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RESEARCH ARTICLE

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Examining Collaborative Skills as a 21st-Century Competency Among Final-Year Undergraduate Students in Pakistan

Qurat Ul Ain ^a Imran Haider ^b Faizan Ali ^c

Corresponding Author: Qurat Ul Ain; qurat.ain009@gmail.com



Abstract: Collaborative skills have emerged as critical 21st-century competencies for undergraduate students, yet few studies have quantitatively assessed these skills, particularly in Pakistani higher education contexts where cultural and pedagogical dynamics differ from Western educational systems. The purpose of this study was to assess and compare the collaborative skills of final-year undergraduate students across four dimensions: active listening, communication, decision making, and positive attitude towards teamwork. A quantitative descriptive survey design was employed. Using proportionate stratified sampling to ensure representation across faculties, data were collected from 110 final-year (8th semester) undergraduate students at the University of Sargodha, Pakistan. A validated and reliable self-developed questionnaire (Cronbach's alpha = 0.910), consisting of 35 items representing the four dimensions of collaborative skills, was administered using a 6-point Likert scale. Overall, students demonstrated satisfactory collaborative skills. Active listening emerged as a particular strength (72% agreement; M = 2.20, SD = 0.78), while positive attitude recorded the highest agreement level (73%; M = 2.17, SD = 0.89). Communication skills showed moderate development (65% agreement; M = 2.32, SD = 0.92). Decision making was the lowest-rated dimension (54% agreement; M = 2.52, SD = 0.83), indicating considerable room for improvement. The findings suggest that final-year Pakistani undergraduates possess foundational collaborative and interpersonal skills, particularly in listening, attitude, and relationship building. However, deliberative collaborative competencies, especially shared decision making, require further pedagogical support. Universities should implement structured collaborative learning activities that explicitly develop decision-making processes and create supportive environments for peer contributions. Cultural tendencies toward hierarchy and respect may contribute to strong listening skills but lower confidence in participating in collaborative decision making.

Keywords: Collaborative Skills, Communication Skills, Decision-Making, Twenty-First-Century Skills

Introduction

In this modern workplace, four different people are assembled together to help solve an issue that their company is facing. One colleague actively hears and listens to the views of others. Another one is definitely clear and demonstrates a solution. A third colleague considers the various possibilities in an orderly manner. All treat each other with respect and openness. This is ideal collaborative work; how many undergraduate students get to learn these skills before entering into such work environments? In the 21st century, the seekers' needs have grown beyond disciplinary learning, demanding higher education institutions to prepare students to develop their competencies beyond the discipline. Given these skills, collaborative skills are especially important, as graduates are expected to work effectively in groups, take turns speaking, actively

^a M.Phil. Educational Administration and Management, Institute of Education, University of the Punjab, Lahore, Punjab, Pakistan.

^b Secondary School Teacher, School Education Department, Punjab, Pakistan.

^c Headmaster, School Education Department, Punjab, Pakistan.

listening, and thinking collaboratively (Riaz & Din, 2023). Recent studies justify that collaboration has now become a key competency and employability skill in undergraduate education (Marreh & Velankar, 2024). Collaborative skills in general are the ability to communicate, listen to others, discuss decisions, show consideration for others, and be a positive team player. Such skills go beyond simple participation in groups; they indicate students' ability to make meaningful contributions to the collective educational and career objectives (McKay et al., 2024).

Studies in the recent past have shown that cooperative learning classrooms are effective in improving student involvement, interpersonal interaction, student learning, and student teamwork (Wibowo et al., 2024). Despite the increase in emphasis on cooperative learning in higher education all over the world, the collaborative skills that students have are not well researched. While collaborative learning is a growing focus in higher education, research focused specifically on the extent of students' collaborative skills is scarce. Most literature emphasizes collaborative learning strategies, technology-facilitated collaborative learning, or instructional strategies dealing with collaborative learning, but there are not enough studies about the students' existing collaborative skills as measurable skills themselves (Ransanz Reyes et al., 2025). This gap is more significant in the context of higher education in Pakistan. Riaz & Din (2023), in a mixed-methods research study with undergraduate students, noted that while students were broadly aware of collaboration being an important 21st-century skill, their engagement with collaborative learning was seen to be quite different across subject disciplines and prior experiences of students with collaborative tasks. However, there is no quantitative assessment of collaborative skill levels on various dimensions available in the literature of Pakistan's higher education institutions. Additionally, previous work in a comparative context that focuses on measurement has employed a qualitative or observational method or dealt with students from a single discipline like medical or nursing students (Mughal & Shaikh, 2018), resulting in a lack of quantitative and cross-faculty evidence related to collaborative skill levels of final-year undergraduate students in Pakistan. The present study examined the level of collaborative skills of the final year undergraduate students of the University of Sargodha on four aspects: communication skills, good listening, decision making, and positive attitude towards teamwork.

