students

Statement	Mean	Standard deviation	Median	N
Trustworthiness – total	3.474	0.978	4	2062
(T1) I can rely on the students I interact with in this school.	3.788	0.951	4	2066
(T2) Students in this school are usually considerate of one another's feelings.	3.367	1.002	3	2062
(T3) Students have confidence in one another in this school.	3.414	0.943	3	2063
(T4) Students in this school show a great deal of integrity.	3.433	0.967	4	2065
(T5) There is high "team spirit" among students in this school.	3.309	1.073	3	2064
(T6) Overall, students at this school are trustworthy.	3.538	0.937	4	2066
Cronbach's alpha	.9281			

SOURCE: own research.

The research results also showed the differences between the perspective of trustworthiness by students according to kind of university, gender and virtual experience. The students from BUT assessed all statements of trustworthiness clearly higher than students from BBU that are shown in table 2.6.

TABLE 2.6. Trustworthiness among BBU and BUT students

Stat.	Mean		Standard deviation		$\chi 2$	df	p
	BBU	BUT	BBU	BUT			
(T1)	3.59	3.96	0.83	1.01	216.67	4	0.0000
(T2)	3.19	3.51	0.93	1.03	85.04	4	0.0000
(T3)	3.18	3.61	0.84	0.98	188.98	4	0.0000
(T4)	3.32	3.53	0.88	1.02	66.73	4	0.0000
(T5)	3.19	3.40	0.99	1.13	51.70	4	0.0000
(T6)	3.39	3.66	0.86	0.98	90.49	4	0.0000

$\chi 2$ = Chi-square discrepancy, df = degrees of freedom, $p < 0.05$

SOURCE: own research.

The differences in trust among students depend also on gender. Although these differences are not large, they are noticeable. Overall, male students assessed all statements of trustworthiness higher than female students.

TABLE 2.7. Trustworthiness among male and female students

Stat.	Mean		Standard deviation		χ2	df	P
	male	female	male	female			
(T1)	3.873	3.742	0.972	0.935	31.51	8	.0001
(T2)	3.454	3.320	1.018	0.987	20.51	8	.0085
(T3)	3.551	3.335	0.970	0.917	38.57	8	.0000
(T4)	3.518	3.386	0.990	0.950	21.48	8	.0059
(T5)	3.415	3.249	1.072	1.069	13.54	8	.0094
(T6)	3.649	3.475	0.930	0.934	23.57	8	.0027

χ2 = Chi-square discrepancy, df = degrees of freedom, p < 0.05

SOURCE: own research.

The results of trustworthiness among students who have or do not have virtual team experiences in most cases are slightly different (Table 2.8.). Moreover, all statements of trustworthiness were rated higher by the students without experience than with experience. This means that those who have experience in work in a virtual environment have a lower level of trust in other team members. This may be due to students without these experiences have no awareness of difficulties in working in virtual team.

TABLE 2.8. Trustworthiness among students with or without virtual team experience

Stat.	Mean		Standard deviation		χ2	Df	p
	yes	*no*	*Yes*	*no*			
(T1)	3.719	3.835	0.918	0.970	20.27	4	.0004
(T2)	3.321	3.399	0.986	1.011	6.49	4	.1650
(T3)	3.320	3.478	0.922	0.952	20.19	4	.0004
(T4)	3.336	3.500	0.966	0.962	15.43	4	.0038
(T5)	3.213	3.374	1.075	1.067	13.01	4	.0112
(T6)	3.476	3.580	0.924	0.943	9.61	4	.0473

Yes – with experiences; no – without experiences, χ2 = Chi-square discrepancy, df = degrees of freedom, p < 0.05

SOURCE: own research.

The results show that trustworthiness was assessed as average among the students, although trustworthiness is one of the crucial factors in virtual teamworking.

E-technology competence

Using ICTs is very important for virtual teams. Knowledge about tools that can be used in virtual work and how to use them among students are average. The most used tools are those which are the most popular among young people: various kinds of messengers, e-mail, social media like Facebook, and mobile phone – about 80 percent of students use the tools and almost all know the tools (chart 2.1).

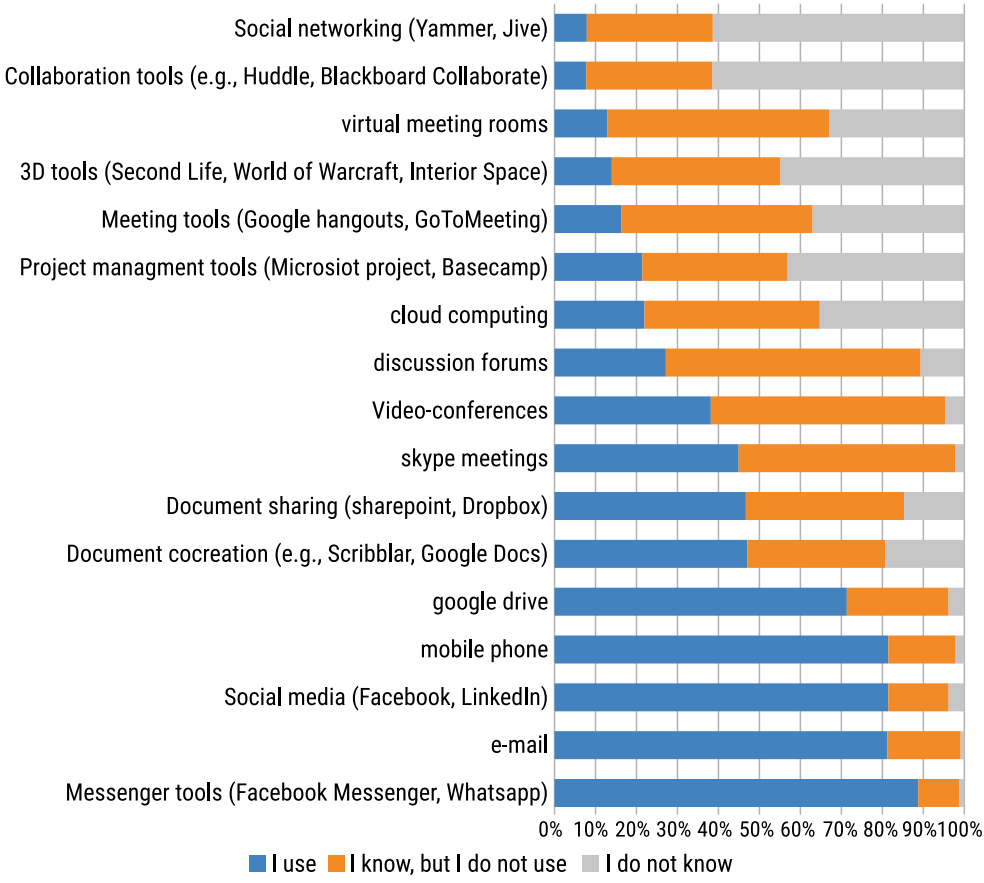

CHART 2.1. Types of virtual tools used for teamwork among BBU and BUT students
SOURCE: own research.

Next, the group of tools for virtual creating and sharing documents such as Google drive, Scribbler, Google Docs and SharePoint, Dropbox are also quite well known: about 55 percent of students use the tools; about 30 percent know the tools, but do not

use them; and less than 20 percent do not know them. Meetings with using Skype, phone and video are used on average by 40 percent of students; known, but not used by more than 50 percent; and the rest do not know them. The least known and used tools are those which are more advanced such as Yammer or Jive for social networking and Huddle or Blackboard Collaborate for collaboration. They are used by the students more at work than at university.

Further analysis shows that there are slight differences between students according to gender, university and virtual experience (Tab. 2.10). In the case of gender it is noticed that there are no significant differences about the most common used tools, excepting for social media (Facebook and LinkedIn) and there are significant differences about advanced tools between men and women.

In the case of the university there is also a lack of significant differences about common tools and there are differences about advanced tools between both BBU and BUT universities. This could be the result of BUT being a technical university with a faculty of computer science where, additionally, most students are men. In the case of virtual experiences there are not significant differences in most tools. Although in some tools for virtual teamwork the value p is below 0.05, however this value is around 0.05 (0.042, 0.037).

TABLE 2.10. Types of virtual tools used for teamwork among students by gender, by university and by virtual experience

Tools of virtual teamwork	Mann–Whitney U test _ gender		Mann–Whitney U test _ university		Mann–Whitney U test _ virtual experiences	
	z	p	z	p	z	p
Messenger tools (Facebook Messenger. whatsapp)	-0.009	0.992	-1.596	0.110	-2.323	0.020
e-mail	0.679	0.497	0.247	0.804	-1.199	0.230
Social media (Facebook, LinkedIn)	2.633	0.008	0.707	0.479	-1.313	0.189
mobile phone	0.172	0.863	-2.996	0.002	-1.504	0.132
google drive	-0.151	0.879	-3.397	0.000	-2.024	0.042
Document cocreation (e.g. Scribblar, Google Docs)	0.771	0.440	4.987	0.000	2.119	0.034
Document sharing (sharepoint, Dropbox)	-0.856	0.391	2.643	0.008	0.916	0.359
skype meetings	-0.293	0.768	5.143	0.000	1.020	0.307
Video-conferences	-0.687	0.491	0.098	0.921	-0.177	0.859
discussion forums	-2.820	0.004	-4.630	0.000	-3.591	0.000
cloud computing	-2.874	0.004	-0.708	0.478	-0.290	0.771

Tools of virtual teamwork	Mann–Whitney U test _ gender		Mann–Whitney U test _ university		Mann–Whitney U test _ virtual experiences	
	z	p	z	p	z	p
Project management tools (Microsiot project, Basecamp)	-1.258	0.208	-3.007	0.002	-0.739	0.459
Meeting tools (Google hangouts, GoToMeeting)	-3.136	0.001	0.023	0.981	-0.360	0.718
3D tools (Second Life, World of Warcraft, Interior Space Design programs)	-6.188	0.000	-5.783	0.000	-2.439	0.014
virtual meeting rooms	-4.682	0.000	-6.194	0.000	-2.081	0.037
Collaboration tools (e.g. Huddle, Blackboard Collaborate)	-2.167	0.030	-1.811	0.070	-1.406	0.159
Social networking (Yammer. Jive)	-2.276	0.022	-1.663	0.096	-1.105	0.268

Note: $p<0.05$

SOURCE: own research.

The results show that e-technology competences are quite developed among the students. It seems that the students are well-prepared to work in virtual environments.

Self-leadership skills

Self-leadership skills is very important for working in virtual teamwork that requires self-motivation skills, being responsible for establishing and achieving goal and tasks without the constant supervision of the leader.

Self-leadership skills were assessed with five dimensions according to Houghton 2002, although the questionnaire was shortened compared to the original form. The five dimensions were:

- self-goal setting (with statements: "I establish specific goals for my own performance". "I work toward specific goals I have set for myself". "I think about the goals that I intend to achieve in the future");
- evaluating beliefs and assumptions ("I try to mentally evaluate the accuracy of my own beliefs about situations I am having problems with". "I openly articulate and evaluate my own assumptions when I have a disagreement with someone else". "I think about and evaluate the beliefs and assumptions I hold");
- self-observation ("I make a point to keep track of how well I'm doing at work (school)". "I usually am aware of how well I'm doing as I perform an activity". "I keep track of my progress on projects I'm working on");
- focusing on natural rewards ("When I have successfully completed a task. I often reward myself with something I like". "I focus my thinking on the pleasant rather than the unpleasant aspects of my job (school) activities". When I have a choice.

I try to do my work in ways that I enjoy rather than just trying to get it over with". "I seek out activities in my work that I enjoy doing");

- self-cueing ("I use written notes to remind myself of what I need to accomplish". "I use concrete reminders (e.g. notes and lists) to help me focus on the things I need to accomplish").

The descriptive statistics (mean, standard deviation, median) of self-leadership are shown in Table 2.11. The reliability analysis indicated acceptable internal consistency (i.e. alpha = 0.70 or above). Cronbach's coefficient alpha was from 0.809 to 0.896 for five dimensions, and 0.939 for total questions about self-leadership.

All dimensions were scored quite high. The highest was rated self-goal setting (mean_4.078. stand. dev._1.127); the lowest – self-cueing (mean_3.737. stand. dev._1.290). This means that students possess skills to manage their own tasks, they can set and achieve the goals, and they are reflexive because they analyse their performance and try to focus on good aspects of their work. These skills can be also good for them as future leaders in a virtual environment.

TABLE 2.11. Self-leadership among students

Dimensions	Mean	Standard deviation	Median	N	Cronbach's alpha
Self-leadership – total	3.891	1.174	4	2099	0.939
(S-L1) Self-goal setting	4.078	1.127	4	2099	0.896
(S-L2) Evaluating beliefs and assumptions	3.910	1.159	4	2099	0.859
(S-L3) Self-observation	3.898	1.183	4	2099	0.864
(S-L4) Focusing on natural rewards	3.833	1.115	4	2099	0.809
(S-L5) Self-cueing	3.737	1.290	4	2099	0.864

SOURCE: own research.

Next, the differences in self-leadership skills among students by gender, university and virtual experience was measured. It is noticed that some dimensions are more sensitive to the variables. For example, gender has an impact on self-goal setting ($p = 0.001$) and self-cueing ($p = 0.000$). The female students assessed these dimensions slightly higher (Tab. 2.12.). This means that female students establish goals and pay attention to realize them more often than male students.

TABLE 2.12. Self-leadership among male and female students

Dimensions	Mean		Standard deviation		Mann–Whitney U test _ gender	
	male	*female*	*male*	*female*	Z	p
(S-L1)	4.084	4.145	0.921	0.873	3.295	0.000
(S-L2)	3.951	3.971	0.886	0.856	0.086	0.930
(S-L3)	4.039	4.074	0.908	0.868	0.869	0.384
(S-L4)	3.833	3.878	0.892	0.847	1.970	0.048
(S-L5)	3.737	3.870	1.210	1.156	5.855	0.000

Note: $p<0.05$

SOURCE: own research.

Some differences between BBU and BUT students are noticed. All dimensions were assessed higher by BUT students than BBU students. There are significant differences in focusing on self-observation ($p = 0.000$) and natural rewards ($p = 0.001$). It seems that self-observation is very important for self-management. It allows the evaluation of own progress to achieve goals, and then reward yourself.

TABLE 2.13. Self-leadership among BBU and BUT students

Dimensions	Mean		Standard deviation		Mann–Whitney U test _ university	
	BBU	BUT	BBU	BUT	Z	p
(S-L1)	4.078	4.089	1.055	0.786	2.108	0.034
(S-L2)	3.910	3.987	1.060	0.699	1.144	0.252
(S-L3)	3.898	4.162	1.062	0.727	-5.564	0.000
(S-L4)	3.816	3.848	1.073	0.696	3.151	0.001
(S-L5)	3.651	3.813	1.333	1.087	-1.538	0.123

Note: $p<0.05$

SOURCE: own research.

The highest differences are among students with or without virtual experience (Tab. 2.14). The students who have experiences in virtual work assessed own self-leadership skills higher in all dimensions. This suggests that professional experiences improve own abilities in management. When students have to work, they also have to manage their task, time, responsibilities and even other team members.

