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Students' Perceptions of Collaborative Learning Resources in EFL Teacher Education: The English Teaching Major for I and II Cycles at Universidad Estatal a Distancia

Percepciones de los estudiantes sobre los recursos de aprendizaje colaborativo en la formación docente en inglés como lengua extranjera: la Carrera de Enseñanza del Inglés para I y II ciclos de la Universidad Estatal a Distancia

Perceptions des étudiants à l'égard des ressources d'apprentissage collaboratif dans la formation des enseignants d'anglais langue étrangère : le cours de formation des enseignants d'anglais pour le premier et LEdeuxième cycles de l'enseignement primaire à l'Université d'État à Distance

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Abstract: This article examines the use of visual organization resources within collaborative practices in English as a Foreign Language (EFL) teacher education and their perceived contribution to learning and soft skill development. The study analyzed pre-service teachers' perceptions of two resources, color coding and graphic organizers, and their contribution to learning. The study was grounded in several theories that emphasize social interaction, scaffolding, and positive interdependence. A descriptive mixed-methods approach was utilized through a diagnostic questionnaire and two post-implementation instruments administered to pre-service English teachers at the Universidad Estatal a Distancia (UNED) in Costa Rica. Quantitative data indicate that both resources supported organization, comprehension, and collaborative work, while qualitative findings highlight perceived growth in soft skills such as teamwork, responsibility, accountability, creativity, and critical thinking. Participants also reported challenges related to time, unequal participation, and task clarity. Overall, the findings suggest that color coding and graphic organizers can support collaborative learning and soft skill development when implemented with clear structure, sufficient time, and explicit role assignment. As the findings are based on participants' perceptions, they should be interpreted as perceived contributions rather than direct measures of learning or skill development.

Keywords: distance education, instructional materials, linguistic competence, soft skills.

Resumen: Este artículo examina el uso de recursos de aprendizaje colaborativo en un programa de formación de docentes de inglés como lengua extranjera (EFL) y la contribución percibida al aprendizaje y al desarrollo de habilidades blandas. El estudio analizó la percepción del estudiantado sobre la codificación por colores y los organizadores gráficos. La investigación se fundamentó en teorías que destacan la interacción social y la interdependencia positiva. Se empleó un enfoque de métodos mixtos descriptivos mediante un cuestionario diagnóstico y dos instrumentos posteriores a la implementación con futuros docentes de inglés de la Universidad Estatal a Distancia, de Costa Rica. Los datos indican que ambos recursos apoyaron la organización, la comprensión y el trabajo colaborativo. Los hallazgos cualitativos destacan el desarrollo percibido de habilidades blandas como el trabajo en equipo, la responsabilidad, la creatividad y el pensamiento crítico. También se reportaron desafíos relacionados con el tiempo, la participación desigual y la claridad de las tareas. Los hallazgos sugieren que estos recursos pueden apoyar el aprendizaje colaborativo y el desarrollo de habilidades blandas en la formación docente. Dado que los resultados se basan en las percepciones de quienes respondieron, deben interpretarse como contribuciones percibidas y no como medidas directas del aprendizaje o del desarrollo de habilidades.

Palabras clave: competencia lingüística, educación a distancia, habilidades blandas, material didáctico.

Résumé : Cet article examine le recours aux ressources d'apprentissage collaboratif dans un programme de formation des enseignants d'anglais langue étrangère (ALE), ainsi que leur contribution perçue aux apprentissages et au développement des compétences transversales. L'étude porte sur les perceptions des étudiants concernant le codage couleur et les organisateurs graphiques. Elle s'appuie sur des approches théoriques qui mettent en avant l'interaction sociale et l'interdépendance positive. La recherche adopte une approche descriptive fondée sur des méthodes mixtes. Elle repose sur un questionnaire diagnostique et deux instruments administrés à l'issue de la mise en œuvre des ressources auprès de futurs enseignants d'anglais de l'Université d'État à Distance, au Costa Rica. Les données recueillies indiquent que ces deux ressources ont contribué, selon les participants, à l'organisation des idées, à la compréhension et au travail collaboratif. Les résultats qualitatifs mettent en évidence le développement perçu de compétences transversales telles que le travail en équipe, le sens des responsabilités, la créativité et l'esprit critique. Des difficultés liées à la gestion du temps, à la participation inégale des membres des groupes et au manque de clarté des consignes ont également été signalées. Les résultats suggèrent que ces ressources peuvent favoriser l'apprentissage collaboratif et le développement des compétences transversales dans le cadre de la formation des enseignants. Toutefois, dans la mesure où ils reposent sur les perceptions des répondants, ils doivent être interprétés comme des contributions perçues et non comme des mesures directes des apprentissages ou du développement des compétences.

Mots-clés : Compétence linguistique, compétences transversales, enseignement à distance, matériel pédagogique.

«Most great learning happens in groups. Collaboration is the stuff of growth».[1]

Introduction

Collaborative learning has become a central approach in education at all levels, particularly in teacher education programs that seek to prepare future educators for learner-centered and communicative classrooms. In English as a Foreign Language (EFL) contexts, collaboration is connected not only to linguistic development but also to the strengthening of soft skills, such as teamwork, accountability, critical thinking, and creativity. These competences are relevant for pre-service teachers.

The sociocultural and cooperative learning perspectives discussed in the following section provide a framework for understanding how interaction, dialogue, and shared problem-solving contribute to knowledge construction. Collaborative settings offer learners opportunities to exchange ideas, negotiate meaning, and organize information collectively. These experiences are particularly relevant in pre-service teacher education, where future teachers can reflect on pedagogical practices they may later use in their own classrooms.

This article draws on a research project conducted at Universidad Estatal a Distancia (UNED), Costa Rica, with pre-service teachers enrolled in the course Evaluation of Learning while Teaching EFL during the second quarter of 2024. Many of these students were in their second or third year of the English Teaching Major for I and II Cycles.

At UNED, specifically in the English Teaching Major for I and II Cycles, courses incorporate both collaborative and individual learning experiences. Since the courses are taught through distance education, individual tasks are used to build personal comprehension, autonomy, and self-discipline, while collaborative activities are incorporated to encourage the co-construction of knowledge, teamwork, and peer learning, and are often used to help maximize the virtual learning experience. Within this context, color-coding and graphic organizers were incorporated into collaborative activities during two online workshops in the course. These activities involved organizing, synthesizing, categorizing, and communicating information. The findings may inform the design of similar activities in teacher education courses, including those involving educational analysis, reading comprehension, and collaborative discussion in distance and face-to-face settings.

