



## Examining Intercultural Interaction Patterns in Active Learning Groups: Erasmus+ Building Bridges through Project Arts Example

### Aktif Öğrenme Gruplarındaki Kültürler Arası Etkileşim Örüntülerini İncelenmesi: Erasmus+ Sanat Köprüleri Oluşturmak Projesi Örneği

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**ABSTRACT:** The aim of this study is to reveal intercultural interaction patterns in active learning groups. The study group consists of 28 students between ages of 15-17 who continue their education in the 9<sup>th</sup>, 10<sup>th</sup> and 11<sup>th</sup> grades. The participating students in question are studying at fine arts high schools in Romania, Poland and Türkiye. These three schools came together to carry out joint activities with the scope of the “Building Bridges through Arts” Project supported by Erasmus+ Programme. Activities were carried out in active learning groups. Semi-structured interview questions were used in the study. As a result of the analysis of the interview questions, students expressed opinions that creating active learning groups helped them learn about different cultures, strengthen interpersonal interaction, create products together; encourage collaboration, facilitate making decisions together and enhance positive time management.

**Keywords:** Active learning groups, interaction patterns, intercultural communication, Erasmus+ Program

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**ÖZ:** Bu çalışmanın amacı aktif öğrenme gruplarındaki kültürlerarası etkileşim örüntülerini ortaya çıkarmaktır. Çalışma grubunu 15-17 yaş aralığındaki, 9., 10 ve 11. sınıfta eğitimlerine devam etmekte olan 28 öğrenci oluşturmaktadır. Söz konusu katılımcı öğrenciler Romanya, Polonya ve Türkiye’de yer alan güzel sanatlar liselerinde öğrenim görmektedirler. Bu üç okul, Erasmus+ Programı tarafından desteklenen “Sanat Köprüleri Oluşturmak” (Building Bridges through Arts) Projesi kapsamında ortak etkinlikler yürütmek amacı ile biraraya gelmişlerdir. Etkinlikler, aktif öğrenme grupları şeklinde gerçekleştirilmiştir. Çalışmada yarı yapılandırılmış görüşme soruları kullanılmıştır. Görüşme sorularının analizi sonucunda öğrenciler, aktif öğrenme grupları oluşturulmasının farklı kültürleri tanıma, kişiler arası etkileşimin güçlenmesi, işbirliğine teşvik etmesi, birlikte ürün oluşturulması, birlikte karar vermeyi kolaylaştırması, zamanı olumlu yönetme konusunda görüşler bildirmişlerdir.

**Anahtar sözcükler:** Aktif öğrenme grupları, etkileşim örüntüleri, kültürlerarası iletişim, Erasmus+ Programı

## 1. INTRODUCTION

Active learning, though discussed in literature by various researchers at the beginning of the century, is not a new concept. Montessori suggested that students should decide what they want to learn (Anderson, 1984; Cooperstein & Kocevar-Weidinger, 2004); Dewey (1972) emphasized the importance of students discovering knowledge themselves (Ün-Açıköz, 2002). In our current information age, the diverse forms of interaction that aim to nurture individuals who think, understand, interpret, produce knowledge, solve problems, and think scientifically are of great importance (Braxton et al., 2000; Spiceland & Hawkins, 2002). Consequently, interest in active learning has been increasing worldwide (Yıldız-Demirtaş, 2017). Today, in many schools across various countries, active learning and the skills that can be gained through it are emphasized to develop a smart and flexible workforce (Baum et al., 1997; Ün-Açıköz, 2014). In this context, active learning methodologies based on lifelong learning provide students with the opportunity to actively engage in learning by addressing multiple domains (Lord et al., 2012). As students actively participate in hands-on activities, they become involved in the process of inquiry, discovery, investigation, and interpretation (Brown & Cocking, 2000), in other words, they gain the ability to use knowledge (Tesfaye & Berhanu, 2015). The European Commission (2023) prioritizes the professional development of teachers, school leaders, and other educational staff in school education by promoting the formation of intercultural active learning groups (Bleszynska, 2008) and the transfer of good practices (Buil Fabregá et al., 2019) through the interaction of different cultures (Dori et al., 2002). This is because active learning supports the strengthening of foreign language skills by involving students in the learning process through online or face-to-face activities (Venton & Pompano, 2021). In this way, project learning mobility activates students (Urry, 2002) and encourages individuals to take responsibility (Ballatore & Ferede, 2013). Additionally, in active learning, learning results from what students naturally do (Kardaş-Uca, 2016). Thus, students participate in the structured learning process of engage-explore-explain-elaborate-evaluate (Hill, 2013) by making analogical connections among stimuli (Vygotsky, 1978).