TABLE. 2.14. Self-leadership among students with or without virtual team experience

Dimensions	Mean		Standard deviation		Mann–Whitney U test _ virtual experiences	
	Yes	*no*	*Yes*	*no*	Z	P
(S-L1)	4.155	4.036	0.848	0.965	2.303	0.021
(S-L2)	4.024	3.902	0.846	0.909	3.509	0.000
(S-L3)	4.085	4.008	0.854	0.941	1.485	0.137
(S-L4)	3.902	3.786	0.837	0.924	2.645	0.008
(S-L5)	3.832	3.673	1.165	1.236	2.911	0.003

Note: Yes – with experiences; no – without experiences, p<0.05

SOURCE: own research.

Cultural intelligence

Cultural sensitivity is crucial for working in virtual teams, especially among multicultural team. This skill can be measured by cultural intelligence.

Cultural intelligence (CQ) was assessed in four dimensions according to a shortened version of a questionnaire proposed by Ang (2007):

- Metacognitive CQ (with statements like " I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds". "I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me". "I check the accuracy of my cultural knowledge as I interact with people from different cultures");
- Cognitive CQ ("I know the legal and economic systems of other cultures". "I know the cultural values and religious beliefs of other cultures". "I know the rules for expressing nonverbal behaviors in other cultures");
- Motivational CQ ("I enjoy interacting with people from different cultures". "I am confident that I can socialize with locals in a culture that is unfamiliar to me". "I am sure I can deal with the stresses of adjusting to a culture that is new to me);
- Behavioral CQ ("I change my verbal behavior (e.g.. accent. tone) when a cross-cultural interaction requires it". "I vary the rate of my speaking when a cross-cultural situation requires it". "I change my nonverbal behavior when a cross-cultural situation requires it").

The descriptive statistics (mean. standard deviation. median) of cultural intelligence are reported in Table 2.15. The reliability analysis indicated acceptable internal consistency (i.e. alpha = 0.70 or above). Cronbach's coefficient alpha varies from 0.8254 to 0.8836 for four dimensions.

All dimensions of cultural intelligence were scored average. The highest was rated motivational CQ (mean_3.752. stand. dev._0.8548). This means that students enjoy interacting with people from other cultures and they are open to become acquainted

with a culture that is unfamiliar to them. It is a very good point to start working in various cultures, for example, in multicultural teams. Next, metacognitive CQ was assessed high (mean_3.715. stand. dev._0.8254). This means that students are sensitive to differences in culture and can adjust their own behaviour in various situations. The lowest rated dimension of cultural intelligence was cognitive (mean_3.012. stand. dev._1.060). This means that students do not feel that they have sufficient knowledge about other cultures.

TABLE 2.15. Cultural intelligence among students

Dimensions	Mean	Standard deviation	Median	N	Cronbach's alpha
Cultural intelligence – total	3.512	1.067	4	2099	0.951
(CQ1) Metacognitive CQ	3.715	1.028	4	2099	0.851
(CQ2) Cognitive CQ	3.012	1.060	3	2099	0.825
(CQ3) Motivational CQ	3.752	1.078	4	2099	0.854
(CQ4) Behavioral CQ	3.569	1.105	4	2099	0.883

SOURCE: own research.

The differences in assessing cultural intelligence between students by gender, university and virtual experiences were noted. Women assessed their own awareness about differences in other cultures (metacognitive CQ) higher than men, meanwhile they assessed their own knowledge about other cultures (cognitive CQ) lower than men. The other dimensions of cultural intelligence do not show significant differences.

TABLE 2.16. Cultural intelligence among male and female students

Dimensions	Mean		Standard deviation		Mann–Whitney U test _ gender	
	male	*female*	*male*	*female*	Z	P
(CQ1)	3.684	3.764	0.857	0.867	2.505	0.012
(CQ2)	3.124	2.973	0.889	0.883	-3.825	0.000
(CQ3)	3.764	3.781	0.846	0.939	1.197	0.231
(CQ4)	3.569	3.604	0.933	0.973	1.185	0.235

Note: $p<0.05$

SOURCE: own research.

Significant differences between BBU and BUT students are noticed in all dimensions of cultural intelligence (Tab. 2.17.). Three dimensions: metacognitive CQ,

motivational CQ and behavioural CQ were assessed higher by BBU students than BUT students. This may be related to BBU being a more international university with more foreign students than BUT. This provides very good possibilities to work with people form another culture and gain experience in this topic. This, in turn, can lead to students being more open and positive to other cultures. However, the BUT students have broader knowledge about other cultures because the cognitive CQ was assessed higher by BUT students than BBU students.

TABLE 2.17. Cultural intelligence among BBU and BUT students

Dimensions	Mean		Standard deviation		Mann–Whitney U test _ university	
	BBU	BUT	BBU	BUT	Z	p
(CQ1)	3.762	3.678	0.996	0.805	5.055	0.000
(CQ2)	2.832	3.171	0.935	0.858	-8.008	0.000
(CQ3)	3.824	3.693	1.078	0.808	6.899	0.000
(CQ4)	3.589	3.554	1.104	0.883	3.153	0.001

Note: $p<0.05$

SOURCE: own research.

Virtual experience also has an impact on cultural intelligence. As it is presented in Table 2.18 students with experience of work in virtual teams assessed three of four dimensions of cultural intelligence higher than students without that experience.

TABLE 2.18. Cultural intelligence among students with or without virtual team experience

Dimensions	Mean		Standard deviation		Mann–Whitney U test _ virtual experiences	
	Yes	no	Yes	no	z	p
(CQ1)	3.781	3.674	0.857	0.925	2.821	0.004
(CQ2)	2.988	3.030	0.852	0.947	-1.285	0.198
(CQ3)	3.836	3.699	0.907	0.967	3.482	0.000
(CQ4)	3.643	3.522	0.961	1.010	2.594	0.009

Note: Yes – with experiences; no – without experiences, $p<0.05$

SOURCE: own research.

The results indicates that cultural intelligence that can support virtual working is quite good among the students. There are no significant differences between

the genders, however, we can notice the differences between universities and experiences. The experience in working in an international environment or in a virtual team (often with people from various cultures) has a positive impact on cultural intelligence.

Emotional and spiritual intelligence of virtual team members

Nowadays, these kinds of intelligence are more important than rational intelligence for both leaders and e-leaders. However, virtual teamworking faces more challenges than traditional teams. Thus, the level of emotional and spiritual intelligence presents itself to be interesting to measure among the students.

The five dimensions of emotional intelligence was measured among students according to the Leadership Toolkit1:

- Self-awareness with 10 items, for example: "I realise immediately when I lose my temper", "I usually recognise when I am stressed", "When I am being 'emotional' I am aware of this";
- Self-regulation with 10 items, for example: "Difficult people do not annoy me", "I can consciously alter my frame of mind or mood", "I can suppress my emotions when I need to";
- Motivation with 10 items, for example: "I am able to always motive myself to do difficult tasks", "I always meet deadlines", "Motivation has been the key to my success";
- Empathy with 10 items, for example: "I am always able to see things from the other person's viewpoint", "I am excellent at empathising with someone else's problem", "I can tell if a team of people are not getting along with each other";
- Social skills with 10 items, for example: "I am an excellent listener", "I am good at adapting and mixing with a variety of people", "I love to meet new people and get to know what makes them 'tick'".

Spiritual intelligence was measured with the SISRI-24 questionnaire proposed by King (2008) with its subscales:

- Critical existential thinking (CET), which refers to thinking about the essence of reality, the world, and other existential and non-existential concerns in relation to oneself, for example: "I have often questioned or pondered the nature of reality", "I have spent time contemplating the purpose or reason for my existence";
- Transcendental awareness (TA), which refers to identifying the means of achieving transcendence from oneself and the physical world, for example: "I recognize aspects of myself that are deeper than my physical body", "I am aware of a deeper connection between myself and other people";
- Conscious state expansion (CES), which refers to the ability to control how and when to enter higher states of consciousness, for example: "I am able to enter

1 Available on website: https://www.londonleadershipacademy.nhs.uk/leadershiptoolkit

higher states of consciousness or awareness", "I can control when I enter higher states of consciousness or awareness";

- Personal meaning production (PMP), which refers to finding personal meaning in all experiences and mastering the purpose of one's life, for example: "My ability to find meaning and purpose in life helps me adapt to stressful situations", "I am able to define a purpose or reason for my life".

TABLE 2.19. Descriptive statistics of emotional (EI) and spiritual intelligence (SI) of students

Dimensions	Mean	Standard deviation	Median	Cronbach's coefficient alpha
Emotional intelligence – total	3.675	1.049	4	0.828
Self-awareness	4.052	0.965	4	0.725
Self-regulation	3.195	1.115	3	0.697
Motivation	3.546	1.008	4	0.700
Empathy	3.952	0.925	4	0.701
Social skills	3.630	1.190	4	0.739
Spiritual intelligence – total	3.541	1.094	4	0.912
Critical existential thinking (CET)	3.534	1.289	4	0.845
Transcendental awareness (TA)	3.676	1.042	4	0.757
Conscious state expansion (CSE)	3.225	1.041	3	0.841
Personal meaning production (PMP)	3.678	0.948	4	0.685

SOURCE: own research.

The descriptive statistics (mean, standard deviation and median) of the two questionnaires are shown in Table 2.19. The reliability analysis indicated acceptable internal consistency (i.e. alpha = 0.70 or above). Cronbach's coefficient alpha was 0.828 for emotional intelligence questionnaire and 0.912 for spiritual intelligence (SI) questionnaire total. However, the reliability for particular dimensions of EI was not sufficient for four of five dimensions. Only the social skills dimension has acceptable reliability. Some statements for other dimensions were removed to obtain sufficient reliability. Thus, 2 questions were removed (no 36 and 41) from self-awareness; from self-regulation – 6 questions (no 2, 12, 17, 27, 32, 37); from motivation – 2 questions (no 33 and 43); from – empathy 5 questions (19, 24, 29, 34, 39). This ensures the dimensions have acceptable reliability above 0.700, except for one dimension – self-regulation (0.697). In the case of SI, the reliability is acceptable for the three subscales: CET (critical existential thinking) – 0.845; TA (transcendental awareness) – 0.757;

CSE (conscious state expansion) – 0.841. For PMP (personal meaning production) it is slightly lower – 0.685 with one statement (no. 4) removed. The level of reliability is due to the number of respondents being small – only 23 persons.

The research results showed that emotional intelligence was assessed average (mean_3.675, stan.dev._1.049) and slightly higher than spiritual intelligence (mean_3.541, stan.dev._1.094). The means all dimensions are from 3.195 (self-regulation) to 4.052 (self-awareness) for EI and from 3.225 for 3.678 (Personal meaning production) for SI.

2.4. Tips for e-leadership education

A virtual team which consists of members dispersed in different geographical places who use communication technologies to work together, nowadays is considered as the most common way to organize work. For organizations, virtual teams offer many advantages, however it also throws up a number of challenges. One of them is leading a virtual team.

Leadership is a topic widely tackled by experts in many fields of business and management. The dynamic development of ICTs in the digital era and requirements to work better, faster and effectively in a virtual environment have allowed leadership to begin to complement an emerging paradigm that can act on changing situations that can be imposed on the technology. This emergent paradigm is e-leadership. E-leadership might be defined as the management process of a group of employees using advanced information technology to produce a change in attitudes, behaviors and performance of individuals, team and organization. Compared to traditional leadership with face-to-face meetings, e-leadership is a process that aims to guide behaviors toward fixed shared goals but which is simultaneously mediated by information and communication technologies (Jawadi et al., 2013). E-leaders have to use multiple communications tools, thus they need to learn how to transmit messages through information technologies, which medium to use to send a specific message to achieve goals, and how to avoid misunderstandings in order to influence to move the team forward. Thus, e-leadership is an emerging research topic because of its importance for the challenges and benefits it brings to organizations by creating a new way of leading in a virtual environment.

E-leadership has emerged in virtual team literature. However, the way e-leaders develop high quality skills to operate in a virtual environment is little understood. The following new competences for e-leaders are requirement.

- E-technology. It is a crucial factor because e-leadership should appear in a virtual environment with good skills to use technological tools for communication and effective collaboration. That is why it is necessary to develop learning, knowledge and skills in ICTs of e-leaders.

- E-communication. Communication between leader and team members and among individuals in a team is significant to establish the goals, the way of achieving the objective, to take decisions and avoid misunderstanding. The lack of face to face meetings and direct and nonverbal contacts makes communication difficult. This requires knowledge and skills how to communicate effectively in such a limited virtual environment.
- Trust. Trust among team members including the leader as one of the team members is emphasised as a crucial factor to cooperation. It is also not easy in a situation with limited communication and influence on team members' engagement and motivation.

One of the most important shortcomings of current leadership education is the lack of virtual-oriented training that allow students to gain appropriate skills and competence to work in a virtual environment. Over the last decades, a large body of knowledge has amassed regarding how to develop traits or behaviours of leaders in traditional organizations and teams. However, the field of higher education should pay attention to leadership programs that allow to increase leadership knowledge, skills, and abilities which, in turn, can produce other effective virtual team working.

To accomplish the research results conducted among the university's students, it is suggested that students as future e-leaders should be trained about:

- communication tools,
- build trustworthiness,
- self-leadership,
- cultural, emotional and spiritual intelligence.

This study result showed that knowledge and use of information and communication technology tools are average among students. They use the most common tools. However, they should know how to use more advanced tools for virtual work. For example, messenger is good for sending short and quick informal messages, but not appropriate to explanation the task. It is also very important to know the tools that have the possibility to create, keep and share documents under working on team members. Then, virtual teams should know tools that enable virtual meetings that would substitute face-to-face meetings with possibilities of understanding, explanation, asking and verification. Of course, not only tools are responsible for good communication between team members. The ways of sending messages and awareness that interpretation of information is limited because of the lack of face-to face meetings are very crucial factors for effective collaboration.

The next significant issues focus on building an individual self-perspective. Self-leadership and trust are competences that students should learn. Being a part of a team is not only sharing the task and responsibility among many people, but above all is the responsibility of the result and success of a team. It seems that internal motivation now plays a more important role than before. A team member should be motivated

to engage in teamworking, manage their own tasks and activities according to deadlines. This is the element of self-management and trustworthiness. The students know that situations where only some students are engaged in a project during teamworking on classes happen very often. This creates attitudes that it is possible to do nothing to gain a benefit of being a part of a team. In an education system only these students who have contributed to work should be assessed positively in order to change the inappropriate behavior.

Also certain kinds of intelligence should be developed in academic classes. Cultural intelligence is very important. First, being aware of differences in various cultural results being more sensitive for differences and more open to other cultures and team members behaviours. Then, teamwork is pleasurable, not stressful; it is about understanding, not conflict; and successful, not hard-working. Next, the emotional intelligence for all kinds of leaders is significant, however for an e-leader might be even more challenging. E-leadership is the heart of leading a team giving right directions to employees. To get better outcomes from the virtual team members and to achieve the organizational aims, e-leaders should be able to understand the employees and own emotions as well. Members of a team usually expect that others should understand their feelings, perspectives, values, beliefs and respect them. Therefore e-leaders should be very careful in dealing with followers' emotions. Through a greater understanding and managing of own and others' emotions, leaders can positively affect teamworking by creating a workplace of open communication, enhanced trust and greater empathy. In turn, spiritual intelligence is a set of skills that connect people to their own source of meaning, purpose, and ethics. As with emotional intelligence, savvy business leaders know that these spiritual qualities are important to success. Thanks to spiritual intelligence, team members can be highly engaged and strongly committed to organizational goals because of a sense of meaning to their work and a culture of work that adheres to ethical principles. All these qualities are important not only to the well-being of employees, but also to creating high team performance.