[1] Ken Robinson, «Changing Education Paradigms» (lecture, Royal Society of Arts, London, June 16, 2010), YouTube video, 11:40, posted by RSA, October 14, 2010, https://www.youtube.com/watch?v=zDZFcDGpL4U

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The main objective of the study was to explore pre-service English teachers' perceptions of color-coding and graphic organizers as visual organization resources used within collaborative learning activities in an EFL teacher education context. Specifically, the study examined their perceived usefulness for organizing and understanding information, supporting collaborative work, and contributing to soft skill development, as well as the difficulties participants encountered when using these resources.

Theoretical background

Both the research project and this article are guided by an integrated theoretical background based primarily on the Sociocultural (Constructivist) Learning Theory, along with several supporting theories, including Social Cognitive Theory, Multiple Intelligences Theory, Cooperative Learning principles, and more contemporary theories that build on collaboration in the classroom. This background aims to provide a clear path to better understand how learning comes through interaction, scaffolding, and engagement through dialogue, and how specific instructional practices can put these theoretical assumptions into play in teacher education contexts.

Each theoretical perspective included in the study supports a specific aspect of the analysis. Sociocultural Learning Theory provides the main framework for understanding learning through social interaction, mediation, and shared activity. Social Cognitive Theory supports the consideration of observational learning, modeling, and students' regulation of their participation in collaborative contexts. Multiple Intelligences Theory provides a complementary perspective on the use of visual resources and different ways of engaging with information. Cooperative Learning Theory supports the analysis of collaboration through positive interdependence, individual accountability, and interpersonal interaction. The perspectives proposed by Bruffee, Sawyer, and Harasim further inform the understanding of knowledge construction through dialogue, shared questioning, group creativity, and online collaborative knowledge building. A more thorough description of each theoretical perspective is included in the following paragraphs.

Collaborative learning in teacher education can be understood through perspectives that focus on the social construction of knowledge. Sociocultural Learning Theory, originally proposed by Lev Vygotsky[2], argues that cognitive development occurs through social interaction and mediated learning experiences. From this perspective, knowledge is not only constructed individually but rather emerges through conversation,

[2] Lev S. Vygotsky, *Mind in Society: The Development of Higher Psychological Processes*, ed. Michael Cole et al. (Cambridge, MA: Harvard University Press, 1978).

collaboration, and participation in shared learning activities, which are the basis of the study that was conducted.

A key concept within Vygotsky's theory is the Zone of Proximal Development (ZPD), defined as the space in which learners can accomplish tasks with the support of peers or instructors that they would not yet be able to complete on their own. Within this zone, learning is supported through scaffolding, discussion, and collaborative problem-solving. Contemporary research has continued to demonstrate the relevance of sociocultural principles in higher education settings, highlighting how collaborative learning environments allow students with varying levels of expertise to support one another's development through peer interaction and shared knowledge construction. Dewi, Yusuf, and Subagya[3], for example, demonstrated that implementing social constructivist principles in classroom learning strengthens cooperative attitudes and collaborative behaviors. Their study, grounded in Vygotsky's theory, linked constructivist principles to collaborative behavior in group tasks. Wibowo and colleagues[4] examined the relevance of Vygotsky's constructivist learning theory in different learning environments. The authors highlighted the importance of scaffolding, peer interaction, and guided collaboration within the ZPD. Their findings show that collaborative learning activities enable learners with varying abilities to support one another's progress.

While sociocultural theory provides the primary basis for this article, other perspectives help support the understanding of collaborative learning processes. For example, Social Cognitive Theory, developed by Albert Bandura[5], highlights the role of observational learning, imitation, and modeling in shaping behavior. It suggests that people acquire knowledge and behavioral patterns by observing others, as well as by reflecting on the consequences of their own and others' actions. In other words, although learning can occur through direct instruction, it also occurs through observation, modeling, and social interaction. Within collaborative learning environments in educational settings, students learn by observing peers, discussing shared goals, and regulating their contributions in response to group dynamics. Other, more contemporary researchers have continued the research started by Bandura years ago. For example, Nur Syafiqah Abdul Kadar and colleagues examined online group work through a social cognitive lens, linking personal, behavioral, and environmental factors to collaborative

[3] Ressi Kartika Dewi, Munawir Yusuf, and Subagya, «Implementation of Vygotsky's Theory of Social Constructivism in Elementary School Learning», *Journal of Educational Research and Practice* 15, n.º 1 (2025).
[4] Sigit Wibowo, Muhammad Nur Wangid, and Fery Muhamad Firdaus, «The Relevance of Vygotsky's Constructivist Learning Theory in Differentiated Learning», *European Journal of Educational Research* 13, n.º 2 (2024).
[5] Albert Bandura, *Social Foundations of Thought and Action: A Social Cognitive Theory* (Englewood Cliffs, NJ: Prentice Hall, 1986).

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outcomes in higher education[6]. They build on the same principles introduced by Bandura and apply them to online higher education contexts.

Furthermore, Howard Gardner's Multiple Intelligences Theory questions traditional views of intelligence by suggesting that individuals hold varied cognitive strengths, including linguistic, logical-mathematical, visual-spatial, interpersonal, and intrapersonal intelligences[7]. From this perspective, learning is improved when instructional strategies engage multiple means of interaction. The use of color-coding and graphic organizers aligns closely with this theoretical view by engaging visual-spatial and interpersonal intelligences while at the same time supporting linguistic processing when used in EFL classroom contexts. When used collaboratively, these visual organization resources allow learners to negotiate meaning, organize information visually, and draw on others' strengths within the group. This theory aligns with Vygotsky since students who are allowed to work with individuals who possess different types of intelligence have the opportunity to learn from those individuals in their collaborative processes.

Another complementary perspective is Cooperative Learning Theory, developed by David and Roger Johnson, which emphasizes positive interdependence, individual accountability, creative interactions, and social skills development within cooperative learning. Johnson and Johnson state, «Cooperative learning groups are based on *positive interdependence* among group members, where goals are structured so that students need to be concerned about the performance of all group members as well as their own»[8]. These principles highlight the importance of structuring tasks in ways that require students to rely on one another to achieve shared goals. Visual organization resources such as color-coding and graphic organizers implemented collaboratively can support these principles by distributing responsibilities among group members and encouraging discussion, feedback, and collective problem-solving.