In active learning, the process of knowledge relies on the endeavor to solve problems and find new applications within learning environments that include individual differences (Niemi, 2002). Principles of active learning, such as developing skills for working on and researching original topics, enabling students to actively participate in the decision-making process, fostering collaboration among learners, and transferring current knowledge to original materials (Garbinger & Dunlap, 1995), align with the competency of "learning to learn," which is a priority concept in the European Commission's Call for Proposals for lifelong learning (European Commission, 2023). Additionally, to ensure active participation, it is important to consider age groups, socio-economic conditions, learning needs (Dunkase et al., 1997), and students' predispositions to learning styles (Yıldız-Demirtaş & Baltacıoğlu-Gökdağ, 2010) in learning environments.

Based on this information, the "Building Bridges Through Art" project was designed in line with the general objectives of the Erasmus+ Program (European Commission, 2023), which aims to enhance students' knowledge and awareness levels on specific topics (Hart et al., 2020; Ruggery, 2022), develop individuals' creative thinking and problem-solving skills on issues such as environmental problems, and equip them with artistic, social, and intercultural competencies. Accordingly, within the scope of this study, the learning processes and patterns of participants in intercultural environments, following the activities prepared in collaboration with the project partners, were examined in the light of the literature.

## 2. METHOD

In this research, a case study, one of the qualitative research methods, was used to examine the intercultural interaction patterns in active learning groups. A case study is a research method that examines a phenomenon in detail within its context and uses multiple sources of evidence or data when available (Yıldırım & Şimşek, 2008; Yıldız-Demirtaş).

Before starting the research, an application was made to obtain ethical approval from the Ethics Committee of Dokuz Eylül University, Buca Faculty of Education, and as a result, ethical approval was obtained with the document number E-10042736-659-292804 dated 22.06.2022.

### 2.1. Research Design

The study aimed to analyze intercultural interaction patterns within active learning groups, guided by the "Building Bridges Through Art Project" objectives as delineated in the European Commission Erasmus+ Program Guide (European Commission, 2021) in line with the following objectives:

- Responding to environmental needs and tasks,
- Adopting a solution-oriented approach to problems in intercultural environments,
- Supporting other team members in intercultural activities,
- Exchanging ideas in the target language on universal topics (e.g., global warming),
- Product-based collaboration,
- Forming collaborative groups composed of diverse members,
- Developing creative thinking while solving problems,
- Collaborating to strengthen weaknesses,
- Exploring different learning paths in intercultural environments,
- Internalizing universal topics (e.g., protecting nature).

Through these objectives, the research sought to uncover the intricate dynamics of intercultural communication and collaboration, thereby contributing to a deeper understanding of how active learning environments can facilitate cultural exchange and mutual growth among diverse student groups.

### 2.2. Study Group

The study group consists of 28 (twenty-eight) students aged between 15 and 17 who are continuing their formal education in the field of fine arts. These students are from Romania (n=8), Poland (n=8), and Türkiye (n=12). The study group was selected from students who participated in at least two activities conducted in Romania, Poland, and Türkiye. Information regarding the country, gender, and age of the participant students is listed in Table 1:

