

COLLABORATIVE SOLUTIONS

Handbook for the Implementation
of the PEER Model of
Collaborative Problem Solving



Faculty of Philosophy, University of Belgrade | 2024





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*Smiljana Jošić and
Aleksandar Baucał
(editors)*

*Collaborative Solutions
Handbook for the implementation of the PEER Model
of Collaborative Problem Solving
(translated from the original publication titled
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rešavanja problema putem saradnje"*

Authors:

Aleksandar Baucal
Dragica Pavlović Babić
Ana Altaras Dimitrijević
Ksenija Krstić
Zorana Jolić Marjanović
Ivana Stepanović Ilić
Marina Videnović
Smiljana Jošić
Tijana Nikitović
Kristina Mojović Zdravković
Milana Rajić
Jovan Ivanović
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Edited by

Smiljana Jošić and Aleksandar Baucal

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Publishing director:

Danijel Sinani, PhD
Dean of the Faculty of Philosophy in Belgrade

Reviewers:

Danijela Petrović, PhD
Faculty of Philosophy, University of Belgrade
Nevena Buđevac, PhD
Faculty of Education, University of Belgrade
Vladeta Milin, PhD
Faculty of Philosophy, University of Belgrade

Translated from Serbian into English:

Aleksandra Ilić

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Foreword

This handbook is a result of dedicated work and research conducted within the project entitled *The PEER Model of Collaborative Problem Solving: Developing Young People's Capacities for Constructive Interaction and Teamwork*. With the financial support of the Science Fund of the Republic of Serbia, researchers at the Faculty of Philosophy at the University of Belgrade and the Institute for Educational Research in Belgrade set out to create a program that could help adolescents improve their collaboration when solving complex problems and tasks.

Relying on the existing knowledge in the domains of sociocultural psychology, differential psychology, developmental psychology, and education sciences, we have formulated the unique PEER Model of Collaborative Problem Solving. Innumerable hours of research, material development, and interaction with the youth have gone into the shaping of the PEER model as well as this handbook. The guiding premise of this model is that collaboration quality and productivity hinge on careful consideration of the following aspects of collaboration: 1) **p**ersonality traits, 2) **e**mootional intelligence, 3) **e**xchanging ideas through dialogue, and 4) **r**esources available. In this handbook, we have dedicated a chapter to each letter in the PEER model. These chapters comprise brief explanations of each element of the model, followed by activities that support the development of collaboration among the youth. Through the synergy of these elements, young people not only formulate better solutions but also improve the personal competencies necessary for successful collaboration.

Our hope is that this publication will serve as a resource and inspiration to everyone who is dedicated to supporting the youth's development and fostering collaborative problem-solving skills. This handbook is primarily intended for professionals who work with the youth and use group work as a method when conducting activities both in school and out-of-school contexts. In this handbook, psychologists, pedagogists, school counselors, kindergarten teachers and other professionals engaged in youth development can find useful guidelines and tools aimed at supporting young people in the development of their collaborative problem-solving skills.

The first two chapters of the handbook are dedicated to activities that aid the process of identifying and acknowledging **p**ersonality traits, along with exercises that highlight the contribution of emotional intelligence to collaboration. Activities described in these chapters rely on psychological knowledge, which is why they are primarily intended for psychologists. However, this does not preclude other educators, particularly teachers, from implementing these activities in consultation with psychologists. The two subsequent chapters are dedicated to **e**xchanging ideas through dialogue and the available **r**esources and they are intended for the wider population of educators, that is, they can be implemented by all professionals who use group work in the education of the youth.

We would like to express our gratitude to the following partner schools in Belgrade, whose generous support and dedication have made it possible to achieve

our goals: the Patriarch Pavle Grammar School, the Saint Sava Grammar School, the Zemun Grammar School, the Secondary School of Dentistry, the Radoje Dakić Secondary School of Mechanical Engineering, the Fifth Belgrade Grammar School, the Secondary Technical School of Transport, the Seventh Belgrade Grammar School, the Secondary School of Tourism, the Secondary School of Tourism and Hospitality, the Secondary School of Pharmacy and Physiotherapy, and the Sixth Belgrade Grammar School. We are grateful for the invaluable support and contributions of these schools, their students, teachers, school counselors, and principals. Together, we have created resources that we believe can contribute to the education and development of the youth.

Likewise, we would like to thank all the reviewers who have helped elevate the quality of this handbook. Suggestions and comments received from Danijela Petrović, PhD, Nevena Buđevac, PhD, and Vladeta Milin, PhD have significantly contributed to the shaping of the contents of this handbook.

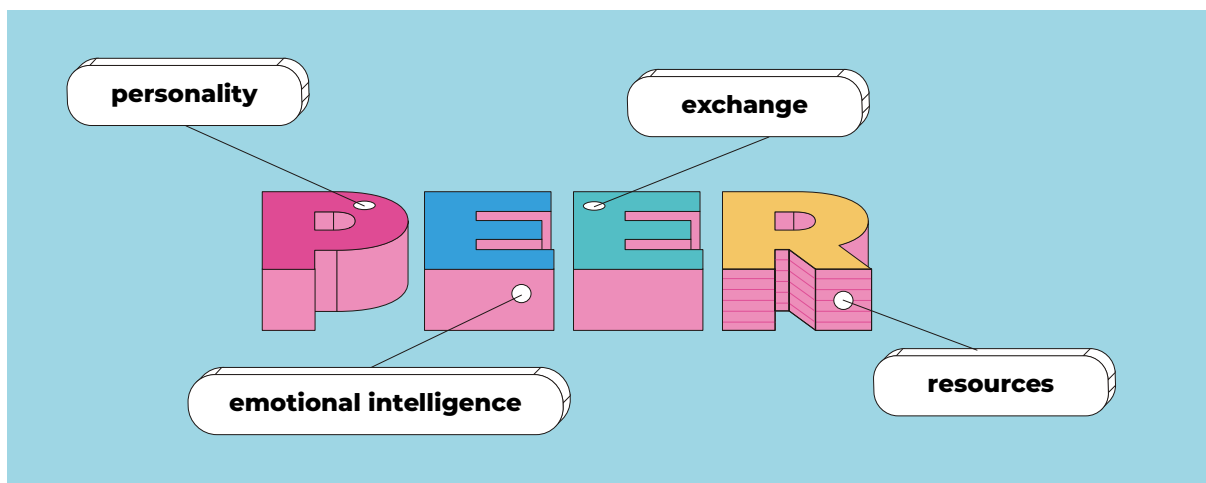
We hope for this handbook to be of use to everyone who wants to contribute to the development of skills that constitute prerequisites to successfully involving the youth in collaborations aimed at complex problem solving. Furthermore, we would like to encourage all practitioners to actively participate in the creation of new materials so we could keep increasing our support for the community of professionals who work with the youth. If you have modified or adapted some of the activities described in this handbook to your working environment, please share your versions with us. You can send your novel ideas to the email address peersolvers@f.bg.ac.rs and thus help improve the methods of working with the youth that foster the development of collaboration skills.

The authors of the handbook

The PEER Model of Collaborative Problem Solving

It is hard to imagine any complex (social) problems of modern society being solved by a single person. The pace of contemporary life demands collaboration in different segments of our lives. Due to the common need for collaborative problem solving, we sometimes collaborate with individuals with whom we do not share the same opinions, interests, and values. Numerous studies have shown that collaboration can yield more creative, effective, and comprehensive solutions than individual efforts, and that there are problems that could not be solved otherwise. Furthermore, when solving problems in collaboration with others, people develop social and cognitive skills. Hence, it is not surprising that some of the leading organizations, such as the Organization for Economic Cooperation and Development (OECD) and the European Commission, have recognized collaborative problem solving as one of the key life competencies, highlighting the development of skills necessary for successful collaboration as a major objective of contemporary education.

In this handbook, the concept of collaborative problem solving denotes a process in which a group of people works together to find a solution, recognizing that individual contributions are not enough to ensure success. In this process, group members engage in complex interactions that encompass two dimensions: the social dimension, which focuses on intra-group relations, and the cognitive dimension, which pertains to the very process of problem solving. This concept should be clearly distinguished from cooperation, where there is an agreed-upon division of work within the group, with every member taking responsibility for a specific part of the task, in accordance with personal knowledge and skills. On the other hand, during unstructured collaboration, the solution is formulated and agreed upon during joint activities and the division of roles within the group is highly flexible. This form of interaction involves thinking about the problem together, which is also known as interthinking and implies intense exchanges of ideas and joint responsibility throughout the problem-solving process. Research suggests that successful or productive collaboration does not occur spontaneously, but requires support and systematic education. Indeed, for some time now, many education systems have recognized the importance of striving to develop group work and collaborative problem-solving skills in students during their education. However, although this is a common topic in the literature and although there is a large corpus of empirical data on peer collaboration, practitioners still face numerous challenges when educating the youth on how to collaborate productively.



Having in mind the enormous significance of involving the youth in collaborative problem solving, the authors of this handbook have designed the PEER model as a comprehensive framework for the systematic development of abilities necessary for productive collaboration among adolescents.

The PEER model is based on the results of meticulous analyses of extensive literature and empirical research findings. By systematically reviewing the large body of existing literature and researching secondary school students' experiences with collaboration at school and the ways they collaborate with their peers, we have managed to identify the conditions that foster productive collaboration and the ways teachers can support collaborative problem solving among students at school. In the following paragraphs, we will briefly describe the four key elements of the model that shape its acronym: PEER. More detailed information on each factor is provided within individual chapters of this handbook.

P = Personality. *Interactions with others involve the entire personality of the individual, with all the unique qualities that make this individual different from other people. Research in the field of organizational psychology has shown that individual differences in the basic personality dimensions – known as the Big Five – significantly influence the flow and outcomes of teamwork. However, instead of suggesting that certain traits are desirable, while others merely hinder teamwork, this element of our model emphasizes the importance of education on individual differences in personality and the acknowledgment of these differences in collaboration scenarios. Essentially, the model advocates the idea that differences in personality profiles among group members can constitute advantages and not shortcomings when solving a problem collaboratively.*

E = Emotional intelligence. *Group interactions and problem solving can be significantly improved by virtue of abilities and skills encompassed by the construct of emotional intelligence, that is, by accurately identifying, properly understanding, and appropriately regulating emotions. The scientific reasoning behind the inclusion of this element into our model of collaborative problem solving is found in numerous studies conducted in educational and organizational contexts that have empirically shown that emotional intelligence has a significant role in teamwork.*

E = Exchange. *For most problems and in a variety of contexts, the basic means of collaborative problem solving is the exchange of thoughts and ideas among participants. Although people can differ in terms of personality profiles and skills in the domain of emotional intelligence, when working in a group, they need to overcome these individual differences and establish a common ground in the*

sense of rules and values that usually yield a productive dialogue. Hence, the second E in the PEER model stands for the necessity of introducing the youth to the rules and values of exchanging ideas, in order to enable collaboration and prevent them from slipping into persuasion or conflict or becoming passive and withdrawing from the collaboration process.

R = Resources. *Finally, our model suggests that productive collaboration hinges on the availability of suitable resources, specifically, the use of digital technology during the process of task solving. Nowadays, it is hard to imagine solving a complex everyday problem without using digital technology (at least at the initial stages of the problem-solving process). We believe that making such resources available to the youth engaged in collaborative problem solving can also help ensure equal participation of all students since this means that group members can make contributions outside of their existing expertise and knowledge base (by finding relevant information online).*

In this handbook, we have devoted a chapter to each of the factors within the PEER model, with the introductory section of each chapter containing detailed explanations of the findings we relied on in emphasizing the importance of the given factor for the development of collaborative competencies. Likewise, each chapter features activities that can be conducted to help young people improve their collaboration skills.

personality

PERSONALITY IN COLLABORATIVE PROBLEM SOLVING



The professional qualifications of facilitators necessary to conduct the activities in this chapter:

The activities described in this chapter can be conducted by psychologists or teachers with the support of psychologists, with students working in small groups.

Key Concepts

Defining personality and its dimensions. Personality is defined as the set of relatively stable patterns of thought, emotion, and behavior that differentiate one person from another. According to one of the leading models, personality can be described by the Big Five dimensions: neuroticism (or emotional stability), extraversion, openness to experience, agreeableness, and conscientiousness. Each of these dimensions can be visualized as a continuum with two extremes (extremely low or extremely high level of the trait) and most people are positioned somewhere between the two extremes that define each dimension.

Neuroticism pertains to individual differences in the presence of negative emotions. High neuroticism implies pronounced apprehensiveness, insecurity, and proneness to frequent mood swings, while low neuroticism or high emotional stability indicates resilience, calmness, and composure even in tense and challenging situations.

Extraversion encompasses sociability, talkativeness, dominance, high energy, and the presence of positive affect. A high score on this dimension indicates that the person is warm, sociable, and cheerful, while a low score is a reflection of being reserved, withdrawn, and prone to gloomy moods.

Openness to experience (or simply openness) encompasses curiosity, creativity, novelty seeking, non-conformist behavior, and tolerance for differences. High openness is characteristic of individuals who are imaginative, curious, and prone to research, while low openness is found in individuals who have rigid attitudes, who are guided by traditional values, and who are highly practical in behavior and decision-making.

Agreeableness comprises characteristics that come to the fore in interpersonal relations, such as compassion, respect, and acceptance of others. High agreeableness is present in individuals who are compassionate, cooperative, and trusting, while a low score on this dimension is found in individuals who are cynical, quarrelsome, and lack interest in the feelings of others.

Conscientiousness refers to individual differences in the levels of organization, diligence, and responsibility. Highly conscientious individuals are systematic, hard-working, and reliable, while a low level of this trait is reflected in disorganization, a lack of discipline, and excessive carefreeness.

Research has consistently shown that personality dimensions are manifested in nearly all aspects of life, including relations with other people, school, work, and health. Extraversion and agreeableness are closely associated with (pro)social behavior that improves the quality of interpersonal relations, openness is best observed when completing intellectual and creative tasks, while conscientiousness is significant in predicting school and work success. Finally, emotional stability is associated with psychological well-being and mental health.

The Role of Personality in Collaborative Problem Solving

According to research findings, personality traits are associated with an individual's behavior and role in a team. Furthermore, they have a significant effect on the person's achievement, satisfaction, and the quality of interpersonal relations established during collaborative task solving.

For instance, high agreeableness contributes to exhibiting prosocial behavior during group work and establishing harmonious interactions with others. Hence, highly agreeable team members spontaneously take on the leading role in forming good relations. Highly agreeable individuals are team players, they share their knowledge with others, and they rarely neglect their responsibilities during group work. Finally, agreeable individuals more easily adapt to working with others and find it more enjoyable.

High conscientiousness is associated with being task-oriented, better at evaluating task requirements, and apt to more easily identify the existing limitations. Therefore, highly conscientious team members spontaneously take on the role of supervising and monitoring the problem-solving process in the group. Furthermore, highly conscientious individuals readily share their knowledge with other team members, which is why they constitute a valuable resource and source of help in task solving. Although conscientious individuals' satisfaction with group work depends on the dedication of other team members – it bothers them when people shirk their responsibilities – they adapt relatively easily and invest maximum effort when collaborating.

Highly extraverted individuals take to group work like a duck to water. They unreservedly express their ideas, take control, and demonstrate their influence on others, while forming a rich network of relations with different team members. For all these reasons, they often assert themselves as leaders. On the other hand, high introversion makes group work less pleasant and depending on the circumstances, it can prevent introverted members from showing their true potential and contribution. This is particularly true for groups characterized by a significant disproportion in the numbers of people with high and low extraversion.

Unlike the previous three personality dimensions, research has not systematically linked openness and emotional stability to specific behaviors and roles in a group, but these dimensions have been found to affect the flow and outcome of group work when observed as qualities of the entire group, as we will explain in the following paragraphs.

Numerous studies have explored the effects of personality traits on the flow and outcome of collaboration from the perspective of group composition, that is, by taking into account the level of a specific trait at the group level and not in individual group members.

Such studies have shown that groups composed of highly conscientious members have a significantly better starting position, more self-confidence, and greater success in collaborative problem solving, especially when solving a highly complex task that requires long-term dedication, perseverance, and systematic-

ity. On the other hand, some findings suggest that innovativeness and creativity can be blocked in groups made up of highly conscientious members since great systematicity can undermine the process of generating novel and different solutions. By stark contrast, the level of openness can be significant for achieving success in creative tasks, allowing for easy and spontaneous generation of new ideas. Still, highly open groups can get caught up in their creativity and fail to properly elaborate and refine the chosen solution due to a lack of a “conscientious” focus on achieving the ultimate goal, that is, solving the problem.

The team atmosphere can be significantly influenced by the level of harmony between team members’ personality traits. In groups characterized by great differences in conscientiousness, agreeableness, and emotional stability, the positive group atmosphere is often jeopardized, which is manifested in a larger number of conflicts and a diminished sense of solidarity and harmony in the team. Conversely, when group members are similar in terms of these traits, they are highly dedicated to group work, even when conflicts arise. Furthermore, teams made up of agreeable, emotionally stable, and open members are more inclined to exchange ideas and accept different opinions and they are ultimately more cohesive.

All of these findings suggest that one of the prerequisites to successful participation in collaborative problem solving is understanding the way differences in personality can affect collaboration with others. This is why it is important to hone our ability to evaluate our own personality, identify collaboration aspects and ways in which we as individuals can be of greatest use to ourselves and the group, and understand when our traits can constitute a challenge in teamwork. Likewise, it is crucial to view the behaviors, attitudes, and feelings of our collaborators from the standpoint of different personality dimensions and adequately recognize and acknowledge their traits during collaboration.

Finally, although personality traits are relatively stable, they are not immutable. In fact, they only crystallize during early adulthood. Prior to this point, during adolescence, there is room to systematically – through different interventions – stimulate potentially underdeveloped aspects of personality whose presence has numerous positive effects on the individual and society as a whole.

What follows is a set of activities that psychologists can conduct independently or in collaboration with other teachers during regular classes (primarily psychology, civic education, and homeroom classes) with the aim of reinforcing the youth’s ability to recognize and acknowledge their own personality and the personalities of their peers during collaboration. It should be noted that these activities are mutually connected and should be conducted successively, in the order in which they are shown here.

Activity objectives:

1. familiarization with the concept and dimensions of personality;
2. improving the recognition of differences and similarities in personality traits;
3. enhancing the understanding of the roles of individual personality traits in collaboration;
4. practicing the identification of links between individual traits in a personality profile;
5. encouraging the application of knowledge about personality traits and the effect of personality on collaboration.

Collection of Activities That Aid the Acknowledgment of Personality in Collaborative Problem Solving

Activity 1: Personality in People (Objective 1)

Necessary materials:

- A laptop/computer and a projector or a flipchart and markers or a blackboard/whiteboard and chalk/markers
- Paper sheets and pencils for students (if they are not expected to have them)
- Supplement P1 as a reminder for the facilitator

Activity duration: 15–20 minutes

Activity flow and implementation instructions:

The aim of this activity is to introduce students to the concept and dimensions of personality. First, the facilitator tasks the students with choosing two close persons (e.g., siblings, friends, or parents), imagining them in an everyday situation that involves other people, and writing down the qualities that these persons most commonly exhibit. If necessary, the facilitator can explain the task by telling the students to list these persons' feelings and behaviors in the given situation. Once the students have written down their responses, the facilitator invites them to present the qualities they have listed in the plenum. After several students present their responses, the facilitator invites others to add qualities that have not yet been presented. The facilitator should write student responses on the blackboard/whiteboard/flipchart or enter them into a slide in a PPT presentation, making sure to divide them into five columns, so that the set of qualities in each column corresponds to one of the Big Five personality dimensions. The table with student responses should be used to show the students how personal qualities are grouped into several wider sets and introduce the labels of the Big Five personality dimensions. While explaining the nature of these dimensions, the facilitator can add more qualities to each of the columns.

Possible activity adaptations or expansions:

Facilitators can adapt the activity by asking students to choose one person and list this person's qualities in interaction with others. Thus, the duration of the activity can be shortened, but it should be noted that thinking about two people helps the students come up with a more diverse list of qualities based on the similarities/differences between the two individuals.

Activity 2: How High Is Your Trait? (Objective 2)

Necessary materials:

- White paper masking tape
- Sticky notes in five different colors
- Handout on personality dimensions (*Supplement P2*)

Activity duration: 10–15 minutes

Activity flow and implementation instructions:

This activity is designed to illustrate the presence of individual differences in personality dimensions. Before the activity, the facilitator should stick five long pieces of tape on the board/wall, one for each of the Big Five personality dimensions. Using a marker, the facilitator should mark the central point or average (30) and ends (0 and 60) on each piece of tape, as shown in Figure 1 (it is not advised to draw the marking lines on the board using a marker or chalk since they would get erased during the activity).

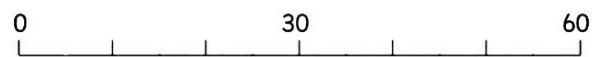


Figure 1. Personality Trait Level Self-Assessment Scale

At the beginning of the activity, the facilitator gives five differently colored sticky notes to each student. Subsequently, all students receive a handout on personality traits and indicate on a paper of a certain color (e.g., yellow) how they estimate their own emotional stability on a scale from 0 to 60. The same activity is repeated for the remaining four dimensions, with the estimation indicated on a differently colored paper each time. After the students complete the self-evaluation process, they approach the wall/board and stick their notes to the corresponding values on the marked scales. Once the notes are placed, the facilitator talks to the students about what they can conclude based on the appearance of the scales with sticky notes. In this segment, the facilitator strives to steer the discussion so that students realize that their responses indicate certain similarities and differences between them, of which they might not have been aware, and that their responses clearly illustrate the existence of individual differences in personality traits. The conversation also serves to comment on the way their responses are distributed along the scales, with a particular emphasis on the meaning of a greater concentration (which points to greater similarities) or dispersion of responses (which indicates greater differences), along with the meaning of the concentration of responses around the central point or the ends of the scales. Finally, the facilitator uses this opportunity to highlight that no position on the scale is inherently good or bad, but that it is important to be able to recognize our own traits and try to notice different traits in other people so that we could interact with them more successfully.

Possible activity adaptations or expansions:

If there is more time available, the facilitator can engage the students in a discussion on the matter of the distribution of responses depending on age, that is, the fact that at certain ages, responses can move in relation to the central point, towards one of the two ends of the scale. For example, in adolescence, respons-

es on the Extraversion scale can veer towards the right end of the scale, while responses on the Conscientiousness scale can gravitate towards the left end of the scale, as probably illustrated by the students' responses. However, after adolescence, responses on the dimensions of Agreeableness and Conscientiousness tend to increasingly move towards the right end of the scale.