In addition, perspectives on collaborative knowledge construction have been explored by scholars such as Kenneth A. Bruffee[9] and R. Keith Sawyer[10], who emphasize that learning often develops through dialogue, shared questioning, and group creativity. These ideas have also been extended to digital learning contexts through Linda Harasim's theory of Online Collaborative Learning[11], which highlights communicative knowledge-

[6] Nur Syafiqah Abdul Kadar et al., «Exploring Online Group Work Through the Social Cognitive Theory», *International Journal of Academic Research in Business and Social Sciences* 13, n.º 9 (2023): 1575-1589, https://doi.org/10.6007/IJARBSS/v13-i9/17744
[7] Howard Gardner, *Frames of Mind: The Theory of Multiple Intelligences* (New York: Basic Books, 1983).
[8] David W. Johnson, Roger T. Johnson, and Edythe J. Holubec, *Circles of Learning: Cooperation in the Classroom* (Alexandria, VA: Association for Supervision and Curriculum Development, 1984), 9.
[9] Kenneth A. Bruffee, *Collaborative Learning: Higher Education, Interdependence, and the Authority of Knowledge*, 2nd ed. (Baltimore: Johns Hopkins University Press, 1999).
[10] R. Keith Sawyer, *Group Genius: The Creative Power of Collaboration* (New York: Basic Books, 2007).
[11] Linda Harasim, *Learning Theory and Online Technologies* (New York: Routledge, 2012).

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building processes that occur when learners generate, organize, and process ideas collectively.

Collaborative learning environments also provide opportunities for students to develop soft skills, which are increasingly recognized as essential for professional success. Soft skills include interpersonal communication, teamwork, responsibility, creativity, and critical thinking. In teacher education programs, these competences are particularly important because future educators must not only master disciplinary knowledge but also develop the interpersonal and organizational abilities required to manage collaborative and communicative classrooms.

Within this framework, the use of visual organization resources such as color-coding and graphic organizers serves both cognitive and collaborative functions. These resources can help learners organize information visually, clarify relationships among ideas, and communicate their understanding to peers. When implemented in group contexts, they also encourage negotiation of meaning, shared decision-making, and collective problem-solving.

Together, the theoretical perspectives presented here help frame collaborative learning as a social, cognitive, and professional process. By basing the analysis primarily on sociocultural theory while incorporating complementary perspectives on collaboration, it provides a lens for understanding how these visual organization resources used within collaborative learning activities may support both linguistic development and the improvement of soft skills among pre-service English teachers.

Within the study, regarding color-coding as a resource used within collaborative learning activities, it was key to demonstrate how the use of color-coding could aid students in the organization of their ideas, in the incorporation of creativity and clarity in their organization, and in the ability to work together in teams to communicate their ideas effectively. As France Preechawitayakul states in «The Ultimate Guide to Color Coding in E-learning», «Although you might associate colors with something that only children would use, you would be surprised by how effective they actually are for college students and adults»[12]. Color-coding is often used in research, especially because the content can be lengthy and varied, and students find this resource useful to decode and organize the information. It would seem that this same resource could be used and applied to smaller chunks, such as in the construction of the indicators of learning and of the Table of Specifications (TOS), which were the two assignments that the students in the study were given to use color-coding.

[12] France Preechawitayakul, «The Ultimate Guide to Color-Coding in eLearning», eLearning Industry, August 9, 2019, https://elearningindustry.com/guide-color-coding-elearning

Along the same lines, the creation of graphic organizers is a visual organization resource that can be used in a collaborative learning environment. The use of this resource can aid students in organizing their ideas effectively and conveying information in a way that is more visually appealing and more clearly understood. Patricia Lupion Torres talks about this in her *Handbook of Research on Collaborative Learning Using Concept Mapping*:

> Students can work with each other online, collaborating, interfering, modifying, doing research, inserting annotations, documents, links, and pictures and setting up discussion threads. By engaging in the construction of concept maps, students think about both the content and the form. The organized visual representation of content also helps in the transfer of knowledge from the short-term memory to the long-term memory, anchoring new concepts to previously acquired ones.[13]

While previous studies provide theoretical and experiential support for collaboration, visual organization, and knowledge construction, the study referred to in this article contributes a more specific perspective by examining pre-service English teachers' perceptions of two visual organization resources within a distance teacher education course. In particular, the study focuses on their use in assessment-related tasks, the use of colors to better identify important parts of the table of specifications, and the use of graphic organizers to synthesize information from teacher interviews and course readings, alongside participants' perceived benefits and difficulties while using these resources. Therefore, the contribution of the study does not establish the effectiveness of these resources, but documents and describes how a specific group of pre-service teachers perceived their use within these particular academic activities while working collaboratively.

As mentioned by Angela Izuagba and Adaku Afurobi, in their article, *Equipping Learners with Soft Skills Using Collaborative Teaching/Learning Strategies*, «Soft skills are personal attributes that enhance an individual's inter-personal interactions and job performance in spite of his/her level of hard skills' knowledge»[14]. While it is obvious that students in the English Teaching major need to develop a high level of linguistic competence, not everyone thinks about the importance of developing soft skills.

Providing spaces where learners have opportunities to develop soft skills and linguistic competence through collaborative learning practices is key for

[13] Patricia Lupion Torres, *Handbook of Research on Collaborative Learning Using Concept Mapping* (Hershey, PA: IGI Global, 2009), 23.
[14] Angela Izuagba and Adaku Afurobi, «Equipping Learners with Soft Skills Using Collaborative Teaching/Learning Strategies», *European Journal of Social Sciences* 47 (2015): 418.

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current and future academic settings and professional situations. As the English Teaching Major for I and II Cycles is in charge of producing quality English teachers who, in turn, will adequately prepare youth for both English language use and normal challenges in life, it is of utmost importance to implement effective ways to aid students in this major to work collaboratively, improve linguistic competence, and develop important soft skills. Of course, participants must be able to put all of this into practice in both their studies and in their future classrooms as teachers. Teachers who can collaborate, think critically, organize their ideas, communicate their thoughts comprehensively, apply creativity, and act responsibly will be more impactful as examples of those important soft skills for their own students. So, the ideas and the theory that are proposed and included here would hopefully not only benefit the participants in the study but also their future students.

The theories discussed previously provide a rational foundation for analyzing the implementation and outcomes of visual organization resources used within collaborative learning activities in EFL teacher education. They frame collaboration as a cognitive, social, and professional process, offering a clear lens through which the findings of the study are interpreted.

Methodology[15]

This article describes the steps taken to carry out the study and provide transparency regarding the research process. Although the instruments were reviewed by four peers for clarity and relevance, no statistical reliability analysis or empirical validation with a larger sample was conducted. Therefore, the findings should be interpreted as descriptive accounts of the perceptions of the participants in this particular course and context rather than as generalizable evidence of the effectiveness of the resources.

The study used a descriptive mixed-methods approach to examine participants' perceptions of two visual organization resources used within collaborative learning activities. Quantitative data were obtained from closed-ended questionnaire items and summarized using the descriptive statistics provided by Google Forms. Qualitative data were obtained from open-ended questions and were reviewed and grouped according to recurring categories related to the perceived usefulness of the resources, collaborative work, soft skills, linguistic competence, and difficulties encountered. The quantitative and qualitative findings were integrated

[15] ChatGPT (GPT-5.2), OpenAI, was used to assist with portions of the idea organization, word choice and formatting according to Chicago Notes-Bibliography style. The author takes full responsibility for the final content including ideas, theory, interpretation, analysis and conclusions.