Literature Review

Collaboration is an interactive and context-dependent phenomenon, and in such a context, collaboration is viewed as a multi-dimensional construct that some suggest is impossible to define in a simple, universally acceptable way (Dillenbourg, 1999). Collaborative skills are multifaceted and understanding them requires theoretical engagement, consideration of key components, awareness of where they can potentially be measured, and understanding of culturally-specific contexts in which collaboration may become visible in the educational context.

The Theoretical Basis of Collaboration

In the framework of previous research on collaborative learning, collaborative learning has been defined as a process by which individuals utilize cognitive, metacognitive, and interactional abilities while operating in a group setting (Dillenbourg, 1999). Recent studies add even more to this definition: social-emotional skills, communication skills, negotiation skills, and skills in building relationships (Schürmann et al., 2024). These dynamic conceptualizations indicate that collaboration is not a 'thing' but, instead, a set of competencies that are subject to being learned and developed. Other conceptual foundations are gained through international frameworks. For example, the OECD's model of social and emotional skills views collaboration as one of several core skills which can be strengthened over time and practiced, tested and improved, and does not consider it set since birth (OECD, 2024). This developmental and multi-dimensional perspective is consistent with the present study, where collaborative skills are assessed from four specific and measurable dimensions (communication, active listening, decision-making and attitude to teamwork) instead of a single and undifferentiated trait.

Core Attributes of Collaborative Skills

Active Listening and Communication: Active listening and communication skills are regarded as fundamental as they foster the sharing of ideas, positive feedback, and mutual understanding within a team (McKay & Sridharan, 2024). Communication skills help students express their ideas, negotiate assignments, and solve conflicts (Guo & Asmawi, 2024). But active listening is not just hearing. It means listening, understanding, and addressing others with consideration and respect. It is possible to train and strengthen active listening verbally as well, and there are some studies that have examined the impact of interventions to further listening skills in the field of active listening that were taught to undergraduates, which have shown some efficacy in developing communication abilities in general (Kluger & Itzhakov, 2022). These abilities, when combined, contribute to better personal relationships, reduced misunderstandings, and enhanced mutual coordination, ultimately enhancing group effectiveness when working together (Wibowo et al., 2024).

Collaborative Contexts for Decision Making: The ability to make decisions is a fundamental adaptive process of successful collaboration. It includes analysing alternatives, acknowledging different points of view, and choosing the necessary actions that will help achieve common goals. The literature on collaborative learning indicates that structured collaboration can effectively enhance students' critical thinking skills and decision-making in groups in meaningful ways (Eskiyurt & Özkan, 2024). But collectively making decisions takes different skills from the individual making a decision because students have to balance their judgment with others, listen to others, use other people's suggestions, and ensure that they commit to the decisions made by the group, which is not necessarily their own.

Positive Attitude and Openness to Collaboration: A positive attitude is an added attribute in the behavioral and cognitive aspects as it encourages cooperation, respect, tolerance of other perspectives, team responsibility, and commitment to team objectives. In general, students with positive attitudes toward collaboration are likely to be more productive in working in teams, contribute to their team with positive actions, and are likely to be better able to achieve desired learning outcomes (Francis et al., 2025). Attitude has affective aspects (willingness, enthusiasm, respect, etc.) and aspects of motivation (investment in the successful collective achievement, etc.).

Approaches and Challenges in Measurement

There are methodological issues involved in measuring collaborative skill. Collaborative competence cannot be directly measured; it is assumed based on reporting about the observed behaviour, by means of self-report questionnaires, or on the outcome of the collaboration, by analysing the collaborative products. Both methods have their advantages and disadvantages. Self-report measures are subject to response bias and social desirability effects, but are convenient for large samples and provide measurable data. Time-intensive and challenging to scale, observational approaches actually record the collaborative behaviours. Most of the instruments in the literature that assess collaborative skills are either composites of different approaches or are based on previously validated self-report scales (Schürmann et al., 2024).