Team leaders should know that influencing people, especially during periods of change and greater efforts, means to motivate them emotionally and not just selling them data and analytics. Also, cognitive science research demonstrates that decisions are emotionally charged and that values play the role of guidelines in any decision-making process. All the books about project management should contain chapters about rational, emotional and spiritual knowledge and to integrate them into the complexity of knowledge dynamics.

Chapter 3. Managing performance in virtual teams

3.1. Team effectiveness in virtual teams

The use of virtual teams (VTs) suggests considerable promise based on advantages such as the capacity to maximize expertise and resources from diverse geographical regions, reduced costs given the unneeded travelling, and facilitated knowledge sharing (Dulebohna and Hoch, 2017). There are benefits of VT for both managers and employees, such as time saved with the lack of travelling to meetings. In order to take advantage of VT, the organizations needs to maintain the adequate functioning of the technology necessary for virtual teamwork and to provide the development programs the team members need to effectively implement their work responsibilities.

Early research findings reveal large similarities between the factors the lead to success in both traditional and VTs (Drexler, 1995), such as clear goals, leadership, employee motivation and commitment, team communication. Duarte & Snyder (1999) distinguish a set of key factors that influence the performance of VT: technology, the policy of human resources, the learning and development programs, the characteristics of the team processes, organizational cultures, leadership, and personal mastery. Still, given the particularities of the VTs, some of the factors become more critical (Nakayama et al., 2005), such as the need for orientation of the team members so they share a clear understanding of the purpose, the role in the organization structure and strategy, and the responsibilities of the team; the need for trust between the team members (which is even more critical in the early stages of a team development, when there is little experience in working together as a team and the team lacks the control mechanisms that usually exist in traditional teams), need for good communication and implementation of methods to obtain members' feedback on the work flow and processes. Pointing to the "dark side" of the VTs, dysfunctional aspects such as reduced member commitment, roles in multiple teams, role ambiguity, high team fluctuation, absenteeism, and social loafing could affect the teamwork in the virtual setting (O'Hara-Devereaux and Johansen 1994).

Shaw et al. (2000) identified three major areas that need to be considered when evaluating the satisfaction and performance of group members. The first component is the task interdependence (the perceived inter-relatedness of the team tasks), followed by the reward interdependence, and the individual's attitudes and preferences toward group work. While some stream of research focus on group design components, little attention has been placed on the interaction between the design aspects and the members' attitudes related to teams (Shaw et al., 2000).

It is relevant to note the dynamic character of teams, which stresses the continuous changes VTs go through and the need to review, periodically, their performance and behaviours, following certain milestone stages. Also, when discussing team effectiveness, we need to take into account the various types of teams.

In organizations we can encounter several types of teams. The most common, as identified by Robbins (2005) are: problem-solving teams, self-managed work teams, cross-functional teams and virtual teams.

Problem solving teams are some of the most widely used teams. They generally consist of 5-12 members, who are part of the same department and who meet up for a few hours to discuss ways to boost work efficiency (quality improvement, cost reduction, changes in the labor process structure. Although rarely authorized to implement their ideas, their input and insight is very useful in discovering new solutions for the entire organization. Given that problem solving teams feature a series of limitations as to individuals' involvement in the work and decision-making process, autonomous work teams began to emerge which, alongside identifying solutions, plan their implementation and assume full responsibility for results.

Self-managed teams are groups of individuals who carry out highly interdependent tasks, borrowing most of a supervisors' responsibilities: they plan, allocate tasks, monitor work and implement corrective actions, evaluate each team member's performance. In self-managed teams it is important that current members handle the selection of new members, in line with the requirement and work style promoted by the team (Banner et al., 1992).

Cross-functional teams comprise members from similar hierarchical levels, but different departments, who carry out a task together, each providing knowledge and competences from distinct areas of specialization (production, design, marketing, procurement). Task forces are temporary cross-functional teams. This work structure allows individuals from different groups to share information from various areas, to discover new ideas and solutions and to coordinate complex projects. Due to their qualification background in different areas, the forming stage of these teams is lengthier, and they need more time to understand and familiarize with each other. According to the degree of permanency, task routine and autonomy, West (2005) identifies several types of teams: consultancy and involvement teams (decision-making committees, quality control units), service and production teams (maintenance, sales, manufacturing teams), design and development teams (research, product development), response and negotiation teams (operating teams, trade unions).

Unlike these types of teams which rely on direct member interaction, *virtual teams* use computerized technology to network with the members located in different work sites, in order to achieve a common objective. Similarly, virtual teams share information, solve tasks, make decisions and may include members from the same department or individuals from different organizations. In terms of life span, virtual teams can last for several days while solving a specific problem, a longer time to complete a project or can be permanent. The main elements which distinguish such teams from directly interacting teams are: communication is confined to non-verbal language, members' social needs are satisfied to a lower degree, possibility to overcome time and space constraints.

Regardless of the type, size and structure of a team, its chief goal is to perform well. A team's efficiency has three drivers (West, 2005): related to task (accomplishment of objectives), team member satisfaction (content, stress level, personal development) and team viability (likelihood that team members will continue to work together efficiently if needed). In terms of efficiency, four categories of teams are distinguished: *high performing teams* (high reflectivity when it comes both to tasks and social issues, which means that it innovates, changes work strategies or objectives in order to succeed with the task in a collaborative manner); *poor performing teams* (even if very well-performing socially, which means that the team has created a relaxed, mutually supporting and opened environment, task reflexivity is low and performance is poor); *dysfunctional teams* (since they exhibit poor task social issues reflexivity, members are dissatisfied both with interpersonal relations and with team outcomes); *un-welded effective teams* (although well-performing, team members cannot build functional relations, which decreases the desire to work together and the sense of innovation).

The studies which attempted to identify the main factors influencing the efficiency of a team distinguished 4 categories: factors related to context, composition, work structure and process related (Robbins, 2005) as is shown in Fig. 3.1.

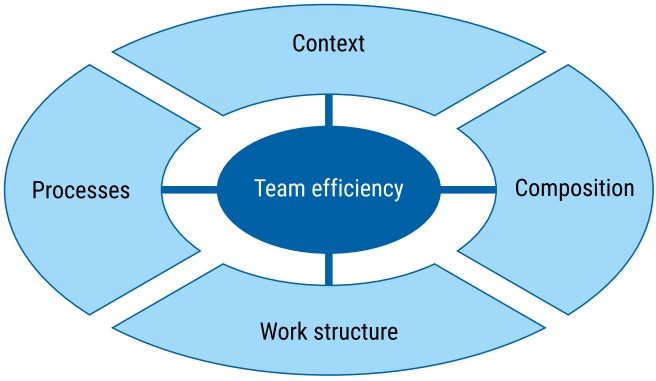

FIGURE 3.1. Factors that influence the team efficiency
SOURCE: own compilation base on (Robbins, 2005).

The *context related factors* which influence the efficiency of a team refer to the *fitness of resources* (the support and resources allocated by the management to the team: timely provision of information, appropriate equipment, administrative assistance); *structure and leadership* (fair distribution of tasks, knowing each role in the team, competence development, conflict resolution, leaders' expectations and attitude towards the team); *level of confidence among team members* (trust fosters cooperation, reduces the need of members' mutual supervision, easier acceptance of risks); *performance reward and evaluation system* (complementary to individual rewards, team reward systems should also be put in place).

Team's composition refers to team members' *competences* (knowledge, skills). High team performance requires at least 3 categories of competences: technical expertise, problem solving and decision-making skills and soft skills. Equally important are *members' personality traits* (teams which scored higher at personality traits were more favorably appreciated by managers); *role allocation* (appropriate pairing between individual preferences and role requirements boosts the chance that the team will work better together); *diversity* (heterogeneous teams, given the differences between members, are more likely to cover a wider range of competences and, being prone to divergence, can generate innovative ideas); *size* (studies report that the most efficient teams are small-sized, generally comprising less than 10 members. In large teams cohesion is low, interaction and the diffusion of social responsibility across the team is reduced, and small sub-groups can emerge; *members' flexibility* (the more adaptable and flexible are members, the more efficient is the team, since flexibility helps them replace or complete colleagues more quickly); *members' preferences* (members selection should consider individual preference for team work. Individual work oriented-persons could derive lower satisfaction from team work).

Work structure refers to elements that motivate employees, such as: *competence diversity range* (the extent to which works covers diversified tasks, requiring distinct competences); *task identity* (the extent to which work entails completion of an entire task, which results in an identifiable service or finished product); *task significance* (the extent to which work impacts on others); *autonomy* (the degree in which work offers freedom of action and decision to the individual, in work planning and procedure setting); *feedback* (the extent to which the individual receives direct insight on his/her performance). If the work activity covers a wide range of abilities, task identity and autonomy to a high degree, the likelihood that the individual will consider his/her work important and valuable increases. A highly autonomous work confers a sense of responsibility, with implications on employee motivation.

Process related factors generate positive results on team work, so that team performance is higher than the sum of individual performances. They relate to: *setting a common goal* to guide members' actions and to engage team members' commitment to the defined common goal (Kiesler, 1971); *translating the chief goal into specific objectives,* realistic and measurable in terms of team performance, capable to guide the team towards results; *team efficacy,* which motivates team members to engage

actively in the tasks to be completed; *conflict level* (if interpersonal conflicts are most often dysfunctional, disagreements in the team trigger innovation and foster critical evaluation of the solutions); *social loafing*, which refers to individuals' tendency to avoid active commitment to group work given that individual performance is difficult to measure. In view of this last factor, we consider that in order to be efficient, monitoring should target both the performance of the entire team and of each member individually.

3.2. Performance models for virtual teams

Scholarly literature places great importance on identifying the most relevant aspects that lead to better VT performance (Aritz et al., 2017). Several models have been advanced. The Input-process-output framework provides a useful theoretical foundation to distinguish the main inputs, team stages, processes, moderators, and relevant outputs for the VT effectiveness. This framework suggests that the input factors impact the team stages and process factors, which further influence the team outcomes, and mediate the relationship between inputs and outcomes (Ilgen et al., 2005). Inputs or drivers of VT performance continue to get considerable research attention, initially investigating member demographics, knowledge, skills, and more recently team composition, cultural values, multi-team membership, and task characteristics. But which are the key inputs and processes that impact output remains a question to be addressed by scholarly research. To address this gap, in this chapter we aim to identify the mediating mechanisms between the contextual resources that support and the challenges that hinder the team effectiveness and the performance in VTs. We focus on the role of resources at the team and individual level, such as the impact of the technology use related knowledge, and the challenges faced while working in VTs.

Aiming to determine the key elements of VT performance, Powell et al. (2004) pinpoints four main components: inputs, socio-emotional processes, task processes, and outputs (Fig. 3.2).

The *inputs* are related to design (the planning and structuring the development of the team), culture (common values, shared knowledge), technical expertise, and training (Van Ryssen & Godar, 2000). Focusing on the mediators and moderators of the input-output relationship, considerable research examined the action and interpersonal processes, while the transition is acknowledged to be lacking findings (Gilson et al., 2015; Marks et al., 2001). Evidence shows that the action processes such as communication, coordination, and knowledge sharing positively impact team efficiency and effectiveness (Kock and Lynn, 2012). Powell et al. (2004) indicate a positive impact of the *socio-emotional processes* on the performance of VR projects.

The *task processes* such as communication, coordination, and task-technology structure also play a crucial role for VT performance. Particular challenges such

as insufficient contextual information, asymmetric information distribution among members, increased risks for incorrect interpretations, and technical problems impose even more communication related difficulties for VTs (McDonough et al., 2001). Research shows that online communication tools can be effective substitutes for face to face decision-making, with even certain advantages, such as more efficient use of time (Handgraaf et al., 2012). Still, early research (Veinott et al., 1999) indicates variations of the effectiveness of the online communication tools as a function of the characteristics of the communicating partners. Similarly, the fit of the task-technology-structure also depends on the individuals characteristics (Majchrzak et al., 2000). Analysing the elements that influence the performance of VTs, we can note that the combination itself of these components might also have an impact.

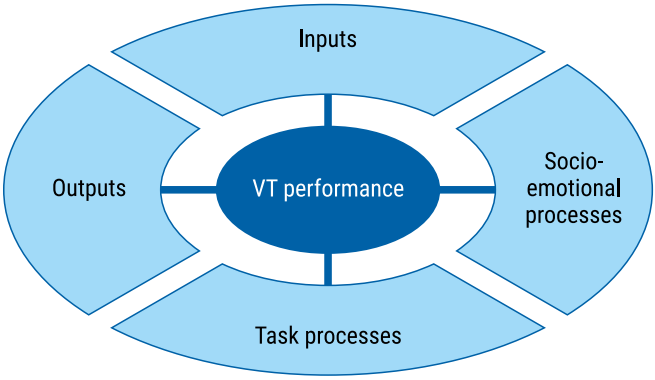

FIGURE 3.2. Components of VT performance
SOURCE: own compilation base on (Robbins, 2005).

Dulebohna and Hoch (2017) advance a contingent approach to IPO based on the assumption that the characteristics of the VRs vary as a function to the particularities of the organizations and other contextual factors. The performance of the VT is influenced by the specific inputs, processes, and moderating factors that are more or less deterministic. IPO is also useful as a diagnosis tool for the assessment of the VT performance in organizations and the identification and facilitation of the factors that are critical for the effectiveness of the VT work. The inputs include organizational level factors, team leadership factors, and team composition. The first category of input factors include organizational actions for the design of the VT, setting objectives, work environment, actions for providing teams with structural supports such as information & communication technology, training, and reward systems (Hoch and Kozlowski, 2014). The team leadership factors relate to the skills required for managing VTs. While, in the early stages of VT development it was assumed that the skills needed by the leaders were rather similar to the ones for traditional teams, it is widely acknowledged now that VTs require particular VT skills such as supplementary communication skills, competence of collaborative

technology, understanding of cultural diversity, ability to motivate team members, behaviours that facilitate empowerment and participative management. The virtual nature of the interaction attenuates the leader influence, which make transformational leadership behaviours, leader member exchange (LMX) to be even more important. In VTs, transformational leadership positively influences performance, satisfaction (Purvanova & Bono, 2009), and motivation (Andressen et al., 2012). Team composition represents the third input category and includes surface level diversity (ethnicity, culture, language) and deep level diversity (individual personality, values), knowledge, skills, abilities and other various individual differences (Eisenberg and Mattarelli, 2016). The team processes and the emergent states represent the mediators between inputs and outcomes. They include cognitive, motivational, affective, and behavioral processes. Potential moderators that might influence the intensity of the relationship between inputs and outcomes include the particularities of the virtuality (the degree of the geographic dispersion, as space and time, the characteristics of the electronic media use), interdependence and task complexity, the external team context. VTs exist to achieve certain purposes that might focus on two levels of outcomes. The team level outcomes of VTs refer to indicators for team performance and effectiveness, and the individual team member outcomes refer to standards for the members' performance, attitudes, and behaviours. Following the input-mediator-output-input (IMOI) model (Ilgen et al., 2005), the feedback loop represents a critical component that reflects the dynamics of the VT. As complex and adaptive systems, the VTs learn in time and the outcomes obtained at a certain moment also influence the inputs, the processes and emergent states.