Activity 3: Your Traits Define Your Vibe! (Objective 3)

Necessary materials:

- Supplement P3 for the facilitator
- Cards describing behaviors and roles associated with extreme positions on the Big Five personality dimensions for the students (*Supplement P4*)

Activity duration: 30–35 minutes

Activity flow and implementation instructions:

This activity should enable students to better understand how personality traits can manifest in collaboration. For the purpose of this activity, the students are divided into five groups and the facilitator assigns extreme positions on two personality dimensions to each group, according to the following scheme: Group 1) high extraversion and low conscientiousness, Group 2) high emotional stability and low agreeableness, Group 3) high conscientiousness and low extraversion, Group 4) high openness and low emotional stability, and Group 5) high agreeableness and low openness. Each group receives a unique set of cards with behavior descriptions or role labels that indicate the benefits and challenges of high or low levels of the assigned personality dimensions in the context of collaboration. The students are tasked with matching the assigned positions on the given personality dimensions with behavior descriptions and roles on the cards. The time allotted for this task is 15-20 minutes. Afterwards, in the plenum, the students exchange their group solutions, that is, every two groups that were assigned different positions on the same dimension contrast their solutions. The facilitator makes sure that during the exchange and the accompanying discussion, the students understand that both positions on a personality dimension can be beneficial but also challenging in collaboration and that this is something they should keep in mind when working with others.

Possible activity adaptations or expansions:

If there is not enough time for the full-length activity, the facilitator can reduce the number of cards for every group. Likewise, if it seems that it would be easier for the students to contrast extreme positions on the same personality dimension, the facilitator can adapt the task and assign one dimension to each group (e.g., assign both high and low extraversion to the same group and provide the corresponding set of cards to sort).

Activity 4: What Is Your Character? (Objective 4)

Necessary materials:

- Supplement P5 for the facilitator
- Cards with narrative character descriptions for the students (*Supplement P6*)
- Cards with graphical representations of the characters' personality profiles (*Supplement P7*)

Activity duration: 30–40 minutes

Activity flow and implementation instructions:

This activity helps students practice recognizing individual personality dimensions within a unique personality profile. The facilitator divides the students into five groups. Each group receives a card with a narrative description of an imaginary person (character) and five cards with graphical representations of personality profiles. The students are instructed to identify the card with the graphical representation that best suits the narrative description of the character assigned to their group. Once all groups have successfully matched their narrative description to the corresponding graphical representation, each group is tasked with contemplating and answering the following questions: 1) How will this character behave when collaborating with someone or working in a group? and 2) Which tasks or roles in group work would best suit this person? Once the groups complete the task, the facilitator invites each group to introduce their character and present the answers they formulated during the discussion. After each group’s presentation, the remaining groups should be given the opportunity to share their insights. In the second part of the activity, the facilitator should help the students realize how the effect of a certain trait on collaboration depends on the other traits of the same person, that is, this person’s entire personality (for example, in collaboration, the extraversion of a person with low agreeableness and conscientiousness does not manifest the same way and does not have the same quality as the extraversion that is paired with high agreeableness and conscientiousness, as illustrated by the characters of Maria and Dean in this activity). To help the students come to these realizations, during the conversation, the facilitator can use Table 1, in which + stands for a high level, – stands for a low level, and n stands for an average level of a trait.

Table 1. A Comparative View of the Levels of the Big Five Personality Dimensions in the Characters Described in the Activity

	Emotional Stability	Extraversion	Openness	Agreeableness	Conscientiousness
Maria	-	+	n	-	-
Dean	n	+	n	+	+
Nadia	-	n	-	n	+
Michael	n	+	+	-	-
Valery	+	-	+	n	+

In the final segment of the activity, the students join the facilitator in formulating some practical advice for involving persons with different personality profiles in group work.

Possible activity adaptations or expansions:

If there is a chance to conduct this activity multiple times with the same group and the duration of the activity needs to be shorter in one of the instances, the activity can be modified so that all groups receive a narrative description of the same character and all five graphical representations of personality profiles. This modification results in the elimination of the segment in which all groups introduce their characters since the character is the same for everyone. However, all groups have the chance to present their answers to the questions. This way, the groups get the opportunity to determine whether their answers to the same questions are concordant and iden-

tify the main points of disagreement should any arise. The facilitator should stimulate constructive exchanges and guide the groups towards the harmonization of recommendations for involving this character in collaboration. The facilitator can modify this activity by creating custom profiles modeled on the ones provided in this handbook.

Activity 5: Like Rejoices in Like or Beauty Lies in Diversity? (Objective 5)

Necessary materials:

- Description of the problem situation for the students (*Supplement P8*)
- Group tasks (*Supplement P9*)

Activity duration: 40 minutes

Activity flow and implementation instructions:

The purpose of this activity is to enable students to apply their knowledge about personality dimensions and their effects on collaboration in a specific situation. The facilitator begins by dividing the students into five groups. All groups receive a description of the same problem situation that is rooted in everyday experience and whose solution necessitates the collaboration of a large number of actors. In the example shown here, the collaboration takes the form of a tenant meeting at which tenants work together to find the best solution for fixing the elevator that is out of order (see Supplement P8). Each group randomly draws a paper with a different task related to the described problem situation. Following the parameters set in the task, which pertain to the actors' personality traits, each group writes a short script showing the development of the described problem situation. The students can act out their script or simply read it in front of the other groups. After the first group acts out or reads their script, the facilitator starts a discussion guided by the following questions:

- *Which personality traits did you observe in the actors in the problem situation?*
- *What kinds of relations did these actors establish during problem solving?*
- *Was the problem-solving process in this group smooth or not and what is the main reason for this?*
- *How successful were these actors in problem solving and what had the greatest effect on the outcome?*
- *How could each or some of the participants have acted differently to improve the outcome?*

A conversation guided by these questions is repeated after every group's presentation. It should be noted that during this activity, which the students may perceive as entertaining, the facilitator needs to ensure they maintain the necessary level of focus during the discussion and task solving in order to achieve the stated objective of the activity. In the end, the facilitator can summarize the conclusions reached during the discussion to show that the composition of the group in terms of specific personality traits can significantly influence the flow and outcome of group work.

Possible activity adaptations:

The task set in this activity can be adapted depending on the facilitator's familiarity with the group and the students' preferred work mode. Instead of a script, the students can also make a list of advantages and challenges to the functioning of a group comprising actors with the given personality traits. Furthermore, the facilitator can come up with a completely different script and individual group tasks.

emotional intelligence

THE CONTRIBUTION OF EMOTIONAL INTELLIGENCE TO (PEER) COLLABORATION



The professional qualifications of facilitators necessary to conduct the activities in this chapter:

The activities described in this chapter can be conducted by psychologists or teachers in consultation with a school counselor – psychologist or a psychology teacher.

Key Concepts

What Is Emotional Intelligence?

The concept of emotional intelligence refers to a set of abilities involved in the cognitive processing of emotional information. This form of processing ranges from reading signs that indicate how someone feels (e.g., registering voice raising as a sign of annoyance), through understanding symbols that represent different emotional states (e.g., understanding words that denote emotions), to knowing and identifying the rules that govern our emotional functioning (e.g., knowing that sadness arises as a consequence of a personal loss). According to John Mayer and Peter Salovey, who introduced this concept into the domain of psychology in the 1990s, emotional intelligence encompasses four aspects or branches. Each branch gathers several specific cognitive skills, as described below and shown in Table 2.

The first branch is called *emotion perception* and it primarily pertains to the ability to accurately identify one's own emotions and recognize others' emotional states as well as to capture emotions expressed through music or visual arts. This branch also encompasses the complementary ability to express emotions adequately. The basic skill within the first branch is the capacity to interpret specific physical and mental states (e.g., pleasant arousal or positive thoughts) as corresponding emotions (e.g., joy) and to decipher emotions based on another person's facial expressions, tone of speech, or body language. More developmentally advanced emotion perception and expression skills include differentiating between authentic or sincere and deceptive or dishonest emotional expressions.

The second branch is usually referred to as *using emotions* and involves the establishment of links between emotional experiences on the one hand and sensations, representations, thoughts, and behaviors on the other. For example, anger is associated with the sensations of hot and red, fear is associated with freezing, positive mood is associated with a flow of ideas, and mildly negative mood is linked to precise logical analysis. These correspondences form the basis for the application of the skills that are usually listed as components of this branch, that is, the skills of consciously generating or using spontaneously arising emotions to improve cognitive functioning in the sense of a better attention focus, more vivid

memory and recollection, and finally, a wider perspective and more efficient and creative problem solving.

The third branch is known as *emotion understanding* and encompasses knowledge of emotions and related phenomena (e.g., the understanding that obstacles to goal achievement lead to frustration, which can eventually transform into anger) and the ability to apply this knowledge to understand one's own and other people's emotional experiences (e.g., to realize what has caused someone to get angry). Knowledge about emotions also includes a person's emotional vocabulary, that is, a system of concepts that can be used to symbolically represent and categorize emotional experiences. In fact, the ability to label emotions is an elementary skill encompassed by this branch. Overall, the third branch comprises knowledge of the nomenclature, structure and dynamics of emotional phenomena and the ability to use this knowledge to analyze emotional aspects of a situation and make appropriate conclusions and predictions. Hence, this is the core and "most intellectual" branch of emotional intelligence.

The fourth and final branch is labeled *emotion management* and it is defined as the ability to regulate one's own emotions and purposefully influence the emotions of others. While this branch likewise encompasses knowledge and the ability to apply it, here, this refers to the knowledge and application of suitable emotion regulation strategies. At the core of this branch lies the capacity to experience a wide range of emotions as a prerequisite to evaluating their informativity, appropriateness, and purposefulness in a specific situation. At higher levels, this branch encompasses the ability to evaluate the effectiveness of potential emotion regulation strategies and mitigate unpleasant emotions and intensify pleasant emotions by choosing an effective strategy, while not neglecting the cognitive value of emotions themselves (e.g., to allay an irrational fear by understanding its origin). Therefore, this branch also includes the complex ability to modulate or modify an emotional reaction to reinforce personal development.

Table 2. The Four Branches of Emotional Intelligence
According to Mayer and Salovey

Branch	Abilities Encompassed
Perception	<ul style="list-style-type: none"> • Identifying emotions in one's own physical states, experiences, and thoughts • Recognizing emotions in others through vocal cues, facial expressions, statements, and behaviors • Perceiving emotional content in the environment, visual arts, and music • Expressing emotions accurately when desired • Knowing how emotions are displayed depending on the situation and culture • Discriminating between accurate and inaccurate emotional expressions • Identifying false or dishonest emotional expressions
Use	<ul style="list-style-type: none"> • Generating emotions to aid judgment and memory • Generating emotions as a means of understanding another person's experience • Prioritizing thinking and attention focus according to the present feelings • Leveraging mood swings to view something from different perspectives • Selecting problems based on how the ongoing emotional state can contribute to their solution

Branch	Abilities Encompassed
Understanding	<ul style="list-style-type: none"> • Labeling emotions and recognizing relations between them • Determining the precursors/causes, meanings, and consequences of specific emotions • Appraising situations from the standpoint of emotions they could elicit • Differentiating between moods and emotions • Understanding complex and mixed emotions • Recognizing potential emotional transitions, e.g., from anger to satisfaction • Understanding how someone might feel in the future or under certain conditions (affective forecasting) • Recognizing cultural differences in the evaluation of emotions
Management	<ul style="list-style-type: none"> • Being open to different emotions and the information they convey • Engaging with emotions if they are helpful; distancing from them if not • Monitoring emotional reactions to determine their reasonableness • Evaluating possible ways to maintain, moderate, or intensify an emotional response • Effectively managing one's own emotions to achieve a desired outcome • Effectively managing others' emotions to achieve a desired outcome

The Role of Emotional Intelligence in Education and Collaborative Problem Solving

Over the past three decades, psychologists have invested considerable efforts into scientifically (re)examining the significance of emotional intelligence in different contexts, including education. One of the well-documented findings is that better emotion understanding (the 3rd branch) and management (the 4th branch) skills are associated with higher academic achievement, especially in the domain of humanities (e.g., languages, literature, and history). Likewise, research has consistently shown that persons with higher emotional intelligence establish better interpersonal relations and tend to be more favorably evaluated by their peers (e.g., as more honest and pleasant) in various social situations in comparison to individuals with lower emotional intelligence.

Apart from having a crucial role in individual achievement and psychosocial adaptation, emotional intelligence can deliver a multifold contribution to teamwork and collaborative problem solving. Firstly, the higher the emotional intelligence of individual team members, the more likely they are to establish and maintain good relations and a pleasant atmosphere during group work. Accordingly, numerous studies have shown that emotionally intelligent teams are characterized by greater mutual trust and group cohesion as well as greater satisfaction with participation in teamwork. Secondly, emotional intelligence can indirectly improve achievement, since better interpersonal relations and fewer arguments and conflicts within the team contribute to greater success in collaborative problem solving. Along this line, research has shown teams with higher emotional intelligence to be more productive, effective, and creative. Thirdly, emotional intelligence can enhance the positive effect or mitigate the negative effect of other variables on teamwork. As suggested by extant evidence, in teams whose members significantly differ in the level of conscientiousness or positive affect (see chapter Personality in Collaborative Problem Solving), higher emotional intelligence helps smooth

over these differences and prevent them from jeopardizing collaboration. Finally, it should be noted that apart from numerous benefits, high emotional intelligence also has its pitfalls. Namely, if team members have refined emotion perception skills (the 1st branch) but pay more attention to negative than positive feelings, this can adversely impact relations within the team as well as the quality of teamwork.

Based on the information presented above, we can conclude that it is paramount to hone skills in the domain of emotional intelligence and learn when and how they can be of use. What follows is a set of activities designed with the goal of supporting the development of these skills in regular classes (e.g., psychology or civic education classes).



Activity objectives:

1. fostering emotion perception skills;
2. fostering skills of using emotions;
3. consolidating and enriching the emotional vocabulary;
4. fostering emotion understanding skills;
5. fostering emotion management skills.

Collection of Activities That Foster Emotional Intelligence Skills

Activity 1: A Hundred Faces – One Emotion and Vice Versa (Objective 1)

Necessary materials:

- Several copies of the handout with randomly assorted multiple expressions of the basic emotions on one male face and one female face (the I Spy game; *Supplement E1*)
- Non-verbal emotional expressions (*Supplement E2*)
- Photographs that illustrate a singular emotional expression in a large group of people (*Supplement E3*)
- A computer and a projector (optional)

Activity duration: 30 (10+10+10) minutes

Activity flow and implementation instructions:

This activity set should direct students' attention towards certain universal signs used to express and recognize emotions and specific ways of displaying emotions in close persons. Furthermore, students are shown the significance of correctly recognizing emotions in interaction and collaboration, especially with peers.

The first segment of the activity is an exercise focusing on emotion recognition speed. The students are divided into groups comprising three to five members and each group receives a copy of the I Spy handout (*Supplement E1*). The students are instructed to count and write down the number of faces that express each of the basic emotions as quickly as they can. To make it more interesting, the activity can be organized as a competition, with groups letting the facilitator know as soon as they complete the task. In addition to being dynamic, this activity should serve as an impetus for a discussion between the facilitator and the students about the signals people rely on when they draw conclusions about another person's emotions (refer to *Supplement E2*).

In the second part of the activity, the facilitator shows several photos (*Supplement E3*). After each photo, the facilitator should ask the students what they see, how they would describe the behavior of persons in the photo, whether they could guess how these persons feel, and upon what they have based their inferences. When the students respond to these questions, the facilitator should systemize the sources of information based on which emotions are recognized (e.g., facial expressions or posture), including sources that are not visible in the photographs

(e.g., tone of voice or physiological reactions). The discussion is then steered towards difficulties in recognizing emotions by posing the following or similarly formulated question: What are the situations in which it is hard to determine how someone feels and what is it that makes it difficult? This question serves as an introduction to the following part of the activity.

In the third segment, the facilitator talks to the students about how they recognize emotions in everyday interactions with close people, especially friends with whom they engage in joint activities. The facilitator then asks the students to recall specific patterns of behavior and signals based on which they can identify close people's emotions even when they do not want to express them openly. This should be followed by a discussion about expressing one's own emotions – how overtly/covertly they show their emotions so that they are easy/difficult for others to read; in which situations they cannot show how they feel and conversely, cannot hide their feelings, and who is best at reading their feelings and why.

At the end of the conversation, the facilitator sums up the experiences the students have shared and draws conclusions. What is important to emphasize is that emotions are not invisible, that there are certain regularities in displaying emotions, and that paying attention to them allows us to recognize our own and other people's feelings, which further enables us to be more successful at acknowledging and regulating emotions in teamwork situations (see the description of Activity 4, which pertains to emotion regulation).

Possible activity adaptations or expansions:

The facilitator can make a custom version of the I Spy game using photographs or illustrations from open-access databases such as FACES ([link](#)). Likewise, the facilitator can choose other photographs or illustrations of group emotional expressions. If deemed necessary (e.g., due to time constraints), the facilitator can adapt the described activity by skipping a segment. It is also possible to change the order in which different segments of the activity are implemented.

Activity 2: In the Mood for Different Moods (Objective 2)

Necessary materials:

- Several versions of the mood/emotion coordinate system (Supplement EI4)
- A computer and a projector (optional)

Activity duration: 15 minutes

Activity flow and implementation instructions:

This exercise should help the students realize that emotions are integral to everything we do but also that what we do depends on our emotional state. The facilitator starts the activity by raising the students' awareness of their emotional state, asking them to state how they currently feel. To help the students describe their emotional state, the facilitator suggests that they determine their position in the coordinate system with energy level as the x-axis and pleasantness level as the y-axis (Supplement EI4). The facilitator highlights that these dimensions yield four fields (quadrants) to which the following colors are assigned: yellow (high pleasantness, high energy), green (high pleasantness, low energy), red (low pleasantness, high energy), and blue (low pleasantness, low energy). The facilitator should keep in mind that the students might be more prone to place themselves in a

certain field and assign a color to their current emotional state than to identify it correctly (see the description of the Emotional Nuances activity). However, if the students prove ready to label their current moods and emotions, the facilitator should link their statements to the corresponding fields in the coordinate system.

Subsequently, the students should be engaged in a discussion of which activities should be undertaken and which should be avoided when located in a specific quadrant (red, blue, yellow, or green) within the emotion coordinate system. After the discussion, the facilitator shows several examples of (group) activities (e.g., debating, brainstorming, careful suggestion analysis, and reaching an agreement) that correspond to different mood categories (e.g., debating – red; brainstorming – yellow; careful suggestion analysis – blue; reaching an agreement – green; see Supplement E14). This helps the students adopt the idea that moods influence the level of success in a task and that some activities may be easier or harder to complete depending on the current emotional state. Hence, it is important to strive to match activities to the current mood, when possible. Finally, the facilitator should explain that it is not necessary to be cheerful and energetic all the time and that all four mood categories are important for collaboration and group work.

Possible activity adaptations or expansions:

The list of activities provided in the graph in Supplement E14 is not exhaustive. The facilitator has the freedom to modify the listed activities to suit the characteristics of the group or the purpose of the training.

Activity 3: Emotional Nuances (Objective 3)

Necessary materials:

- Cards with the labels of the basic emotions: joy, sadness, fear, anger, and disgust (a total of five cards, each featuring one basic emotion: *Supplement E15*)
- Cards with statements with boldface words and phrases denoting different “nuances” of the basic emotions (a total of 44 cards – eight each for fear, anger, and disgust and ten each for joy and sadness: *Supplement E15*)
- Illustrations from Ekman’s Atlas of Emotions (Supplement E16)

Activity duration:

The core segment of the activity can be completed within approximately 10 minutes, but the exercise can be extended by talking about the meanings and uses of different words that denote emotional states (see the section Possible activity adaptations or expansions).

Activity flow and implementation instructions:

When introducing the activity, the facilitator highlights the significance of the ability to accurately label emotions and correctly understand the words people use to convey their feelings. The facilitator can also emphasize that labeling emotions accurately is the first step in mastering one’s own emotions and a way to better understand and get closer to others, while remarking that people most often talk about emotions generically, in rough, general terms (e.g., “I’m fine”, “not bad”, or “I’m feeling a bit down”). Within this context, the exercise that follows is introduced to the students as a useful tool for refreshing their emotional vocabulary.

The activity itself requires dividing the students into five groups. Each group receives the same materials: first, five cards with the labels of the basic emotions (they should keep these cards in front of them) and then a set of 44 cards with sentences that describe different emotional states. It is important for the cards in the set to be shuffled since the students are tasked with sorting them into the five basic categories as quickly as possible. Namely, they need to categorize each statement as a nuance of joy, sadness, fear, anger, or disgust. Once all the groups have completed this task, the accuracy of each solution is verified in the plenum with one representative of each group reading out the sentences associated with the same basic emotion. Since there are five groups, each group proposes a solution for one basic emotion, while other groups check whether the solution matches their categorization. The facilitator makes corrections as needed, explains why a statement (i.e., emotional nuance) belongs to a different basic emotion, and specifies the meanings of the words with which the students were not entirely familiar.

At the very end, the facilitator shows the complete solution to the students (e.g., in the form of a slide), along with graphs from Ekman's Atlas of Emotions (Supplement E16), using them to additionally illustrate variations in emotions within the same basic category and the corresponding richness of the emotional vocabulary. The group that was the first to correctly sort emotional nuances can get a small reward (e.g., extra credit for participation).

Possible activity adaptations or expansions:

The described activity can easily be adapted for use in foreign language classes by translating all the materials (cards with words and sentences) into the target language, which would also be used in communication during the exercise. This would not only help consolidate the students' emotional vocabulary but also help them expand their target language vocabulary.

Furthermore, the activity can be expanded and elaborated by tasking the students with listing additional words and phrases that denote emotions belonging to a specific spectrum (e.g., coming up with more words/phrases that refer to fear). The students can then be prompted to sort these words and phrases into literary and colloquial (slang), that is, those used in formal and informal contexts and into the ones they feel comfortable using and the ones they virtually never utter.