**Table 1:** Information about Participants' Genders and Ages by Country

	Romania (f)	Romania (%)	Poland (f)	Poland (%)	Türkiye (f)	Türkiye (%)	total (f)	total (%)
<b>female students</b>	4	15	8	28.6	7	25	19	68.6
<b>male students</b>	4	15	0	0	5	17.8	9	32.8
<b>15 years old</b>	2	7.1	1	3.6	4	15	7	25.7
<b>16 years old</b>	5	17.8	2	7.2	3	10.7	10	35.7
<b>17 years old</b>	1	3.6	5	17.9	5	17.9	11	39.4

According to Table 1, when examining the gender and age characteristics of the participant students (n=28), it is observed that 68.6% (n=19) of the study group are female and 32.8% (n=9) are male. Additionally, 25.7% (n=7) of the participants are 15 years old, 35.7% (n=10) are 16 years old, and 39.4% (n=11) are 17 years old.

### 2.3 Data Collection Tools

In the study, data were collected using the "Intercultural Interaction Patterns in Active Learning Groups Interview Form" through Google Forms. This form was prepared after active learning group activities to determine how participant students managed their learning processes and of patterns they formed in intercultural environments. In qualitative research, formulating research questions requires purpose orientation and clarity at all stages. Accordingly, the interview questions were meticulously prepared by the researchers and reviewed by five experts. Opinions were obtained from three academics working in Türkiye and Romania, as well as three teachers involved in the Erasmus Art Bridges Project.

The questions were translated into English by one of the researchers, who is an English teacher, and then reviewed by the teachers at the project partner schools. The finalized form was prepared online. The interview form included 11 open-ended questions. Additionally, to evaluate the project's outcomes from the students' perspectives, a multiple-choice question was added at the end of the interview form. This question was phrased as "*Please select one or more options that apply to you: Project activities...*" and the responses were analyzed using a separate graph.

The internal consistency of the interview questions was calculated based on the Miles and Huberman (1994) model. According to this model, the agreement between coders is expected to be at least 80% (Miles & Huberman, 1994; Patton, 2002). In our study, the inter-coder reliability for the questions was found to be 97%. The researcher from Türkiye actively participated in conducting the activities, while one teacher from each of Türkiye, Romania, and Poland served as observers.

### 2.4 Data Collection

The data collected using the "Intercultural Interaction Patterns in Active Learning Groups Interview Form" was part of the "Building Bridges Through Art" project, prepared and implemented by the partner schools in Romania, Poland, and Türkiye, in accordance with the 2021 Call for Proposals of the Erasmus+ Program. One of the researchers was a teacher at one of the partner schools. Within the scope of this project, the researcher and teachers from other partner schools conducted activities in

Romania and Poland like those described below. These activities were also similarly implemented during the mobility in Türkiye. The activities conducted in Türkiye were prepared by the researchers. After conducting studies in the three countries, data were collected online from students who participated in activities in at least three countries.

## 2.5 Project Activities Process

In this study, the activities implemented based on the active learning model were prepared in accordance with the guidelines specified by Cedefop (2020) and Hart et al. (2020), aiming to develop environmental skills, social skills, and language and communication skills defined by the European Commission as key competencies. The active learning methods and techniques used in the research promote social and collaborative learning instead of competitive and individual learning. These methods and techniques are used to measure students' interest levels in a specific topic and to determine the rationale behind the information discussed when faced with uncertainty or a problem. In this context, students can think critically and participate in goal-oriented collaboration within a specific strategy framework by using information accurately and with justification (Bellanca, 1997).

**Table 2:** Activities Conducted Within the Framework of the "Building Bridges Through Art" Project

Activity	Duration	Participant Number	Method/Technique Used	Aim	Explanation
<b>When the Wind Blows</b>	5 min.	18	information management and icebreakers	participant introduction and emphasis on erasmus+ priorities	the participants gather in a circle, and the facilitator indicates the blowing wind with various expressions.
<b>Actionbound Application</b>	20 min.	18	information utilization, decision making, and collaboration	enhancing students' skills in information utilization, decision making, and collaborative action	participants work in groups of four or five to accomplish tasks such as creating reusable materials from waste.
<b>Back to Back Technique</b>	15 min.	18	interpersonal communication and assessment	building connections and strengthening collaborative skills	assessment through pair communication enhances and strengthens these communication skills.
<b>Consider All Factors</b>	15 min.	18	with carousel technique	considering all factors in the decision-making process	participants engage in the decision-making process considering all factors, including issues like global warming.