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during interpretation by comparing the patterns identified in the closed-ended responses with the explanations and examples provided in the open-ended responses. This integration allowed the qualitative responses to give context to the quantitative patterns, especially in relation to the perceived benefits and challenges.

The research was conducted in the English Teaching Major for I and II Cycles at Universidad Estatal a Distancia (UNED) in Costa Rica. Participants were pre-service English teachers enrolled in a university-level virtual modality course, *Evaluation of Learning while Teaching EFL*, that incorporated collaborative learning as a regular instructional practice. Both quantitative and qualitative data were collected through three instruments: a Diagnostic Questionnaire, administered before the implementation of the strategies to retrieve demographic information and prior knowledge from participants; Post-Implementation Instrument #1, administered after the use of color-coding to better understand the participants' perceptions of the use of color-coding as a visual organization resource used within collaborative learning activities; and Post-Implementation Instrument #2, administered after the use of graphic organizers to have a better idea of participants' perceptions of the use of graphic organizers as a visual organization resource used within collaborative learning activities. All instruments included a disclaimer informing participants about the purpose of the research and the voluntary and anonymous nature of their participation. Participants were informed that their responses would be used for research purposes and that participation or non-participation in the questionnaires would not affect their course evaluation or academic standing.

Participants were selected because they were enrolled in the course where both visual organization resources could be naturally integrated into existing collaborative course activities. A total of 29 students from different regions of Costa Rica including Guápiles, Alajuela, Palmares, Heredia and San José, were enrolled in the course during the second quarter of 2024 and were distributed across two groups. Throughout the course, students worked on different activities related to the evaluation of learning while teaching EFL, including the construction of tests for the different skills, the creation of rubrics, and the construction of the Table of Specifications, among other important topics. All enrolled students were invited to participate in each questionnaire; however, since participation was voluntary, the number of responses varied across the three instruments, as shown in Table 1 (next page).

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Table 1. Student participation in data collection

Data collection instrument	Students enrolled	Responses	Response rate
Diagnostic questionnaire	29	13	44.8 %
Post-implementation instrument #1: Color coding	29	19	65.5 %
Post-implementation instrument #2: Graphic organizers	29	25	86.2 %

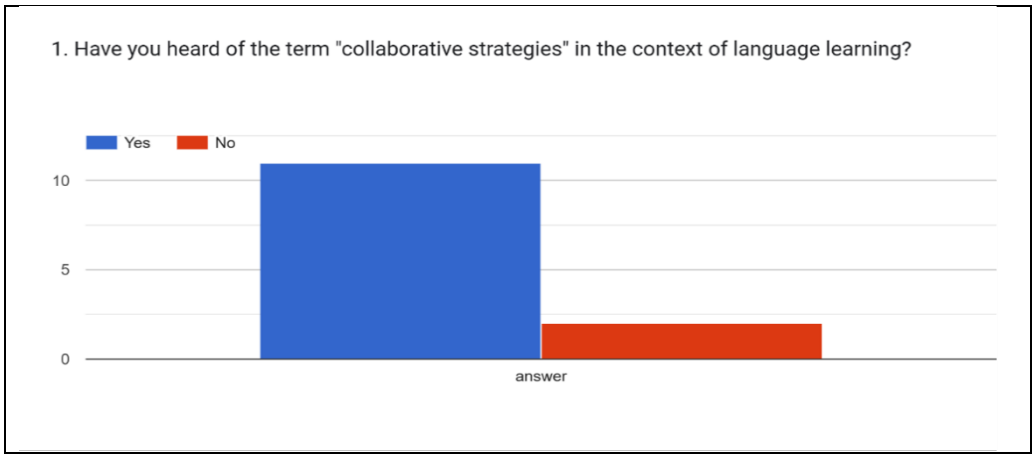
Source: Based on course enrollment and questionnaire response data reported by Tricia Henderson, 2024.

At different moments throughout the course, all 29 enrolled students were invited to participate in all three stages of data collection, and all participated in the in-class collaborative learning activities. However, as the table shows, the number of responses varied across instruments. Because the response groups were not identical across the three instruments, comparisons between diagnostic and post-implementation responses cannot be interpreted as evidence of change among the same participants. Also, since the demographic information was retrieved only from those who filled out the diagnostic questionnaire, it is not a real representation of the total number of participants. This indicates a methodological limitation of the study. Nonetheless, it is possible to include important information about the group profile in general.

Overall, the group represented a heterogeneous population for the most part in terms of prior academic experience and linguistic proficiency, reflecting common characteristics of students in teacher education programs. Nearly all of the participants had previously heard of the term «collaborative strategies» in the context of language learning, and several «collaborative strategies» were identified as having been previously used, as reflected in Figures 1 and 2 (next page).

It is relevant to clarify that the questionnaires used the term «strategy» when referring to color-coding and graphic organizers, reflecting the terminology used in the instruments administered to participants. In this article, however, these two practices are referred to as visual organization resources to avoid implying the study establishes their validity or effectiveness as instructional strategies. When reporting questionnaire items or participants' responses, the original term «strategy» is used to accurately represent the data collected. Figure 1 presents participants' responses regarding their prior familiarity with the term «collaborative strategies».

Figure 1. Prior knowledge



Source: Based on Tricia Henderson, «Diagnostic Questionnaire», Google Forms survey, June 2024.[16]

Figure 2 presents participants' reported prior experience with different collaborative strategies in language learning.

Figure 2. Previously used collaborative strategies



Source: Based on Tricia Henderson, «Diagnostic Questionnaire», Google Forms survey, June 2024.[17]

Both visual organization resources, color coding and graphic organizers, were implemented as part of regular collaborative course activities. They were selected due to their alignment with the activities to be implemented, their potential to support collaborative work and provide opportunities to practice soft skills with appropriate guidance, and their connection to the

[16] Tricia Henderson, «Diagnostic Questionnaire», Google Forms survey, June 2024, https://docs.google.com/forms/d/e/1FAIpQLSeXDqTK8VAn4-tNpvT6iNktuGRBw9ZvardZwPIECfgGlE9R3w/viewform?usp=header

[17] Ibíd.

theoretical framework discussed above. Color-coding was used to support visual organization, categorization of information, and shared meaning-making, while graphic organizers were used to facilitate collective organization of ideas, synthesis, and representation of ideas.