Moreover, it is possible to initiate a discussion on the precise meanings and subtle differences between words and phrases that describe different emotional nuances (e.g., the difference between cheerfulness and peacefulness or discouragement and despair). The mood coordinate system described above can be used for this purpose, as it is highly likely for some emotional nuances to precisely differ in the level of (un)pleasantness and/or the level of arousal. This activity can also be organized by having the class (gradually) create their own emotion coordinate system, that is, jointly determine the positions of different emotional nuances in the proposed coordinate system.

Alternatively or additionally, after the main part of the activity, the facilitator can proceed to talk to the students about the ways accurately labeling emotions contributes to self-knowledge and self-regulation as well as communication and collaboration with others (e.g., labeling a negative emotion in a timely manner can help prevent its escalation). The students would then be asked to share examples from their personal experience and thus reinforce their awareness of the importance of (the use of) an adequate emotional vocabulary.

Activity 4: Emotion Puzzles – Solving (Objective 4)

Necessary materials:

- Illustration of regularities in understanding emotions (Supplement E17)
- Table with contents that correspond to different puzzle pieces (Supplement E18)
- Emotion puzzle template (Supplement E19)
- A computer and a projector (optional)

Emotion puzzle is a graphical representation of the manifestations and effects of emotions in collaboration.

The first piece of the puzzle contains a description of a collaborative situation in which a problem arises – uneven distribution of work, discordant expectations and interests of team members, inappropriate communication, or prioritizing unity and socialization, i.e., a positive work atmosphere.

The second, core piece of the puzzle pertains to emotional experiences as responses to the situation described in the first piece. These can be either positive or negative and they can belong to the protagonist, whose perspective is adopted in the description of the initial situation, but also to the other party, who can have a completely different perspective on the situation.

The third and final piece of the puzzle features the outcome of the situation, which can likewise be positive or negative, depending on the nature of the emotions that lead to it.



Figure 2: An Example of a Solved Emotion Puzzle

Activity duration: 30 minutes

Activity flow and implementation instructions:

This activity focuses on the manifestation of emotions in collaboration and the way emotions can affect both positive and negative collaboration outcomes. The activity comprises four steps:

1. linking collaborative situations to emotional experiences as responses to these situations;
2. taking the perspective of the antagonist, that is, understanding the emotional experiences of different actors;
3. predicting the outcome of collaboration based on team members' emotional experiences;
4. concluding and summing up the main learnings.

At the beginning of the activity, the facilitator should divide the students into several small groups and assign three situations i.e., three initial puzzle pieces to each group. Once the students have familiarized themselves with the situations, they engage in the task of matching the situations to the corresponding emotional experiences. The facilitator reads out/shows the middle pieces of the puzzles, one by one. The students rely on teamwork to work out the answer to the question of to whom these emotions belong, that is, whether the persons whose emotional reactions are described found themselves in one of the situations assigned to their group. Once a group identifies the right situation, the facilitator gives them the middle part of the corresponding puzzle.

In the subsequent step, the groups practice perspective-taking by exchanging their opinions on the feelings of the antagonist, that is, the person other group members blame for the situation in which they found themselves. They write their answer on the back of the middle piece of the puzzle. Once they complete this task, the students and the facilitator jointly discuss the responses provided. The aim of the activity is to help the students understand that there are two sides to every story, that is, that the actors can experience the same situation in different ways.

The final step of group work sees the introduction of denouements, that is, positive or negative outcomes of the situation. The students are tasked with concluding what most probably happened to the teams to which the first two puzzle pieces refer. The facilitator reads out or shows the students different outcomes and their task is to work in groups to identify the final pieces of their puzzles. Once all the puzzles have been solved, the facilitator instructs the students to focus on one of the situations and come up with an alternative (positive) emotional reaction to it and the corresponding outcome, thus demonstrating that negative emotions most often lead to negative outcomes, while positive emotions yield positive collaboration outcomes.

At the very end of the exercise, the facilitator sums up the main conclusions they've jointly reached, which should include the following: a) there are individual differences and different perspectives – different people do not react identically in the same situation and do not view the situation the same way; b) emotions are not set in stone, that is, we do not always have to react the same way in the same situation; sometimes we can even voluntarily change our emotional reaction; and c) groups that nurture positive emotions and know how to avoid or moderate negative emotions have better mutual relations and achieve greater success.

Possible activity adaptations or expansions:

Group work situations illustrated by the puzzles can be adapted to the specific school/class in which the activity is conducted (e.g., situations can be linked to a specific vocational subject at vocational secondary schools).

Depending on the amount of time available, the facilitator can reduce the duration of the first part of the activity by organizing a “raffle”. The facilitator does not have to list all the emotional experiences to be paired with situations assigned to the groups, but instead select a smaller number of experiences while making sure that one team can win the raffle, that is, pair up all the situations.

Finally, the content of this activity can be adapted by directly linking it to a lesson in psychology or another subject.

Activity 5: Emotion Puzzles – Fixing (Objective 5)

Necessary materials:

- Table with contents that correspond to different puzzle pieces (Supplement E18)
- Emotion puzzle template (Supplement E19)
- Table/slide with emotion regulation strategies (Supplement E110)
- A laptop/computer and a projector (optional)

Activity duration: 20 minutes

Activity flow and implementation instructions:

While this activity can be conducted independently, the recommendation is for it to follow the previously described exercise.

The activity is designed to introduce students to ways they can modify certain (negative) emotional reactions to ensure positive collaboration outcomes. If the activity is preceded by the Emotion Puzzles – Solving activity, the facilitator can start by reminding the students that groups that nurture positive emotions and know how to avoid or mitigate negative emotions establish better relations and solve tasks more successfully.

The activity starts with an example of two puzzles with the same initial situation but different emotional experiences (positive and negative) and different outcomes. The facilitator introduces the concept of emotion management through a joint discussion and a reminder that in the same situation, different emotions can lead to different outcomes.

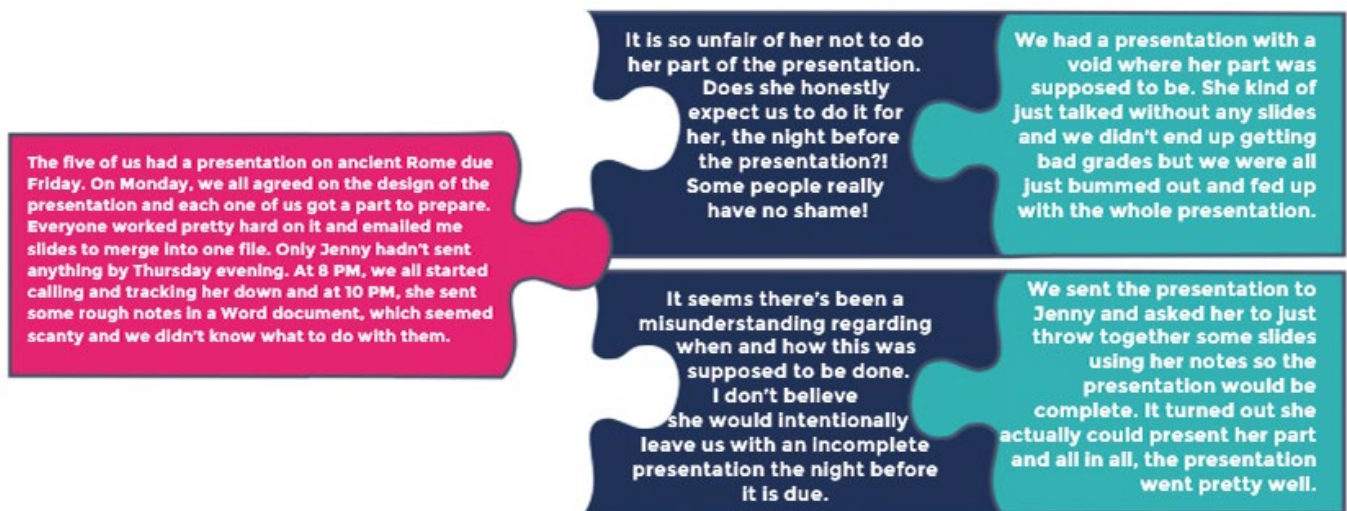


Figure 3: An Example of a Puzzle With the Same Initial Situation but Different Emotional Reactions and Collaboration Outcomes

In the following step, the facilitator introduces students to some emotion regulation strategies classified as non-adaptive, either generally or in the long run (e.g., ignoring problems), and adaptive (e.g., adopting another person's perspective).

To give the students an opportunity to practice modifying or regulating negative emotions, the facilitator presents several select situations (the initial pieces of the puzzle) and instructs the students to work in teams and propose suitable emotion regulation strategies to solve the described problems. What follows is a

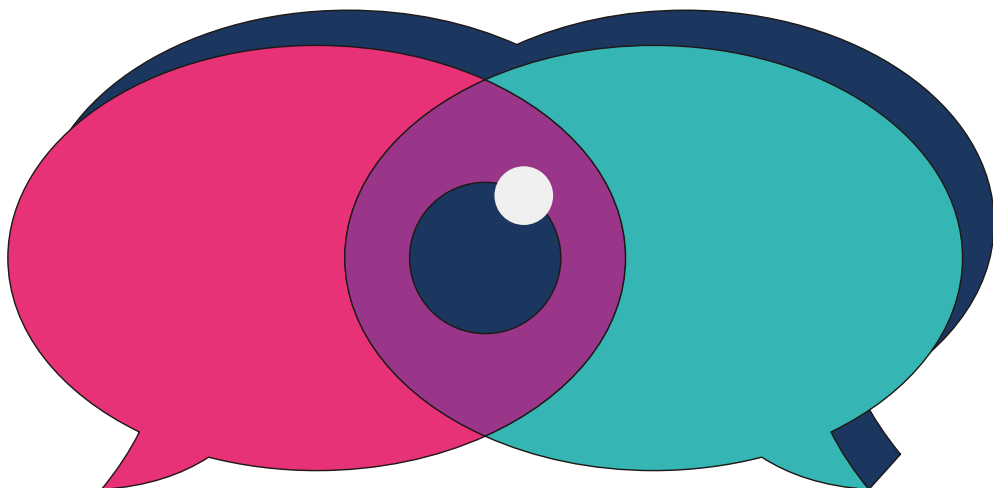
joint discussion on the successfulness and limitations of the proposed strategies. At the end of this discussion, the facilitator can state or help the students formulate conclusions that would generally suggest that a) it is important to regulate emotions in a timely and appropriate manner; b) it is not enough to moderate negative emotions; positive emotions also need to be maintained and intensified; c) not all regulation strategies are equally good; some are temporarily beneficial but harmful in the long run; d) not all strategies are suitable for everyone; you should find the one that works for you; e) virtually no strategy is effective 100% of the time; it is crucial to be flexible and have multiple strategies at the ready; f) emotion regulation requires practice and patience.

Possible activity adaptations or expansions:

Group work situations illustrated by the puzzles can be adapted to the specific school/class in which the activity is conducted (e.g., situations can be linked to a specific vocational subject at vocational secondary schools). The facilitator also has the freedom to modify the content of the puzzles based on previous experiences in working with the students involved in the activity and attempt to make it more interesting and relevant to them.

exchange

EXCHANGING IDEAS THROUGH DIALOGUE



The professional qualifications of facilitators necessary to conduct the activities in this chapter:

Professionals who work with the youth and use group work as a method in teaching or workshops. Unlike in previous chapters, which pertained to personality and emotional intelligence, the activities described in this chapter can be conducted by teachers, school counselors, youth workshop facilitators, and peer educators.

Key Concepts

Collaborative problem solving. Even though collaboration with others is a powerful way to learn, in many situations, its potential remains untapped. There are various sources of difficulties that can arise during group work and render this form of learning ineffective. Our research team analyzed the results of more than 150 studies aiming to identify the traits that characterize successful versus unsuccessful groups. After collecting all the obtained traits, we grouped them according to the aspect of collaboration to which they pertain, that is, according to whether the **focus is on intra-group relations** or the **process of task solving**. Our subsequent goal was to translate all traits into the fewest number of rules that need to be followed for a group to function properly. We formulated the rules to make them sound as simple as possible in order to make it easy for students to remember them. What follows is a succinct description of each rule.

The first group of rules pertains to **establishing collaborative relations within the team**. It encompasses the following rules:

1. **We are all equal and we respect one another.** This rule serves to establish appropriate socioemotional relations within the team. During group work, some members are sometimes unappreciated and their contributions are undervalued. Members who feel neglected most often withdraw from group work and make smaller contributions. Such groups achieve lower-quality results in comparison to groups in which all members listen to one another, value one another, and allow everyone to express their opinions.
2. **We foster a good atmosphere even when we think differently.** One of the points of divergence between successful and unsuccessful teams is the atmosphere during group work. Successful groups are characterized by efficiency and a good atmosphere. Furthermore, successful teams manage to view differences in opinion as an advantage of group work and not a hindrance. In such groups, members are free to express attitudes and opinions that are not

aligned with the currently prevailing opinion in the group without fearing that this lack of agreement would lead to heightened tension or conflict.

3. **We are all responsible for group work.** In successful groups, all members have a sense of joint or shared responsibility for the results of group work. Conversely, in less successful teams, members blame one another or do not feel any personal responsibility for the final result of group work. Sometimes, the division of work within the group is such that each member only takes responsibility for one part of the task and takes no interest in the work of the rest of the team. According to our research, this practice is common among secondary school students and often takes the following pattern: each member takes responsibility for one part of the presentation, i.e., group work, everybody does their part, and one person simply merges all the elements so that students do not even have any insight into the work done by other members of the group.
4. **We help everyone contribute to group work.** As in the case of Rule 1, adhering to this rule reduces the possibility of someone in the group feeling isolated and thus withdrawing from group work. Successful groups strive to support and motivate their members, especially the ones who are less engaged. In such groups, every member's strong suits are recognized and reinforced.
5. **We strive to involve everyone in decision-making.** For a group to be successful, it is crucial that all members agree on the solution proposed by the group. Like Rule 3, this rule emphasizes the importance of each group member perceiving the proposed solution as truly their own. For this perception to form, it is important that group members discuss and exchange their opinions and arguments until there is an agreement among all members. A common mistake in group work (especially in smaller groups) is making decisions by pushing for a specific solution before any serious attempts have been made to find a solution that would be acceptable to everyone.

The second group of rules pertains to the very **process of group problem solving**. It comprises the following rules:

6. **The more ideas we consider, the more certain we are we have selected the best one.** Research has shown that successful groups exchange ideas more freely, which leads to the creation of multiple different solutions on which the members exchange opinions. Conversely, in less successful groups, discussions are much sparser and the members do not feel free to propose an idea that differs from the ones already suggested.
7. **We expound every idea, weigh arguments, and devise solutions.** Similar to Rule 6, this rule emphasizes that group work is advantageous precisely because groups are made up of distinct individuals with different opinions and ideas. Successful groups differ from their unsuccessful counterparts in that the decision-making process is more systematic, that is, decisions are not made randomly but are preceded by a process of presenting and weighing arguments with the goal of examining all the good and bad sides of each solution.
8. **We wisely use our time to work on the task.** A highly conspicuous difference between successful and unsuccessful groups lies in the way they manage their time. In less successful groups, members often stray from the task at hand and turn to other activities or conversations. Such behavior is less common in efficient groups. Furthermore, successful groups make sure that group work is organized so that sufficient time is allotted to each activity in order to meet the time requirements of the task and avoid making rash decisions due to a lack of time.
9. **We monitor our progress and contemplate our next step.** Research has shown that what makes successful groups different from their less success-

ful counterparts is the fact that they spend more time planning their activities, constantly monitor their progress, and use these insights to organize further group work. Likewise, successful groups are more flexible, which is reflected in the fact that they do not adhere to the previously agreed-upon plan at all costs but modify it if it proves to be in the interest of efficiency. Thus, they are more ready to adequately respond to challenges that may arise in group work and adapt their functioning to novel circumstances.

In addition to the rules described above, successful and unsuccessful groups differ in **group management** modes. In successful groups, leaders do not use their position to promote their own ideas and prevent them from being criticized. They are **coordinators rather than leaders** and search for the best solution together with other members while striving to maintain a positive atmosphere and ensure that all members are respected and given room to express their opinions. When discussing the differences between successful and unsuccessful teams, students often raise the question of the leader. That is why activity organizers / facilitators should be prepared to explain the difference between a leader whose engagement is based on the abuse of power and a coordinator as “the first among equals”.

The following set of activities focuses on the adoption, recognition, and application of the rules described above. The order of the activities is such that it allows students to first learn the rules, then recognize them, and finally apply them to examples of group work and during collaboration with other students. Due to this logical sequence of activities, it is important for their order not to be altered.

Activity objectives:

1. familiarizing the youth with the rules of collaboration and the ways they ensure successful collaboration;
2. empowering the youth to understand the rules of successful collaboration;
3. supporting the youth in applying the rules of good collaboration and identifying the aspects of group functioning regulated by these rules.



Figure 4. The Basic Rules of Productive Collaboration

Collection of Activities That Encourage the Exchange of Ideas in Group Work

Activity 1: Associations (Objective 1)

Necessary materials:

- A laptop/computer and a projector or a board with a blank table to fill in the fields during the association game
- Association worksheet for collaboration rules (Figure 5) or an animated association game in *PowerPoint*

Activity duration: 5–10 minutes

Activity flow and implementation instructions:

This introductory activity aims to create a pleasant atmosphere and prepare the students for one of the key concepts in the context of teamwork – the rules of collaboration. Once the students have completed the game and determined that the keyword is “rules”, the facilitator should help them fully understand its significance in collaboration. The facilitator can draw parallels with everyday situations in which the students apply the rules they have already learned (e.g., road safety and traffic rules) and emphasize that the success of teamwork hinges on adhering to certain rules of collaboration.

Activity adaptations:

The facilitator can independently select the mode of displaying this activity depending on the technical equipment available in the room in which the workshop is conducted. Provided in the handbook is an association worksheet with solutions (Figure 5), whose electronic version can be retrieved and merged with the other slides the facilitator has prepared.

A1 Car	B1 Lottery	C1 Behavior	D1 Newton
A2 Crossroads	B2 Jump rope	C2 Manners	D2 Court
A3 Signs	B3 Monopoly	C3 Restaurant	D3 Attorney
A4 Stoplight	B4 Video	C4 Decorum	D4 Article
A TRAFFIC	B GAME	C ETIQUETTE	D LAW
RULES			

Figure 5. Association Worksheet

Activity 2: The Voices of Successful and Unsuccessful Teams (Objective 1)

Necessary materials:

- Two team photographs (*Supplement E1*)
- Sentence cards in two colors for each student group (Supplement E2)
- The solution for the facilitator; categorized sentences of successful and unsuccessful teams (Table 3 or the corresponding *presentation*)

Activity duration: 20 minutes

Activity flow and implementation instructions:

This activity requires dividing students into small groups, usually including three to five students each. The facilitator should show the photographs of two teams and explain that these teams are similar in terms of the work they do, the number of members, and their skills and competencies, but one team is successful, while the other is less successful. Afterwards, each group receives green and orange sentence cards. The cards feature sentences that are typical of (or more commonly heard among) the members of a successful or unsuccessful team. The students are tasked with identifying and classifying the sentences, that is, determining which ones are more commonly heard in a successful team and which ones are typical of an unsuccessful team (the solution is shown in Table 3 or the corresponding *presentation*). The facilitator discusses the proposed solution with the students and encourages them to express different opinions and supporting arguments.

Activity adaptations:

For the purpose of the PEERSolvers project, we selected team photographs that are specific to students attending different partner schools participating in the project (Supplement E1). Facilitators can independently choose two team photos that are more specific to their students while making sure that the selected team photographs are highly visually similar, that is, that the teams resemble each other. This should make it easier for facilitators to later explain that the teams differ in the way they communicate and that this is what determines their success.



Figure 6. Sample Photographs of Successful and Unsuccessful Teams
(Source: Pexels and Pixabay)

Table 3. The Voices of Successful and Unsuccessful Teams

– What is heard in a successful team?	– What is heard in an unsuccessful team?
<ul style="list-style-type: none"> • Go ahead, we are listening carefully. • Let everyone say what they think about this suggestion. • I love you dearly, but I wouldn't do it like that. • I can't tell you how much I love working with you. • This is really a joint solution. • Without everyone contributing, it wouldn't have worked out this well. • What do you think? You are good at this. • Let everyone say what they think; we are all smart here. • Do we all agree with this solution? • Wait, this decision is not ok with everyone. • Let everyone say whatever comes to mind and then we will figure something out. • Let's hear some more ideas; I think we can do better. • Let's write down all the good and bad sides of this suggestion. • Why do you think that's the correct solution? • Let's see how much time we have and what will take the longest. • We'll stay here forever if we keep this up, • What have we done so far and what's next? • Let's be a bit flexible; we have planned this but we haven't foreseen all the challenges. 	<ul style="list-style-type: none"> • Leave the talking to smarter people. • Do as you're told. • Due to your different opinion, we may well end up fighting. • If you're my friend, you'll agree with me. • If we do it wrong, it will be your fault. • I'll wait for you to come up with a solution and I'll agree because it is all the same to me. • You are not good at this; there's no reason for you to get involved. • You always fumble when you speak, so you'd better keep quiet. • If something goes wrong, remember that I did not agree. • It doesn't matter that not everyone agrees; what matters is that the majority is in favor of it. • One idea is enough; no reason to overthink it. • Let's not dwell on it; just write down the first thing we come up with. • Sounds good. We'll figure out later how to defend this solution. • I don't know why, I just think this suggestion is better and I think we should adopt it. • Wait, let me show you what I've found on TikTok. • Let's get this over with already. • We have a plan and we should stick to it at all costs. • Why waste time planning what to do when that's not going to help us?

Activity 3: The Rules of Collaboration (Objective 1)

Necessary materials:

- A computer/laptop and a projector
- Sentence cards in two colors (Supplement E2)
- Sentences linked to the rules ([Supplement E3](#) or the corresponding [presentation](#))

Activity duration: 20 minutes

Activity flow and implementation instructions:

Relying on the previous activity (The Voices of Successful and Unsuccessful Teams), the facilitator should isolate several sentences based on which one rule on one slide can be deduced (the way the content is displayed can be adapted depending on the technical equipment available in the room in which the workshop is conducted). The students are then tasked with determining what links the displayed sentences, that is, to approximately formulate the rule of collaboration. The flow of the activity for one of the rules is illustrated in Figure 7. In the subsequent step, each of the nine rules described in the introductory part of this chapter is displayed and briefly discussed. The goal is to help the students understand the importance of adherence to the rules of collaboration as a characteristic of a successful group. For the activity to be successfully implemented, it is crucial for the facilitator to be familiar with the explanation of each rule provided in the introductory part of this chapter.