<b>Jigsaw</b>	15 min.	18	information gathering and collaboration	enhancing students' skills in information gathering and collaboration	students roam around the classroom using envelopes containing questions and search for answers.
<b>Identifying Environmental Issues</b>	15 min.	18	facilitating question-answer	raising awareness among students regarding environmental issues	students discuss the issues related to global warming they observe in their surroundings.

In the third mobility of the "Building Bridges Through Art Erasmus+ Project," the "wind blowing technique" was used to enhance the skill of information management. This technique was employed as an icebreaker to help individuals get to know each other in a newly acquainted group and to discern similarities and differences on a topic. Accordingly, participant students, along with the facilitator (one of the researchers), formed a circle and emphasized the priorities of the Erasmus+ Program with expressions like "artwork for blondes in the wind," "artwork for those volunteering in environmental associations in the wind," "artwork for tree planters in windy countries," and "artwork for those familiar with upcycling art." The "Actionbound" application was utilized in groups of four or five to develop skills in information utilization, decision-making, and collaborative action. Participant students performed tasks such as "creating reusable materials from waste." After completing the group tasks, an evaluation was conducted using the "back-to-back technique" to strengthen the nature of interpersonal communication, aiming to enhance teamwork, critical thinking, and problem-solving skills. Subsequently, a clear list was made using the "considering all factors method" and the "ant method" together to identify a decision or idea, where an important detail is that a factor overlooked at the moment could actually be wrong. Participant students filled in a draft considering all factors, discussing scenarios in groups according to known, unknown, and interesting factors related to the "problem of global warming." Envelopes containing questions on the theme of "our world around us" were given to participant students to gather information, and each group roamed around the class to find the answers to their questions. The "considering all factors method" was used to evaluate the answers, and a collective assessment was conducted. Subsequently, the outcome was displayed on a board, and students reached conclusions by identifying similarities and differences in the suggestions. The facilitator (one of the researchers) asked them, "What problems related to global warming do you observe in your surroundings?" Initially, all participants pondered this issue individually and then discussed it in groups consisting of students from three different countries. During the assessment process, a large tree image was presented to the participants in the circle, and colored pencils were provided for them to write down the elements they easily found or overflowed and the elements they found enjoyable and productive on the tree.



Finally, a similar application was conducted on a human figure, and participants were interviewed online. The participants' views and comments on the activities are presented in the findings section.

## 2.6. Limitations

This study is limited to 28 (twenty-eight) participants attending three fine arts schools from three different countries. The study is constrained by a 5 (five) day activity period and the interview form questions. According to the participants' responses, it was observed that they tend to respond to environmental needs and tasks in a solution and collaboration-oriented manner, focusing on "reducing waste" and "raising environmental awareness."

## 3. FINDINGS

The responses of participants to the open-ended interview questions, prepared in line with the CEDEFOP knowledge, skills, and competencies framework (Hart et al., 2020), were first categorized into "solution and collaboration-oriented" and "non-solution and collaboration-oriented." This categorization allowed the responses given at the end of the activities to be organized under specific themes. The responses were analyzed numerically and percentage-wise, enabling a detailed analysis of the data. The following table presents the main and sub-themes for each question, along with the frequencies and percentages of the responses, and direct quotations from the participants.