Prior to the implementation of each resource, students were provided with short instructional videos explaining the purpose of the visual organization resource and demonstrating how it could be applied in the course assignments. The videos were created by the researcher and shared through the course platform[18]. Color-coding was incorporated into an assignment related to the construction of a Table of Specifications (TOS) used in language assessment design. Graphic organizers were incorporated into an activity in which students synthesized information obtained from interviews with English teachers and analyzed course readings. The steps for implementing each visual organization resource are presented in Table 2.

Table 2. Steps for implementing visual organization resources

For color coding	For graphic organizers
1. Students watched the instructional video. 2. Students reviewed what was expected of them for the construction of the Table of Specifications (TOS). 3. Students assigned colors to components of the TOS as they worked on its construction. 4. Students discussed their coding decisions. 5. Students collaboratively completed the task.	Before the workshop, students had to have already analyzed their assigned readings and completed an assignment including interviews with teachers about appropriate assessment practices. 1. Students watched the instructional video. 2. Students synthesized findings collaboratively and selected a graphic organizer type that best displayed their findings from the interviews. 3. Students shared and discussed their results using their graphic organizers.

Source: Based on lesson plans developed for the course Evaluation of Learning while teaching EFL at Universidad Estatal a Distancia (UNED), second quarter of 2024. Table prepared by the author.

Regarding data analysis from the instruments, quantitative data obtained from the closed-ended questionnaire items were analyzed using the statistics provided by Google Forms. The qualitative responses were organized into the following categories: perceived usefulness for organizing and understanding information, collaborative interaction, perceived

[18] Tricia Henderson, «Color-Coding», video, Biteable, 2024, https://biteable.com/watch/4206195/ccf88b133c535078a9a62108a3c0887f; Tricia Henderson, «Using Graphic Organizers», video, Biteable, 2024, https://biteable.com/watch/4208400/95b16916e5de8206da6bb3a98964fecb

contribution to soft skills, perceived contribution to linguistic competence, and difficulties or suggestions for improvement. Responses were reviewed and grouped according to recurring ideas within these categories. Quotations were selected because they clearly illustrated recurring perceptions identified in the qualitative responses and because they represented either a commonly expressed benefit or a relevant challenge. The quotations were used illustratively and were not used as independent evidence of effectiveness.

Results

This section presents the findings from the diagnostic questionnaire and the two post-implementation instruments.

Diagnostic questionnaire

The diagnostic questionnaire was administered to explore participants' prior familiarity with collaborative learning strategies and their perceptions of their role in language learning and soft skill development. Two of the charts can be found in the Methodology section above, Figures 1 and 2.

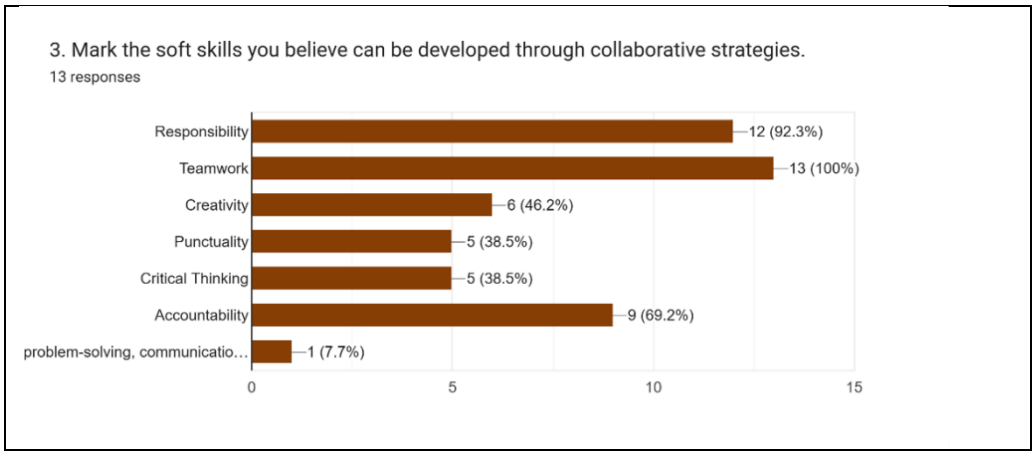
Most participants (11 out of 13; 84.6 %) reported that they had previously heard the term *collaborative learning strategies*, indicating general awareness of the concept. However, two participants reported no prior familiarity with the term.

Regarding prior experience with collaborative strategies, peer review and group discussions/debates were the most commonly used, reported by 84.6 % of participants. In contrast, participants reported less frequent prior experience with color coding (38.5 %) and graphic organizers (53.8 %). Other collaborative learning strategies, such as jigsaw activities and technology-supported tools, were mentioned by only 7.7 % of participants.

Participants also identified several soft skills they believed could be developed through collaborative strategies. Teamwork (100 %) and responsibility (92.3 %) were the most frequently identified skills. Creativity and critical thinking were recognized by 46.2 % of participants. Figure 3 (next page) summarizes participants' responses regarding the soft skills they believed could be developed through collaborative strategies.

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Figure 3. Soft skills



Source: Based on Tricia Henderson, «Diagnostic Questionnaire», Google Forms survey, June 2024.[19]

When asked about the importance of collaborative strategies in language learning, most participants expressed positive perceptions. Seven participants strongly agreed, and five agreed that collaborative strategies contribute to the development of linguistic competence and soft skills.

Participants also described several challenges in connection with collaborative learning based on their own experiences. The most frequently mentioned issues included: unequal participation among group members, differences in work styles and opinions, difficulties coordinating schedules, and concerns about fairness in group assessment. Table 3 (next page) presents selected verbatim responses from participants illustrating these challenges.

These responses indicate that while students recognize the potential benefits of collaborative learning based on the quantitative data, they also perceive several challenges related to group dynamics and responsibility, which they expressed in the qualitative data.

Post-implementation instrument 1: Color-coding

Post-implementation instrument #1 examined participants' perceptions after implementing color-coding as a visual organization resource within a collaborative activity during the design of a Table of Specifications (TOS). Overall, participants reported high levels of agreement that the resource supported the organization of information and the understanding of relationships among learning indicators. Nearly 95 % of participants agreed or strongly agreed that color coding helped in the categorization and

[19] Henderson, «Diagnostic Questionnaire».

organization of learning indicators within the TOS. Participants also indicated that the use of color-coding supported collaborative interaction during the design process, with most respondents reporting agreement that the activity facilitated group interaction and discussion.

Table 3. Participants' perception of challenges in collaborative learning activities: verbatim comments

Participant 1	«The challenge for me is about being able to really commit to invest the time to develop the collaborative strategy appropriately, because sometimes you are running out of time or you have other duties and you don't really apply the technique as it should be applied».
Participant 2	«Although I agree that we can learn from social interactions and group activities, it is very difficult to coordinate with peers».
Participant 3	«Often, some group members contribute more than others, miscommunications or lack of clear communication, and differences in options and work styles».
Participant 4	«Several challenges can arise while using collaborative learning strategies as a student. Some significant challenges are: coordinating schedules and ensuring that all group members are available for meetings and discussions; unequal participation of group members can lead to frustration, differences in opinions, working styles or personal goals».