Once all the rules of collaboration have been explained, the students should try to determine whether there is a reason why some cards are orange and others green, that is, whether there is something that links all the cards of the same color. The facilitator then explains that some rules pertain to intra-group relations, while others focus on problem solving. This whole activity is designed to introduce the students to the rules of collaboration and help them understand the meaning of each rule. Using everyday sentences that are often heard during collaboration helps the students more easily recognize situations in which groups break some of the rules or adhere to them. Depending on the time available, the facilitator can decide how long the students can independently work on discovering and grouping the rules.

Activity adaptations:

The facilitator can modify the sentences or rules to better suit the spoken language of the students. All that matters is that when introducing modifications, the facilitator makes sure that each sentence properly represents the rule to which it pertains and that the core meaning of the rule is not changed. The facilitator should support the students' initiative if they formulate any rules other than the nine listed that sensibly describe the functioning of a successful team.

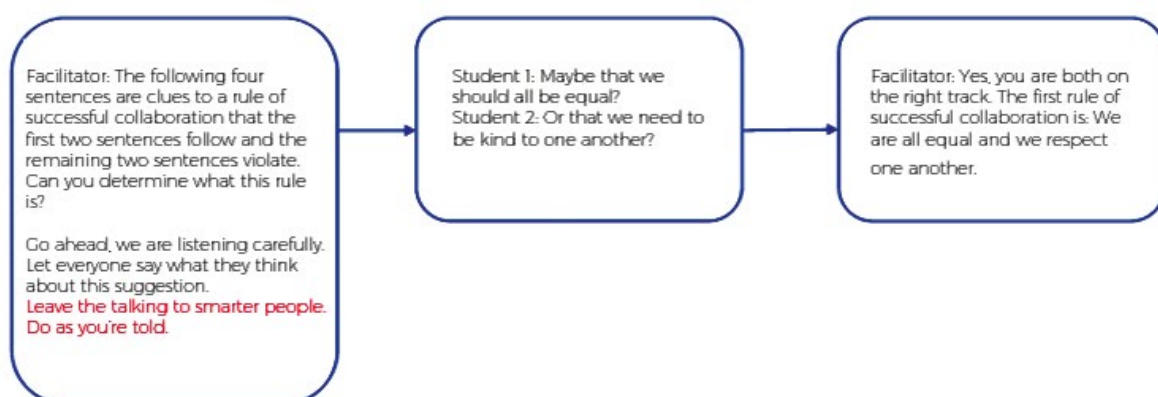


Figure 7. An Example of the Deduction of the Rules of Collaboration Based on Successful and Unsuccessful Teams' Sentences

Activity 4: Fixing Dialogue (Objectives 2 and 3)

Necessary materials:

- A handout with numbered rules for each student (*Figure 4*)
- A handout with the dialogue for each student (*Supplement E4*)
- A blank sheet of paper for each group to work on the task
- Possible solutions for changing the dialogue and solutions pertaining to Brent's participation in the dialogue for the facilitator (*Supplement E5*)

Activity duration: 30 minutes

Activity flow and implementation instructions:

The activity is conducted in small, ideally four-member groups. At the beginning of the activity, the facilitator instructs all students to independently read the vignette that illustrates a dialogue between four actors: Anna, Brent, Luna, and Andrew (*Supplement E4*).

In the following step, the facilitator gives instructions to small groups by tasking each group with analyzing one actor (either Anna, Brent, Luna, or Andrew). In case of a larger number of students, two groups can analyze the same actor. Anna, Luna, and Andrew violate the rules of collaboration, while Brent does not. The first task for all groups is to determine whether the actor assigned to them violates the rules of collaboration. The groups then move on to the main task. If the actor assigned to them violates the rules, their task is to modify the dialogue so that this actor no longer breaks the rules of collaboration. If their task is to analyze the actor who does not violate the rules (i.e., Brent), their goal is to identify the rules he follows by marking them in the text. All groups should also receive a handout with the rules of collaboration (*Figure 4*). The students should be instructed to use the list of rules when working on the task in order to discuss the rules broken or followed by the actor assigned to them. The groups that need to modify the dialogue use the rules to more easily come up with the right way to alter their actor's utterances, while the group analyzing Brent uses the list of rules to identify the rules he follows, underline the sentences in the text that illustrate his adherence, and mark each sentence with the number that corresponds to the rule followed. The facilitator should tell the students that they have just under 20 minutes to complete this task.

The remaining ten minutes are dedicated to a discussion. The facilitator invites one group at a time to present the results of their work, while other students are invited to participate and evaluate the fitness of the proposed solutions, that is, determine whether these solutions ensure that the participation of Anna, Luna, and Andrew in the dialogue contributes to a constructive collaboration. The discussion should include the contemplation of other ways to modify the utterances of Anna, Luna, and Andrew to ensure the dialogue adheres to the rules of collaboration.

Variations: The group that analyzes Anna has the most work to do. Hence, it is possible for the facilitator to immediately task two groups with analyzing her participation in the dialogue by having one group work on the first half of her utterances and the other group analyze her remaining sentences.

Note: In this activity, it does not matter whether the new sentences form a coherent dialogue. That is not the point of this exercise. What is important is that the students discuss the way interlocutors need to communicate to adhere to the rules of collaboration. The group working on Brent's utterances can list the elements of the dialogue in which he adheres to a specific rule. In this case, it is crucial for the facilitator to determine whether the group's response is well-substantiated

and whether it can in fact be linked to a specific rule. As shown in Supplement E5, Brent follows multiple rules at the same time. All that matters is that the students can explain why they believe that a specific rule is followed.

Activity 5: Field Trip (Objective 3)

Necessary materials:

- Tablets / cellphones / internet access
- A copy of the field trip planning handout for each group (*Supplement E6*)

Activity duration: 30 minutes

Activity flow and implementation instructions:

Within a limited timeframe, students divided into small groups need to plan a one-day field trip to the nearest city (e.g., students from Belgrade can plan a trip to Novi Sad). The plan should contain the date of the field trip, a schedule with activity descriptions, a timeline, and a budget plan. Each group receives a table in which to write the responses. The students have 20 minutes to finish the task, that is, fill out the table, which can resemble Supplement E6, while honoring the rules of collaboration. The facilitator should occasionally monitor group members' behavior and awareness of potential rule violations.

Adapting the activity to the school context:

The teacher has the freedom to adapt the students' plan to the subject taught or the topic of the workshop, while making sure that the plan is realistic, interesting, and challenging enough to require the engagement of all members of the group.

Activity 6: Group Work Challenges (Objectives 2 and 3)

Necessary materials:

- A4 paper, pen, markers
- The selection of potential group work challenges given in Table 4

Activity duration: 30 minutes

Activity flow and implementation instructions:

Relying on group work experience (e.g., see the Field Trip Planning activity), the students should engage in group discussions and write down: 1) two or three of the greatest challenges in relation to the rules of successful collaboration that arose during their group work or could arise in future work; 2) a group management mode that could jeopardize the group's success and collaboration. Once the groups have completed this task (e.g., after 10-15 minutes), the challenges identified should be discussed with all students in the plenum. For example, links can be established between the challenges highlighted by the students and the ones listed in the supplement. The challenges listed but not mentioned by the students should also be discussed.

Note: This activity requires reliance on actual group work experiences and the integration of the rules of collaboration into the instructions for the task on which

the students work together. The topic of group work can be adapted to the school subject/workshop (e.g., a project or group homework).

Adapting the activity to the school context:

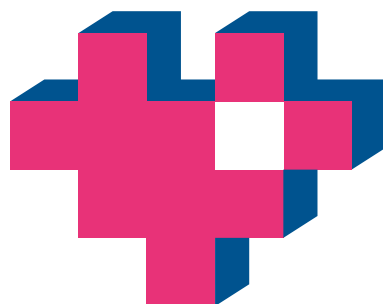
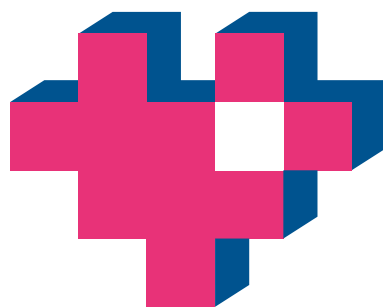
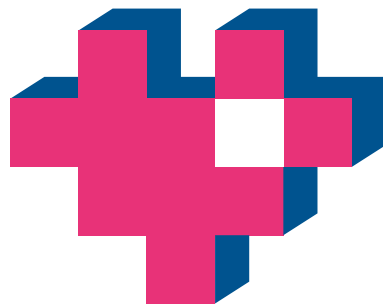
If challenges other than the ones listed in the supplement should arise during the activity, the facilitator can devote greater attention to them. Furthermore, the facilitator can include additional rules/challenges deemed important. Table 4 shows some of the challenges that can arise during collaborative problem solving.


Table 4. Potential Challenges During Collaborative Problem Solving

<p>Challenge 1. Unequal participation of group members – evasion of responsibility or exclusion by the group</p> <p>Situations in which members evade responsibility can be avoided by raising awareness of the fact that sharing responsibility for the outcome of group work also means sharing involvement in solving the problem at hand (Rule 3: We are all responsible for group work). If someone is excluded by the group, it should be highlighted that successful groups seek to maximize the contributions of all members (Rule 4: We help everyone contribute to group work).</p>
<p>Challenge 2. Decisions are made with no argumentation or some members of the group insist on their suggestions and refuse to abandon them regardless of the arguments.</p> <p>If a group makes decisions regardless of the arguments, it is important to emphasize that a good solution is always the result of comparing different ideas while not focusing on the originator of the idea but on how well the ideas are expounded (Rule 7: We expound every idea, weigh arguments, and devise solutions). Likewise, it should be pointed out that the success of collaboration hinges on the maintenance of team spirit even when there are conflicting opinions (Rule 2: We foster a good atmosphere even when we think differently).</p>
<p>Challenge 3. Rash decision-making</p> <p>Although it can be tempting to adopt the very first idea, the group should be made aware that this can often jeopardize the success of the group, since longer deliberations can produce novel ideas that would not come to the fore without a more thorough contemplation (Rule 6: The more ideas we consider, the more certain we are we have selected the best one).</p>
<p>Challenge 4. The group does not keep track of time</p> <p>To avoid situations in which the group does not manage to complete the task on time or finishes long before the allotted time has elapsed, the group should know that time well used is an indicator of success (Rule 8: We wisely use our time to work on the task). In order to use time wisely, it is crucial to make a work plan, monitor adherence to it, and determine whether it should be adjusted (Rule 9: We monitor our progress and contemplate our next step).</p>
<p>Group management mode: a coordinator, not a “leader”</p> <p>“LEADER”: “Leaders” see themselves as superior to others. They make most decisions independently. The atmosphere is positive only when everyone agrees with them. They only listen to group members who are close to them or whom they perceive as “better” than others. They believe that their ideas should not be questioned. They view management as an immutable characteristic of their personality.</p> <p>COORDINATOR: Coordinators see themselves as equal to other group members. They encourage the group to make decisions that are most acceptable to all members. They defuse tension when there are conflicting opinions. They encourage and listen to all group members. They show by their own example that ideas should be reexamined and substantiated. They see management as an assigned role that is subject to change.</p>

resources

THE INTERNET AS A RESOURCE IN COLLABORATIVE PROBLEM SOLVING





The professional qualifications of facilitators necessary to conduct the activities in this chapter:

The activities described in this chapter can be conducted by professionals who work with the youth and use group work as a method in teaching/workshops, such as teachers, school counselors, facilitators, and peer educators..

Key Concepts

Resource. This term denotes anything that can be used and relied on to achieve a certain goal or solve a problem situation. Successful collaboration hinges on the availability and proper selection of resources during the problem-solving process. When solving a problem, the youth can rely on a multitude of diverse resources. These can include material resources, such as equipment, teaching materials, and library books. Likewise, resources can be non-material and include the person's knowledge and social resources – relevant others and their competencies. Apart from team members who also work on the task, another important resource is the teacher or the instructor who supports the team during collaboration. Students tend to have more success in solving complex team tasks, such as scientific or creative assignments, when teachers encourage them to interact with one another, actively search for knowledge, and ask questions.

Digital resources. This chapter focuses on the internet as a digital resource that young people rely on daily. If we want to adapt our work with the youth to the reality they live in, it is necessary to take into consideration the vital role of digital resources in their everyday lives. Apart from using digital resources in out-of-school contexts, young people employ them during collaboration in the school context, to gather information. Previous studies have shown that the frequent use of digital resources among adolescents does not guarantee successful use in learning and problem-solving situations. This finding points to the need for improving the skills necessary to properly use digital resources when solving complex problems.

Critical selection of information. To fully use the potential of the internet as a resource, it is important to develop effective strategies for working with information. The internet undoubtedly provides access to a wealth of knowledge in different areas, including books, scientific articles, video materials, and many other sources. The youth should be encouraged to devise effective internet search strat-

egies that can help them navigate the sea of available information and select the data that are relevant to the topic and useful for solving the problem at hand.

Evaluating information. After applying effective internet search strategies, the next crucial step is evaluating the reliability of the information obtained. Considering that the internet is chock-full of (un)reliable information, successful collaborative problem solving requires the adoption of criteria for determining information reliability. Such criteria include identifying the source of information, evaluating the relevance of the source to the problem at hand, determining the logical consistency of the information, establishing potential vested interests of the author, and cross-referencing information from various sources.

Chatbots and internet search. The latest tools such as ChatGPT constitute a quick and efficient way to obtain information. They speed up and facilitate the internet search process and young people already use them as a resource for solving various tasks, including school assignments. Hence, it is paramount to familiarize young people with both the advantages and limitations of these tools when used as internet search engines and direct sources of information. ChatGPT relies on vast databases to retrieve and link information and make conclusions, making internet searches more efficient and economical. On the other hand, users do not have an insight into these databases and usually cannot identify the source of the information provided by this and similar tools. Hence, it is impossible to verify the origin of the obtained information and the criteria based on which it was selected as the most relevant.

The Role of Digital Resources in Collaborative Problem Solving

There are several reasons why digital resources have been recognized as a crucial aspect of collaborative problem solving. Firstly, research on the effectiveness of peer collaboration has shown that teams of students who used digital resources during collaboration were more successful in mastering the concepts, understanding the topic they researched, integrating their knowledge, and proposing creative ideas and solutions. Likewise, several studies have reported that successful teams are distinguished by highly developed digital skills reflected in the use of multiple resources, that is, visiting a larger number of webpages and studying different contents based on systematic internet searches.

It should be noted that the internet is a significant factor that helps bridge differences in abilities and skills between team members. The use of digital resources can ensure equal participation in group task solving, since all members can contribute to the product of their joint endeavor regardless of their current expertise, by using the internet to find the necessary information.

Previous chapters focused on different ways to improve the quality of student collaboration during problem solving. This chapter is primarily devoted to ways of improving the quality of the joint solution (product of collaboration) by effectively using digital resources. In addition to the main goals of the training, the youth should adopt the message that they personally, along with other team members, constitute the main resource for solving the problem. They should recognize their active role in searching for information, that is, that they themselves use their knowledge and skills to conceive and conduct their internet search and use the obtained results to shape the joint solution.



Activity objectives:

1. supporting the youth in devising and selecting effective internet search strategies;
2. fostering a critical attitude towards the information available online, especially in terms of its reliability;
3. expanding the knowledge offered by the internet as a meta-source of information: internet searching and chatbots.

Collection of Activities That Support the Adequate Use of (Digital) Resources in Group Work¹

Activity 1: The Orchestra: Identifying the resources necessary to achieve the group goal or solve the problem (Objective 1)

Necessary materials:

- A slide or a photograph of a musical orchestra (a sample photograph is available [here](#))

Duration: 5–10 minutes

Activity flow and implementation instructions:

This is a quick and effective exercise that employs a widely familiar example to highlight the numerousness and diversity of resources required to yield a complex, highly structured and synchronized product of collaboration, such as a symphonic orchestra concert. In this plenary exercise, the facilitator shows a picture of an orchestra and asks the students to identify the resources necessary to hold a concert. Students' suggestions should be short, itemized, and free from additional explanations and they should be produced quickly. As the students identify different individual resources, the facilitator provides clues to their categorization, e.g., into material resources, logistics, specific musical competencies, and learning support. The activity lasts until the production of suggestions starts to dwindle. The facilitator ends the activity with a brief summary highlighting the diversity of resources used and the need to choose the resources that suit the nature of the situation/task and ensure their harmonized and coordinated use. The facilitator generalizes this situation to all situations that result in a complex product of group work.

Activity adaptations:

The facilitator can choose a different photograph, a short video clip or an object that suits the characteristics of the group (e.g., grammar school students can be shown an encyclopedia and technical secondary school students can be shown a model of a microscope or an Egyptian pyramid). If it is determined that there is

¹ The materials used for the activities in this chapter are particularly adapted for students in Serbia, thus, they are in Serbian and sourced from references familiar to the students. For future implementations, we recommend that all digital materials be identified and tailored to the specific student trainee group, ensuring they are relevant and up to date.

already a consensus within the group regarding the key learnings, the facilitator can also ask a student to summarize the activity and deduce conclusions.

Activity 2: I as a Resource: Identifying the Existing Knowledge and Evaluating its Reliability and Relevance (Objective 1)

Necessary materials:

- A slide or inscription on the board comprising the two keywords whose meaning is to be defined: evocation and anticipation

Activity duration: 5 minutes + 5 minutes

Activity flow and implementation instructions:

This is a particularly brief and dynamic activity with a two-step implementation. In the first step, the facilitator introduces a significant and indispensable resource that is used in every novel problem-solving or group work situation but often remains unrecognized. This resource comprises the existing *knowledge and competencies*, that is, what we already have in our brains. After the introduction, the facilitator invites the students to contemplate and jointly discuss why the existing knowledge is important: 1) when thinking about a topic, we never start “from scratch”, but instead rely on what we know, which allows us to initially map and understand the problem situation; 2) establishing links between old and new knowledge and experiences yields a wider perspective and better understanding; 3) the existing knowledge facilitates and informs the search for new information because it helps us identify the knowledge we lack; 4) we search “old” knowledge using strategies analogous to internet search strategies – we identify the key concepts (because it is important to know what we are dealing with) and evaluate the relevance of our knowledge to the problem situation (we determine the goal we want to accomplish), which are the characteristics of every meaningful and effective learning strategy.

In the second step, the students identify the two processes at the beginning of the problem-solving process – evocation and anticipation. This plenary exercise takes the form of a linguistic brainteaser whose goal is to discover and describe these processes. The words displayed are *Evocation* and *Anticipation*. The students are expected to jointly discover and agree that evocation is recollection, that is, identifying the existing knowledge that is useful and relevant to the new task, while anticipation is prediction, that is, identifying the knowledge not possessed but crucial to the new task.

Activity adaptations:

If the students are productive and responsive, the facilitator can let them independently determine the meanings of evocation and anticipation. If there is enough time, these processes can be linked to a specific situation. The facilitator can offer an example of a situation in accordance with the group’s interests, but it is even better if one of the students provides an example.

In case the meaning discovery process is not smooth and spontaneous, the facilitator provides guidelines and asks questions that serve to remind and encourage. For instance: Have you ever heard this word? Can you remember the exact situation? Can you remember the sentence or phrase in which this word was used? The encouragement can be more direct, such as: Have you heard of evoking memories? What do we actually do when we evoke memories?

This activity lasts until the goal is accomplished, that is, until the concepts are defined and it is established that all the students agree with the solution and understand the concepts. The facilitator can ask the students to provide some everyday examples of the use of these words or their synonyms (e.g., evoking events, evoking experiences, predicting the outcome, anticipating another person's behavior).

Activity 3: How to Protect the Eagles? Identifying the Knowledge Necessary to Solve the Problem Situation (Objective 1)

Necessary materials:

- A brief introductory text with an illustration (Figure 8)
- Tablets / cellphones / computers with internet access
- The Knowledge Map table for identifying the existing (evocation) and necessary (anticipation) knowledge (*Supplement R1*)

Activity duration: 15 minutes

Activity flow and implementation instructions:

The main aim of this activity is to demonstrate the significance of planning in a problem-solving situation. This is accomplished by having groups of students working on a specific task that introduces mapping the existing and necessary resources as a mandatory initial step.

The activity starts with a brief introduction to a real problem whose solution is a matter of public interest. The proposed problem is the endangered status of the Eastern Imperial Eagle in Serbia and the students' task is to propose measures that could contribute to the protection and population increase of this species, which also has a symbolic significance since it adorns the coat of arms and the flag of the Republic of Serbia.

Before the groups start working on the problem, the facilitator shows the table given to each group. The table features the structure of the knowledge necessary to solve the task along with knowledge relevance and source reliability evaluations. The students are instructed to use the table as a guide to organizing group activity, which includes identifying the steps, planning the order of activities, and the division of work.

The groups have about 10 minutes to complete the task. The students are not expected to provide complex, thoroughly elaborated solutions but to develop an awareness of the problem-solving *process*. The groups present their solutions. The final, concluding question is posed with the goal of yielding metacognitive insights: What has this exercise helped us discover about our knowledge?

Finally, the facilitator concludes that in problem-solving situations, we usually know more than we initially think, that we know more and use our knowledge better as a group than as individuals, and that we know how to identify the important information we need and how to find them.

Activity adaptations:

There are multiple ways to adapt this activity to students' needs and interests, primarily by choosing the problem to solve. In the selection process, the main concern is finding a problem that the students would find relevant and motivating. Likewise, it is important to keep in mind that this activity focuses on the problem-solving process, that is, group work planning and not the product itself.

If there is time and the students are willing, it would be good if they reached the final conclusions on their own.



Figure 8. An Example of a Brief Problem Situation Description

Activity 4: Information Reliability (Objective 2)

Necessary materials:

- A brief Instagram video dedicated to internet search strategies published by @drcosmicray ([link](#))

Activity duration: 10 minutes

Activity flow and implementation instructions:

This activity aims to motivate students to think about the strategies they personally use when looking up information online. The recommended video clip prepared by Tijana Prodanović, PhD (you can learn more about the author [here](#)) is dedicated to searching for reliable information on the internet. Once the students have watched the video clip, the facilitator can initiate a discussion by asking them whether they have used any of the search strategies mentioned in the clip and invite them to share relevant experiences. It is sufficient for several students to share their experiences, which the facilitator and the whole group can further discuss. In the joint discussion, the students should state whether and to what extent they are familiar with good internet search strategies and how much they can rely on the information obtained through their use. If the facilitator chooses to implement this activity after the previously described exercise (*How to Protect the Eagles? Identifying the Knowledge Necessary to Solve the Problem Situation*), the students can provide an example of a webpage they recognized as relevant in the eagle protection task and then list the sources of information found on the page.