**Table 3:** Open-Ended Questions to Evaluate the Problem-Solving and Collaboration Process in Groups Work

Question	Main theme	Sub-themes	Solution and Collaboration-Oriented Responses (f)	Solution and Collaboration-Oriented Responses (%)	Other/Irrelevant Responses (f)	Other/Irrelevant Responses (%)	Direct Quotations
What actions can you take to respond to the needs and tasks related to our environment after the activities?	Solution Development	Environmental awareness, Voluntary participation	28	100.0	0	0.0	"I plan to clean up the environment after the activity." "I will participate in recycling projects."
What behaviors would you	Collaboration	Tolerance, Empathy	25	89.3	3	10.7	"I would try to understand



<b>exhibit in an intercultural environment?</b>							<i>other cultures."</i> <i>"I would listen without prejudice."</i>
<b>How were you able to support other team members during the activities?</b>	Supportive Behaviors	Helping, Encouraging	27	96.4	1	3.6	<i>"I supported my team members by giving them ideas."</i> <i>"I tried to boost morale."</i>
<b>How did you exchange views with other team members on environmental issues?</b>	Communication	Discussion, Information sharing	27	96.4	1	3.6	<i>"I shared information about environmental issues."</i>  <i>"We discussed and found a common solution."</i>
<b>What did you do when creating a product within the group?</b>	Collaboration and Productivity	Task sharing, Cooperation	28	100.0	0	0.0	<i>"We shared tasks and worked together."</i> <i>"Everyone took responsibility."</i>
<b>How did you support each other during the activities?</b>	Supportive Behaviors	Helping, Boosting morale	28	100.0	0	0.0	<i>"We boosted each other's morale."</i> <i>"We stayed in communication to help each other."</i>
<b>Did you have any difficulties collaborating? If yes, how did you solve them?</b>	Challenges and Solutions	Communication issues, Finding solutions	28	100.0	0	0.0	<i>" We tried to overcome difficulties together."</i>
<b>How did you help each other learn while collaborating?</b>	Peer Learning	Information sharing, Guiding	28	100.0	0	0.0	<i>""We shared our knowledge."</i> <i>"We guided each other."</i>

<b>What did you do to strengthen communication?</b>	Communication Strategies	Open communication, Active listening	24	85.7	4	14.3	"We established open and clear communication."  "We listened to each other carefully."
<b>How can you collaborate with other members in future teams?</b>	Future Plans	Collaboration, Communication	26	96.3	2	7.4	"I will plan for good collaboration."  "I will establish better communication."
<b>How can you act according to environmental values in the future?</b>	Environmental Awareness	Recycling, Environmental consciousness	25	92.9	3	7.1	"I will be more careful about recycling."  "I will increase my environmental awareness."

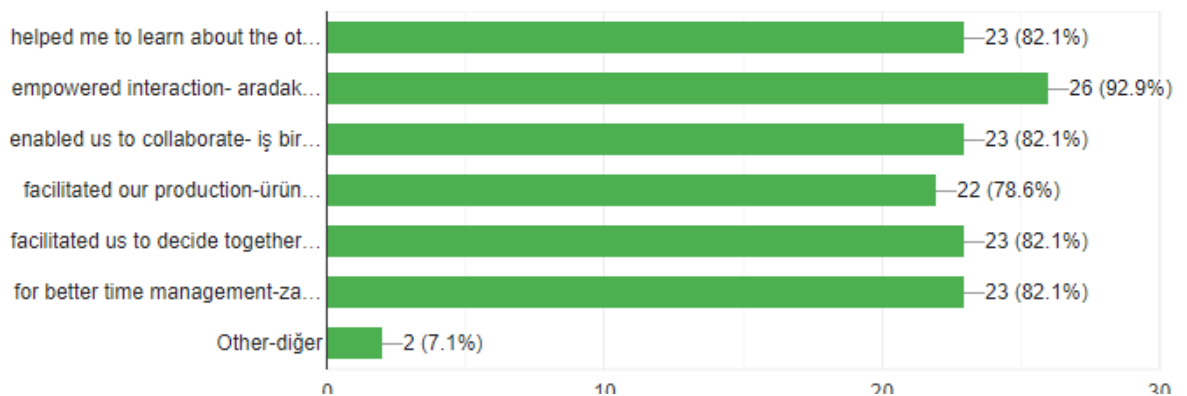
The category of solution and collaboration-oriented responses in Table 3 includes responses that reflect participants' problem-solving abilities and tendencies to collaborate during and after the activities. These responses were detailed to evaluate the solution proposals developed by participants and the level of collaboration they exhibited during group work. The non-solution and collaboration-oriented responses category includes responses in which participants were not sufficiently active in problem-solving and collaboration. These responses focused on the difficulties participants encountered during the activities and their strategies for overcoming these challenges. In this thematic analysis process, each response was first coded, and then these codes were grouped under the identified themes. The obtained data were analyzed numerically and percentage-wise. This allowed for detailed information on participants' tendencies toward solution orientation and collaboration. Numerical analyses revealed the distribution of participants' responses and the frequency of grouping under specific themes. Percentage analyses determined the proportion of each category within the overall responses. Each question includes main and sub-themes, the frequencies and percentages of the responses, and direct quotations from the participants.