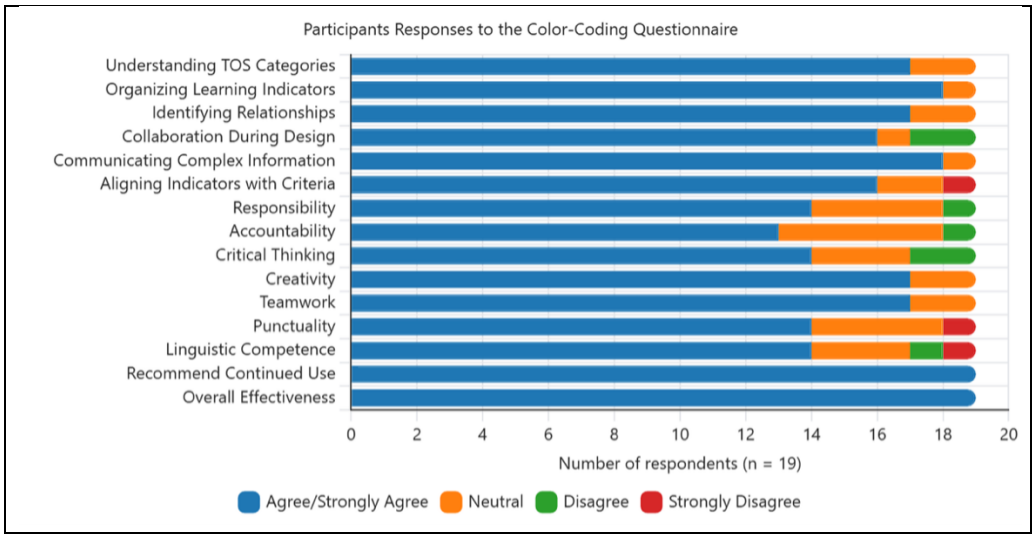
Source: Based on participants' responses to Tricia Henderson's «Diagnostic Questionnaire», Google Forms survey, June 2024.

Regarding soft skill development, the majority of participants reported that the activity contributed to the development of several skills, including responsibility, accountability, critical thinking, creativity, teamwork, and punctuality. Most participants also reported that they would recommend the continued use of color coding for organizing learning indicators and designing Tables of Specifications. Figure 4 (next page) presents participants' levels of agreement with statements regarding the perceived usefulness of color-coding in the collaborative activity.

Open-ended responses generally reflected positive perceptions of the resource, particularly highlighting its usefulness for organizing complex information and improving clarity in collaborative tasks. However, a small number of participants indicated uncertainty regarding whether they had used the resource correctly. Table 4 (next page) presents selected participants' comments on the perceived usefulness of color-coding and the clarity of its implementation.

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Figure 4. The use of color-coding



Source: Figure created by the author with assistance from Microsoft Copilot (GPT-5) for data processing, visualization coding, and graphic design. Based on response data from Tricia Henderson's «Post-Implementation Instrument #1», Google Forms survey, July 2024.[20]

Table 4. Participants' perception of the use of color-coding: verbatim comments

Comment 1	«Not sure if we did this correctly. It's not clear».
Comment 2	«Color-coding is a helpful technique for activities where students need to do multiple steps such as building a TOS».
Comment 3	«It is easier to organize and understand it».
Comment 4	«Color-coding helps teachers to be more organized while students learn the subject easier».

Source: Based on participants' responses to Tricia Henderson's «Post-Implementation Instrument #1», Google Forms survey, July 2024.

Post-implementation instrument 2 : Graphic organizers

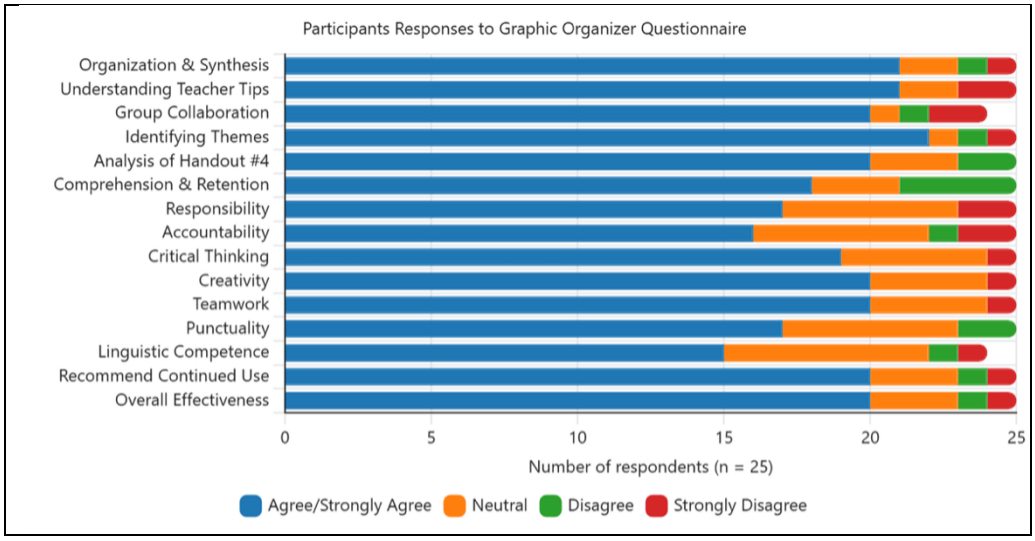
Post-implementation instrument #2 examined participants' perceptions after using graphic organizers as a visual organization resource within a collaborative activity for synthesizing information from teacher interviews and analyzing an assigned course reading. Most participants reported that graphic organizers supported the organization and synthesis of information,

[20] Tricia Henderson, «Post-Implementation Instrument #1», Google Forms survey, July 2024, https://docs.google.com/forms/d/e/1FAIpQLScXLKwrs4dcFCAPHJU0WqKA2bJk5VBcn-n81_jwqOkpuVxSmg/viewform?usp=header

particularly in identifying key ideas from teacher interviews and analyzing course readings.

Participants also reported that the use of graphic organizers facilitated collaborative discussion and idea sharing among group members. In addition, most participants perceived graphic organizers as supporting opportunities to practice several soft skills, including responsibility, accountability, critical thinking, creativity, teamwork, and punctuality. Most participants also indicated that they would recommend the continued use of graphic organizers for future assignments involving discussion and analysis of course materials. Figure 5 visually shows the results, indicating that the majority of the students marked between strongly agree and agree to the statements related to the perceived contribution of graphic organizers to the assigned tasks.