The existing models highlight the role of the team leadership factors for VT performance (Dulebohna and Hoch, 2017). While leadership is important at the team level, at individual members' level, self-leadership becomes also a critical component. Self-leadership includes the processes through which the individuals themselves determine how to behave in the desirable way, divided in three categories: behaviour strategies, natural rewarding, and constructive cognitive patterns (Houghton and Neck, 2002). The behaviour focused strategies comprise self-observation and self-cueing, self-goal setting, self-reward and self-punishment, and associate with increased self-awareness, which facilitate the identification of the behaviours that need to be improved. The natural reward strategies focus on stimulating the enjoyable sides of a certain activity and motivating through the task itself (Manz and Neck, 1999), which further fosters increased self-competence, self-control, and sense of purpose. The constructive thought patterns imply the generation and maintenance of the functional models of thinking (visualising successful performance, self-talk), coupled with the challenging of irrational beliefs (evaluating beliefs and assumptions). In the context of virtual work, we expect that self-leadership influences the efficacy of the VTs.

In a comparative approach, Aritz et al. (2017) bring evidence that the well-coordinated VTs that reach better performance use media differently compared to poorlycoordinated teams. The members of the well-coordinated teams are more likely

to use collaborative, high-immediacy and high-symbol-variety media tools to support communication (e.g., Google Docs, Skype, Google Hangouts, web-conferences, phone calls). The findings demonstrate the good coordination of the VT leads not only to improvements in the use of media tools, but also to changes in members' perceptions and attitudes towards these tools. Still, little is known about the particular resources that potentially benefit the VT performance in various contexts. As existing findings emphasize, we should not assume that young generations are inherently media savvy and have all the skills necessary to use social networking tools in an efficient way (Aritz et al., 2017). Aiming to shed more light on the behaviours of young VT members in Eastern European countries, we explore a set of characteristics of the university students' behaviours in VTs. We expect that resources such as the team members' technology-use knowledge impact the performance in VTs. Even more, there is sparse research on the mechanisms that potentially mediate the members' knowledge and team performance.

The Time-Interaction-Performance (TIP) model developed by McGrath (1991) conceptualises working teams as time-based, multifunctional, and multimodal social systems. The effective teams perform three functions – production (task performance), support for the members (members' integration, commitment, loyalty), and members well-being (roles, interactions, internal rules) and act in four modes – acceptance of a tasks, problem solving, conflict management, and tasks implementation. While traditional teams engage in different modes and functions at various time phases, VTs face the challenge to rather engage simultaneously in all these modes and functions to reach performance.

Another stream of VT research aims to explore the challenges faced by VTs and how the perceived difficulties impact team effectiveness. The obstacles which deter team success are related to issues inherent to the organizational context in general, but also to the particularities of the individuals who form the team (Eales-White, 2004).

Cultural obstacles refer to: hindrances inherent to the organizational culture promoted by the organization, hostile attitude or management mistrust in the usefulness of teams as organizational work structures; too much focus on tasks while overlooking human relationships and individuals' feelings; inefficient strategic thinking, which fails to identify the root causes of problems; lack of openness to new solutions; a traditional hierarchical structure, which includes team members from various management levels who are not willing to abandon the position-specific attitude; reward systems which favor individual work, etc.

Individual obstacles relate to: leadership type (attitude, leaders' trust in the team's potential, knowledge, leaders' technical and team work skills --overlapping competences can be associated with insufficient coverage of other abilities required for task completion; moreover, similar competences can generate conflicts among members); remote work sites for the team members, which can impair communication and interaction; team size (the more members in a team, the higher the likelihood of team

division, the quality and frequency of interactions drop, there occurs role overlapping, members' commitment declines, members' similar preferences can generate conflicts as to resource allocation across the team).

Other difficulties relate to team members' interaction: individuals do not apply themselves and sometimes work less in groups than individually, a phenomenon which is called *"social loafing"*, especially if their individual effort cannot be quantified. An experiment which involved the handling of a load showed that if a single person could carry about 85 kg, in groups of 7 they carried 450 kg, which means that the team achieved only 75% of the sum of each member's individual work (West, 2005). This phenomenon is similar with the diffusion of responsibility across the team, when each member believes that another member is in charge of a given task (Kravitz and Martin, 1986).

Moreover, the interactional nature of team work can imply a *longer time to complete an activity.* Until reaching maturity, teams can need more time to become successful. While traditional work groups may need less time for planning since it was handled beforehand by the supervisor, and decision-making is more centralized, team kick-off meetings can be extremely time and energy consuming, requiring lengthy negotiations for the planning and distribution of tasks and roles. Nevertheless, a number of activities can be completed more quickly in work teams or groups than if carried out separately by each member of the group.

Individual performance can regress since team work implies matching individual behavior to the other members' work style, abandoning some work habits, interdependence between members' work and results. For all these reasons, the decision whether to use individual, group or team work is highly dependent on the task and individuals particularities.

Sometimes, group work can lead to a phenomenon called *groupthink.* Teams which were successful and become extremely self-confident tend to ignore criticism to the team's ideas. Especially with decision-making groups, to mitigate conflicts and to maintain members' consensus, group participants can be prone to overlook critical analysis and evaluation of input, which can lead to unsound decisions. Starting from the analysis of overly cohesive groups (groups characterized by a high level of solidarity, member interaction and attachment to the group) Janis (1982) shows that extraordinary circumstances (stressful events, recent failures) and structural errors (group's isolation, excessive group homogeneity, lack of methodological review procedures) can generate groupthink. Groupthink is characterized by: the illusion of the group's invulnerability, ignorance of opinions which conflict with the group's position and reprobation of members who issue opposing ideas, self-censure of members' opinions to avoid coming in opposition with the rest of the group, the illusion of unanimity of thought.

Relying on the responses of a group of managers, the devoted literature identified a set of *elements which make a team less effective:* time waste, isolated members, lack of mutual support, lack of a common direction and vision, intrigue, secretive objectives

and the struggle for power, emergence of sub-groups, poor definition of roles, planning errors, undermining the leader's authority, failure to assume risks or, on the contrary, assuming risks without a proper evaluation of the consequences (Forsyth, 1990), lack of experience, failure to meet deadlines, rejecting new ideas, excessive compliance with procedures and details, too much focus on the task while overlooking members' feelings.

In view of these limitations, studies showed that *the use of team-based work structures is not recommendable when:* the human resources involved in the performance of work is highly fluctuating. For a team to be efficient, to build trust and to be able to coordinate its efforts, members should work together and have the guarantee of long-term collaboration; the work activities are standardized and undergo little change in time, and therefore do not require team work, since individual performance is more efficient; or when both group members and the leader are highly individualist and prefer to work on their own, not in a team. For all these reasons, we should not claim that teams are the all-round solution for all problems, but work tasks must be evaluated one by one in consideration of the advantages and disadvantages presented by individual-, group- or team-based work structures.

3.3. Individual characteristics and team performance

Exploring the role of the personality traits for VT, previous findings show that openness to experience is more strongly associated with preference for VT detrimental to traditional work groups, and extraversion more strongly related to preference of VT compared to working alone (Luse et al., 2013). Moreover, questions have been raised that these differences might be a result of the various generations' particularities (Gilson et al., 2014). There is sparse research on the newer generations' role and distinct characteristics of working in VTs. Jimenez et al. (2017) warn of the need for organizations to manage heterogeneous group members (with different skills for using technologies and distinct motivational factors and career interests such as the Millennials and the Generation Z cohorts). To address this gap, we focus our analysis on the younger generation characteristics related to working in VTs, aiming to reveal potential strategies for organizations to better adapt to their particularities.

Team members' cultural intelligence (CQ) has been hypothesized to influence the processes and the dynamics of team work (Ang et al., 2007). Operationalised as the individuals capacity to effectively interact with persons from distinct cultural backgrounds (Li et al. 2013), CQ includes several components: cognitive (knowledge and understanding of cultural differences and norms), motivational (interest and perceived self-capacity to adjust to cultural differences), and behavioural CQ (Earley and Ang, 2003). In a more general approach, Earley and Mosakowski (2004) define CQ as the capacity to understand unfamiliar and ambiguous behaviours. Previous

findings show that CQ facilitates communication and knowledge sharing across cultures (Rockstuhl et al., 2011).

D'Souza and Colarelli (2010) argue that each member's skills are more critical for VTs, being a more important selection criterion compared to traditional teams, but personal characteristics (such as physical attractiveness (Patzer, 2006), gender (Colarelli et al., 2006), similarities in attitudes and values) are less important. Still, the factors that predict individuals' willingness to be part of a team remain underexplored (Luse et al., 2013). Traditionally, the main reasons that explain why people want to work in a team relate to personal characteristics. Personal factors such as personality and decision style (Landers and Lounsbury, 2006; McElroy et al., 2007) were discussed as influencing factors of the members attitudes in virtual environment. Since VTs involve using technology to communicate, we argue that individuals' skills in information technology will play a role in individuals' preferences for working in VTs.

3.4. Strategies to improve virtual team performance

To manage distance and achieve team effectiveness, the team management should focus on practices that aim at goal, task, and outcome interdependence. Reaching goal interdependence can be achieved through management practices such as managing by objectives, delegating management approach, which are considered to better fit VTs than direct control techniques (Konradt et al., 2003). Reaching task interdependence is considered a solution to compensate the often low perceived own contribution in VTs. Structural management practices such as designing the team working process and so enhance the task-driven interactions of the team members (e.g. tasks that require frequent interactions, working closely together, coordination of the activities, strong interdependence of the individual outcomes). The purpose of these activities is to help members be more aware of the effects of their effort on the others and thus increase social pressure. A third category of tasks are the ones that reach outcome interdependence through team-performance based rewarding, which leads to increased members motivation and overall team effectiveness. Hertel (2004) reveals some mediating mechanisms such as the motivational process. Valence, instrumentality, self-efficacy, and trust (VIST) as predictors of individual performance motivation in teams mediate the effects of the managerial practices on team effectiveness.

Following recent research recommendation that young generations are not inherently communication-technology experienced (Aritz et al., 2017), we acknowledge the need to identify the particular areas of media usage knowledge in which younger generations face weaknesses. Moreover, based on the particular identified media-tools knowledge gaps we advocate the need to guide their learning of social tools, how to successfully chose and use the right media platforms, and to support them in understanding the value of this knowledge.

As businesses expand globally facing time and competitiveness pressures, a type of VTs that recently gained more attention has been the Global Virtual Team (GVT) (Jimenez et al., 2017). While authors use interchangeably terms such as multicultural distributed team (Connaughton and Shuffler, 2007) and transnational team (Haas, 2006), the GVT represent temporary work groups that are geographically dispersed and culturally diverse, and use technology for communicating. Kristof et al. (1995) emphasize the temporary character of a GVT, which means that besides the fact that members may never have worked together before, they might not expect to work together as a team in the future. Studies show that trust is associated with better team capacity to manage uncertainty, complexity, and the requirements of the virtual environment and can be improved through equitable and regular communication, especially in the early stages of a team formation (Jarvenpaa and Leidner, 1999). Task related communication needs to be complemented by social communication, and the communication initiating behaviours need to be coupled by responding behaviours, while members explicitly verbalize their commitment and positive feelings. Characterising VTs as global denotes cultural diversity and globally spanning members, able to react adequately to global requirements (Jackson et al. 1995). Jimenez et al. (2017) propose a structuring framework for understanding the challenges of GVT, based on three key dimensions and their interactions: location, distance, and time. As VTs, the GVTs promise flexibility, timely responsiveness, reduced costs, and capacity to adapt rapidly to the dynamic global requirements.

3.5. Empirical research findings on Gen Z

Challenges faced in VTs

To measure VT challenges, we adapted the existing scales for measuring team work challenges (Aritz, 2017; Mayer 1995) and used 12 items (Cronbach's alpha = .87) to measure the challenges faced when working in VTs (e.g. team coordination problems, insufficient members IT knowledge, decision making problems).

The results show that the most critical challenges are related to coordinating the teams, motivating the team members and their commitment to team, personality differences between the team members. We ran a factor analysis to identify the potential factors behind the challenges. The principal axis factoring for the extraction method and Promax rotation reveal three factors that explain 62.71% of the variance. The content analysis of the factors highlights three categories of factors: general team work challenges, differences between the team members, and virtual work specific challenges (Table 3.1).

The challenges comprised of the first two factors relate to general difficulties faced by traditional teams and they are perceived to be more provoking by the respondents. While we can note sub-groups differences by country and previous experience

in VTs, the results show the generally traditional-teams related challenges are perceived to be more provoking (see Table 3.2).

The findings reveal considerable differences between the respondents who have experience in VTs compared to those with no experience (the independent t test shows significant values $p<.05$ for all items measuring the perceived challenges except one). The young respondents perceive higher challenges for working in VTs when having no VT experience. The findings show that the respondents who have experience in working in VTs perceive the challenges to be less intense.

TABLE 3.1. Factor analysis of the challenges of working in VTs

		Factors		
		1	2	3
General team work challenges	Coordination problems	.653		
	Lack of involvement, motivation and commitment of team members	.717		
	Decision making problems	.697		
	Leadership problems (eg delegating, monitoring and providing feedback)	.759		
	Team roles problems (unclear tasks/roles of each member)	.711		
	Not meeting the deadlines	.598		
Team members differences	Skill-level differences between members			.727
	Personality differences between members			.650
Virtual work specific challenges	Language proficiency difficulties of the members		.660	
	Communication problems		.717	
	Insufficient knowledge of IT tools by team members		.747	
	Hardware difficulties (software, computer, internet access)		.753	

SOURCE: own research.

Also, the findings show differences between the Romanian and Polish students. The Romanian students perceive all challenges as being more provoking compared to the Polish students, the largest differences referring to the perceived language related difficulties. This shows that in Romania, the strategies to improve skills for VT work should focus on developing the language skills.

TABLE 3.2. Challenges mean values, SD, and independent sample *t* test between respondents with and without experience of working in VTs

	Mean	SD	Mean VT Experienced	Mean No VT Experience	Differences (t test)	Mean Romania	Mean Poland	Differences (t test)
coordination problems	3.36	.95	3.29	3.55	4.41***	3.44	3.15	4.72***
lack of involvement, motivation and commitment of team members	3.26	1.07	3.20	3.42	3.25**	3.33	3.09	3.42**
decision making problems	3.18	.99	3.08	3.41	5.24***	3.25	3.00	3.85***
leadership problems (eg delegating, monitoring and providing feedback)	3.07	1.17	2.92	3.42	6.94***	3.17	2.79	5.06***
team roles problems (unclear tasks/roles of each member)	3.00	1.14	2.89	3.25	5.07***	3.10	2.72	5.19***
not meeting the deadlines	2.88	1.26	2.74	3.19	5.75***	2.98	2.61	4.51***
skill-level differences between members	3.14	1.06	3.11	3.21	1.61	3.17	3.05	1.76
personality differences between members	3.24	1.14	3.18	3.37	2.68**	3.33	3.01	4.27***
language proficiency difficulties of the members	2.62	1.27	2.33	3.32	13.03***	2.88	1.93	12.61***
communication problems	2.94	1.18	2.73	3.43	9.70***	3.12	2.45	9.01***
insufficient knowledge of IT tools by team members	2.66	1.19	2.44	3.17	9.97***	2.76	2.38	4.97***
hardware difficulties (software, computer, internet access)	2.53	1.27	2.26	3.16	11.67***	2.74	1.96	9.78***

Levels of significance are denoted as follows: **p<0.05; ***p<0.001; Two-tailed significance tests.
SOURCE: own research.