Activity adaptations:

Depending on the time available, the facilitator can determine the duration of the students' discussion. Likewise, depending on the students' previous experience, the length at which the facilitator explains the video clip may vary.

Activity 5: Scientific and Pseudoscientific Knowledge (Objective 2)

Necessary materials:

- A brief Instagram video about pseudoscience published by @drcosmicray ([link](#))
- A scientific article about the importance of fighting against the pseudoscientific idea of denying the extinction of species ([link](#))

Activity duration: 10–15 minutes

Activity flow and implementation instructions:

As in the previously described activity (Information Reliability), the brief video clip serves to encourage the students to think about different types of information found online. The facilitator can expand the discussion by referring back to the previous activity about eagles (*How to Protect the Eagles? Identifying the Knowledge Necessary to Solve the Problem Situation*) and summing up all the activities that the students listed as solutions to help the eagles. However, it is important that the facilitator lets the other side be heard as well, that is, check whether some of the participants have found information that clashes with the listed activities aimed at protecting the eagles.

In the second part of the activity, the facilitator shows a scientific article about the importance of fighting against the pseudoscientific idea of denying the extinction of species (as a reliable piece of information) and thus opens up the possibility of discussing conflicting information. The discussion can be guided by the following questions: What is the difference between these sources? What is the cause of doubt? Which sources do we trust more? Why?

Activity adaptations:

Depending on the time available, the facilitator can determine the duration of the students' discussion. Likewise, depending on the students' previous experience, the length at which the facilitator explains the video clip may vary.

Activity 6: Fake News (Objective 2)

Necessary materials:

- Tablets / cellphones / computers with internet access

The facilitator should choose/find a fresh piece of news whose reliability is currently being verified. During the training within the PEERSolvers project, the latest news was about a panther from Apatin ([link](#)), which later proved to be fake news ([link](#)).

Activity duration: 30 minutes

Activity flow and implementation instructions:

The students have about 10 minutes to find out as much as they can about the panther that was allegedly spotted near Apatin. For this purpose, the students can use tablets or cellphones with internet access to find as many news articles about the panther as they can and then discuss them in groups. Group members should

find a text that clearly shows that this is fake news. If they do not manage to find it independently, the facilitator needs to show them this news item ([link](#)).

The facilitator should use the example of the news about the panther from Apatin to guide the discussion so that the students are encouraged to think about validating information found online and strategies that can aid validation. The facilitator can point out that verifying false information can be challenging, but that there are certain steps that can be taken to reduce the likelihood of getting deceived:

1. Verifying the **reliability of the source** of information and **relevance to the topic** at hand. More specifically, it is always better to visit the official site of the institution or entity and check the available information than to search portals. If the source is unknown or suspicious, it is necessary to find additional sources that confirm the veracity of the information.
2. Checking the **date** of publication because some information can be outdated.
3. **Cross-referencing information**, that is, determining whether other reliable news articles or sources confirm the same information. If the information does not show up in other relevant places, this can be a warning sign. Likewise, a reliability check should also focus on the source and the quality of the source of the information. Respectable media outlets, research journalists, and experts in a specific field usually provide reliable information.
4. Fake news is often not signed with the full name of the journalist, which can be one of the important warning signs when evaluating information reliability. Furthermore, fake news is sometimes signed with a fake name, that is, authorship is attributed to an individual who does not actually exist. Hence, it is recommended to **research the author of the information**, that is, check the author's education, experience, and expertise in the given field. If the search does not yield any relevant information about the author, this can be another warning sign.
5. **Potential interests** can sometimes have a key role in the publication of fake news. Motives that can cause people or organizations to spread fake news can be political (for instance, to form a public opinion), economic (using sensationalist stories to attract attention, clicks, and views), social (for instance, in creating an ethical question), and ideological or religious (e.g., spreading information that supports the position or interests of an ideology).
6. **Logical consistency** pertains to verifying that the claims or pieces of information in fake news are mutually compatible and not contradictory. When fake news is consistent, this means that there is no obvious contradiction or incongruency within the information itself. For example, if the fake news claims that a certain event occurred in a certain place at a certain time, logical consistency would require these pieces of information to be congruent and uncontradictory. Conversely, if there is a certain discord between temporal and spatial details, this could point to a lack of logical consistency.

Activity adaptations:

For this activity, it is desirable for the facilitator to prepare an example of fake news that has been published recently or has just been debunked. In the latter case, if the students are aware that this news has been debunked, the facilitator can replace the first part of the activity (group work) with a brief demonstration of the popularization and debunking of the news (e.g., following the example of the video clip focusing on the fake news story about a TikTok school for the youth, [link](#)).

Activity 7: Artificial Intelligence and Internet Search (Objective 3)

Necessary materials:

- Tablets / cellphones / computers with internet access
- A ChatGPT or Google account for every student (accessed via a tablet/cell-phone)

Activity duration: 30 minutes

Activity flow and implementation instructions:

This activity can be conducted individually or in small groups.

In the first segment of the activity, the students are instructed to use the Google search engine on their tablets/cellphones to find five movies that have been recognized as “the best movies of all time”. After several minutes, the facilitator initiates a group discussion by asking whether it was easy to make such a list, which sources of information the students used, and whether there were any contradictory findings. The aim of this discussion is to highlight the existence of different sources, such as YouTube clips, movie reviews, articles from different pop culture magazines, and interviews with actors, directors, and screenwriters, while also underscoring the importance of establishing the relevance of the obtained information by further researching the origin of the information (e.g., looking up the YouTuber who made the list, what the list is based on, and what else this YouTuber has published).

The facilitator introduces the second part of the activity by asking the students whether they have heard of ChatGPT or other chatbots that leverage artificial intelligence. If they are familiar with a chatbot, the facilitator dedicates several minutes to a conversation about student experiences, the context in which they have learned about the chatbot, and whether they have used it. After exchanging experiences or if (some of) the students are unfamiliar with these concepts, the facilitator provides a short definition of ChatGPT and focuses on the use of this tool as an internet search engine. It is important for the facilitator to emphasize that ChatGPT was not primarily designed as a search engine but is frequently used for this purpose because it quickly provides a structured response. What follows is a brief demonstration of the advantages and shortcomings of using ChatGPT as a search engine:

- The facilitator instructs the students to ask ChatGPT the same question they entered into the Google search bar – which five movies are considered the best movies of all time.
- A brief discussion of the results – whether and to what degree the results match the ones obtained via a Google search.
- The students are instructed to ask ChatGPT which sources of information it used to compile the list provided. If necessary, they can ask additional questions about the databases the chatbot used to learn which movies it should display.
- The facilitator initiates a discussion in which the students learn about an important limitation of ChatGPT and its downside as a search engine. Namely, unlike with Google and other traditional search engines, it is not possible to trace the sources of information that ChatGPT provides as responses to

the questions posed. Like other chatbots based on artificial intelligence, ChatGPT relies on large databases into which the user most often does not have any insight. Furthermore, such software links information and reaches conclusions instead of the user. This precludes the evaluation of information reliability and can lead to major errors of which the user cannot always be aware.

- At the very end, the students are instructed to ask ChatGPT to show them possible sources of the information that piques their interest (e.g., “If I want to find out which movies are the best, where can I look for the answer to this question?”). By asking such questions, the students can receive useful guidelines from ChatGPT and expand their internet search by including some sources that they did not think of initially. Together with the students, the facilitator discusses the useful aspects of the use of ChatGPT as a “pre-search engine”, that is, a tool used when devising an internet search strategy.

Activity adaptations:

The facilitator can change the content of the internet search depending on the school subject within which the described activity is conducted.

If there are technical limitations or it is not possible to ensure that all students (or one student within a smaller group) have access to ChatGPT, the facilitator can prepare slides with screenshots demonstrating communication with the chatbot.

SUPPLEMENTS

Personality in Collaborative Problem Solving

Supplement P1. The Big Five Personality Dimensions

Dimension	Description	Facets
Neuroticism	Signifies the level of emotional stability, with one end of this dimension encompassing emotional stability, security, and calmness and the other end comprising nervousness, insecurity, and depression. Persons who are well-adjusted or emotionally stable are characterized by calmness, stability, relaxedness, and a sense of security. Conversely, individuals with high neuroticism levels are often nervous, distrustful, and insecure – some of the consequences include high perfectionism and a critical attitude towards one's own results and other people's actions.	Anxiety Hostility Depression Self-consciousness Impulsiveness Vulnerability
Extraversion	Pertains to the level of sociability, openness, and readiness to establish relations with other people. Extraverts are communicative, open, and friendly towards others. On the other hand, introverts are usually unsociable, withdrawn, and less inclined to engage in social interactions.	Warmth Gregariousness Assertiveness Activity Excitement seeking Positive emotions
Openness	Indicates receptiveness to new contents, knowledge, and experiences and proneness to fantasizing. One end of this personality dimension encompasses qualities such as creativity, originality, curiosity, openness to new experiences, imaginativeness, unconventionality, and proneness to risk-taking. The other end of the dimension gathers characteristics such as closed-mindedness, conventionality, conservatism, unimaginativeness, and risk aversion.	Fantasy Aesthetics Feelings Actions Ideas Values
Agreeableness	Speaks of the person's inclination towards establishing harmony and good relations with others. One end of this dimension comprises exceptional cooperativity, warmth, and trust in others, while the opposite end gathers antagonism, coldness, and distrust. Persons with high scores on this dimension usually express concern for others and tend to be trusting, collegial, and polite. Conversely, low agreeableness is associated with antagonism, distrust, a lack of empathy and collegiality, and impoliteness.	Trust Straight-forwardness Altruism Compliance Modesty Tender-mindedness
Conscientiousness	Pertains to the level of carefulness, scrupulousness, and perseverance. One end of this dimension gathers reliability and trustworthiness, while the other end encompasses unreliability and untrustworthiness. Persons with high scores on this dimension are well-organized, meticulous in performing their duties, tidy, and self-disciplined. By contrast, persons with low scores on conscientiousness tend to be impulsive, carefree, and poorly organized.	Competence Order Dutifulness Achievement striving Self-discipline Deliberation

Adapted from Đurić-Jočić, D., Džamonja-Ignjatović, T., & Knežević, G. (2004). NEO PI-R: Application and interpretation. Belgrade: Center for Applied Psychology

Supplement P2. High and Low Levels of Individual Personality Traits

(Printable materials from this supplement suitable for use during the activity can be retrieved from the following [link](#))

Dimension	High Level of the Trait	Low Level of the Trait
Emotional Stability	<ul style="list-style-type: none"> - composed and even-tempered - reliable - rational thinker - oriented towards long-term goals - stable 	<ul style="list-style-type: none"> - apprehensive - gets upset in stressful situations - dejected - oriented towards short-term goals - easily discouraged - ill-humored
Extraversion	<ul style="list-style-type: none"> - friendly - enjoys group and social situations - energetic, lively, especially in social settings - enjoys controlling others and being in charge - positive, optimistic - easily bored by one and the same and prone to seeking new thrills 	<ul style="list-style-type: none"> - quiet, can seem hostile - withdrawn in interactions - prefers to let others lead rather than being the leader - enjoys being alone - independent
Openness	<ul style="list-style-type: none"> - curious - open to emotion - creative and artistic - imaginative - open-minded - enjoys solving problems - questions rules and behavioral norms 	<ul style="list-style-type: none"> - fact-oriented - dislikes change - enjoys routines - craves security and stability - less open to emotion - prone to conservative thinking
Agreeableness	<ul style="list-style-type: none"> - compassionate - likable - cooperative and agreeable - trusting and trustworthy - willing to compromise - puts the team before the individual 	<ul style="list-style-type: none"> - objective - honest, sometimes to the point of being hurtful - can seem intimidating and cruel - can be arrogant and conceited
Conscientiousness	<ul style="list-style-type: none"> - goal- and achievement-oriented - well-organized - self-disciplined and motivated - enjoys planning schedules and deadlines - careful, especially in decision-making - has a sense of duty in relation to the task or work - can seem like a perfectionist 	<ul style="list-style-type: none"> - poorly organized - often unreliable - careless, especially indecision-making - impulsive - easily distracted from the task at hand

SUPPLEMENT P3. Descriptions of Behaviors and Roles Classified by Personality Dimension

AGREEABLENESS		
POTENTIAL...	POSITION ON THE DIMENSION	
	HIGH	LOW
BENEFITS	<p>fosters good relations with team members</p> <p>thrives in teamwork situations</p> <p>easily reaches a compromise with others</p> <p>acknowledges and shows understanding for other team members</p> <p>makes other group members feel accepted</p> <p>does what is expected to do; does not evade work</p> <p>cooperator</p> <p>team player</p>	<p>openly expresses opinions and disagreement with the group</p> <p>objectively views the contributions of other group members</p> <p>not guided by emotions and friendship concerns when making a judgment about something</p> <p>can dedicate more attention to the task due to not being concerned about intra-group relations</p> <p>independent decision-maker, not guided by the will of others</p> <p>impartial judge</p>
CHALLENGES AND DOWNSIDES	<p>avoids arguing and rarely expresses an opposing opinion</p> <p>often puts friendly intra-group relations before the quality of the solution</p> <p>tends to accept every majority decision without questioning it</p> <p>due to focusing on relations, can make a poorer contribution to solving the task</p> <p>indecisive and impressionable</p> <p>goody two-shoes, sanctimonious</p>	<p>prioritizes personal goals and interests</p> <p>uncooperative and rarely compromises</p> <p>doubts other group members' motives</p> <p>argumentative and intolerant</p> <p>competitive</p> <p>insensitive to other people's problems or needs</p> <p>can evade work</p> <p>resident curmudgeon</p>
CONSCIENTIOUSNESS		
POTENTIAL...	POSITION ON THE DIMENSION	
	HIGH	LOW
BENEFITS	<p>reliable – can be counted on</p> <p>efficiently completes group tasks</p> <p>disciplined, works systematically, and meets deadlines</p> <p>great attention to detail, never misses a thing</p> <p>persistent in achieving goals; motivated by obstacles</p> <p>sticks to the rules of group work</p> <p>accepts duties and helps others do their part of the work</p> <p>diligent ant</p>	<p>flexible in completing tasks</p> <p>easily adapts to different work modes</p> <p>accepts that someone else manages tasks</p> <p>does not push others to buckle down and work harder</p> <p>undisturbed by plan changes</p> <p>relatively easily functions in tasks whose outcome is uncertain</p> <p>casual</p>
CHALLENGES AND DOWNSIDES	<p>finds it hard to cooperate with people who do not share the same task commitment</p> <p>can be inflexible in terms of accepting new and different work modes</p> <p>has to have control over everything that is done</p> <p>frustrated when things do not go according to plan</p> <p>has too high expectations of others</p> <p>takes on too many responsibilities due to not having confidence in others</p> <p>strict perfectionist, (resident) controller</p>	<p>unreliable and inconsistent</p> <p>does tasks sloppily</p> <p>does not respect deadlines or problem-solving frameworks</p> <p>violates the rules of group work</p> <p>rash, overlooks important elements of the task</p> <p>has poor work ethics</p> <p>inefficient in tasks that demand dedication and order</p> <p>slacker</p> <p>cool as a cucumber</p>

EXTRAVERSION		
POTENTIAL...	POSITION ON THE DIMENSION	
	HIGH	LOW
BENEFITS	<p>takes to group work like a duck to water</p> <p>always involved in group activities, never a passive observer</p> <p>can participate in multiple tasks simultaneously</p> <p>always ready to act and quickly solve tasks</p> <p>expresses needs, opinions, and attitudes loudly and clearly</p> <p>gets along with all group members and knows how to use their potentials</p> <p>leader</p> <p>coordinator</p>	<p>good at group tasks that require individual work</p> <p>does not impose opinions on others</p> <p>analytical and meticulous, which often yields new approaches to solving the task</p> <p>cautious decision-maker</p> <p>does not obstruct group work with idle chit-chat</p> <p>sensitive to others and a great listener</p> <p>careful observer</p>
CHALLENGES AND DOWNSIDES	<p>has the need to constantly switch between activities</p> <p>wants to do a lot, but often superficially</p> <p>can produce more ideas than others but with little concern about the quality of ideas</p> <p>participates in the conversation even when lacking expertise</p> <p>enjoys chatting, thus distracting attention from the task</p> <p>wants to be the leader even when not the best candidate for the role</p> <p>likes to dominate in the group and impose opinions on others</p> <p>loudmouth</p> <p>center of attention</p> <p>entertainer</p>	<p>often finds group work frustrating and uncomfortable</p> <p>the presence of a large number of people distracts this person from the task</p> <p>does not know how to present good ideas to the group, sounds unconvincing when proposing solutions</p> <p>does not express opinions and thoughts in the group and thus can seem insufficiently engaged</p> <p>slow to adapt to unexpected changes to group work or the task</p> <p>outsider</p>

EMOTIONAL STABILITY		
POTENTIAL...	POSITION ON THE DIMENSION	
	HIGH	LOW
BENEFITS	<p>brings calmness and balance into group work and relations</p> <p>has a positive attitude that favorably affects group members' satisfaction</p> <p>efficiently regulates stress caused by unforeseen challenges in group work</p> <p>works well under pressure caused by short deadlines or unfavorable work conditions</p> <p>calm and rational decision-maker</p> <p>the voice of reason</p> <p>support in crisis</p>	<p>sets realistic and relatively quickly attainable personal and group goals</p> <p>critical of self and personal results as well as the work of others</p> <p>not prone to risky, hasty decisions and solutions</p> <p>has a fear of failure that can contribute to the quality of the solution</p> <p>often reexamines proposed solutions or decisions</p> <p>emergency alarm</p>
CHALLENGES AND DOWNSIDES	<p>this person's unwavering calmness and composure can seem unnatural and even annoying</p> <p>certain that everything will be alright, can overlook mistakes and problems in the work process</p> <p>rationality in decision-making can prevent this person from seeking creative solutions</p> <p>can give the wrong impression of being resistant to pressure and unbreakable</p> <p>others can neglect the fact that this person also needs support and reinforcement</p> <p>steady as a rock</p>	<p>has difficulty focusing on the task when under pressure</p> <p>overreacts to the slightest sign of stress and struggles to shake off negative moods</p> <p>constantly worries about finishing the task or the quality of the solution</p> <p>makes decisions influenced by strong emotions</p> <p>can be hostile to others</p> <p>panicker</p>

OPENNESS		
POTENTIAL...	POSITION ON THE DIMENSION	
	HIGH	LOW
BENEFITS	<p>full of new and original ideas and ways to solve the problem</p> <p>curious and seeks additional sources of information</p> <p>enjoys differences and exchanges of ideas in the group</p> <p>likes deliberating on complex questions and problems</p> <p>readily accepts and initiates changes and novelties in the work process regardless of the risk of failure</p> <p>has diverse experiences</p> <p>an original thinker</p> <p>creative</p> <p>idealist (with their head in the clouds)</p>	<p>great at executing procedural tasks</p> <p>follows the rules and does not take many risks</p> <p>guided by pragmatic goals and solution-oriented</p> <p>substantiates suggestions with facts</p> <p>others know what to expect from this person</p> <p>focuses on one thing</p> <p>administrator, notary</p> <p>specialist</p> <p>realist (with both feet on the ground)</p>
CHALLENGES AND DOWNSIDES	<p>produces a multitude of ideas, but does not always think them through</p> <p>constantly introduces new suggestions and thus prolongs the work process</p> <p>can be unpredictable due to the need to consider the problem from different angles</p> <p>group members can find it hard to follow this person's train of thought</p> <p>enjoys the problem-solving process more than the implementation of the solution</p> <p>can be insufficiently pragmatic when choosing the task</p> <p>elusive</p> <p>adventure-seeker</p>	<p>struggles with tasks without pre-defined solutions</p> <p>rigidly sticks to the existing solutions, rules, and approaches</p> <p>focuses on what is right at hand and finds it hard to consider the big picture</p> <p>not interested in abstract ideas and questions, only facts</p> <p>versed in a small and limited number of topics</p> <p>bureaucrat</p> <p>conservative</p> <p>creature of habit</p> <p>ensor</p>

SUPPLEMENT P4. Cards With Descriptions of Behaviors and Roles Based on Personality Dimensions

(Printable materials from this supplement suitable for use during the activity can be retrieved from the following [link](#))

HIGH AGREEABLENESS – BENEFITS AND CHALLENGES		LOW AGREEABLENESS – BENEFITS AND CHALLENGES	
fosters good relations with team members	avoids arguing and rarely expresses an opposing opinion	openly expresses opinions and disagreement with the group	prioritizes personal goals and interests
thrives in teamwork situations	often puts friendly intra-group relations before the quality of the solution	objectively views the contributions of other group members	uncooperative and rarely compromises
easily reaches a compromise with others	tends to accept every majority decision without questioning it	not guided by emotions and friendship concerns when making a judgment about something	doubts other group members' motives
acknowledges and shows understanding for other team members	due to focusing on relations, can make a poorer contribution to solving the task	can dedicate more attention to the task due to not being concerned about intra-group relations	argumentative and intolerant
makes other group members feel accepted	indecisive and impressionable	independent decision-maker	competitive
does what is expected to do, does not evade work	goody two-shoes, sanctimonious	impartial judge	insensitive to other people's problems or needs
cooperator	team player	resident curmudgeon	can evade work
HIGH CONSCIENTIOUSNESS – BENEFITS AND CHALLENGES		LOW CONSCIENTIOUSNESS – BENEFITS AND CHALLENGES	
reliable – can be counted on	finds it hard to cooperate with people who do not share the same task commitment	flexible in completing tasks	unreliable and inconsistent
efficiently completes group tasks	can be inflexible in terms of accepting new and different work modes	easily adapts to different work modes	does tasks sloppily
disciplined, works systematically, and meets deadlines	has to have control over everything that is done	accepts that someone else manages tasks	does not respect deadlines or problem-solving frameworks
great attention to detail, never misses a thing	frustrated when things do not go according to plan	does not push others to buckle down and work harder	violates the rules of group work
persistent in achieving goals	has too high expectations of others	undisturbed by plan changes	rash, overlooks important elements of the task
sticks to the rules of group work	takes on too many responsibilities due to not having confidence in others	relatively easily functions in tasks whose outcome is uncertain	has poor work ethics
accepts duties and helps others do their part of the work	strict perfectionist	casual	inefficient in tasks that demand dedication and order
diligent ant	(resident) controller	cool as a cucumber	slacker