Figure 5. The use of a graphic organizer



Source: Figure created by the author with assistance from Microsoft Copilot (GPT-5) for data processing, visualization coding, and graphic design. Based on response data from Tricia Henderson's «Post-Implementation Instrument #2», Google Forms survey, July 2024.[21]

Responses to the open-ended question highlighted both perceived benefits and challenges. Several participants noted that graphic organizers helped them organize and communicate ideas more clearly. However, some participants suggested that additional time would be helpful when completing the activity and that further explanation of different types of graphic organizers could improve implementation. In Table 5 (next page), there are a few of their quotes to back this up and show the results more clearly.

[21] Tricia Henderson, «Post-Implementation Instrument #2», Google Forms survey, July 2024, https://docs.google.com/forms/d/1Cg7jxhc3ccia4_wNQyX7scP2PIrh8blEO4-qoAYBhrk/viewform?edit_requested=true

Table 5. Participants' perception of the use of graphic organizers: verbatim comments

Participant 1	«Provide more information, like the different types of organizers».
Participant 2	«It's a good way to organize information and mark the important details».
Participant 3	«It would be better if we had more time to fill out the graphic organizer. In the workshop, we had limited time, and it was difficult to fill it out in that short period».
Participant 4	«Every graphic organizer contributed to a deeper understanding of the discussed topics, so no further comments are necessary».
Participant 5	«The adaptability and communication abilities of the people involved might be a challenge in the use of the tools».

Source: Based on participants' responses to Tricia Henderson's «Post-Implementation Instrument #2», Google Forms survey, July 2024.

Discussion

Taken together, the quantitative and qualitative findings indicate that participants generally perceived both visual organization resources as useful for organizing information and supporting collaborative work. The open-ended responses complemented these findings by explaining how participants experienced these benefits in practice, while also identifying difficulties related to time, clarity of instructions, and confidence in applying the resources. Therefore, the two sources of data provide a complementary account of participants´ perceptions rather than independent sets of findings.

The purpose of this study was to explore the use of visual organization resources used within collaborative learning activities, specifically color-coding and graphic organizers, in the context of teacher education and to examine their potential contribution to the development of linguistic competence and soft skills among students based on the participants' perceptions. The findings from the diagnostic questionnaire and the two post-implementation instruments provide insights into students' prior experiences with «collaborative strategies» in general, their perceptions of the implemented visual organization resources, and the potential benefits and challenges associated with their use.

The results of the diagnostic questionnaire indicate that most participants were already familiar with the concept of «collaborative strategies» in language learning. However, this familiarity appeared to be primarily

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associated with commonly used interaction-based activities such as peer review, group discussions, and debates. The majority of participants reported that they had experienced these activities in their language learning courses.

The familiarity that participants demonstrated with collaborative learning is consistent with the sociocultural perspective proposed by Vygotsky[22], which views learning as a process that emerges through interaction and shared activity, which is already incorporated in the UNED courses. Similarly, Dewi, Yusuf, and Subagya[23] found that learning environments grounded in social constructivist principles promote collaborative behaviors. However, while participants in the present study reported frequent exposure to discussion-based collaborative activities, they reported less experience with more structured visual organization resources such as color-coding and graphic organizers. This finding suggests that although collaborative learning may be present in educational contexts, the range of visual organization resources implemented collaboratively may still be somewhat limited.

These findings highlight the importance of explicitly introducing diverse visual organization resources to be used in collaborative practices in teacher education programs. Exposure to a broader range of resources may help future teachers consider how to incorporate them into their own classroom practices.

The results from the post-implementation instruments suggest that both color-coding and graphic organizers were perceived as useful resources for organizing information and supporting learning processes. Participants perceived color-coding as helping them identify relationships among different components of the TOS and helped them categorize learning indicators more effectively. Similarly, the use of graphic organizers was reported to support the synthesis of information obtained from teacher interviews and the analysis of course readings.

These findings, based on the participants' responses, are consistent with Sociocultural Learning Theory[24] because they show that learning can be mediated through tools, interaction, and social participation. In this context, both color-coding and graphic organizers functioned as mediating resources that supported students in organizing information and constructing meaning collaboratively. Likewise, the findings align with principles of Cooperative Learning previously described, which suggest that structured

[22] Vygotsky, Mind in Society.
[23] Dewi, Yusuf, and Subagya, «Implementation of Vygotsky's Theory of Social Constructivism».
[24] Vygotsky, Mind in Society.

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tasks facilitate interaction and support the achievement of shared academic goals.

Participants' perceptions of these visual organization resources when used collaboratively are consistent with the observations of Preechawitayakul[25], who argues that color-coding helps learners organize and decode information more effectively. Although her discussion focuses primarily on e-learning contexts, participants in this study perceived similar benefits when applying color-coding to assessment design tasks. Likewise, the positive perceptions of graphic organizers are consistent with Torres' argument that visual representations help learners organize information and connect new knowledge with previously acquired concepts[26].

However, some participants also reported challenges associated with the use of these resources, particularly regarding time constraints and uncertainty about whether resources were being used correctly. These responses suggest that while these resources used within collaborative activities can be beneficial, their usefulness in the activities or participants' experiences with the resources may depend on the clarity of instructions and the amount of time allowed for their implementation.

Another important part of this study was to examine participants' perceptions of whether collaborative practices using these visual organization resources could contribute to the development of soft skills. Across both post-implementation instruments, participants generally agreed that the use of the resources within collaborative practices provided opportunities to help develop skills such as responsibility, accountability, teamwork, critical thinking, creativity, and punctuality.

These perceptions are consistent with the collaborative nature of the tasks implemented in the workshops. The activities required students to work together to analyze information, organize ideas, and produce shared outputs, which likely encouraged communication, negotiation, and shared decision-making. Such processes are often associated with the development of interpersonal and professional skills that are highly valued in educational and workplace contexts.

These perceptions are consistent with Cooperative Learning Theory, particularly Johnson and Johnson's emphasis on positive interdependence, individual accountability, and interpersonal interaction as important elements of collaborative work[27]. The activities required students to analyze information, organize ideas, and produce shared outputs, creating

[25] Preechawitayakul, «The Ultimate Guide to Color-Coding in eLearning».
[26] Lupion Torres, *Handbook of Research on Collaborative Learning Using Concept Mapping*, 23.
[27] Johnson, Johnson, and Holubec, Circles of Learning, 9.

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opportunities for communication, negotiation, and shared decision-making. Participants' recognition of responsibility, teamwork, and accountability suggests that they perceived these skills as relevant to the collaborative activities. Similarly, Bruffee[28] and Sawyer[29] emphasize the role of dialogue and shared questioning in knowledge construction. The activities incorporating color-coding and graphic organizers may have provided opportunities for these forms of interaction.