Based on the findings, we highlight the rather large differences between the Romanian and the Polish young generation regarding the challenges they perceive to face in teams and their usage of VT tools. Moreover, differences were identified between their trust and self-leadership level. Focusing on the rather unexplored factors that predict individuals' willingness to be part of a team vs. working alone and the preferences for working in VTs vs. working in traditional teams (Luse et al., 2013), we bring evidence for the role of the personal characteristics such as trust and self-leadership.

Trust influences not only the subjectively perceived performance of the team, but also the preference for working in teams compared to working alone. On the other hand, the self-leadership skills influence the subjectively perceived team performance, but also the preference for working in VTs compared to working in traditional teams.

Chapter 4. Implementing virtual tools in academia

4.1. Teaching strategies of the virtual teams

Modern education in the realities of education systems in Central and Eastern Europe is faced with the challenges of applying the right methods with the use of good and appropriate tools, especially in the situation of reform and establishment of the National Qualifications Framework for Higher Education (Wróblewska, 2012, Glińska 2009, Thieme 2009). Technological advancement in countries leading in IT solutions shows that nowadays good and numerous models can be drawn from the research on the development of remote learning techniques (Nory, Graham, 2015). The wealth of information and knowledge, based on the current achievements of science, creates huge challenges for the education system, people responsible for the education system and the teaching staff themselves. This is important at every stage of education, especially in undergraduate and graduate education. The teaching method "covers all the activities that the teacher is to perform during the teaching (...), one of these activities depends on solving the problem of how to introduce new messages into the mind of the student for the first time (Sośnicki, 1948).

Communicating the content of a given subject at the university may take place at different levels:

- Transmission of content in a spoken or read form to the listener
- Interacting with one of the students of the study,
- Entering into multiple interaction, that is, the lecturer and students as well as students with each other.

The scope of interactions may concern a narrowly understood subject, threads indirectly related to the discussed issue (which may support creative thinking) as well as refer to the techniques and tools used. Due to the duration of the classes, the technological aspect always escapes attention and is not discussed.

In the didactic process, all aspects should be discussed in detail and demonstrated. The components of the system should include the formal part in the form

of procedures, tools and the informal one based on the transfer of content and creating the student-instructor relationship.

Traditional tools, such as blackboard or chalk, are less and less common at universities, as multimedia projectors, flipcharts and computers are used. Learning takes place in traditional lecture halls, classrooms and didactic workshops, e.g. computer laboratories. With each subsequent academic year, more remote learning elements are introduced. In the USA, this trend has been clearly visible since the beginning of the 21st century. MIT, as one of the first technical universities in the world, has been offering many complete study programs and examination tasks since 2005. Depending on the field of study, the specific subject, this process is constantly developing. Recently, the development of the pandemic has dynamized these processes and even replaced stationary didactics with virtual didactics. Within a few weeks, universities were introduced to solutions such as Zoom, Google Drive, Microsoft Teams or others, which were used sporadically in most universities in Central and Eastern Europe. Challenges with modern tools are:

- All over the world, remote techniques are used in various fields, ranging from humanities to medicine to technical sciences. Remote laboratories are being established in the space of universities, an example is NerLab at the Univeristy of South Australia which has been operating since 2002. It turn outs that students working without lab supervisors receive good performance because of collaboratively preparing for the experiment, conducting the experiment and connecting up the instruments with a rather messy ambiguous environment of wires, instruments and components (McIntyre and Bok, 2012).
- Teachers use virtual tools as a typical didactic aid to help them conduct the learning process in a given subject. Using these tools can also take the form of training the ability to perform tasks remotely individually or collectively. This means that, apart from the given task, students focus on improving the ability to use remote tools. The matrix below illustrates the two dimensions and different aspects of distance learning.

Students learn to work in virtual teams in several different ways. Learning new technologies can be conscious and unconscious, appearing in the background of a task.

The methods and tools are to come from experts. Usually, however, experts find employment in reputable institutions, hence in the absence of competences at the university or leaders, building a technology museum at the university takes place. Unfortunately, young people who use the technology on a daily basis usually experience a disappointment and they are left to adapt to the existing situation.

The strategy of universities in the field of education must also be consistent with the assumptions of the humanities (G. Allport, A. Maslow or C. Rogers), which state that the student, through his/her subjectivity and activity, determines the learning process, influences its course and controls it (Wróblewska 2012). The teacher is only a guide, tutor who supports the student in his/her activities, in the best form acting

as a tutor, coach or mentor. In the academic field, the term tutor is used to define the teacher-student relationship. Tutoring during meeting face-to-face or even virtually could support students in feedback instead of providing written form of assessments (Chalmers, Mowat, Chapman 2018). The short direct comments or even direct comments during project accelerate the involvement and quality of the final virtual individual or team project.

The table 4.1 presents the stages of the implementation process of tutoring, coaching and mentoring.

TABLE 4.1. Stages of the method implementation process of tutoring, coaching and mentoring

Tutoring	Coaching	Mentoring
1. Building a tutorial relationship, getting to know each other, building trust and a common understanding of goals and methods of tutoring, defining the principles and forms of cooperation (conclusion of a contract). 2. Formulation of the goal of cooperation: determining what we want to work on, what to develop, determining the results (both in the scientific and development sphere), that is, by which we will know that tutor cooperation is effective. 3. Implementation of the assumed goal: regular, methodical tutorial work, with a strong emphasis on the mentee's own work, encouragement for independent thinking and inspirational tutor meetings (tutorials).	1. Explain the general need and goals of coaching. 2. Agreeing on specific development needs. 3. Develop a detailed plan. 4. Perform a scheduled task or activity. 5. Evaluation of activities and planning of ways of better functioning. 6. End of coaching. Another description of the process, from the English abbreviation COACH: • Competences – assessment of the mentee's knowledge and skills. Outcomes – definition of results, • goals that the student should achieve. • Action – the mentee performs specific tasks. Checking – assessment of completed tasks, providing feedback, summary of achievements	Mentoring in a modern organization can include nine stages: 1. Set goals and exchange expectations related to mentoring 2. Gathering information about yourself and identifying strengths and weaknesses. 3. A series of conversations deepening the self-awareness of the mentee and jointly identifying the opportunities and threats of individual development paths. 4. Arousing the need to formulate expectations and goals for the future. 5. Determining and confirming the development path and its consistent implementation. 6. Arousing positive ambitions in the mentee and deliberate removal of self-imposed restrictions caused e.g. by fear of failure.

Tutoring	Coaching	Mentoring
4. Process evaluation: analysis of what has been achieved in the scientific and developmental dimension, deeper reflection strengthening self-awareness (awareness of personal values, goals, strengths and weaknesses, influence on others) of the mentee and tutor.		7. Developing personal and social competences, including leadership, team building, project management, etc. 8. Combining and using acquired knowledge and skills in practice. 9. Evaluation of the mentee and help in assessing the results: talks on the implementation of the chosen path, its verification, eliminating weaknesses, strengthening strengths, identifying new opportunities and maintaining change dynamics

SOURCE: (Czekerda, Fingas, Szala, 2015, p. 30).

Besides the stages of tutoring, coaching and mentoring implementation that enable the students to achieve their full potential, the significant issues are related to the competence of tutor, coach and mentor (tab. 4.2). The very important competence is knowledge about the selected process (tutoring, coaching or mentoring). A tutor should also have high interpersonal skills in order to be able to recognize and support the abilities of a student. A coach should have ability to "lead" by asking and giving advice to a person. A mentor should have professional knowledge and wants to share this knowledge with a mentee.

TABLE 4.2. Competence profile of tutor, coach and mentor

Tutor	Coach	Mentor
The tutor should: • have extensive knowledge in their field; • have high interpersonal skills and be patient and able to listen;	A coach does not need to have more substantive knowledge than his client; usually doesn't give advice. The relationship between coach and mentee is not hierarchical, but partnership.	The mentor should be a person with interesting experience, who enjoys authority and respect. Some authors also point to the important role of mentor's professional and social position, which helps him in fulfilling his function.

Tutor	Coach	Mentor
• have a variety of teaching techniques; • be open to the mentee's problems; • be able to assess the work of a mentee and set development tasks; • be well organized (punctuality, regularity of sessions, quality of prepared materials); • be able to strengthen their students' confidence; • try to live by values.	The competences of the coach should include: • knowledge about what coaching is, its stages and tools; • knowledge about how coaching differs from consulting, mentoring or psychotherapy; • knowledge of your role and the specifics of the coach-client relationship; knowledge of the specifics of adult development, knowledge of optimal learning conditions for adults; • ability to strengthen customer awareness based on experience gained and analysis of own work effects. • In the sphere of coaching attitudes, it should be distinguished by being free from grades and better from the client	A mentor is a person who – most often in the name of specific values – wants to share his/her knowledge with someone about a more modest experience, in a relationship characterized by mutual trust. The mentor's strength lies in his achievements and authority, and psychological competences (characteristic of coaching) are somewhat less important here, although they are most desirable because they favor the quality of the mentor's work.

SOURCE: (Czekerda, Fingas, Szala, 2015 p. 33).

Below, the table (tab. 4.3) presents the main tools that can be used in tutoring, coaching and mentoring. The literature proposes many various tools which can be selected depending on the mentee, group, or tasks.

TABLE 4.3. Main tools used in tutoring, coaching and mentoring

Tutoring	Coaching	Mentoring
• essays; • case studies; • tutorial projects; • discussions in a small group; • jointly solving tasks and problems; • active listening;	• work on goals: searching, defining; • planning specific activities and exercises to bring the client closer to the objectives; work on beliefs about yourself, surrounding people and the world; • resource mapping and use;	• work on goals: searching, defining; • planning specific activities and exercises to bring us closer to achieving our goals, • encouraging us to take leadership actions and initiatives;

Tutoring	Coaching	Mentoring
• independent research; • conversations on humanities, culture, etc.	• expanding self and client awareness; • assigning homework and evaluating them; • focusing on what is possible	• giving advice and tips; • networking

SOURCE: (Czekerda, Fingas, Szala, 2015 p. 33).

4.2. Empirical evidence based on virtual student projects

Procedure of selecting the participants

As part of the project, research was conducted on the work of virtual student teams consisting of 4 students from two universities: Babes Bolyai University and Bialystok University of Technology. Further analysis of the course and results of the study will be preceded by a discussion of the student recruitment process, as this corresponds to the conclusions of the study and the scope of their use. The case study method has its limitations compared to statistically confirmed (verified) studies.

The conditions created for remote work by the university for students were not the best. Remote communication problems were noticed by students on the first day during team exercises in another study, so they were mentally prepared to deal with technical problems. The Internet network did not, occasionally, work well enough. Sometimes the inconvenience of maintaining constant access to the Internet network at the university led to the use of private access to wifi.

The academic staff did not have enough practice in the daily use of IT tools in remote learning, as the time of the pandemic showed. The author of this chapter had the opportunity to work and perform tasks or communicate with various programs dedicated to this purpose only in February 2020, however, during the research in September 2019, his practice was limited to gmail, google docs, Skype, WhatsApp, Doodle, i.e. messengers, e-mail and selected tools supporting remote work. Knowledge of other tools, such as Microsoft Teams, Zoom, could affect the final work, but it was clear that the university, unfortunately, did not have tools for remote teaching at that time.

The process of selecting students for experimental research was carried out in a specific and planned manner at BBU and BUT. BUT has developed regulations along with its score, which required knowledge of English at the B2 level as a condition. Students obtained selection points for their language certificates, average grade for academic performance, involvement in university activities, e.g. participation in other university projects, activity in research clubs. The information campaign about participation in the project was distributed during classes, meetings of research clubs, as well as on the website of the faculty and university. The first selection process involved

the formal submission of a set of documents. Based on the documents and attachments, a ranking list was prepared, which made it possible to define a list of people qualified for the second stage of the selection, namely the interview. It was carried out by the project manager together with a member of the research team. From the pool of 24 candidates, 12 students were selected to go to Romania in September and a reserve list was prepared. Recruited students are in the upper deciles of their year or field of study. Average grades and the others involved indicate that these are people who distinguish themselves above average in activity, cleverness, resourcefulness or self-organization. During the interviews, it turned out that many of them have practical experience in professional work and international exchanges under Erasmus +.

Process of collecting data

The program of the 6-day stay of Polish students at the BBU university in Romania included numerous lectures, exercises and team work with the use of remote tools. This research exercise described here consisted of 2 parts of introductory lectures on the structure of a business plan conducted in a stationary mode and preparation of a solution to 3 practical problems in remote work. For this purpose, 24 students were divided into 6 teams of 4 each. Therefore, two teams were preparing a solution to the same given problem functioning in the social space. They simulated the activities of a startup that prepares a business plan for its activities by solving the problem, and thus monetizing the activities and the need for a new start-up company.

The given problems were formulated as follows: Team A and B: problem with lorry drivers, which cheat on the time of working.

The policeman stops the lorry and it turns out, that the driver's tachograph shows that the lorry is on parking. This driver drove more than 15 hours. It causes danger-for other users of roads. You want to prevent a potential accident.

Team C and D: Many people read information, which are a fake news. Can we build some tools or procedures for that? Should we establish a private/ individual censor? You want to create a new commercial solution.

Team E and F: Is it possible that only software could measure the engagement and motivation of students in a project?

You want to improve a system of the evaluation of students' final mark based on their work in a team project. Please try to create a system, which could be used to evaluate quality and engagement for each person on the project, that results in a different final mark.

The structure of the business plan was presented by Ioana Muresan PhD from BBU and was as follows:

I. The descriptive part

1.1. Presentation of the business

- Description of the business idea (vision, mission, objectives)
- Description of the company (name, form of organization, object of activity, presentation of the management team)

- Description of the offered products/ services – the difference from the competition, the technologies used
- Analysis of the environment in which the company will evolve – PEST analysis

1.2. The marketing plan

- Analysis of the situation of the company on the market (Market description: industry, trends, market characteristics, consumer preferences, Market segment identification: Who buys? – Customer profile, Competition analysis: identification of the main competitors, offers, prices and advantages offered)
- The marketing strategy – realization of the marketing mix (4P: product, price, promotion, placement)
- Sales forecast (number of potential customers in a month * average sales value)

1.3. The management plan

- Description of the project implementing the business idea
- GANTT chart – the graphical description of the activities in time
- The budget

1.4. The business risks.

Students worked out a business plan sitting in different lecture halls so that they had no physical contact with each other. In a situation where there were 2 or 3 students in one room, it meant that each of them was from a different project team. Participant observation showed that in 2 rooms there was music playing in the background, in one room some students worked listening to selected music with headphones on, and in other cases there was peace and quiet in the room. Remote work had its limitations here if it was necessary to communicate by voice. Unfortunately, it turned out that some teams started their work late or also some of its members. It resulted from the necessity to satisfy one's hunger due to the lack of satisfaction with the breakfast offered in the student canteen. One of the students worked from the dormitory for the second day due to her health deteriorating. Thus, the participant observation showed greater flexibility in creating environmental conditions in remote work, including eating sandwiches, drinking beverages, etc.