HIGH EXTRAVERSION – BENEFITS AND CHALLENGES LOW EXTRAVERSION – BENEFITS AND CHALLENGES

takes to group work like a duck to water	has the need to constantly switch between activities	good at group tasks that require individual work	often finds group work frustrating and uncomfortable
always involved in group activities, never a passive observer	wants to do a lot, but often superficially	does not impose opinions on others	the presence of a large number of people distracts this person from the task
can participate in multiple tasks simultaneously	can produce more ideas than others but with little concern about the quality of ideas	analytical and meticulous, which often yields new approaches to solving the task	does not know how to present good ideas to the group, sounds unconvincing when proposing solutions
always ready to act and quickly solve tasks	participates in the conversation even when lacking expertise	cautious decision-maker	does not express opinions and thoughts in the group and thus can seem insufficiently engaged
expresses needs, opinions, and attitudes loudly and clearly	enjoys chatting, thus distracting attention from the task	does not obstruct group work with idle chit-chat	slow to adapt to unexpected changes to group work or the task
gets along with all group members and knows how to use their potentials	wants to be the leader even when not the best candidate for the role	sensitive to others and a great listener	outsider
leader	likes to dominate in the group and impose opinions on others	careful observer	
coordinator	loudmouth		

HIGH EMOTIONAL STABILITY
– BENEFITS AND CHALLENGESLOW EMOTIONAL STABILITY
– BENEFITS AND CHALLENGES

brings calmness and balance into group work and relations	this person's unwavering calmness and composure can seem unnatural and even annoying	sets realistic and relatively quickly attainable personal and group goals	has difficulty focusing on the task when under pressure
has a positive attitude that favorably affects group members' satisfaction	certain that everything will be alright, can overlook mistakes and problems in the work process	critical of self and personal results as well as the work of others	overreacts to the slightest sign of stress and struggles to shake off negative moods
efficiently regulates stress caused by unforeseen challenges in group work	rationality in decision-making can prevent this person from seeking creative solutions	not prone to risky, hasty decisions and solutions	constantly worries about finishing the task or the quality of the solution
works well under pressure caused by short deadlines or unfavorable work conditions	can give the wrong impression of being resistant to pressure and unbreakable	has a fear of failure that can contribute to the quality of the solution	makes decisions influenced by strong emotions
calm and rational decision-maker	others can neglect the fact that this person also needs support and reinforcement	often reexamines proposed solutions or decisions	can be hostile to others
the voice of reason	steady as a rock	emergency alarm	panicker
support in crisis			

HIGH OPENNESS

– BENEFITS AND CHALLENGES

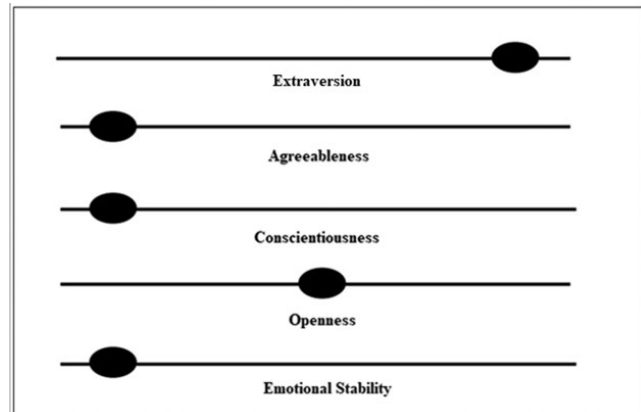
LOW OPENNESS

– BENEFITS AND CHALLENGES

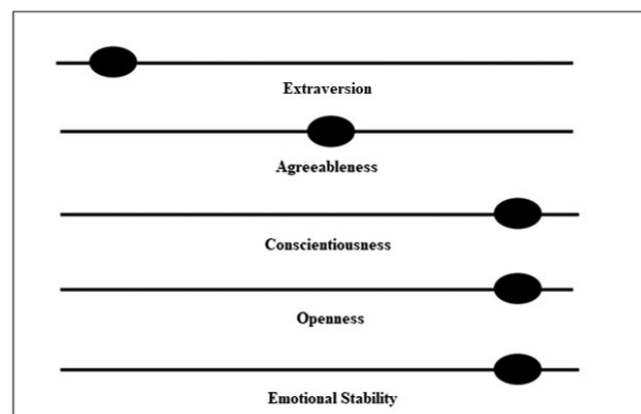
full of new and original ideas and ways to solve the problem	produces a multitude of ideas, but does not always think them through	great at executing procedural tasks	struggles with tasks without pre-defined solutions
curious and seeks additional sources of information	constantly introduces new suggestions and thus prolongs the work process	follows the rules and does not take many risks	rigidly sticks to the existing solutions, rules, and approaches
enjoys differences and exchanges of ideas in the group	can be unpredictable due to the need to consider the problem from different angles	guided by pragmatic goals and solution-oriented	focuses on what is right at hand and finds it hard to consider the big picture
likes deliberating on complex questions and problems	group members can find it hard to follow this person's train of thought	substantiates suggestions with facts	not interested in abstract ideas and questions, only facts
readily accepts and initiates changes and novelties in the work process regardless of the risk of failure	enjoys the problem-solving process more than the implementation of the solution	others know what to expect from this person	versed in a small and limited number of topics
has diverse experiences	can be insufficiently pragmatic when choosing the task	focuses on one thing	bureaucrat
an original thinker	elusive	administrator, notary	conservative
creative	adventure-seeker	specialist	creature of habit

SUPPLEMENT P5. Character Descriptions With Graphical Representations of Their Personality Profiles

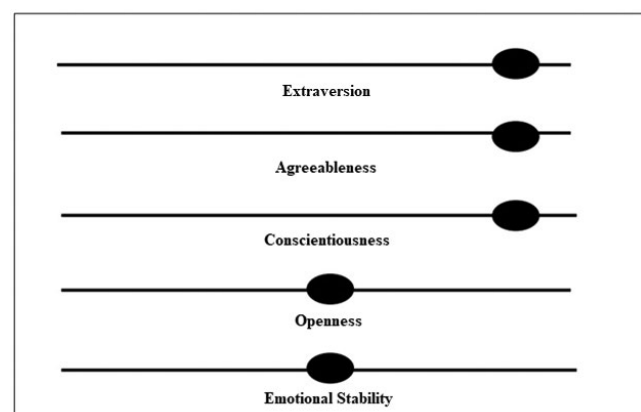
Maria has many friends and she is quite popular. At school, she has excellent grades, despite doing most of her schoolwork at the last minute due to poor time management. She often volunteers to express her opinion and all teachers know her name. When she prepares a project or presentation with other students, Maria is always in charge. When solving tasks, she is highly curious and she can often devise multiple creative solutions. Other students sometimes find it challenging to work with Maria because they perceive her as an obtrusive and impulsive person who occasionally seems dismissive of other people's opinions.



Valery has numerous interests. She loves good books, movies, and TV shows and she enjoys art. She can spend hours by herself without getting bored. People in her surroundings perceive her as a quiet and withdrawn girl, but her best friend knows that Valery is like that only when in the company of a lot of people. She is an excellent student and her teachers find her to be diligent and dedicated. When she prepares a project or presentation with other students, Valery is the team member who dedicates most time to the subject at hand and finishes her part of the work even before it is due. On the other hand, during group discussions, Valery is usually hesitant to express her opinion. Hence, it sometimes happens that group members do not see how much she can contribute or Valery misses the opportunity to use her knowledge to make a greater contribution to the final result of group work.



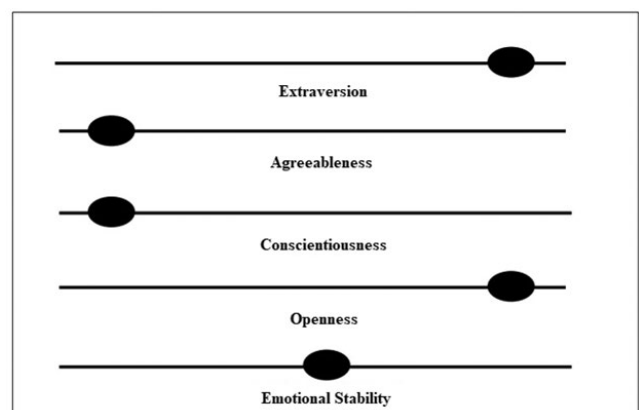
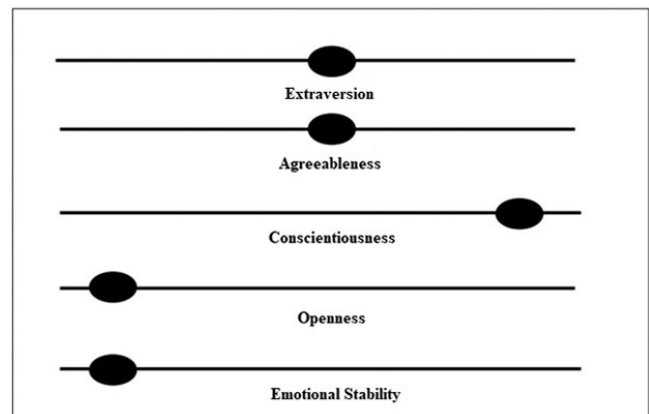
Dean is a social butterfly and has a lot of friends. He has no trouble blending into any social group and has friends among his classmates, basketball buddies, and neighbors. He attributes great importance to friendships and invests considerable effort into maintaining a good relationship with everyone. He is an excellent student because being well-organized helps him balance schoolwork with frequent outings with his friends. When he prepares a project or presentation with other students, Dean endeavors to do his part but also to maintain good relations within the group. He works hard on making all group members



feel welcome and appreciated. Sometimes, Dean abandons his opinion (one that could help solve the task) because he is afraid of jeopardizing the good atmosphere within the group or his relations with his friends.

Nadia's days are filled with various activities. When not at school, Nadia plays volleyball and the piano and she also speaks two foreign languages. She has chosen all of these activities on her own and her parents are proud of her because she is exceptionally dedicated, diligent, and well-organized for her age. Nadia is an excellent student and the class president. Teachers find her to be highly mature for her age and they often rely on her when certain information needs to be communicated to the class. When she prepares a project or presentation with other students, Nadia often assumes the role of the leader: she assigns tasks and makes sure the group reaches the best possible solution and finishes everything on time. Other group members are sometimes bothered by the fact that Nadia finds it hard to accept that someone does not share her opinion and gets furious when others cannot keep up with her (which is not easy).

Michael plays basketball and dreams of becoming a professional basketball player. He enjoys socializing and has a large circle of friends. Due to many social engagements, he often neglects to do his schoolwork, which affects his academic achievement. Teachers find him to be highly intelligent and creative, but often quite superficial. He quickly loses his temper when faced with criticism or an opposing opinion. When he prepares a project or presentation with other students, Michael sometimes suggests solutions that elude everyone else. Still, when tasks are assigned, other group members automatically assume that Michael will not do his part or will do the bare minimum. When someone tries to tell him that he is not sufficiently dedicated to group work, Michael tends to react impulsively or start arguing. Other students like to socialize with him but often avoid being in the same group with him when there is some serious work to be done.



SUPPLEMENT P6. Character Descriptions

(Printable materials from this supplement suitable for use during the activity can be retrieved from the following [link](#))

Maria has many friends and she is quite popular. At school, she has excellent grades, despite doing most of her schoolwork at the last minute due to poor time management. She often volunteers to express her opinion and all teachers know her name. When she prepares a project or presentation with other students, Maria is always in charge. When solving tasks, she is highly curious and she can often devise multiple creative solutions. Other students sometimes find it challenging to work with Maria because they perceive her as an obtrusive and impulsive person who occasionally seems dismissive of other people's opinions.

Valery has numerous interests. She loves good books, movies, and TV shows and she enjoys art. She can spend hours by herself without getting bored. People in her surroundings perceive her as a quiet and withdrawn girl, but her best friend knows that Valery is like that only when in the company of a lot of people. She is an excellent student and her teachers find her to be diligent and dedicated. When she prepares a project or presentation with other students, Valery is the team member who dedicates most time to the subject at hand and finishes her part of the work even before it is due. On the other hand, during group discussions, Valery is usually hesitant to express her opinion. Hence, it sometimes happens that group members do not see how much she can contribute or Valery misses the opportunity to use her knowledge to make a greater contribution to the final result of group work.

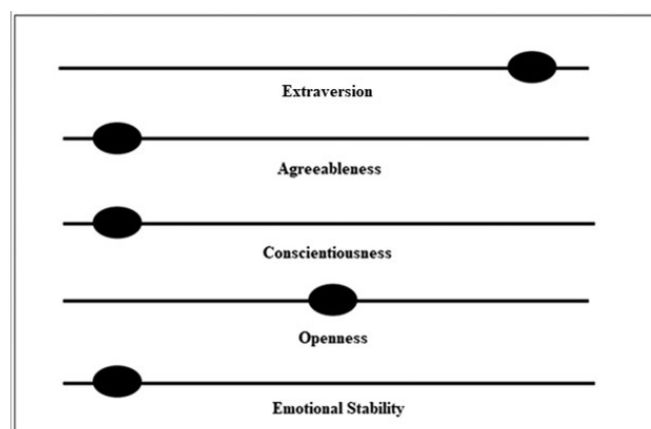
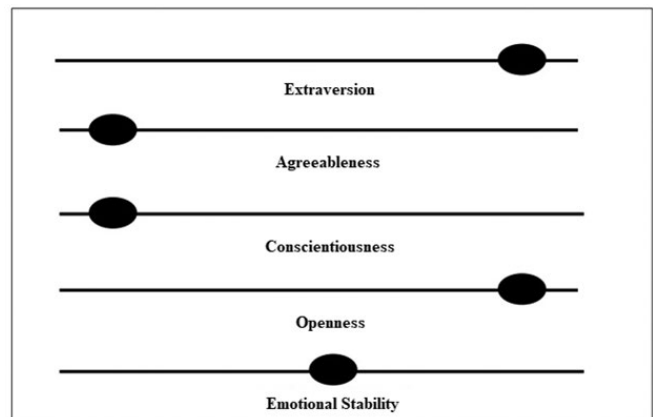
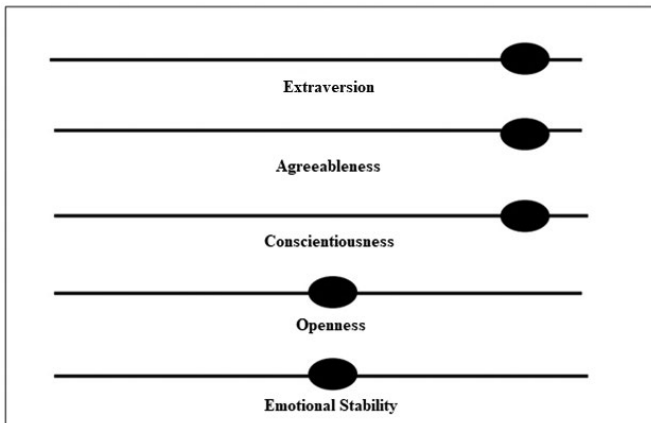
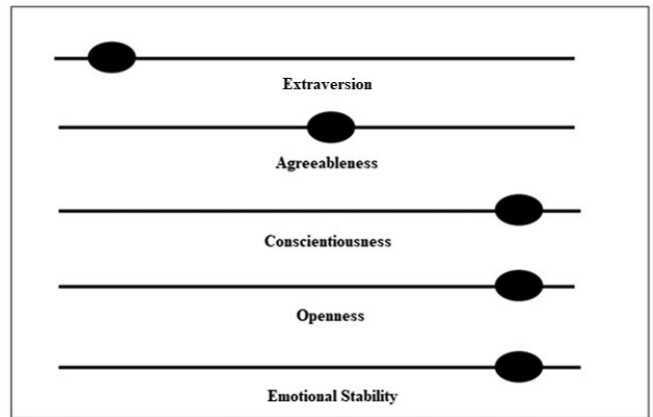
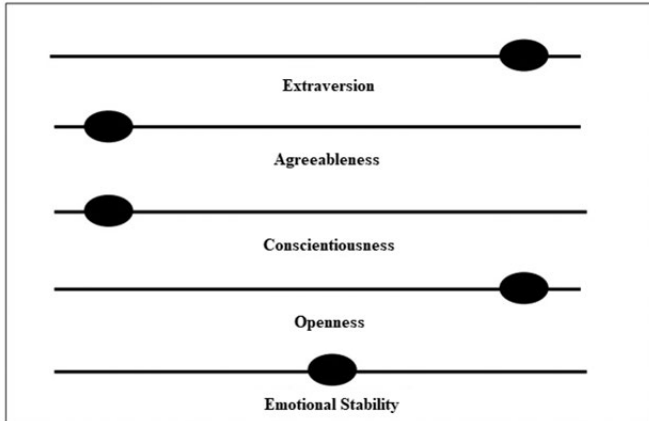
Dean is a social butterfly and has a lot of friends. He has no trouble blending into any social group and has friends among his classmates, basketball buddies, and neighbors. He attributes great importance to friendships and invests considerable effort into maintaining a good relationship with everyone. He is an excellent student because being well-organized helps him balance schoolwork with frequent outings with his friends. When he prepares a project or presentation with other students, Dean endeavors to do his part but also to maintain good relations within the group. He works hard on making all group members feel welcome and appreciated. Sometimes, Dean abandons his opinion (one that could help solve the task) because he is afraid of jeopardizing the good atmosphere within the group or his relations with his friends.

Nadia's days are filled with various activities. When not at school, Nadia plays volleyball and the piano and she also speaks two foreign languages. She has chosen all of these activities on her own and her parents are proud of her because she is exceptionally dedicated, diligent, and well-organized for her age. Nadia is an excellent student and the class president. Teachers find her to be highly mature for her age and they often rely on her when certain information needs to be communicated to the class. When she prepares a project or presentation with other students, Nadia often assumes the role of the leader: she assigns tasks and makes sure the group reaches the best possible solution and finishes everything on time. Other group members are sometimes bothered by the fact that Nadia finds it hard to accept that someone does not share her opinion and gets furious when others cannot keep up with her (which is not easy).

Michael plays basketball and dreams of becoming a professional basketball player. He enjoys socializing and has a large circle of friends. Due to many social engagements, he often neglects to do his schoolwork, which affects his academic achievement. Teachers find him to be highly intelligent and creative, but often quite superficial. He quickly loses his temper when faced with criticism or an opposing opinion. When he prepares a project or presentation with other students, Michael sometimes suggests solutions that elude everyone else. Still, when tasks are assigned, other group members automatically assume that Michael will not do his part or will do the bare minimum. When someone tries to tell him that he is not sufficiently dedicated to group work, Michael tends to react impulsively or start arguing. Other students like to socialize with him but often avoid being in the same group with him when there is some serious work to be done.

SUPPLEMENT P7. Graphical Representations of the Characters' Personality Profiles

(Printable materials from this supplement suitable for use during the activity can be retrieved from the following [link](#))



SUPPLEMENT P8.

Description of the Problem Situation

(Printable materials from this supplement suitable for use during the activity can be retrieved from the following [link](#))

The elevator is out of order and all the neighbors in the building need to agree on which technician to hire to fix it, but:

- the first-floor neighbor does not want to participate because he never uses the elevator;
- the third-floor neighbor blames the malfunction on the sixth-floor neighbor, who used the elevator to transport building materials for his apartment renovation;
- the sixth-floor neighbor and the fourth-floor neighbor think that everyone should chip in to cover the costs of the repair, regardless of who is “responsible” for this specific malfunction.

SUPPLEMENT P9.

Group Tasks

(Printable materials from this supplement suitable for use during the activity can be retrieved from the following [link](#))

How would a tenant meeting unfold and how would the problem be solved if all the neighbors in this task were extraverts?

How would a tenant meeting unfold and how would the problem be solved if all the neighbors in this task were high in conscientiousness?

How would a tenant meeting unfold and how would the problem be solved if all the neighbors in this task were high in agreeableness?

How would a tenant meeting unfold and how would the problem be solved if the third-floor neighbor was low in emotional stability, the first-floor neighbor was high in introversion, the fourth-floor neighbor was high in conscientiousness, and the sixth-floor neighbor was an extravert?

How would a tenant meeting unfold and how would the problem be solved if you found yourselves in the roles of the neighbors in this task? Divide the roles of neighbors among yourselves!

The Contribution of Emotional Intelligence to (Peer) Collaboration

SUPPLEMENT E11.

The I Spy Exercise Focusing on Basic Emotion Recognition Speed

(Printable materials from this supplement suitable for use during the activity can be retrieved from the following [link](#))

I SPY...



HAPPINESS _____
FEAR _____

SADNESS _____
DISGUST _____

SUPPLEMENT EI2: Non-Verbal Emotional Expressions (for Facilitators)

Source: Ekman, P. (2010). *Emotions revealed*. Belgrade: Institute for Textbooks and Teaching Aids; including the foreword to the Serbian edition by Žarko Trebješanin.

ANGER

Emotional expressions of anger are observed in a recognizable posture (leaning threateningly towards the source of frustration, tight arm muscles, clenched fists), voice (raised or harsh tone of voice), and facial expressions (furrowed eyebrows, eyes wide open, piercing, direct gaze that “crushes” or “darts” the opponent, redness of the face, protruding chin, the upper lip raised, and the cupid’s exposed). In anger, the lips take two distinct positions. They can be separated, forming a square or a rectangle, or they can be tightly clenched.

FEAR

The common facial signals include maximally raised eyebrows, eyes wide open, shivering, a dropped lower jaw, the lips stretched horizontally towards the ears, and the chin pulled back. In terms of movement, the person may move away from the source of danger. Vocally, extreme fear can be accompanied by screaming. More subtle signs of fear may include heavy breathing, the head tilted slightly backwards and to the side, and horizontally stretched lips with tight neck muscles.

DISGUST

Disgust can be displayed on the face in one of three ways. The first expression features a slightly protruding tongue, as if the person is removing something from the mouth. The second expression involves raising the upper lip, which is relaxed, not tense. In the third expression, the nose is wrinkled and the nostrils are raised. All of these expressions can be displayed both individually and simultaneously. In terms of movement, disgust is manifested by turning the head away and avoiding the unpleasant object.