The responses in Table 3 examine in detail what participants can do to respond to environmental needs and tasks after the activities (e.g., "I plan to clean up the environment after the activity."), the behaviors they exhibit in intercultural environments (e.g., "I would try to understand other cultures."), how they support other team members (e.g., "I supported my team members by giving them ideas."), and

how they exchange views on environmental issues (e.g., "I shared information about environmental issues.").

Responses are categorized as solution and collaboration-oriented or other/irrelevant, and the participants' behaviors during and after the activities are analyzed. Solution and collaboration-oriented responses highlight the importance participants place on environmental values and their solution-oriented approaches. The process of collaboration in intercultural groups is described with expressions such as "listening to each other" and "providing verbal or visual assistance." These behaviors emphasize the positive attitudes participants display while collaborating and the harmony within the team.

Strategies for overcoming challenges encountered during the activities are indicated with expressions like "using body language" and "using technology." These strategies enhance participants' problem-solving skills and support the collaboration processes. Regarding future collaborations, participants' behaviors such as "giving tips" and "brainstorming" stand out as significant elements that strengthen collaboration. Additionally, participants' tendencies to use technology and social media effectively to maintain collaboration and protect environmental values demonstrate their ongoing solution and collaboration-oriented attitudes.



**Figure 1:** Responses to the Multiple-Choice Questions at the End of the Interview

In the last section of the interview form, participants were asked to choose up to three options to describe their learning experiences during the activities. As seen in Figure 1, the activities helped participants learn about different cultures (82.1%), strengthen the interaction between team members (92.9%), collaborate (82.1%), and produce together (78%), helped them make their decision-making processes easier (82.1%) and manage time better (82.1%). Additionally, under the heading "other" (7.1%), participants commented on "having a good time" and "improving foreign language skills".

#### 4. DISCUSSION and RESULT

In this study, 11 open-ended interview questions and 1 multiple-choice question aimed at examining different interaction models in active learning groups from three different countries were conducted online. Accordingly, interaction models such as "responding to environmental tasks and needs with solution and collaboration-oriented responses," "supporting each other in a cross-cultural environment," "appropriate behavior in a cross-cultural group," "exchanging information about environmental issues in the target language," "ensuring active participation during production,"

"supporting each other during production," "supporting oneself and other team members in group work," "strengthening communication with visual aids, body language, and technological applications," "taking a problem-solving approach during communication challenges," "tendency to collaborate in the future," and "acting according to environmental values" stood out.

Upon examining these trends, participants responded to environmental needs and tasks (% 100) by supporting and collaborating with other team members, aligning with the fact that students discover knowledge and truths through active participation (Dewey, 1972; Ün-Açıkgöz, 2002). Responses related to exhibiting appropriate behavior in cross-cultural environments (% 89.3) include behaviors such as speaking the common language, using body language when necessary, and acting as a facilitator, which can be considered as indicators of interaction occurring in different ways in active learning groups (Spiceland and Hawkins, 2002). Additionally, the ability to provide justification for information in active learning environments (Romanov et al., 2020), collaborating with teammates using technology and social media (%96.2), planning to collaborate via social media in the future (%96.2), and planning to collaborate in the future to raise awareness about waste reduction using technological tools (%92.9) are noteworthy.