Results

The way of organizing work in a virtual team is presented in the table which shows that the responsibilities in the project have been divided. There was more variation in the way of making decisions or choosing a leader in the team. Although the virtual work only lasted two days, nearly half of the teams made changes to the way they work. Members of all teams used Messenger for communication, only one team additionally had WhatApps. Due to the written work, the business plan used GoogleDocs or Word.

The students were asked to go deep into specifics of their virtual team work. The open questions were related to decision process, reflection, mentoring, teamwork. The free atmosphere during summer school without typical study programs and assessment, supported the participants to think about the process of study,

acquiring the competence to be competitive in the market and first of all to have a fun during the study.

TABLE 4.4. Organization of virtual work

Group	A	B	C	D	E	F
share task at your virtual team	Yes	Yes	Yes	Yes	Yes	Yes
choose a leader of the team	No	Informal leader	Informal Leader	No	Yes	No
vote on decision	Yes	No	No	Yes	50%	Yes
change a style of work during a virtual team (elasticity)	Yes	No	No	Yes	No	No
FB	Yes	Yes	No	Yes	No	Yes
GoogleDocs or Word	Yes	Yes	Yes	No	Yes	Yes
Messenger	Yes	Yes	Yes	Yes	Yes	Yes
WhatApps	No	Yes	No	No	No	No

SOURCE: own elaboration.

Cited student's answers should be consider by academics and the authority of the university on how to improve the condition and process of virtual teamwork. The professor through open questions stimulated the quality of acquiring and developing the flow of tacit knowledge, which is much more difficult using remote techniques.

How students answered self-reflection on virtual work:

I just give my best working on the project, I don't need to think about it (Q4, 3M)

I don't often think about whether I put in enough commitment while working in a team, because everything I do I try to do 100% so I don't have to think about it – it's obvious to me. The exception is when I don't see commitment from any other side. (Q4, 5A)

Not really often. More frequently I ask my teammates how they like working with me this way and what they would change in our work. (Q4, 1M)

When I work with the same people on a daily basis, I don't think about self-reflection. (Q4, 7Z)

Whenever. Then I think what could be improved, or with someone else I could create a team to cooperate with. (Q4, 4P)

I use it quite often, it helps me a lot to think about new ideas, or how we can make the best out of the ideas we already have. (Q4, 6O)

It depends on how well we get along in the team. If my ideas fall on fertile ground and are considered valuable and logical by the rest of the group, I don't feel the need to consider too much and analyze; I just do my part of the job. If, on the other hand, there are different opinions on a given issue in the group, I wonder if my point of view and my effort are adequate. (Q4, 7M)

I think there is not enough time to use self-reflection when working in a virtual team, I did it once when I finished my part of the job and had free time. (Q4, 8T)

The quoted statements of students show that most of them think about the team, not about the process of acquiring the knowledge. They want to focus on doing tasks with the same and known colleagues to eliminate a reflection.

Taking decisions in virtual work as in stationary work is a challenge for each team not only students.

Decision process was an extremely complicated moment. It demanded a very deep thought process and had to be supported by a tiny bit a subconscious decision making. (Q5, 1F)

Makes decisions based on available information and constructive discussion, I try to avoid voting on serious matters, it can only be used on matters of low value. It prefers a solution based on discussion and reaching an agreement by compromising. (Q5, 8T)

Students are very aware of having the competence to work in virtual teams, which is supported by the following opinion:

I think that virtual work will be very helpful at work to work more efficiently at my work post with my work mates. (Q6, 1F)

Not necessarily. I'd rather say that my generation is more into web services than the others and we already got used to communication through the web. I'd suggest showing young people different approaches to virtual work and different tools to improve virtual work. (Q6, 1M)

Of course, yes, nowadays skills related to virtual work and work in international teams are VERY useful and open many paths, I am sure that when applying for a job in another country or even in a foreign company, working

remotely, the experience gained here can be crucial in both your CV and your skills. (Q6, 3M)

I think so, in the 21st century mainly students work in virtual teams, because of the time savings, sometimes it is difficult to get everyone together. Therefore, when work is split, you can do it remotely from home whenever you have time. (Q6, 4P)

Yes, I think that any practical skill that I can use later in my professional life is useful and I would like to learn this kind of thing in my studies.

I think that during the IT classes that are included in the university syllabus, we should also learn how to use different platforms that facilitates the work in virtual teams. (Q6, 6O)

Mentoring, coaching or even tutoring are not familiar among the students. However, they appreciate the individual approach and new soft skills.

I believe that soft skills are very useful and important in life, so something like that should be included in the learning process. (Q8, 8T)

Yes, I think that there should be someone who can give you advice when you don't know what to do, and just be there to guide us. (Q8, 10A)

It seems to me that in the studies during the project such the mentor is the teacher who conducts the classes. (Q8, 13I)

Students themselves do not submit new solutions, tools, techniques in education systems in the example of Poland and Romania, but they can adapt perfectly to situations or changes that are imposed by external conditions. The students were excellent at preparing business plans and presenting them in such a short time, despite the technical problems and modest tools of remote work. The academic staff has much greater opportunities to introduce innovations in education and popularize education, which unfortunately only a few take advantages of. The effects of these activities are visible in projects carried out as part of Erasmus +, the NAWA project or the Science Festival. The promotion of the best solutions and people promoting education takes place as part of the nationwide EDU inspirator competition organized by the Foundation for the Development of the Education System since 2012.

4.3. Tools for virtual teams

The first beginnings of remote work elements at a time when such terms were not used yet were a telegraph or a telephone, when we called a person from the company or for other purposes to prepare the task. In education, the task was translated over the phone to a friend or colleague, or the joint agreement of the scope of work happened from time to time in an informal form, often in emergency situations, e.g. illness, inability to travel to work or school (impassable road over a damaged bridge after a storm, or heavy snowfall).

Teachers will use modern methods under several conditions, as will students, who, however, do not have the power to do so in many countries, education systems, or specific universities. However, the correct entry is important and the following opportunities that will be created. According to the theory of motivation, most people estimate their expenditure on the basis of effects, of course there are certainly those who break out of this pattern of action and introduce new didactic tools and methods despite the adversities.

Functionality of remote work tools: One-to-one, one-to-many, many-to-many communication, interaction

TABLE 4.5. Tools in distance learning

Collaboration	Project Management	File Sharing/ Document Storage	Meeting Tools	Video & Audio Conferencing
• Redbooth • Huddle • Blackboard Collaborate • Goplan	• MS Project • Primavera • Apollo • Wrike	• Google Dox • Dropbox • Sharepoint • Box • Zoho Docs	• Goto Meeting • WebEx • Adobe Connect • iMeet	• Zoom • Microsoft Teams • Skype • Cisco Telepresence • Polycom Telepresence • Join Me

SOURCE: own elaboration based on Nory B. Jones, C. Matt Graham, Virtual Teams in Business and Distance Education: Reflections from an MBA Class Journal of Business & Economic Policy, Vol. 2, No. 1; March 2015, www.zoom.com, www.microsoft.com

Students set up groups on FB, they can also run a blog, which additionally allows them to share their observations on their teamwork or tasks on an ongoing basis (Śliwierski 2009).

Nowadays students will face virtual teams even with programs of talent management, which are established to improve the team performance (Maynard, Vartiainen, and Sanchez, 2017).

Blended learning developed in education will allow for even better readiness to work remotely after graduation. On-line courses pointing to the attributes that improve the quality of this education include: (consider whether to write it in too broadly).

4.4. Recommendation for the implementation of virtual teaching methods

Universities are always facing challenges regardless of the times in which they operate. In the same education system in a given country, we find good and bad universities, as well as good and weak professors, as well as good and weak students. By analogy with football leagues, we have great players and coaches who often use a similar set of tools. The education system, however, should be taken more seriously, especially as it affects the economic level of the regional, national or global level. The education system is a kind of social good that influences the development of civilization. Numerous solutions developed and tested at universities are then used in global companies such as Google or FB. The operating system of a particular university depends largely on its staff who create and build it, and in this staff there are leaders, who also have educational or research responsibilities.

Certainly, the university cannot be an open-air museum, it should not only keep up but also be ahead of the developing world, which means introducing various new learning tools, including remote education. It should be understood that a certain part of the subjects is to be conducted remotely. Currently, students communicate remotely when creating their projects via instant messaging and sharing documents and folders. The university is obliged to create solutions enabling remote learning and remote work of students based on its own resources. In these subjects, where it is possible, it is worth taking care of various forms, from a full distance course, through to combined and only stationary education.

Recent experiences of companies show that their employees have the option of only remote, partially remote and combined work, e.g. 40% of working time in the office. This trend, being completely natural, may also occur at universities. Just as not every student has the possibility of a continuous education process in a remote mode, through social and technical factors, it can also occur in the case of a university teacher. Therefore, a proper planning of the entire education cycle with a division into virtual and distance learning would be a natural process. In addition, it may also be related to the requirements of flexibility, environmental protection or better resource management.

Conducting lectures remotely also allows you to engage students in addition to the content provided, to test their level of satisfaction, commitment or communication. The current tools allow you to conduct various types of quizzes and surveys

during the course of classes through the function of assigning a desktop, engaging students to transfer the content of their project, using the audio and video form, depending on the needs and technical possibilities, on-line documentation of learning outcomes, using the chat function to ask questions and also to answer.

The group presenting the project can divide the roles where one of the people presents solutions, while other people read the questions asked from their colleagues or the leader punctually and at the same time prepares the answers. This form allows you to determine whether the presenters have mastered and know the content they present, and whether each team member is able to answer the questions. At the same time, this form allows you to archive questions or content and return to them at a later time or after filling gaps in knowledge.

Remote learning also allows for greater freedom in terms of clothes, choice of surroundings, own appearance, or other elements such as background music or the choice of room temperature and humidity. Thus, distance learning can provide a more individual learning process tailored to the individual student, which will improve the understanding of the topic rather than training in taking the tests. Remote learning does not interfere with experiencing.

The subject matter of the classes is certainly to be interesting and interestingly presented, the issues may not be trivial or definitely too difficult for a given group of students, as it will have a counterproductive effect, resulting in a decrease in motivation. Students willingly engage in topics whose problems are real, they can creatively search for solutions in a group and then transfer them into ready ideas. On the other hand, the scale of such problems should be carefully selected according to the field of study, year of education and previous subjects already realized.

Creating solutions under high time pressure or hunger, failure to meet Maslow's basic needs, is not fulfilling regardless of the type of education, be it remote or stationary. The conversation about holding certain regimes should therefore be communicated. Some of the students were anxious, sometimes angry, when some of the team members did not work on the problem remotely, while not informing other team members about it.

Research shows the need for university authorities to create tools for remote work, in the form of not only procedures or guidelines, but also expenditure on physical infrastructure. Students themselves, as well as individual groups or the entire academic year, use e-mails outside the university system. Even someacademic teachers do not have official e-mails, which is a certain basis for communicating with colleagues or students. Additionally, universities do not provide databases for teachers, just as there is no such thing for student projects.

To a greater extent, embedding remote learning methods during studies may also give rise to attitudes and expectations towards future jobs, including remote work, among local employers. As it is known, nothing will be forced to survive, but local employers are unlikely to be able to fight the main trends in the form of work. It will be important when recruiting talented, ambitious and well-prepared students. Even

now, remote work methods are very popular among a large group of specialists, called freelancers, who, living in their city or in the countryside, work for clients from all over the world. Remote work, like e-learning, is in line with the processes of globalization.

The didactic content, and in particular the content of the tasks, in relation to the expected level of their implementation by the lecturer, will always differ among some students or project teams. At this point, it is worth giving a chance to clarify the topic, problem or created solution. Performing a task, especially for the first time, always raises some interpretation problems, secondly, the next iteration or approach to the problem gives a new light, which allows more ambitious students to fulfill themselves, without harming the less involved.

The evaluation of team projects always raises some dilemmas on the part of the teacher and the student. Information asymmetry between the lecturer and the project team will never be eliminated, but it is worth taking care of reducing it. Students see no contraindications to differentiate the final grade in situations of different levels of involvement in the project. On the other hand, the ability to work remotely, including measuring its intensity, or other statistics, allow for a more objective evaluation of a team project.

The use of such words like mentoring, coaching or tutoring among students is embarrassing, which results from the lack of knowledge of this vocabulary, which is due to a small presence in the media and public space. Teaching techniques in remote work referring to the instructor-student relationship, with the use of remote tools should bring good results in improving the competences of students and entire project teams. It seems that the terminology itself is secondary and more important are the activities and personal activity of the teacher and students, as well as the openness of both parties to actions and communication.

Innovation Box – a place for reporting educational innovations by students, university employees or entrepreneurs cooperating with universities. Students who participated in Erasmus programs, or have experience gained from other universities, can present their methods to improve and increase the level of innovation in educational tools and techniques, which should then be analyzed for implementation in specific fields of study or subjects.

Periodic meetings among teaching staff, where they will be informed about modern teaching methods and tools, along with the possibility of participating in training.

A cyclical review of the university's strategy and implementation of innovations by the university's management and advisory staff in the field of trends in teaching tools and techniques, along with benchmarking at the national and international level.

Summary

A virtual team has become the basic unit for many organizations in the digital era. In only a few years many employees have spent at least half their time on work virtually and work in virtual teams. Virtual teams has emerged as a dominant structure in the contemporary business environment, creating business value. Today the number of organizations working virtually and the number of teams working remotely has dynamically increased.

Virtual work has obvious benefits for organizations like diverse knowledge resources, time cost savings, and more affordable opportunities for collaboration, it also comes with many management challenges. Doing leadership in virtual teams has now become a usual part of almost every leaders' daily work. Leaders will face the challenge of how to lead the teams virtually and how to influence meaning of work. Virtual working will require different means of engaging the remote workforce.

The research in this project was aimed to determine skills, knowledge and readiness of university students and academic teachers to work in a virtual team. The results show that the universities create an environment to build the capacity of virtual teamworking and leading those teams in an effective way. In order to develop students' multicultural and virtual teamwork skills the university teachers used various methods. Acknowledging these methods can help lecturers understand how the teaching of multicultural and virtual teamworking skills leads to the growth and development of students for the current job market requirements, and how to better plan their courses and materials in accordance with the methods used. The study also shows the level of e-leaders competences such as e-technology competences, capacity of building trust among members and emotional and spiritual intelligence among the students. These skills are crucial for working virtually in a team. Also performance models for virtual teams are shown in the study with the strategies to improve effectiveness. To manage distance and achieve team effectiveness, the team management should focus on practices that aim at goal, task, and outcome interdependence. Finally, this study makes an effort to present how to improve the conditions and processes of virtual teamwork in an education program.