SADNESS

Vocal expressions of sadness include crying, weeping, and speaking in a low voice. In terms of movement, sadness can be expressed by the absence of gesticulation, sitting frozen or walking very slowly, and keeping the head bowed. Facial signals include raised inner corners of the eyebrows, slightly droopy upper eyelids, the distinctive U-shaped wrinkle on the forehead, the corners of the lips pulled downwards, teary eyes, and the gaze directed towards the ground.

JOY

The basic facial expression associated with joy is a smile (pulling the corners of the mouth upwards) accompanied by a tightening of the lower eyelid that forms a wrinkle at the outer corner of the eye. Vocal expressions of joy include sounds of relief (sighing) or amusement (laughter or giggling).

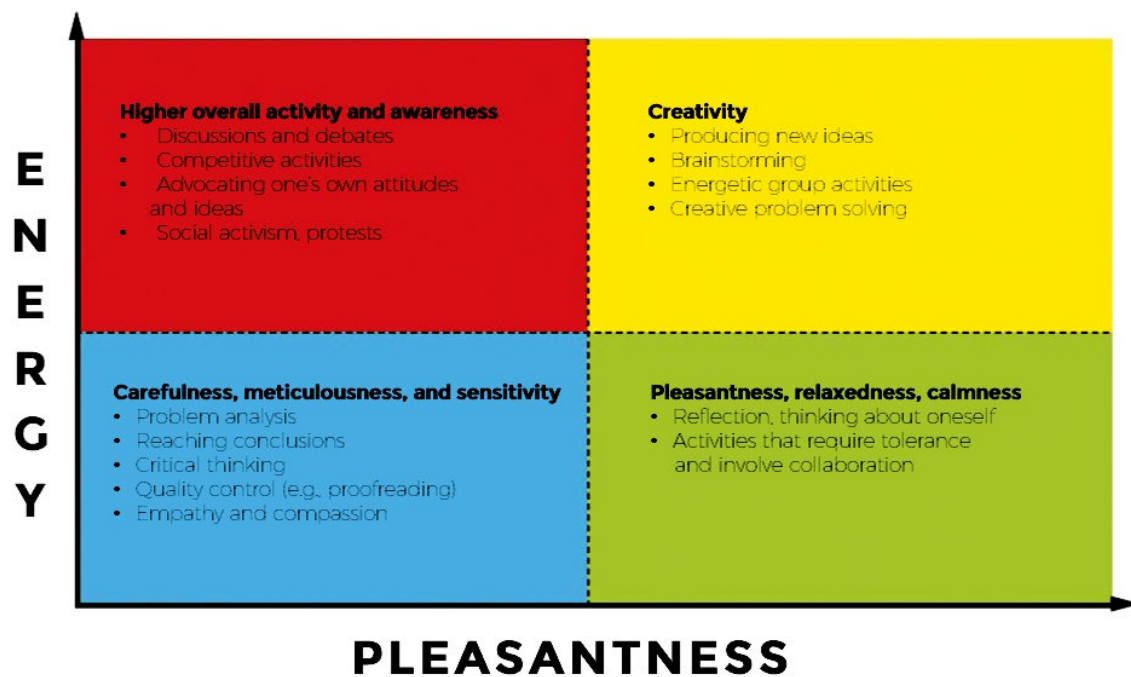
Supplement E13. Photographs That Illustrate Group Emotional Expressions



(Source: Mora Credits, Pexels and Freepik)

Supplement EI4.

The Mood Coordinate System (Adapted from: Brackett & Kremenitzer, 2011) Adapted to Group Activities



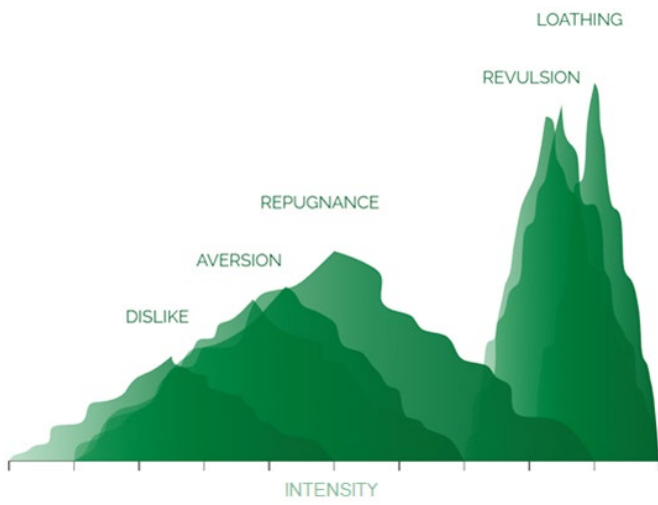
SUPPLEMENT E15.

Cards with Basic Emotion Labels (cut along the dotted lines)

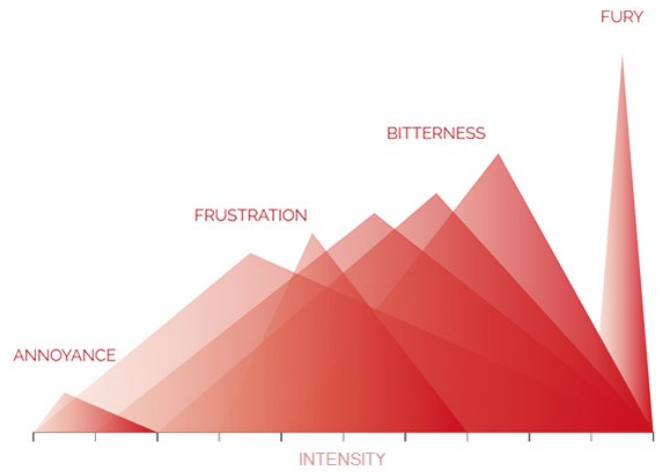
(Printable materials from this supplement suitable for use during the activity can be retrieved from the following [link](#))

FEAR	ANGER
She was nervous yesterday.	He was really annoyed about something.
He seemed pretty anxious .	He yelled in frustration .
I have trepidations about that.	She seemed argumentative in that situation.
The thought of it fills me with dread .	She just sat in the corner, exasperated .
I was in a state of desperation .	He has been irritable since yesterday.
They instantly started to panic .	He gave me a bitter look.
When she heard that, she was horrified .	Just thinking about it filled me with rage .
It filled him with terror .	He slammed the door furiously .
DISGUST	SADNESS
I dislike what you're doing.	I was really disappointed .
My aversion to it only grew.	He was discouraged by the response.
I find that place repugnant .	He was visibly distraught by her arrival.
It was a repelling sight.	He seemed helpless .
I loathe that person.	Finally, he shrugged in resignation .
He found my remark distasteful .	She walked hopelessly down the street.
I'm absolutely abhorred by your behavior.	It has left me in despair .
We condemn these events with utter revulsion .	The whole situation left him miserable .
JOY	
I'm always amused in their company.	
I was excited to participate.	
He was full of enthusiasm again.	
We rejoiced at the news.	
It seems like they are on cloud nine .	
I've never seen her so ecstatic .	
No wonder she felt relieved .	
Only a child can be so carefree .	
His whole being was filled with bliss .	
He felt peaceful there.	

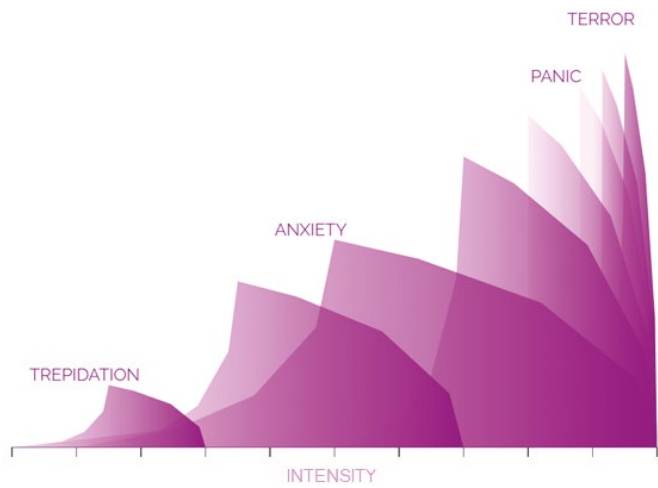
Supplement E16. Illustrations From Ekman's Atlas of Emotions



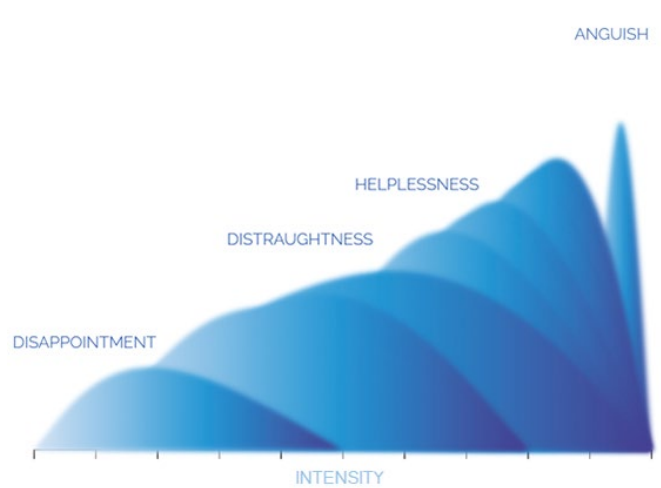
Disgust



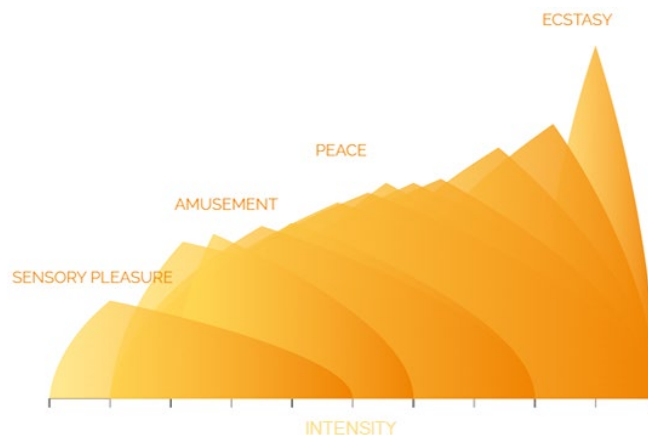
Anger



Fear

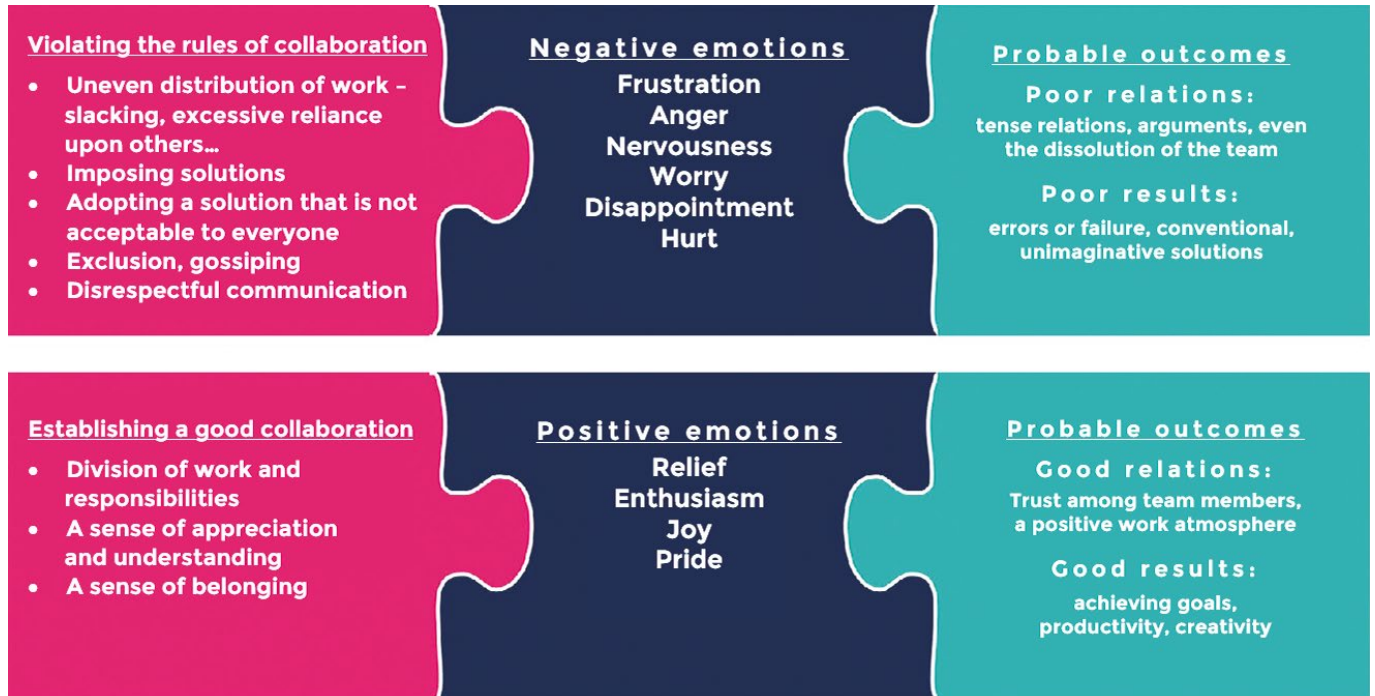


Sadness



Joy

Supplement E17. Regularities in Understanding Emotions



Supplement EI8:

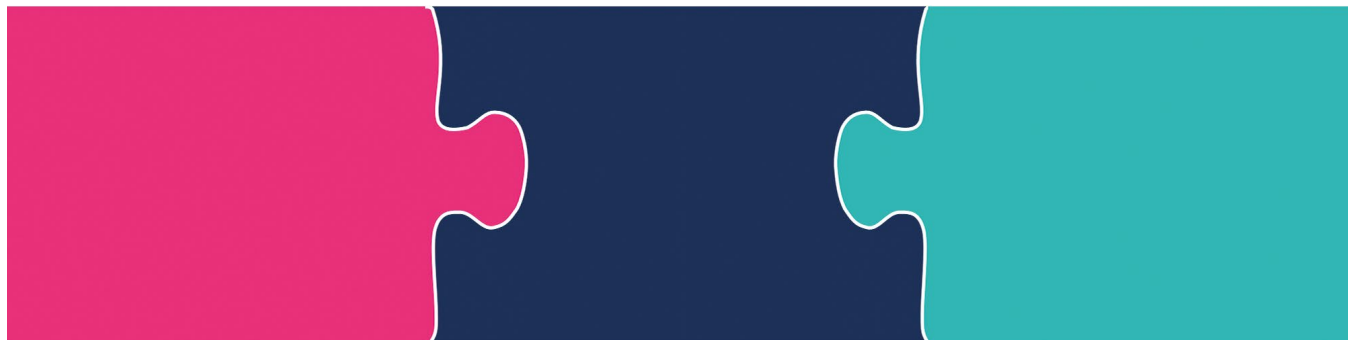
Situation Label	Actors	THE PLOT – THE FIRST PIECE OF THE PUZZLE	THE EMOTIONAL REACTION – THE SECOND PIECE OF THE PUZZLE Three versions: a) the initial negative reaction of the protagonist; b) the other side's perspective; c) a more constructive and emotionally intelligent reaction of the protagonist	THE DENOUEMENT – THE THIRD PIECE OF THE PUZZLE Two versions: a) the most probable outcome after the initial emotional reaction (v. left in the same row); b) the most probable outcome after the more emotionally intelligent reaction (v. left in the same row)	Possible regulation strategies – moderating negative emotions
Situation 1.1: Slacking	Xander	My dad says that if my buddies and I fix up my grandma's old cottage – clean up the yard, throw out some old stuff from the cottage, mow the lawn, and clean everything – we can spend a part of our summer break there and do whatever we want. He says that we have to do it by the end of May and Jake and I have been working hard and finishing a part of the work every weekend, but Matthew	It's not fair and I'm annoyed by his behavior. He'll ruin this unique opportunity for all of us. Later, he'll definitely want to come by and hang out with us, but since he's been slacking like this, I'm really not sure we can finish everything in time.	Of course, we didn't manage to fix up everything and there's no way we can hang out there during the summer. Whatever summer plans I end up making, I won't be spending time with Matthew, who's ruined it all for everyone.	(1) humor (2) focusing on the goal
	Matthew	just comes around and leaves early, complains about some old injury when he needs to mow the lawn, says he's allergic to dust and can't clean out the attic....	I don't know what they expect me to do, but they expect too much. I have a million grades to fix and if they work a bit harder, they can finish it without me, but instead of supporting me, they just keep hassling me.		
	better Xander		It's hilarious how much he's been avoiding work; the two of us just fall about laughing whenever he makes another dumb excuse. I don't have the time to be angry about it and there's no way I'll let my summer break go to waste just because he's slacking off.	We rolled up our sleeves and did as much as we could. It wasn't perfect, but my dad was surprised that we managed to do so much and he came by to help us during our last weekend cleanup. This summer break is going to be awesome!	
Situation 1.2: Being Late and Doing the Bare Minimum	Michael	The five of us had a presentation on ancient Rome due Friday. On Monday, we all agreed on the design of the presentation and each one of us got a part to prepare. Everyone worked pretty hard on it and emailed me slides to merge into one file. Only Jenny hadn't sent anything by Thursday evening. At 8 PM, we all started calling and tracking her down and at 10 PM, she sent some rough notes in a Word document, which seemed scanty and we didn't know what to do with them.	It is so unfair of her not to do her part of the presentation. Does she honestly expect us to do it for her, the night before the presentation?! Some people really have no shame!	We had a presentation with a void where her part was supposed to be. She kind of just talked without any slides and we didn't end up getting bad grades but we were all just bummed out and fed up with the whole presentation.	(1) viewing the situation from another perspective (maybe she didn't fully understand the instructions?); (2) acceptance (we weren't well-organized; we should have merged all the elements earlier and rehearsed the presentation, but what's done is done; we've learned a lesson for the future)
	Jenny		I had to prepare a boring part that I didn't find in the least interesting. Still, I prepared to talk about it and jotted down some notes for myself but I didn't know that I was supposed to make slides out of this content.		
	better Michael		It seems there's been a misunderstanding regarding when and how this was supposed to be done. I don't believe she would intentionally leave us with an incomplete presentation the night before it is due.	We sent the presentation to Jenny and asked her to just throw together some slides using her notes so the presentation would be complete. It turned out she actually could present her part and all in all, the presentation went pretty well.	

Situation 1.3: Who Should Take the Credit?	Selena	The physics teacher has this rule that in group work, all members of the group receive the same grade and we do not always get grouped together with the same people because, as she says, "that's how it works in real life". This time, I was in a group with several students who aren't really good at physics and I invested tons of effort into our group work while they worked at their usual level. In line with the rule, we all ended up getting the same grade.	I don't think it's fair that someone gets rewarded for another person's work. I'm mad at the teacher for coming up with this rule, but also at the team, because they casually piggybacked on my work instead of trying a bit harder.	I get sick just thinking about the next group assignment in physics and as far as the group goes, I can only say that this group work hasn't brought us closer one tiny bit.	(1) Reframing: we are collaborating and everyone contributes in accordance with their abilities; I contributed a lot, but the teacher graded our group work and we got a good grade because I did such a good job and made such a great contribution to the team (2) Acceptance
	The crew		Selena is acting as if we've stolen something from her and that's really unpleasant. No one was slacking on purpose and we all contributed as much as we could! It's not my fault that I'm bad at physics!		
	better Selena		To quote our teacher, that's how it works in real life:) I could've ended up in a group with people who are all better than me and then they'd be pulling me along for the ride. Besides, I'm glad that I have helped the whole team get a better grade.	Statistically, there's very little chance that I'll end up in such a weak team again:) Which may be a shame, because no other group will appreciate me as much as this one; they love me for saving them from getting Fs:)))	
Situation 1.4: Look What She's Done to Our Song	Kate	We wanted to make a panel for our classroom that would represent our entire class. During our homeroom class, we agreed upon the general look of the panel and Daisy, Anna, and I took it upon ourselves to make it happen because all three of us like arts and crafts. On Friday evening, Anna took the panel home and we agreed that we would continue working on it after Sunday. When we met up again, I saw that Anna had added a bunch of stuff to the panel and changed our initial design.	My jaw dropped when I saw all those changes and I was appalled by her behavior! How dare she change something that the whole group agreed upon? It's not her artwork, it's our group panel!	I admit that some of Anna's changes were good, but it's a matter of principle – if we are doing something together, she can't just change it without consulting everyone else. We changed the panel back to what it looked like on Friday. Even if it looks worse, at least it's a group effort. Of course, Anna is pouting and refusing to continue working on the panel.	(1) viewing the situation from another perspective (maybe Anna had a good reason) (2) focusing on the positive side of the outcome (Anna introduced some good changes)
	Anna		I don't get why they're so mad; I just had a rush of inspiration and enough time over the weekend so I didn't want to wait until Monday and risk all the ideas disappearing into thin air. Besides, it doesn't matter who did it; all that matters is that it's good. Isn't that the point of group work?		
	better Kate		I was pretty stunned when I saw all those changes, but I didn't want to get upset right away, before I saw exactly what was changed and why. Maybe there was a good reason to change something and this turns out to be a better version.	Daisy and I carefully analyzed the panel and concluded that there were a lot of good changes. Some of them weren't exactly to our taste, but they inspired us to do something else that fit in nicely. Right now, the panel looks great and the whole class loves it!	