Notably, the majority of existing measures of collaborative skills are developed in Western educational settings. Their suitability to specific cultures is not yet known, as the notions of hierarchy, collective or individual identity, and communication styles differ across cultures. This constraint has produced an argument for local creation of educational instruments in accordance with the local educational values and communication patterns (Mughal & Shaikh, 2018).

Collaborative Skills in Pakistani Higher Education Context

Importance of understanding the collaborative skill development within the context of higher education in Pakistan. Pakistani education culture is based on respect for authority, seniority, and the valued listener is disrespectful (Riaz & Din, 2023). These values have significant implications: in theory, the values will strengthen the development of some collaborative skills such as listening to and respecting others; however,

it is possible that they hinder the development and mastery of other skills, such as contributing to decision-making with peers in a confident manner.

There is limited research on collaboration in higher education in Pakistan. Riaz and Din (2023) undertook a mixed-methods study, where undergraduate students laid the importance of collaborative skills, but they fall short in the consistent application of collaborative skills, especially in formally structured group work. Factors that hindered it were: it was not clear who was to be at the helm and thus to take the lead, others were not contributing equally, and some students were not used to putting their ideas forward, especially those of a lesser social standing. That collaboration is a skill, taught implicitly (with group projects) but not explicitly (with instruction about collaboration techniques) is noted by the authors. Also, passive compliance in groups and active collaboration are at times not clearly distinguished. Such a context adds emphasis to the need for an empirical measurement of the current status of collaborative skill in the world of higher education in Pakistan. It is important to know the skills that students have and which they need to develop in order to create pedagogical interventions that boost learning. Even quantitative results can benefit from having some sense of whether cultural issues might facilitate or impede the various dimensions of collaboration.

In sum, collaboration is viewed as a multi-dimensional collection of learnable skills, such as communication, active listening, decision-making, and positive attitude. These skills are now known to be crucial for 21st-century employment and education. Until now, however, there have been few studies that directly and quantitatively measured the level of collaborative skills, especially in non-Western education. All the previous studies were done quantitatively without considering collaborative skills in different dimensions with final-year undergraduate students in Pakistan. This study aims to fill this gap by providing some empirical evidence about the collaborative skills of Pakistani undergraduate students and lays a foundation for the discussion about the influence of cultural and Educational context on skill development.

Research Methodology

In this study, a quantitative descriptive survey design was used to measure the level of collaborative ability of the final year undergraduate students of the University of Sargodha, Pakistan. The total number of target people was 632 eighth-semester undergraduate students from four faculties (Language and Literature, Agriculture, Science, and Social Science). To minimize the effect of faculty bias, proportionate stratified sampling was used to select 110 students from the eight available faculties (Table 1). The instrument was a 35-item questionnaire developed to assess four skill dimensions of collaboration: communication (10 items), active listening (8 items), decision making (7 items), and positive attitudes toward teamwork (10 items), with a six-point Likert scale to remove neutral responses. For recording responses, a six-point Likert scale ranging from 1 (Strongly Disagree) to 6 (Strongly Agree) was used. To ensure content validity, the questionnaire was reviewed by four experts from the Department of Education, University of Sargodha. A pilot study involving 31 undergraduate students was carried out to assess reliability, and the instrument exhibited excellent internal consistency with a Cronbach's alpha coefficient of .910.

Table 1
Faculty-wise Population Distribution

Faculties	Department	No of students enrolled(8thsemester)	Student selected for sample
Social sciences	Education	83	14
	Psychology	107	18
Sciences	Zoology	102	17
	Chemistry	74	12
Language	English	140	24
	Urdu	78	13
Agriculture	Entomology	19	5
	Plant breeding	29	7
Total		632	110

Results and Findings

The data were analyzed using frequency distribution, percentages, and mean. Active listening, decision making, communication skills, and positive attitude were used to find the level of collaboration in students. The findings of the study are below