Hopefully, this book provides practical lessons learned and knowledge about how to lead and develop virtual teams, which can support an education program and prepare good future leaders for virtual working.

Contribution

The whole book is the result of a joint project and shared effort. Individual contributions by authors: chapter 1 – Anamaria Petre; chapter 2 – Joanna Samul, chapter 3 – Monica Zaharie, chapter 4 – Andrzej Pawluczuk. All authors have agreed to the published version of the book.

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Appendices

Appendix 1. Questionnaire for university students

Dear Students,
The Faculty of Management Engineering at the Bialystok University of Technology in cooperation with Babes Bolyai University carries out research aimed at diagnosing the readiness, requirements and motivation of students to work in traditional and virtual multicultural teams. Research is carried out as part of the NAWA program.

In this study, a **multicultural team** is understood as a team of people working on the implementation of a common goal in which there are representatives of at least two national cultures/countries. **Virtual teams** – as a team of people working on the implementation of a common goal, in which team members are spatially dispersed, and communication takes place through modern information technologies (messenger, skype).

The research is anonymous and the results will be used only for collective scientific studies. The estimated time to complete the survey is 20 minutes.

Thank you for participating in the study.

Part I. Multicultural team

1. Did you have the chance to participate/work (e.g. at work or in college) in multicultural teams (differentiated e.g. in terms of nationality, religion)?
   ☐ yes
   ☐ no (go to question 2)
   1a. Describe activities you had the opportunity to cooperate in multicultural teams: . . . . . .
   . . . . . .
   1b. On average, how satisfied are you with the outcomes achieved by the multicultural teams you were part of? (scale 1-5)
   ☐ the overall degree how well the team had accomplished their goals in general
   ☐ the quality of the team results
   ☐ the quantity of the team results (e.g. finish the task in deadline, do all tasks)
   ☐ the initiative of the team as indicator of new ideas, solutions, innovation

2. Motivation for working in teams. To what extent do you agree with these statements? (scale 1-5)
   Instrumentality
   ☐ I believe that my contribution to the team's success is very important.
   ☐ Other members of my team ask me for advice when task specific problems occur.
   ☐ In difficult situations, the success of my team depends especially on my contribution.
   Self-efficacy
   ☐ I feel capable to accomplish my tasks within my team work.
   ☐ For each problem that arises out of my team work, I can find a solution.
   If a new task arises from my team work, I know how to handle it.
   Trust in other team members
   ☐ I can discuss task-related difficulties with each of the other members of my team.
   ☐ I can share my ideas, feelings, and expectations with each of the other members of my team.
   ☐ The members of my team fulfill their tasks on a high competence level.

3. What skills and competences do you think make working in a multicultural team easier? (scale 1-5)
   ☐ knowledge of languages
   ☐ knowledge about other cultures
   ☐ openness
   ☐ easy in making contacts
   ☐ ability to use online IT tools that enable working in a group
   ☐ other, what?

4. What benefits can cooperation in multicultural teams bring? (scale 1-5)
   ☐ gaining experience in various cultural areas
   ☐ overcoming cultural differences
   ☐ learning how to cooperate and communicate with people different from each other
   ☐ exchange of diverse views and opinions
   ☐ broadening the horizons of thinking
   ☐ learning distance cooperation
   ☐ learning to be open and not to be stereotyped
   ☐ deepening language skills
   ☐ breaking communication barriers
   ☐ gathering unique experiences
   ☐ learning new methods of operation
   ☐ problem solving in a creative way
   ☐ other, which? .....
   ☐ any benefits

5. What makes multicultural cooperation difficult? (scale 1-5)
   - ☐ stereotypes and prejudices
   - ☐ closure for dissimilarity, xenophobia
   - ☐ ethnicity (exaltation of one's own culture)
   - ☐ language barrier
   - ☐ negative previous experience
   - ☐ distrust in relation to others
   - ☐ lack of awareness of one's cultural identity
   - ☐ lack of experience in this area
   - ☐ lack of competence
   - ☐ lack of motivation
   - ☐ differences in values, views, norms
   - ☐ time zones
   - ☐ other, which? .....

Part II. Virtual teams

6. Did you have the chance to participate/work (e.g. at work or in college) in virtual teams (using modern information tools, e.g. facebook, messenger, skype)?
   - ☐ yes
   - ☐ no (go to question 8)

   6a. Describe activities you had the opportunity to cooperate in virtual teams
   .....
   .....

   6b. On average, how satisfied are you with the outcomes achieved by the virtual teams you were part of? (scale 1-5)
   - ☐ the overall degree how well the team had accomplished their goals in general
   - ☐ the quality of the team results
   - ☐ the quantity of the team results (e.g. finish the task in deadline, do all tasks)
   - ☐ the initiative of the team as indicator of new ideas, solutions, innovation

7. What were the main challenges you encountered when working in virtual teams?

	Very rarely	Rarely	Average	Often	Very often
coordination problems					
lack of involvement, motivation and commitment of team members					
decision making problems					
leadership problems (eg delegating, monitoring and providing feedback)					

	Very rarely	Rarely	Average	Often	Very often
team roles problems (unclear tasks/roles of each member)					
not meeting the deadlines					
skill-level differences between members					
personality differences between members					
language proficiency difficulties of the members					
communication problems					
insufficient knowledge of IT tools by team members					
hardware difficulties (software, computer, internet access)					

8. To what extent do you agree with these statements?

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
When I have a choice, I would rather work in virtual teams than by myself					
I prefer to work on a virtual team task than on individual tasks					
Working in a virtual group is better than working alone					
If given the appropriate technology, I can be just as effective working on a virtual team as I can on a face- to-face team					
I could very well feel a part of a team that did not meet face-to-face					
I would participate as easily on a team that used chat rooms, e-mail and conference calls to communicate with my fellow team members as I could in face-to-face discussions					

9. What methods / tools for virtual teamwork do you know and use?

Methods/tools	I don't know	I know, but I don't use	I use
mobile phone			
e-mail			
skype meetings			
Messenger tools (Facebook Messenger, whatsapp)			
Telephoneconferences			
Video-conferences			
discussion forums			
virtual meeting rooms			
google drive			
cloud computing			
3D tools (Second Life, World of Warcraft, Interior Space Design programs)			
Collaboration tools (e.g., Huddle, Blackboard Collaborate),			
Document sharing (sharepoint, Dropbox)			
Document cocreation (e.g., Scribblar, Google Docs)			
Meeting tools (Google hangouts, GoToMeeting)			
Social media (Facebook, LinkedIn)			
Social networking (Yammer, Jive)			
Project management tools (Microsiot project, Basecamp)			
other, which?.....			

Part III. Working in multicultural and/or virtual teams

10. Did you have the chance to participate/work (e.g. at work or in college) in multicultural virtual teams (differentiated e.g. in terms of nationality, religion, using modern information tools, e.g. facebook, messenger, skype)?
    ☐ yes
    ☐ no (go to question 11)
    10a. Describe activities you had the opportunity to cooperate in multicultural virtual teams.....
    .....
    .....
    .....

11. To what extent do you agree with these statements about multicultural and virtual bands?

	Very bad	Bad	Neither good nor bad	Good	Very good
I would like to cooperate in multicultural teams					
I would like to cooperate in virtual teams					
activities carried out as part of the studies prepare to work in multicultural teams					
activities carried out as part of the studies prepare to work in virtual teams					
employers appreciates the ability to cooperate in multicultural teams					
employers appreciates the ability to cooperate in virtual teams					

12. What activities should be undertaken in class to prepare students for multicultural or virtual cooperation? . . . . . .
. . . . . .
. . . . . .

Part IV. Willingness to cooperate

13. To what extent do you agree with these statements about your cultural intelligence? (1-5 scale)

Metacognitive CQ

☐ I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.
☐ I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.
☐ I check the accuracy of my cultural knowledge as I interact with people from different cultures.

Cognitive CQ

☐ I know the legal and economic systems of other cultures.
☐ I know the cultural values and religious beliefs of other cultures.
☐ I know the rules for expressing nonverbal behaviors in other cultures.

Motivational CQ

☐ I enjoy interacting with people from different cultures.
☐ I am confident that I can socialize with locals in a culture that is unfamiliar to me.
☐ I am sure I can deal with the stresses of adjusting to a culture that is new to me.

Behavioral CQ

☐ I change my verbal behavior (e.g., accent, tone) when a cross-cultural interaction requires it.

☐ I vary the rate of my speaking when a cross-cultural situation requires it.

☐ I change my nonverbal behavior when a cross-cultural situation requires it.

14. To what extent do you agree with these statements concerning the trust in the students, with whom you had the opportunity to cooperate in the team?

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I can rely on the students I interact with in this school.					
Students in this school are usually considerate of one another's feelings.					
Students have confidence in one another in this school.					
Students in this school show a great deal of integrity.					
There is high "team spirit" among students in this school.					
Overall, students at this school are trustworthy.					

15. To what extent do you agree with these statements on self-leadership? (1-5 scale)

Self-goal setting

☐ I establish specific goals for my own performance

☐ I work toward specific goals I have set for myself

☐ I think about the goals that I intend to achieve in the future

Evaluating beliefs and assumptions

☐ I try to mentally evaluate the accuracy of my own beliefs about situations I am having problems with

☐ I openly articulate and evaluate my own assumptions when I have a disagreement with someone else

☐ I think about and evaluate the beliefs and assumptions I hold

Self-observation

☐ I make a point to keep track of how well I'm doing at work (school)

☐ I usually am aware of how well I'm doing as I perform an activity

☐ I keep track of my progress on projects I'm working on

Focusing on natural rewards

☐ When I have successfully completed a task, I often reward myself with something I like

☐ I focus my thinking on the pleasant rather than the unpleasant aspects of my job (school) activities

☐ When I have a choice, I try to do my work in ways that I enjoy rather than just trying to get it over with

☐ I seek out activities in my work that I enjoy doing

Self-cueing

☐ I use written notes to remind myself of what I need to accomplish

☐ I use concrete reminders (e.g. notes and lists) to help me focus on the things I need to accomplish

16. Personality (1-5 scale)

I see myself as:

1. ..... Extraverted, enthusiastic.
2. ..... Critical, quarrelsome.
3. ..... Dependable, self-disciplined.
4. ..... Anxious, easily upset.
5. ..... Open to new experiences, complex.
6. ..... Reserved, quiet.
7. ..... Sympathetic, warm.
8. ..... Disorganized, careless.
9. ..... Calm, emotionally stable.
10. ..... Conventional, uncreative.

Additional information

1. Sex: ☐ male ☐ female

2. Year of study:

☐ first-cycle studies (Bachelor)- 1 year

☐ first-cycle studies (Bachelor) – 2 year

☐ first-cycle studies (Bachelor)- 3 year

☐ second-cycle studies (MA) – 1 year

☐ second-cycle studies (MA)- 2 year

3. Faculty:. . . . . .

4. Field of study: . . . . . .

5. Place of residence:
   ☐ village
   ☐ small city (less than 20,000 inhabitants)
   ☐ medium-sized city (21-150 thousand inhabitants)
   ☐ a large city (over 150,000 inhabitants)

6. What is the level of your foreign language skills? (if the case)

Language	Not applicable	A1 (beginner)	A2	B1	B2	C1	C2 (advanced)
English							
German							
Russian							
other, which?							
other, which?							

7. For which purposes have you been abroad in the last 5 years?
   ☐ work
   ☐ studies, training, courses
   ☐ tourist trips
   ☐ other, which? . . . . . .
   ☐ in the last 5 years I have not been abroad.

Appendix 2. Questionnaire for academic staff

Dear colleagues,
The Bialystok University of Technology in cooperation with Babes Bolyai University carries out a research aimed at exploring the academic staff's experiences about the students' teamwork skills for virtual and multicultural teams. The research is carried out as part of the NAWA program.

In this study, a **multicultural team** is understood as a team of people working on the implementation of a common goal in which there are representatives of at least two national cultures/countries. **Virtual teams** – as a team of people working on the implementation of a common goal, in which team members are spatially dispersed, and communication takes place through modern information technologies (messenger, skype).

The research is anonymous and the results will be used only for collective scientific studies. The estimated time to complete the survey is 15 minutes.

Thank you for participating.

1. To what extent do you agree with these statements about multicultural and virtual teams?

	Very rare	Rarely	Sometimes	Often	Very often
My teaching is focused on developing students skills for working in multicultural teams	1	2	3	4	5
My teaching is focused on developing students skills for working in virtual teams	1	2	3	4	5
University teaching prepares students to work in multicultural teams	1	2	3	4	5
University teaching prepares students to work in virtual teams	1	2	3	4	5
Employers appreciates the ability to work in multicultural teams	1	2	3	4	5
Employers appreciates the ability to work in virtual teams	1	2	3	4	5
Traditional teams are more effective and efficient than virtual teams	1	2	3	4	5
Traditional teams are more effective and efficient than multicultural teams	1	2	3	4	5

2. What methods for multicultural and virtual teamwork do you use when teaching and trying to develop students' multicultural and virtual teamwork skills?

Methods	Very rare	Rarely	Sometimes	Often	Very often
Academic games or contests between groups of students	1	2	3	4	5
Class tasks that require work in groups/ teams	1	2	3	4	5
Brainstorming tasks in groups	1	2	3	4	5
Field trips/group visits/going out with the students	1	2	3	4	5
Role plays in groups	1	2	3	4	5
Case studies to be solved in groups	1	2	3	4	5
Thematic student clubs/centres of interest	1	2	3	4	5
Group projects (all members receive the same grade)	1	2	3	4	5
Presentations in groups (all members receive the same grade)	1	2	3	4	5
Debates in groups/teams	1	2	3	4	5

Methods	Very rare	Rarely	Sometimes	Often	Very often
Feedback/debriefing for the entire groups	1	2	3	4	5
Tasks that includes the use of technology for multicultural and virtual team working	1	2	3	4	5
E-learning	1	2	3	4	5
Assigning students to groups according to some specific criteria	1	2	3	4	5
Encouraging students to use online tools when working in teams (for example: google docs, dropbox, Skype)	1	2	3	4	5
Other methods, which?.....	1	2	3	4	5

3. When you give tasks/project to be solved by students in groups, how often do you get involved in the following aspects of the student team work?

	Never	Rarely	Sometimes	Often	Very often
Participating to the formulation of the teams objectives and strategy	1	2	3	4	5
Monitoring the progress of the teams towards goals	1	2	3	4	5
Keeping track of the resources available for the teams (room, databases, software, virtual disk, teleconferencing tools)	1	2	3	4	5
Assisting the team members to perform their tasks	1	2	3	4	5
Coordinating the actions and timing of the teams	1	2	3	4	5
Assisting the members in conflict management situations	1	2	3	4	5
Motivating and building the confidence of the team members	1	2	3	4	5
Assisting members when facing individual emotional difficulties (frustration, cohesion)	1	2	3	4	5
Assisting members of the team to exchange the knowledge in groups and between groups	1	2	3	4	5
Assisting members of the team to be active in work by self- evaluating in the end	1	2	3	4	5
Others, which?.....	1	2	3	4	5

4. How strong do the following factors influence you to use methods focused on developing students' skills for working in virtual and multicultural teams?