Situation 1.5: Practical Division	Luna	Our biology teacher divided us into groups of four and tasked us with doing a presentation on the order of amphibia of our choice. When we got together to start working on it, two teammates said that they would do the entire presentation and that Milly and I could do the presentation planned for the second trimester. We all agreed that this was the best solution and that it would save us a lot of time, apart from Milly, who insisted that we all work on both presentations together, thus spoiling our arrangement.	To me, dividing the work among ourselves is a huge relief and I am really glad the two of them suggested it. But now I'm annoyed by Milly's nonsense. Could it be that because of her, I'll have to do both presentations!?	The three of us agreed that a division of work was the best solution, but Milly's been acting weirdly ever since and ignoring our group chat. Who cares, she's in the minority; all the decisions have been made democratically!	(1) viewing the situation from another perspective
	Milly		Biology is important when applying to the college of my choice so I want the presentation to be good and this way, I have no control over how it will turn out. What if they do it badly and then Luna and I have to work like crazy to fix everyone's grade?		
	better Luna		To me, dividing the work among ourselves is a huge relief, but I can see that something about it is bothering Milly. I don't really get what's troubling her, but I don't want anyone in the group to feel bad; I can't just ignore that.	In the end, we agreed that the two of them prepare the presentation and give Milly and me enough time to look it over and see if everything is ok.	
Situation 1.6: What Kind of a Friend Is That?	Sophia	My best friend Madison and I got the assignment to jointly interpret the book <i>Ex Ponto</i> and answer several complicated questions about this novel. Finishing this assignment is really important to me because that's the only way I can fix my grade, but Madison already has an A and doesn't care about this assignment.	I'm tired, I'm not happy with my progress, and I'm panicking about the amount of work to be done. On top of that, I'm really disappointed and I keep wondering how my best friend could leave me high and dry like this. There's no way I'm going to beg for help!	Of course, I didn't manage to fix my grade because all that stress just ate me alive. I'm no longer speaking to Madison!	(1) viewing the situation from different perspectives (How important is this task to Madison? Recognizing the new dimension of their relationship – working on a school assignment); (2) a brief distraction (focusing on another activity, preferably extracurricular); (3) talking to Madison (relying on their stable and functional relationship outside of this assignment; they know each other well, which can be a good foundation for an open conversation about how Sophia sees the whole situation and why she's stressed out)
	Madison		I can't believe Sophia is pressuring me so much to read a book that's not even mandatory, now that we're reaching the end of the school year! We've never done any school assignments together before and I didn't think that she'd work so hard; I thought she didn't like literature and that we'd just do the bare minimum.		
	better Sophia		I'm tired, I'm not happy with my progress, and I'm worried that I won't be able to do so much work on my own. Still, I have to pull myself together and do as much as I can. Maybe I can still convince Madison to help me out with at least one part of the work.	Madison didn't want to read the whole book, but she found some useful information online and saved me some time. In the end, I managed to fix my grade and what is most important, we didn't get into a fight.	

Situation Label	Actors	THE PLOT – THE FIRST PIECE OF THE PUZZLE	THE EMOTIONAL REACTION – THE SECOND PIECE OF THE PUZZLE Two versions: a) the protagonist's positive reaction; b) the other side's perspective	THE DENOUEMENT – THE THIRD PIECE OF THE PUZZLE	Regulation strategies – maintaining positive emotions
Situation 2.1: It's Easier and Nicer in Company	Skylar	Since the beginning of the school year, we've known that in the third trimester, we'll have a big practical assignment in psychology, different from what we normally do, and that it will significantly influence our final grade. Since then, I've been wondering how I'll handle this new task, if I'll understand what needs to be done or if I'll miss the mark completely. Today, the teacher told us that we would do this project in groups and not individually and we have already formed groups.	I am so relieved and happy that we'll do this in groups and that I'll have someone to rely on and someone with whom I can share my dilemmas. I don't mind rolling up my sleeves, as long as I don't have to do it on my own!	Everyone in the group was in such a great mood the entire time and even when we encountered some problems, instead of creating tension and panicking, everyone solved everything together, step by step.	
	Stephen		We have Skylar in our group, who is so happy she doesn't have to do this on her own that she has lifted everyone's spirits and made us enthusiastic about this assignment!		
Situation 2.2: She's Actually Pretty Cool	Jane	Today was the first day of our practical training at work organizations. Our principal arranged for each group of three students to go to a company, spend a week there, and jointly do some tasks. I'm in a team with two classmates with whom I've never hung out before because they've always seemed to look down on everyone, as if no one is good enough for them. However, today we've spent the whole day together and it turns out we have many common topics and interests.	I feel so relieved and I think that we're going to get along really well. Actually, I was so excited when I realized how normal and cordial the two of them were and how well they understood everything I told them.	All three of us had an awesome time during our training. We easily completed all the joint tasks because we totally get one another and we all think the same way.	
	Kevin and Sandra		What a pleasant surprise! We thought that Jane was a boring nerd, but it turns out that she's a really cool girl; so smart and funny.		
Situation 2.3: Positive Feedback and Encouragement From the Crew	Sasha	Since our homeroom teacher teaches sociology, we wanted to do something special for International Women's Day. Instead of buying her flowers, I suggested making TikTok videos in the spirit of "I don't want a flower, I want a revolution", which would explain the history of the holiday. And that's exactly what we did!	I am so glad that everyone accepted my idea; I was really proud! It's a great feeling when you can make a contribution like that!	We had a great time recording videos and the homeroom teacher was delighted when she saw what we'd made. Even more so when she saw how many views we got! I am still elated by the success of something that I suggested and it has brought me and my friends even closer.	(1) positive self-talk; (2) humor
	a classmate		I thought Sasha's suggestion was amazing, not to mention that it helped us avoid stupid cliches that have nothing to do with the actual spirit of International Women's Day. I am so grateful to her for inspiring us!		

Supplement E19.
The Emotion Puzzle Template
(if impractical, the cards do not need to be shaped like puzzle pieces)



Supplement EI10. Possible Emotion Regulation Strategies

Non-Adaptive Strategies	Adaptive Strategies
self-directed negative thoughts ignoring the issue at the root of the emotion shifting the blame (to oneself or others) repressing (hiding, ignoring) emotions endless procrastination aggressive behavior ...	repeating positive thoughts viewing the situation from a different, more positive standpoint considering another person's perspective acceptance seeking help brief distraction humor ...

Exchanging Ideas Through Dialogue

Supplement E2. Sentence Cards in Two Colors for Each Student Group

(Printable materials from this supplement suitable for use during the activity can be retrieved from the following links – [orange sentence cards](#) and [green sentence cards](#))

Orange Sentence Cards

Green Sentence Cards

Go ahead, we are listening carefully,	Let everyone say what they think about this suggestion.	Let everyone say whatever comes to mind and then we will figure something out.	Let's hear some more ideas; I think we can do better.
Leave the talking to smarter people.	Do as you're told.	One idea is enough; no reason to overthink it.	Let's not dwell on it; just write down the first thing we come up with
I love you dearly, but I wouldn't do it like that.	I can't tell you how much I love working with you.	Why waste time planning what to do when that's not going to help us?	Let's write down all the good and bad sides of this suggestion.
Due to your different opinion, we may well end up fighting.	If you're my friend, you'll agree with me.	Why do you think that's the correct solution?	Sounds good. We'll figure out later how to defend this solution.
This is really a joint solution.	If something goes wrong, remember that I did not agree.	I don't know why; I just think this suggestion is better and I think we should adopt it.	Let's see how much time we have and what will take the longest.
It doesn't matter that not everyone agrees; what matters is that the majority is in favor of it.	Wait, this decision is not ok with everyone.	We'll stay here forever if we keep this up.	Wait, let me show you what I've found on TikTok.
Without everyone contributing, it wouldn't have worked out this well.	If we do it wrong, it will be your fault.	Let's get this over with already.	What have we done so far and what's next?
I'll wait for you to come up with a solution and I'll agree because it is all the same to me.	What do you think? You are good at this.	Let's be a bit flexible; we have planned this, but we haven't foreseen all the challenges.	We have a plan and we should stick to it at all costs.
Let everyone say what they think; we are all smart here.	You are not good at this; there's no reason for you to get involved.		
You always fumble when you speak, so you'd better keep quiet.	Do we all agree with this solution?		

SUPPLEMENT E3: Links Between Successful and Unsuccessful Teams' Sentences and the Rules of Collaboration

	THE RULE OF COLLABORATION	SENTENCES
FOCUS ON INTRA-GROUP RELATIONS	We are all equal and we respect one another.	Go ahead, we are listening carefully, Let everyone say what they think about this suggestion. Leave the talking to smarter people. <i>Do as you're told.</i>
	We foster a good atmosphere even when we think differently.	I love you dearly, but I wouldn't do it like that. I can't tell you how much I love working with you. <i>Due to your different opinion, we may well end up fighting.</i> <i>If you're my friend, you'll agree with me.</i>
	We are all responsible for group work.	This is really a joint solution. Without everyone contributing, it wouldn't have worked out this well. <i>If we do it wrong, it will be your fault.</i> <i>I'll wait for you to come up with a solution and I'll agree because it is all the same to me.</i>
	We help everyone contribute to group work.	What do you think? You are good at this. Let everyone say what they think; we are all smart here. <i>You are not good at this; there's no reason for you to get involved.</i> You always fumble when you speak, so you'd better keep quiet.
	We strive to involve everyone in decision-making.	Do we all agree with this solution? Wait, this decision is not ok with everyone. <i>If something goes wrong, remember that I did not agree.</i> <i>It doesn't matter that not everyone agrees; what matters is that the majority is in favor of it.</i>
FOCUS ON TASK SOLVING	The more ideas we consider, the more certain we are we have selected the best one.	Let everyone say whatever comes to mind and then we will figure something out. Let's hear some more ideas; I think we can do better. <i>One idea is enough; no reason to overthink it.</i> <i>Let's not dwell on it; just write down the first thing we come up with.</i>
	We expound every idea, weigh arguments, and devise solutions.	Let's write down all the good and bad sides of this suggestion. Why do you think that's the correct solution? <i>Sounds good. We'll figure out later how to defend this solution.</i> <i>I don't know why; I just think this suggestion is better and I think we should adopt it.</i>
	We wisely use our time to work on the task.	Let's see how much time we have and what will take the longest. We'll stay here forever if we keep this up. <i>Wait, let me show you what I've found on TikTok.</i> <i>Let's get this over with already.</i>
	We monitor our progress and contemplate our next step,	What have we done so far and what's next? Let's be a bit flexible; we have planned this, but we haven't foreseen all the challenges. <i>We have a plan and we should stick to it at all costs.</i> <i>Why waste time planning what to do when that's not going to help us?</i>

SUPPLEMENT E4. Prepared Dialogue for the Fixing Dialogue Exercise for Each Student

(Printable materials from this supplement suitable for use during the activity can be retrieved from the following [link](#))

Exercise: Fixing Dialogue

What follows is a dialogue between several secondary school students who go to the same class. Identify and underline the sentences in which the student assigned to your group violates the rules of collaboration. As a group, talk about the ways this student could act differently by adhering to the rules. Replace the problematic statements with new sentences that the student could say and thus constructively contribute to their collaboration. If the person assigned to your group does not violate the rules of collaboration, underline the sentences that show that this student adheres to the rules and write the number of the corresponding rule above each sentence.

Anna, Brent, Luna, and Andrew are sitting on a park bench during recess. They are discussing how to help Steve go on the upcoming school trip knowing that his parents cannot afford it. This is an excerpt from their dialogue:

Anna: It would be best to message our entire class on Viber, apart from Steve, of course, and ask everyone to chip in.

Brent: The school trip isn't cheap; there's no way we can collect enough money and it's not like everyone will participate...

Anna: That's what I would do; it's the best solution!

Andrew: Guys, let's go to the mall after class; the voucher that we got is only valid until the end of March.

Luna: Anna is the smartest person here; I would stick with her suggestion.

Andrew: Luna, you never have a mind of your own!

Brent: Let's think this through. Do we have any other ideas? What if we don't collect enough money?

Anna: Everyone will chip in and it will be enough! How can you not get that?

Brent: I just want us to give it some more thought and find another solution. How about asking our homeroom teacher for ideas or help?

Andrew: Really, Brent, you're my friend and all, but when you ask the homeroom teacher for help, that's so lame. I mean... she's okay, she'd try to help... Listen, Steve will manage somehow. Why don't we go to the mall?

Anna: I told you plain and simple, we should message everyone on Viber, everyone will give \$10 or \$20 or as much as they can and his parents will be able to cover the rest.

Brent: And what if someone doesn't have or doesn't want to give that much money? You know that there are people in our class who don't like him all that much.

Anna: You're always such a Debbi Downer. You're so negative. I come up with an actual solution and you just keep poking holes and want to whine to the homeroom teacher. Andrew is right, you're so lame when you ask for help.

Luna: Hey, my uncle owns a bakery and he's always short-staffed. How about we ask him if the four of us can work for him? We could ask other people on Viber and we'll get the money for sure that way. Even Steve... we can say that we'll all

use it as pocket money on the trip. That way, Steve can also participate and he won't feel bad if we help him get the money to go on the trip in the first place.

Andrew: You really should keep your mouth shut. Us working? Yeah, right. Come on, we've been babbling about this for ages. Let's collect a bit of cash like Anna said. His folks will cover the rest and that's that. Come on, people, let's go to the mall, I want to use my voucher before it expires!

Brent: But wait, Luna's idea is really good. We can ask people to give money and we could all earn some cash, including Steve.

Luna: Oh, it's fine, Anna's right.

Anna: Exactly. Forget about it. We'll just message everyone on Viber and that's that.

Supplement E5. Examples of Fixed Dialogues – Solutions for Facilitators

These are merely examples of potential solutions. The facilitator should accept any solution in which students clearly identify the rule broken and adequately replace it in the case of Anna, Andrew, and Luna or identify the rule that Brent followed by writing the corresponding number above the sentence.

Anna

Statement in line 1:	It would be best to message our entire class on Viber, apart from Steve, of course, and ask everyone to chip in.
Explanation:	This sentence could be a subject of discussion since Anna starts the sentence with “it would be best”, which may be a violation of Rule 1.
Example of a rewritten statement:	Instead of “it would be best”, Anna could say “how about...”
Statement in line 3:	That’s what I would do; it’s the best solution!
Explanation:	The statement is in violation of Rules 1, 2, and 7. By claiming that her idea is the best one, Anna does not take Brent’s statement into consideration. She contributes to creating a tense atmosphere by terminating communication and not offering an explanation of her attitude or constructively criticizing Brent’s idea.
Example of a rewritten statement:	Anna’s statement can be rephrased as follows: <u>“Hm, you may be right; we should invest some more thought into the solution.”</u>
Statement in line 8:	Everyone will chip in and it will be enough! How can you not get that?
Explanation:	The statement is in violation of Rules 1, 2, 4, 5, 6, and 7. Anna insults Brent by asking condescendingly: How can you not get that? She creates a negative atmosphere in the group by not offering a constructive explanation of her disagreement. Furthermore, she does not allow the deliberation of alternative ideas, she does not help Brent develop his idea, and she does not contribute to making a decision that is acceptable to everyone.
Example of a rewritten statement:	“I think that everyone will be willing to chip in, but we can definitely consider other ideas in case this doesn’t work out.”
Statement in line 11:	I told you plain and simple, we should message everyone on Viber, everyone will give \$10 or \$20 or as much as they can and his parents will be able to cover the rest.
Explanation:	The statement is in violation of Rules 1, 5, 6, and 7. Anna is still sidelining Brent’s ideas. She does not offer a constructive explanation of her disagreement. Moreover, she does not allow the deliberation of alternative ideas and does not contribute to making a decision that is acceptable to everyone.
Example of a rewritten statement:	“We can message everyone on Viber and see how much money they can give and we can ask the homeroom teacher like Brent suggested. Maybe she’ll have some good ideas as well.”

Statement in line 13:	You're always such a Debbi Downer. You're so negative. I come up with an actual solution and you just keep poking holes and want to whine to the homeroom teacher. Andrew is right, you're so lame when you ask for help.
Explanation:	The statement is in violation of Rules 1, 2, and 5. Anna offends Brent and completely ignores his contribution. She creates a negative atmosphere in the group by not offering a constructive explanation of her disagreement. Seeking help is important when the group does not succeed in problem solving or cannot reach a joint decision.
Example of a rewritten statement:	"We'll check how much money everyone can give and we'll definitely ask the homeroom teacher like you suggested. Don't worry, we'll find a solution."
Statement in line 18:	Exactly. Forget about it. We'll just message everyone on Viber and that's that.
Explanation:	The statement is in violation of Rules 5 and 7. Once again, Anna does not contribute to the development of a productive discussion and making a joint decision.
Example of a rewritten statement:	"Luna's suggestion is interesting, too. We can check on Viber who is willing to chip in and who would like to work and then decide which strategy is the best one."

Andrew

Statement in line 4:	Guys, let's go to the mall after class; the voucher that we got is only valid until the end of March.
Explanation:	Andrew violates Rule 3 by not contributing to the solution.
Example of a rewritten statement:	"Maybe you're both right. We'll definitely collect some money, but it may not be enough, so it's important to check."
Statement in line 6:	Luna, you never have a mind of your own!
Explanation:	The statement is in violation of Rules 1 and 2. Andrew insults Luna and creates a negative atmosphere in the group by not explaining his disagreement in a constructive manner.
Example of a rewritten statement:	"Dear Luna, it's great that you have confidence in Anna, but let's drum up some more ideas, just to make sure that this whole plan works out."
Statement in line 10:	Really, Brent, you're my friend and all, but when you ask the homeroom teacher for help, that's so lame. I mean... she's okay, she'd try to help... Listen, Steve will manage somehow. Why don't we go to the mall?
Explanation:	The statement is in violation of Rules 1, 2, 3, and 4. Andrew underestimates Brent's idea, he does not give him the opportunity to contribute and does not explain why he disagrees, and he once again suggests an unrelated activity that does not contribute to problem solving.
Example of a rewritten statement:	"It's not a bad idea to ask the homeroom teacher for help; she'd surely do her best. But I think that we can come up with more ideas on our own. What do you say?"

Statement in line 15:	You really should keep your mouth shut. Us working? Yeah, right. Come on, we've been babbling about this for ages. Let's collect a bit of cash like Anna said. His folks will cover the rest and that's that. Come on, people, let's go to the mall, I want to use my voucher before it expires!
Explanation:	The statement is in violation of Rules 1 and 7. Andrew insults Luna and does not contribute to the reexamination of different ideas in the group,
Example of a rewritten statement:	"There's another idea we could consider. Once we figure it all out, we can go to the mall together; I have a voucher that is about to expire and you could help me pick out something."

Luna

Statement in line 5:	Anna is the smartest person here; I would stick with her suggestion.
Explanation:	The statement is in violation of Rules 1 and 7. Luna does not explain her attitude and her response favors Anna over other members of the group,
Example of a rewritten statement:	I like Anna's idea. I think that's a quick and easy way to collect the money he needs.
Statement in line 17:	Oh, it's fine, Anna's right.
Explanation:	The statement is in violation of Rule 7. Luna once again withdraws in the face of Anna's dominant attitude and Andrew's insults, thus not contributing to the deliberation and comparative consideration of different ideas.
Example of a rewritten statement:	"It doesn't hurt to have multiple solutions, since they are different ways to more easily reach our goal and they are not mutually exclusive. Andrew, please, show some patience. We'll have time for everything and I can help you pick out something to buy if you'd like."

Brent

Statement in line 2:	The school trip isn't cheap; there's no way we can collect enough money and it's not like everyone will participate...
Explanation:	Brent follows Rule 7 by explaining why he believes they cannot collect enough money. If some of the students believe that he is not sufficiently respectful when addressing Anna, he is in violation of Rule 1. The students can suggest how to reformulate the sentence to make it more respectful.
Statement in line 7:	Let's think this through. Do we have any other ideas? What if we don't collect enough money?
Explanation:	Brent follows Rule 6, striving to ensure multiple approaches to problem solving.
Statement in line 9:	I just want us to give it some more thought and find another solution. How about asking our homeroom teacher for ideas or help?
Explanation:	Brent once again follows Rule 6, striving to ensure multiple approaches to problem solving and he proposes a novel suggestion.
Statement in line 12:	And what if someone doesn't have or doesn't want to give that much money? You know that there are people in our class who don't like him all that much.
Explanation:	Brent once again follows Rule 7 by explaining why he is reexamining Anna's idea for collecting money.
Statement in line 16:	But wait, Luna's idea is really good. We can ask people to give money and we could all earn some cash, including Steve.
Explanation:	Brent adheres to several rules (1, 2, 4, and 5). He strives to maintain the equality of group members and a good atmosphere and he supports Luna's suggestion, showing that every member's contribution is important. He also emphasizes that it is possible to accept multiple suggestions, thus contributing to a solution that could be acceptable to all group members.

SUPPLEMENT E6. Field Trip Planning

(Printable materials from this supplement suitable for use during the activity can be retrieved from the following [link](#))

TASK: FIELD TRIP PLANNING

Imagine that your group needs to organize a one-day field trip to the nearest city. Make a detailed plan of your trip containing the date of departure and the schedule and descriptions of activities (what you plan to do, visit, and see and in what order). Likewise, you should make a detailed budget plan for your activities and write all the information in the table. You have 20 minutes to complete this task.

Note: Make sure you follow the rules of collaboration while solving this task.

DATE OF THE FIELD TRIP:	
ACTIVITY SCHEDULE AND DESCRIPTIONS:	
BUDGET:	

The Internet as a Resource in Collaborative Problem Solving

Supplement R1.

Table for Identifying the Existing and Necessary Knowledge

(Printable materials from this supplement suitable for use during the activity can be retrieved from the following [link](#))

KNOWLEDGE MAP: What do we already know and what do we need to learn to solve the problem?		
The problem we are solving: HOW TO PREVENT THE EXTINCTION OF THE EASTERN IMPERIAL EAGLE IN SERBIA?		
What do we know for certain? 1. 2. 3. ...		Where did we learn this information? 1. 2. 3. ...
What do we think we know but are not certain? 1. 2. 3.		Where do we verify this information? How do we search for it? 1. 2. 3. ...
What is it that we do not know but need to learn? 1. 2. 3. ...	What information are we looking for? 1. 2. 3. ...	Where do we look for it? 1. 2. 3. ...

Is it important for the solution?
 If it is important, we verify it.

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“The handbook is organized into chapters corresponding to the four elements of the PEER model. Each chapter features a brief explanation of the given element, followed by diverse group activities that are intended for the youth and illuminate the significance of the specific element in the context of collaborative problem solving. Furthermore, the activities are designed to foster critical thinking, creativity, peer collaboration, and students' active participation in the learning process, which together contribute to the youth's cognitive, affective, and social development.”

Prof. Danijela Petrović

“This handbook is a result of a multi-year scientific project conducted by the authors, who have been studying the topics covered in the handbook for much longer than several years. On the one hand, this points to the quality of this publication, while on the other hand, it sheds light on a crucial yet relatively rare outcome of scientific projects—it shows how scientific projects can yield useful tools for practitioners and the wider expert and social communities.”

Prof. Nevena Buđevac

“With the original conceptualization and practical elaboration of specific activities, the authors have managed to create an extraordinary resource – a valuable supporting tool for school counselors and teachers, but also students and everyone else willing to learn, discover, and advance. Hence, this handbook constitutes an exceptional encouragement for a genuine improvement of the educational practice.”

Asst. Prof. Vladeta Milin