Table 2
Students' Responses about Active Listening

No.	Statement	Strongly agree	Agree	Slightly agree	Slightly disagree	Disagree	Strongly disagree	mean	SD
1	I show interest and attention to others during discussion while working in group.	39 37%	52 50%	14 13%	1 1%	2 2%	2 2%	1.86	0.98
2	I consistently listen to others during teamwork.	34 32%	52 50%	14 13%	1 1%	2 2%	2 2%	1.96	0.98
3	I am careful in using gesture and facial expression during face to face interaction	37 36%	35 33%	23 22%	6 6%	4 6%	2 2%	2.09	1.06
4	I attentively listen to others when they are speaking.	30 29%	49 47%	11 11%	8 8%	3 3%	3 3%	2.36	1.26
5	As a listener, I compare other's view point with my own.	31 28%	43 39%	19 17%	6 6%	2 2%	3 3%	2.17	1.15
6	I ask clarifying questions to my group members if I don't understand.	35 33%	44 42%	20 19%	3 3%	3 3%	2 2%	2.02	1.05
7	I pay attention to body language during discussion.	31 30%	37 36%	22 21%	3 3%	6 6%	4 4%	2.30	1.30
8	I do not distract group members by using needless gesture.	38 36%	49 47%	10 10%	1 1%	4 4%	3 3%	1.98	1.14

Table 2 shows undergraduate students' responses regarding active listening as a dimension of collaborative skills. The majority (87%) of respondents agreed and strongly agreed that they show interest and attention to others during group discussions, with a mean = 1.86 and SD = 0.98. majority (82%) of students agreed and strongly agreed that they consistently listen to others during teamwork, with a mean = 1.96 and SD = 0.98. The majority (69%) of students opined that they are careful in using gestures and facial expressions during face-to-face interactions, with a mean = 2.09 and SD = 1.06. The majority (75%) of students attentively listen to others when they are speaking, with a mean = 2.36 and SD = 1.26. The majority of (67%) students compare others' viewpoints with their own while listening, with a mean = 2.17 and SD = 1.15. The majority (75%) of students ask clarifying questions when they do not understand their group members, with a mean = 2.02 and SD = 1.05. 66% of undergraduates agreed that they pay attention to body language during discussions, with a mean = 2.30 and SD = 1.30. Finally, many (89%) students avoid distracting group members through unnecessary gestures, with a mean = 1.98 and SD = 1.14.

Table 3

Students' Responses about Decision Making

No.	Statement	Strongly agree	Agree	Slightly agree	Slightly disagree	Disagree	Strongly disagree	mean	SD
9	I rely on gut feelings (6th sense) when making decision in group.	21 20%	36 34%	28 27%	6 6%	6 6%	8 8%	2.65	1.41
10	I remain calm when I have to make decision very quickly .	18 17%	47 45%	20 19%	11 11%	6 6%	3 3%	2.51	1.22
11	I avoid taking advice after decision is made.	16 16	37 36	24 24%	14 14%	7 7%	4 4%	2.71	1.30
12	I try to make decision based on logic.	22 21%	44 42%	20 19%	10 10%	3 3%	6 6%	2.48	1.31
13	I consult from others during decision making	22 21%	41 39%	21 20%	9 9%	6 6%	7 7%	2.57	1.39
14	I don't make emotional decision.	27 26%	37 35%	25 24%	9 9%	3 3%	4 4%	2.39	1.25
15	I work out all pros and cons before making decisions.	22 21%	20 19%	44 42%	10 10%	3 3%	5 5%	3.25	1.12

Table 3 demonstrates undergraduate students' responses regarding decision-making as a dimension of collaborative skills. The majority of them (54%) agreed that they rely on gut feelings when making decisions in a group, with a mean = 2.65 and SD = 1.41. The majority of (61%) students remain calm when required to make decisions quickly, with a mean = 2.51 and SD = 1.22. Half (52%) of the undergraduates agreed that they avoid seeking advice after a decision has been made, with a mean = 2.71 and SD = 1.30. The majority (63%) of students viewed that they make decisions based on logic, with a mean = 2.48 and SD = 1.31. Many (60%) students agreed they consult others during decision-making, with a mean = 2.57 and SD = 1.39. The majority of (61%) students avoid making emotional decisions, with a mean = 2.39 and SD = 1.25. Finally, the majority (62%) of undergraduates opined that they consider all the advantages and disadvantages before making decisions, with a mean = 2.35 and SD = 1.12