These models are associated with supporting the use of technology in active learning groups (Dori et al., 2002), sharing best practices through the interaction of different cultures (Bleszynska, 2008), and transferring best practices (Buil-Fabrega et al., 2019). Furthermore, responses such as being solution-oriented while collaborating (%100) and being able to distribute tasks by considering the strengths and weaknesses of team members (%85.2) demonstrate their ability to contribute to the active learning process through collaboration among differences, thus establishing effective interaction (Venton and Pompana, 2021).

## 5. RECOMMENDATIONS and CONCLUSIONS

Participants emphasized methods such as "providing hints," "brainstorming," and "drawing mind maps" to support other team members during collaboration. Responses regarding potential future collaborations with other team members largely leaned towards collaboration and solution-oriented approaches. It was found that participants tended to maintain their solution and collaboration-oriented attitudes by using technology and social media to increase environmental awareness after the process and by participating in various relevant educational activities or conferences. Responses to the multiple-choice question and participants' comments indicated that the project activities helped them gain knowledge about different cultures, strengthen intercultural interactions, promote collaboration, and facilitate product creation. Additionally, when "other" comments were examined, it was observed that participation in the activities was beneficial in terms of time management, enjoying group work, and improving language communication skills.

The transformation of the interpersonal process into an internal process, requiring the construction of relevant new and enduring behaviors, allows for the design of intercultural activities in active learning groups targeting different intelligence domains (Bellanca, 1997). This process enables individuals to enhance their self-learning skills and make their learning permanent. For example, visual aids, body language, and technological applications used during intercultural activities strengthen participants' communication and collaboration skills.

In line with the research findings, it is recommended to use various active learning methodologies within the framework of predetermined and planned objectives to transform information into a series of active learning and transformation processes (Hart et al., 2020). Therefore:

- **Technology and Social Media Usage:** Considering participants' inclination towards collaborating using technology and social media to increase environmental awareness, the effective use of these tools should be encouraged. Integrating social media tools and technological applications into educational programs provides students with a broader communication and collaboration network (Dori et al., 2002).
- **Activities Targeting Diverse Intelligence Areas:** Intercultural activities can be enriched with activities that cater to different intelligence areas, in line with Gardner's theory of multiple intelligences (Grabinger & Dunlap, 1995). For instance, debate and discussion sessions can be organized for linguistic intelligence, art and design projects for visual-spatial intelligence, and movement and drama activities for bodily-kinesthetic intelligence (Gardner, 1993).
- **Interaction and Collaboration:** Research findings indicate that participants are solution-oriented when collaborating and can distribute tasks by considering the strengths and weaknesses of team members. Therefore, strategies that encourage active participation during group work and collaborative projects should be developed. Methods such as brainstorming, creating mind maps, and task sharing can enhance participant interaction (Spiceland & Hawkins, 2002).
- **Future Collaborations:** Considering participants' inclination towards future collaborations, plans should be made for long-term projects and joint efforts. By developing joint projects on environmental awareness, participants can be encouraged to continuously collaborate in this area. Additionally, participation in international conferences and symposiums should be promoted through these projects (Bleszynska, 2008).
- **Education and Awareness-Raising Activities:** Education programs and awareness-raising activities aimed at increasing environmental awareness support participants' engagement in both individual and group active learning processes (Levine, 2002). Such activities can enhance participants' skills in providing justification for information and applying what they have learned (Romanov et al., 2020).

In conclusion, the results underscore the importance of utilizing diverse active learning methodologies to foster collaboration and enhance environmental awareness among participants. Recommendations include leveraging technology and social media, designing activities targeting different intelligence areas, promoting interaction and collaboration, fostering future collaborations, and implementing education and awareness-raising activities. These measures can contribute to the transformation of information into active learning and transformation processes, ultimately promoting lifelong learning and sustainable practices.

### **Authors' Contributions**

Researchers contributed equally to the study.

### **Conflict of Interest**

The authors declare no conflicts of interest.

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