	Low influence		Average		Very high influence
1. A clear university strategy on the role of multicultural team working	1	2	3	4	5
2. Standards and evaluation criteria for adopting & developing virtual teamwork	1	2	3	4	5
3. Access to resources and tools	1	2	3	4	5
4. Training/ support for teaching skills for multicultural team working	1	2	3	4	5
5. Other colleagues' teaching methods and achievements in teaching virtual and multicultural team working	1	2	3	4	5
6. Size of the class	1	2	3	4	5
7. Heavy workload	1	2	3	4	5
8. Students quality and interest	1	2	3	4	5
9. The level of your technical skills	1	2	3	4	5
10. Your pedagogical skills	1	2	3	4	5
11. Your knowledge and experience in virtual and multicultural team working	1	2	3	4	5
12. Your age	1	2	3	4	5
13. Your career trajectory	1	2	3	4	5

5. Do you agree with the following statements about the methods to improve students' skills for working in multicultural teams?

	Totally disagree	Partially disagree	So and so	Partially agree	Totally agree
a) Teaching methods for multicultural teams are compatible with our existing faculty culture	1	2	3	4	5
b) Teaching methods for multicultural teams are challenging to understand, learn and use effectively	1	2	3	4	5
c) It is easy to experiment or try teaching methods for multicultural teams and then decide if they fit the lecturer	1	2	3	4	5
d) The results of using teaching methods for multicultural teams are clearly visible to you and the others (students, colleagues, faculty management)	1	2	3	4	5

6. What were the main challenges you encountered when working in multicultural and virtual teams?

	Very rarely	Rarely	Average	Often	Very often
a) coordination problems	1	2	3	4	5
b) lack of involvement, motivation and commitment of team members	1	2	3	4	5
c) decision making problems	1	2	3	4	5
d) leadership problems (eg delegating, monitoring and providing feedback)	1	2	3	4	5
e) team roles problems (unclear tasks/roles of each member)	1	2	3	4	5
f) not meeting the deadlines	1	2	3	4	5
g) skill-level differences between members	1	2	3	4	5
h) personality differences between members	1	2	3	4	5
i) language proficiency difficulties of the members	1	2	3	4	5
j) communication problems	1	2	3	4	5
k) insufficient knowledge of IT tools by team members	1	2	3	4	5
l) hardware difficulties (software, computer, internet access)	1	2	3	4	5

7. Thinking about your experience of working in teams, to what extent do you agree with these statements?

	Totally disagree	Partially disagree	So and so	Partially agree	Totally agree
a) I believe that my contribution to the team's success was very important.	1	2	3	4	5
b) Other members of my team/from my university asked me for advice when task specific problems occur.	1	2	3	4	5
c) In difficult situations, the success of my team depended especially on my contribution.	1	2	3	4	5
d) I felt capable to accomplish my tasks within my team work.	1	2	3	4	5
e) For each problem that arouse out of my team work, I could find a solution.	1	2	3	4	5
f) If a new task arises from my team work, I know how to handle it.	1	2	3	4	5

	Totally disagree	Partially disagree	So and so	Partially agree	Totally agree
g) I can discuss task-related difficulties with each of the other members of my team.	1	2	3	4	5
h) I can share my ideas, feelings, and expectations with each of the other members of my team.	1	2	3	4	5
i) The members of my team fulfilled their tasks on a high competence level.	1	2	3	4	5

8. To what extent do you agree with these statements?

	Totally disagree	Partially disagree	So and so	Partially agree	Totally agree
a) I enjoy interacting with people from different cultures.	1	2	3	4	5
b) I am confident that I can socialize with locals in a culture that is unfamiliar to me	1	2	3	4	5
c) I am sure I can deal with the stresses of adjusting to a culture that is new to me.	1	2	3	4	5
d) I establish specific goals for my own performance	1	2	3	4	5
e) I work toward specific goals I have set for myself	1	2	3	4	5
f) I think about the goals that I intend to achieve in the future	1	2	3	4	5
g) I make a point to keep track of how well I'm doing at work (school)	1	2	3	4	5
h) I usually am aware of how well I'm doing as I perform an activity	1	2	3	4	5
i) I keep track of my progress on projects I'm working on	1	2	3	4	5

9. I see myself as:

	Totally disagree	Partially disagree	So and so	Partially agree	Totally agree
a) Extraverted, enthusiastic.	1	2	3	4	5
b) Critical, quarrelsome.	1	2	3	4	5
c) Dependable, self-disciplined.	1	2	3	4	5
d) Anxious, easily upset.	1	2	3	4	5

	Totally disagree	Partially disagree	So and so	Partially agree	Totally agree
e) Open to new experiences, complex.	1	2	3	4	5
f) Reserved, quiet.	1	2	3	4	5
g) Sympathetic, warm.	1	2	3	4	5
h) Disorganized, careless.	1	2	3	4	5
i) Calm, emotionally stable.	1	2	3	4	5
j) Conventional, uncreative.	1	2	3	4	5

10. What are the main challenges you face in your attempts to develop students' skills for working in multicultural and virtual teams?
    10a. In multicultural teams: . . . . . .
    . . . . . .
    10b. In virtual teams: . . . . . .
    . . . . . .
11. What are the main things that could be done to support you to improve students' teamwork skills for multicultural and virtual teams?
    11a. In multicultural teams: . . . . . .
    . . . . . .
    11b. In virtual teams: . . . . . .
    . . . . . .

Additional information

1. Faculty:. . . . . .
2. Job title. . . . . .
3. Number of years of experience in teaching . . . . . .
4. Did you teach classes to international students at your university? ☐ Yes ☐ No
5. Did you teach classes at other universities abroad? ☐ Yes ☐ No
6. Did you teach online courses/modules? ☐ Yes ☐ No
7. Teaching load: How many classes do you teach per week (on average)? . . . . . .
8. Sex: ☐ male ☐ female
9. If you have experience abroad, what type of experience do you have?
   ☐ long term studies (longer than 1 month): bachelor, master, doctorate programs
   ☐ short term trainings, courses
   ☐ other scientific events (conferences, research meetings)
   ☐ tourism trips
   ☐ work
   ☐ other reasons, i.e.. . . . . .
   ☐ in the last years I have not been abroad.

Appendix 3. Self-reported *My Perspective of the World*

My perspective of the world
– self-report surveys

The following statements are designed to measure various behaviors, thought processes, and mental characteristics. Read each statement carefully and choose with one of the five possible responses best reflects you by put "x" in the correct place. If you are not sure, or if a statement does not seem to apply to you, choose the answer that seems the best. Please answer honestly and make responses based on how you actually are rather than how you would like to be.

The five possible responses are: 0 – Not at all true of me | 1 – Not very true of me | 2 – Somewhat true of me | 3 – Very true of me | 4 – Completely true of me

Part I. Behaviors, thought processes, and mental characteristics

Statements	0	1	2	3	4
1. I have often questioned or pondered the nature of reality					
2. I recognize aspects of myself that are deeper than my physical body					
3. I have spent time contemplating the purpose or reason for my existence					
4. I am able to enter higher states of consciousness or awareness					
5. I am able to deeply contemplate what happens after death					
6. It is difficult for me to sense anything other than the physical and material					
7. My ability to find meaning and purpose in life helps me adapt to stressful situations					
8. I can control when I enter higher states of consciousness or awareness					
9. I have developed my own theories about such things as life, death, reality, and existence					
10. I am aware of a deeper connection between myself and other people					
11. I am able to define a purpose or reason for my life					
12. I am able to move freely between levels of consciousness or awareness					
13. I frequently contemplate the meaning of events in my life					
14. I define myself by my deeper, non-physical self					
15. When I experience a failure, I am still able to find meaning in it					
16. I often see issues and choices more clearly while in higher states of consciousness/awareness					

Statements	0	1	2	3	4
17. I have often contemplated the relationship between human beings and the rest of the universe					
18. I am highly aware of the nonmaterial aspects of life					
19. I am able to make decisions according to my purpose in life					
20. I recognize qualities in people which are more meaningful than their body, personality, or emotions					
21. I have deeply contemplated whether or not there is some greater power or force (e.g., god, goddess, divine being, higher energy, etc.)					
22. Recognizing the nonmaterial aspects of life helps me feel centred					
23. I am able to find meaning and purpose in my everyday experiences					
24. I have developed my own techniques for entering higher states of consciousness or awareness					

Part II. Formal information

Sex: ☐ male ☐ female

Year of study:

☐ first-cycle studies (Bachelor) – 1 year
☐ first-cycle studies (Bachelor) – 2 year
☐ first-cycle studies (Bachelor) – 3 year
☐ second-cycle studies (MA) – 1 year
☐ second-cycle studies (MA) – 2 year

Student: ☐ Polish ☐ Romanian.

Appendix 4. Questionnaire after teamwork

Questionnaire

The following statements are designed to measure work in your team. Read each statement carefully and choose with one of the five possible responses best reflects your work in team by put "x" in the correct place. If you are not sure, or if a statement does not seem to apply to you, choose the answer that seems the best. Please answer honestly and make responses based on how you actually felt rather than how would you like to feel.

The five possible responses are: 0 – Not at all true of me | 1 – Not very true of me | 2 – Somewhat true of me | 3 – Very true of me | 4 – Completely true of me

Part I. Teamwork

Statements	0	1	2	3	4
A1. The leaders in my team "walk the walk" and "talk and talk"					
A2. The leader in my team was honest and without false pride					
A3. My team was trustworthy and loyal to its members					
A4. The leader in my team had the courage to stand up for the members					
A5. My team was kind and considerate towards its member, and when they are suffering, want to do something about it					
MC6. The work I did was meaningful to me					
MC7. The work I did was very important to me					
MC8. My job activities were personally meaningful to me					
M9. I felt my team appreciates me and my work					
M10. I felt my team demonstrates respect for me and my work					
M11. I felt I was valued as a person in my job					
M12. I felt highly regarded by my leaders					
O13. I felt like "part of the family" in this team					
O14. I really felt as if my team's problems are my own					
O15. I would be very happy spend more time with this team					
O16. I felt a strong sense of belonging to this team					
P17. In my team everyone gives her/her best efforts					
P18. In my team work quality is a high priority for all members					
P19. My work was very productive					
P20. My teamwork was very efficient in getting maximum output from the resources (people, equipment, etc.) available					

Part II. Formal information

Sex: ☐ male ☐ female

Year of study:

☐ first-cycle studies (Bachelor) – 1 year
☐ first-cycle studies (Bachelor) – 2 year
☐ first-cycle studies (Bachelor) – 3 year
☐ second-cycle studies (MA) – 1 year
☐ second-cycle studies (MA) – 2 year

Student: ☐ Polish ☐ Romanian.

Appendix 5. Emotional intelligence questionnaire

Emotional Intelligence Questionnaire

This self-assessment questionnaire is designed to get you thinking about the various competences of emotional intelligence as they apply to you.

1. Assess and score each of the questionnaire's statements

No.	How much does each statement apply to you	Mark your score				
	Read each statement and decide how strongly the statement applies to YOU. Score yourself 1 to 5 based on the following guide. 1 = Does not apply ~ 3 = Applies half the time ~ 5 = Always applies	the number that shows how strongly the statement applies				
	Statements	1	2	3	4	5
1	I realise immediately when I lose my temper					
2	I can 'reframe' bad situations quickly					
3	I am able to always motivate myself to do difficult tasks					
4	I am always able to see things from the other person's viewpoint					
5	I am an excellent listener					
6	I know when I am happy					
7	I do not wear my 'heart on my sleeve'					
8	I am usually able to prioritise important activities at work and get on with them					
9	I am excellent at empathising with someone else's problem					
10	I never interrupt other people's conversations					
11	I usually recognise when I am stressed					
12	Others can rarely tell what kind of mood I am in					
13	I always meet deadlines					
14	I can tell if someone is not happy with me					
15	I am good at adapting and mixing with a variety of people					
16	When I am being 'emotional' I am aware of this					
17	I rarely 'fly off the handle' at other people					
18	I never waste time					
19	I can tell if a team of people are not getting along with each other					
20	People are the most interesting thing in life for me					
21	When I feel anxious I usually can account for the reason(s)					

No.	How much does each statement apply to you	Mark your score				
	Read each statement and decide how strongly the statement applies to YOU. Score yourself 1 to 5 based on the following guide. 1 = Does not apply ~ 3 = Applies half the time ~ 5 = Always applies	the number that shows how strongly the statement applies				
	Statements	1	2	3	4	5
22	Difficult people do not annoy me					
23	I do not prevaricate					
24	I can usually understand why people are being difficult towards me					
25	I love to meet new people and get to know what makes them 'tick'					
26	I always know when I'm being unreasonable					
27	I can consciously alter my frame of mind or mood					
28	I believe you should do the difficult things first					
29	Other individuals are not 'difficult' just 'different'					
30	I need a variety of work colleagues to make my job interesting					
31	Awareness of my own emotions is very important to me at all times					
32	I do not let stressful situations or people affect me once I have left work					
33	Delayed gratification is a virtue that I hold to					
34	I can understand if I am being unreasonable					
35	I like to ask questions to find out what it is important to people					
36	I can tell if someone has upset or annoyed me					
37	I rarely worry about work or life in general					
38	I believe in 'Action this Day'					
39	I can understand why my actions sometimes offend others					
40	I see working with difficult people as simply a challenge to win them over					
41	I can let anger 'go' quickly so that it no longer affects me					
42	I can suppress my emotions when I need to					
43	I can always motivate myself even when I feel low					
44	I can sometimes see things from others' point of view					
45	I am good at reconciling differences with other people					
46	I know what makes me happy					
47	Others often do not know how I am feeling about things					
48	Motivations has been the key to my success					
49	Reasons for disagreements are always clear to me					
50	I generally build solid relationships with those I work with					

2. Total and interpret your results
   Record your 1, 2, 3, 4, 5 scores for the questionnaire statements in the grid below. The grid organises the statements into emotional competency lists.

Self-Awareness		Self-Regulation		Motivation		Empathy		Social Skills	
1		2		3		4		5	
6		7		8		9		10	
11		12		13		14		15	
16		17		18		19		20	
21		22		23		24		25	
26		27		28		29		30	
31		32		33		34		35	
36		37		38		39		40	
41		42		43		44		45	
46		47		48		49		50	

3. Calculate a total for each of the 5 emotional competencies

Total (SA)		Total (SR)		Total (M)		Total (E)		Total (SS)	

4. Interpret your totals for each area of competency using the following guide.

35-50 points	This area is a ***strength*** for you.
18-34 points	***Giving attention*** to where you feel you are weakest will pay dividends.
10-17 points	Make this area a ***development priority***.

The analysis of teamwork is given a lot of attention in modern research, as there is a constant search to improve leadership and managerial skills. The authors observed this very aptly in their work, so we see a reasonably substantiated significance of the research on the leading and developing virtual teams (...) The research is relevant in academic and practical aspects.

PROF. JAROSLAV DVORAK

Firstly, one of the great strengths of the book is the way the authors integrate research from across the social sciences, including management, organizational behavior and psychology. It complements and extends previous work in the field and can be a starting point to explore further issues of virtual teamwork in the academic context. Secondly, at a time of impending changes for organizations and universities, this book comes up with solutions being a comprehensive, highly practical account of the emergent topic of team work in the virtual context.

DR LUCIA RATIU

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