Table 4

Students' Responses about Communication Skills

No.	Statement	Strongly agree	Agree	Slightly agree	Slightly disagree	Disagree	Strongly disagree	Mean	SD
16	I can convince others by giving logical arguments	32 29%	53 48%	16 15%	2 2%	2 2%	3 3%	1.96	0.91
17	I give time to others to respond and clarify.	21 19%	5 54%	20 18%	1 1%	1 1%	2 2%	2.30	1.13

No.	Statement	Strongly agree	Agree	Slightly agree	Slightly disagree	Disagree	Strongly disagree	Mean	SD
18	I ask open questions to find out the facts.	28 26%	42 38%	21 19%	9 8%	1 1%	3 3%	2.25	1.14
19	I give constructive feedback to the group members for the improvement of works.	30 27%	35 32%	27 25%	9 3%	1 1%	3 3%	2.28	1.16
20	I speak carefully to avoid any misunderstanding.	24 22%	56 60%	14 13%	6 6%	1 1%	4 4%	2.20	1.21
21	I avoid using technical language or jargon while communicating.	28 26%	32 29%	32 29%	7 6%	23 2%	1 1%	2.63	1.21
22	I can convey my message in an understandable manner.	34 31%	51 46%	10 9%	4 4%	3 3%	2 2%	2.00	1.07
23	I can effectively convey my ideas to my group members.	30 27%	46 42%	24 22%	1 1%	4 4%	2 2%	2.11	1.07
24	I talk with confidence during group discussion.	27 25%	41 38%	21 19%	6 6%	4 7%	5 5%	2.36	1.30
25	I can convince others by giving logical arguments	32 29%	32 29%	24 22%	5 5%	6 6%	5 5%	2.38	1.37

Table 4 shows undergraduate students' responses regarding communication skills as a dimension of collaborative skills. The majority (77%) believed that they can convince others by giving logical arguments, with a mean = 1.96 and SD = 0.91. Many (72%) students give others sufficient time to respond and clarify their views, with a mean = 2.30 and SD = 1.13. The majority (63%) of students agreed that they ask open-ended questions to obtain relevant information, with a mean = 2.25 and SD = 1.15. The majority (59%) of undergraduates provide constructive feedback to group members to improve their work, with a mean = 2.28 and SD = 1.16. The majority of them (72%) agreed that they communicate carefully to avoid misunderstandings, with a mean = 2.20 and SD = 1.21. Many (54%) students agreed and strongly agreed that they avoid using technical language or jargon while communicating, with a mean = 2.63 and SD = 1.21.

Table 5

Students' Responses about Positive Attitude

No.	Statement	Strongly agree	Agree	Slightly agree	Slightly disagree	Disagree	Strongly disagree	Mean	SD
26	I freely share ideas and information	42 38%	41 37%	18 16%	6 5%	1 1%	3 3%	2.02	1.13
27	I represent my team's work positively before others.	31 28%	51 46%	22 20%	1 1%	1 1%	5 5%	2.14	1.14
28	I consistently participate in group problem solving with an open mind.	22 20%	52 47%	24 212%	8 7%	2 2%	3 3%	2.32	1.09

No.	Statement	Strongly agree	Agree	Slightly agree	Slightly disagree	Disagree	Strongly disagree	Mean	SD
29	I can understand feelings of others.	43 39%	44 40%	17 15%	1 1%	1 1%	4 7%	1.95	1.12
30	I can build positive relation with team members	44 40%	47 42%	11 10%	3 3%	2 2%	4 4%	1.95	1.16
31	I contribute towards the progress and improvement of group work.	32 29%	55 50%	18 16%	4 4%	2 2%	4 4%	2.01	0.94
32	I value open dialogue and diverse views.	34 31%	41 37%	23 21%	6 5%	1 1%	6 5%	2.25	1.27
33	I recognize and celebrate my team achievement and accomplishments.	30 27%	51 46%	21 19%	7 6%	2 2%	6 5%	2.11	0.99
34	I help team members from diverse backgrounds.	33 30%	40 36%	22 20%	6 5%	5 5%	5 5%	2.32	1.32
35	I respect diversity while working with people from multi-cultures.	44 40%	36 32%	17 15%	4 4%	3 3%	7 6%	2.16	1.39

Table 5 depicts undergraduate students' responses regarding positive attitude as a dimension of collaborative skills. The majority (75%) of final-year students agreed that they freely share ideas and information, with a mean = 2.02 and SD = 1.13. Likewise, (74%) reported that they positively represent their team's work, with a mean = 2.14 and SD = 1.14, while (67%) participate in group problem-solving with an open mind, with a mean = 2.32 and SD = 1.09. Furthermore, the majority (82%) agreed that they build positive relationships with team members, with a mean = 1.95 and SD = 1.16, and (78%) contribute to the progress and improvement of group work, with a mean = 2.01 and SD = 0.94.