Interestingly, the diagnostic questionnaire results indicated that participants tended to associate «collaborative strategies» primarily with teamwork and responsibility, while the post-implementation responses included recognition of a broader set of soft skills, including critical thinking and creativity. Because the response groups were not identical across the instruments, this difference should be interpreted descriptively rather than as evidence of change among the same participants.

Despite the overall positive perceptions of the use of visual organization resources used within collaborative activities, participants also identified several challenges related to group work. These challenges included unequal participation among group members, difficulties coordinating schedules, differences in work styles, and concerns about fairness in assessment. Such issues are frequently reported in collaborative learning contexts and reflect the complexity of coordinating group-based academic tasks.

Some participants also indicated that the limited time during workshops made it difficult to fully develop graphic organizers or to ensure equal participation among group members. These comments highlight the importance of carefully planning collaborative activities to ensure that students have sufficient time and guidance to engage meaningfully in the process and use the resources successfully.

While the overall perceptions of collaborative learning were positive, the challenges identified by participants illustrate that collaboration does not automatically result in effective learning experiences. Although Cooperative Learning Theory[30] emphasizes positive interdependence and shared responsibility, the concerns regarding unequal participation and coordination difficulties suggest that these conditions may not always emerge naturally. This finding reinforces Johnson and Johnson's argument that collaborative activities require careful structuring and monitoring to achieve their intended benefits.

[28] Bruffee, Collaborative Learning.
[29] Sawyer, Group Genius.
[30] Johnson, Johnson, and Holubec, Circles of Learning.

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This study presents several limitations that should be considered when interpreting the findings. First, the data are based on participants' self-reported perceptions rather than direct measures of learning outcomes, linguistic development or soft skills development. Second, the research was conducted with a relatively small group of pre-service teachers enrolled in the aforementioned course at UNED, which limits the generalizability of the findings. Third, since participation in the questionnaires was voluntary, there were different numbers of respondents across the three instruments. Therefore, the response groups were not identical, and differences between the diagnostic and post-implementation responses cannot be interpreted as evidence of change among the same participants. Fourth, the questionnaires referred to color-coding and graphic organizers as «strategies». This terminology was retained when reporting the original questionnaire items and participants' responses to accurately represent the data collected. Throughout the article, however, these practices are referred to as «visual organization resources» to avoid implying that the study established their validity or effectiveness as instructional strategies. Finally, the implementation of the resources occurred within a specific instructional context over a limited period, making it difficult to determine their long-term impact on learning and professional development.

The findings of this study have several implications for teacher education programs. First, the results suggest that introducing the structured use of visual organization resources such as color-coding and graphic organizers within collaborative activities can support both cognitive organization and collaborative interaction during academic tasks. These resources may therefore be useful tools for helping future teachers design assessments, analyze educational information, and engage in reflective discussions about teaching practices. From a practical perspective, educators may consider integrating color-coding into assessment courses by assigning specific colors to learning outcomes, indicators, item types, or other specific aspects. This approach may help students visualize relationships among assessment components and reduce errors during the construction of Tables of Specification. In a similar way, graphic organizers can be incorporated into activities that require synthesis of readings, classroom observations, or interview data, providing students with structured opportunities to analyze and organize information collaboratively.

Second, the positive perceptions of soft-skill development suggest that collaborative learning activities may contribute not only to academic learning but also to the development of professional competences that are essential for educators. Skills such as teamwork, responsibility, and critical thinking are particularly relevant for teachers who must often collaborate with colleagues, administrators, and students in educational environments.

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Finally, the challenges reported by participants highlight the need for careful instructional design when implementing the use of visual organization resources within collaborative activities. Clear instructions, sufficient time, and structured support mechanisms may help maximize the benefits of these resources while minimizing potential difficulties associated with group work.

Overall, based on the participants' perceptions, the findings suggest that visual organization resources such as color-coding and graphic organizers can play a valuable role in supporting both collaborative learning processes and soft skill development in teacher education contexts if implemented appropriately.

Conclusions

This study explored pre-service teachers' perceptions of color-coding and graphic organizers as visual organization resources used within collaborative learning activities, including their perceived contributions to linguistic competence and soft-skill development. Overall, the findings suggest that although participants were already familiar with collaborative learning, their previous experiences were limited primarily to more discussion-based activities, with less exposure to more structured collaborative resources. Participants perceived both resources as useful for organizing and synthesizing information during academic tasks. Color-coding was identified as helping participants distinguish categories and identify relationships among assessment components, while graphic organizers were perceived as useful for synthesizing information from teacher interviews and course readings and facilitating the sharing of ideas.

Regarding perceived contributions to soft skills and linguistic competence, participants perceived positive outcomes particularly in teamwork, responsibility, and accountability, with some recognition of more complex skills such as critical thinking and creativity. They also perceived that the resources could support linguistic competence when integrated with communicative and interaction-based activities. While these findings are based on self-reported perceptions and do not demonstrate direct causality or measurable development, they suggest that collaborative tasks may create meaningful opportunities for interpersonal, professional, and language-related learning within teacher education contexts.

At the same time, based on participants' reports, the study identified important challenges, including unequal participation, time constraints, and uncertainty in the application of the resources. These findings suggest that the benefits perceived by participants depend in part on how collaborative activities are designed and implemented. This reinforces key principles of Cooperative Learning, particularly the importance of clear guidelines,

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defined role distribution, sufficient time, opportunities for practice, and accountability when using collaborative resources. Providing examples of different types of graphic organizers and establishing consistent color-coding systems may also help students use these resources with greater confidence and clarity. Offering additional practice opportunities may also help students feel more confident when using these.

At the program level, teacher education, both here at UNED and elsewhere, may benefit from incorporating a wider variety of structured collaborative resources into methodology courses. Providing explicit instruction and examples of how to implement color-coding, graphic organizers, and other visual organization resources within collaborative activities may help future teachers develop practical tools they can later apply in their own classrooms. Another more innovative idea could be for teacher education programs to incorporate digital collaborative resource libraries available to students in the program, where students experience, evaluate, and adapt resources such as color-coding, graphic organizers, jigsaw activities, and digital collaborative platforms before implementing them in their own teaching practice.

Future research could examine the use of resources used within different collaborative activities in different educational contexts or with larger groups of participants. Another possibility for future research could be to compare the perceived usefulness of color-coding and graphic organizers with other collaborative learning resources or activities, such as jigsaw activities or digital collaborative platforms. Longitudinal research could explore whether repeated exposure to collaborative resources during teacher education is associated with professional competencies during teaching practicum experiences. Such studies could also examine learning outcomes and linguistic or professional development using measures beyond self-reported perceptions.

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