Table 6

Cumulative Table of Collaborative Skills

No.	Statement	Strongly agree	Agree	Slightly agree	Slightly disagree	Disagree	Strongly disagree	Mean	SD
1	Active listening	12 11%	67 61%	1 1%	20 18%	3 3%	1 1%	72%	2.20
2	Decision making	4 4%	55 50%	37 33%	7 6%	2 2%	0 0%	54%	2.52
3	Communication	12 11%	59 54%	28 20%	3 3%	0 0%	3 3%	65%	2.32
4	Positive Attitude	17 16%	63 57%	20 18%	2 2%	1 1%	2 2%	73%	2.17

Table 6 indicated the overall percentage of these four dimensions. For active listening, 72% of students agreed they were good at it, with M = 2.20 and SD = 0.78, showing this as one of their stronger skills. Decision-making appeared as the weakest area among the four skills, with only 54% of undergraduate students agreeing or strongly agreeing (M = 2.52, SD = 0.83).

For communication, 65% of respondents agreed or strongly agreed (M = 2.32, SD = 0.92), reflecting moderate strength. For positive attitude, students scored best overall, with 73% agreeing or strongly agreeing

($M = 2.17$, $SD = 0.89$). In conclusion, students show the strongest collaborative skills in positive attitude and active listening, average skill in communication, and the most room for improvement in decision-making.

Discussion

The findings indicate that undergraduate students generally possess satisfactory collaborative skills, particularly communication skills, and have a positive attitude during group work. Students showed a positive tendency to listen attentively, remain engaged in discussions, ask for clarification when required, and communicate their ideas in an understandable manner. These findings are aligned with Kluger and Itzchakov (2022), who emphasized that high-quality listening strengthens trust, understanding, and interpersonal relationships. Similarly, Bach and Thiel (2024) found that quality of interaction in collaborative learning is associated with students' perceived learning gains and satisfaction. The findings also support McKay et al. (2024), who documented that collaborative group work helps students develop soft skills such as communication, empathy, teamwork, leadership, and conflict resolution.

The findings further suggest that students demonstrate a positive attitude toward collaboration by sharing ideas, respecting others' viewpoints, building constructive relationships, and contributing to group tasks. These results are aligned with Mena-Guacas et al. (2023), who found that students' collaborative attitudes relate to interpersonal competencies in higher education. Similarly, McKay and Sridharan (2024) emphasized that effective teamwork in higher education depends on structured collaboration, student engagement, and peer contribution. However, the comparatively weaker responses in the area of decision-making indicate that students still need further development in advanced collaborative competencies. Therefore, universities should focus on collaborative learning through structured group activities, peer feedback, communication training, and reflective teamwork practices.

Study Limitation

This study is limited by its reliance on self-reported data, cross-sectional design, and context-specific questionnaire. Its focus on a single institution also limits the generalizability of the findings to other Pakistani universities. In addition, individual factors such as personality, family background, previous group-learning experience, and disciplinary differences were not examined. Nevertheless, the study provides useful baseline evidence on collaborative skills in Pakistani higher education.

Conclusion

This study concluded that final-year undergraduate students exhibit a generally satisfactory level of collaborative skills. Among the four dimensions examined, students showed the strongest performance in positive attitude and active listening, indicating their willingness to cooperate, respect others' perspectives, and engage effectively in group interactions. Communication skills were found to be at a high level, suggesting that while students can express ideas and interact with peers effectively, there is still scope for enhancing communication strategies. Decision-making emerged as the comparatively weaker skill, highlighting the need to strengthen students' abilities to analyze alternatives, make informed judgments, and participate confidently in collaborative problem-solving.

Recommendations

Universities should incorporate structured collaborative learning activities, such as project-based learning, case studies, and team-based assignments, to strengthen students' collaborative skills. Since decision-making was the comparatively weaker dimension, educators should integrate problem-solving exercises, simulations, and real-world scenarios that encourage students to evaluate alternatives, think critically, and make collaborative decisions.

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