PEDAGOGICAL ANALYSIS OF THE FORMATION OF COLLABORATIVE SKILLS OF STUDENTS BASED ON MULTI-VECTOR PEDAGOGICAL APPROACHES IN EDUCATION

Turemuratova Aziza Begibaevna
Assistant, Department of Pedagogy and Psychology,
Karakalpak State University named after Berdakh,
Republic of Karakalpakstan, Uzbekistan
Ruzimova Mahliyo Farhod kizi
Student of Karakalpak State University named after Berdak
hhttps://doi.org/10.5281/zenodo.14179079

Abstract. Collaboration skills are skills that students must possess to face the challenges of the 21st century.Collaboration skills do not only play a role in learning but are indispensable for solving life problems. The purpose of this thesis was to identify the collaboration skills of high school students in science learning. This non-experimental survey research involved 226 high school students. Data collection was carried out by observation with observation guidelines.

Keywords: science learning, students, senior high school.

INTRODUCTION

21st-century learning must be able to lead students to think at higher levels and have good collaboration skills [2]. Collaboration skills are a requirement for success in global competition [3, 4].Networking is important to achieve the desired goals. Collaboration skills allow a person to solve problems faced together, by involving various roles, positive interactions, and interdependence [2]. Collaboration skills need to be prepared from an early age, especially through learning.

Collaboration skills teach students to interact with peers in learning activities. This facilitates students in the development of cognition and knowledge acquisition. Collaboration skills can develop students' thinking and problem-solving skills [3] besides that collaboration skills are also able to improve performance [2], can mobilize and give positive energy to others [3] facilitate the work of others, and be able to identify the abilities of team members [4]. Another study adds that collaboration skills can train students to work together in planning, group decision making, setting goals, setting time, accepting roles, and creating a positive group environment, as well as increasing learning effectiveness [1].

MAIN PART

The obstacles faced by practicing student collaboration skills in schools are context, content, educators, and students [2]. Collaboration skills are not just a means to develop or evaluate knowledge learned through engagement in learning and practice [3]. To develop student collaboration skills, a learning model is needed that can facilitate students to interact with each other, work together to solve group problems, share, and take responsibility together.

Students' collaboration skills in science learning have not been widely disclosed, especially in high schools. The results of interviews with science teachers indicate that the learning that has been taking place so far emphasizes cognitive learning outcomes, while the aspects of collaboration skills have not been fully empowered. Collaboration skills in science learning are a driving force so that students can find comprehensive science concepts and solve scientific problems in a solution [3]. The results of previous research conducted by Sari [4] at junior high school indicated that students' collaboration skills in science learning were still low. The same thing was also reported by Stuner, Bishop, & Lenhart [3] that students' collaboration skills still need to be empowered in science learning. Therefore it is important to explore the extent of students' collaboration skills, especially in science learning. This is the novelty of this study.

A non-experimental survey design was used for data collection in this study. This survey aims to measure students' collaboration skills. Student collaboration skills are focused on biology learning.

A non-probability convenience sampling approach was used to select students who would participate in this study. The student age range ranges from 14-16 years. Respondents in this study were 266 students who were in ten-grade senior high school.

The collaboration skills observation sheet modified Greenstein (2012), consists of 4 aspects, namely working productively, showing respect, compromise, and responsibility. The Cronbach's Alpha coefficient is 0.76> 0.11, this figure shows that the instrument that has been compiled is valid and reliable.

Student collaboration skills data are given a score of 1- 4, provided the description is in the rubric (Table 1.)

Table 1. Rubric of Students Collaboration Skills

Aspects of Collaboratio	**Score & Category**	**Descriptors**

n Skill		
Works productively	4 (Exemplary) 3 (Proficient) 2 (Basic) 1 (Novice)	Usethe whole timeefficientlyto remainfocus on the taskand producethat jobrequired.Every membergroup to dohis job. Doing cooperation well andmost of thepermanentdoassignment upteam memberscompleteprofession.Every member of the team didalmost allthat taskassigned. Sometimesworkingtogether, butnot allteam memberscontributeor dohis job,making it difficulttocompleteprofession. Notcooperatewell.All membersof the team wants doing thingsthemselvesand tellother team members whatshoulddoneso it's notfocusing on the task.
Demonstrate respect	4 (Exemplary) 3 (Proficient) 2 (Basic) 1 (Novice)	All team members respectfully listened to and described theideas shared. Most of the team members listened and interacted with respect.Some team members have difficulty appreciating other people's ideas. Team members don't want to listen to other people and argue with teammates.
Compromise	4 (Exemplary) 3 (Proficient) 2 (Basic) 1 (Novice)	All team members are flexible in working together to achieve common goals. Most group members work together in completing group work. Several group members work together in completing groupwork. All group members do not cooperate in completing group work.
Share responsibility	4 (Exemplary) 3 (Proficient) 2 (Basic)	All team members do their best work and follow the assignedtasks. Most of the team members work on the assigned task.

	1 (Novice)	Several team members were involved in group work. All team members are not involved in group work.

Productive work in science learning can be done with a balanced group division of labor [2] so that social jealousy does not occur in completing work. For example, making productive observations, then discussing the results of the observations, and compactly discussing them with group members. The results of the observation showed that there were only a few group members at least 1 to 3 people (each group consisting of 5-6 students) who were actively involved. Meanwhile, other group members were not involved. In productive work, it is necessary to have 1 leader in each group, who can coordinate group members to achieve common goals. The results of this study are supported by Lai, Pang, Lau, Seah, Cheong, and Low, who reported that not all group members can fully contribute to problem-solving, this is because the academic knowledge possessed by each student is different. Productive work can improve student academic achievement, social skills, and student psychology [2]. The awareness to advance is very necessary to produce productive work.

The highest student demonstration respect was in the basic category, namely 54.29%, which means that some group members had difficulty appreciating other people's opinions. This shows that students have not been trained to respect the opinions of friends, and have not been able to express ideas well. Students demonstrated respect related to students' communication skills, related to good sentence formation in expressing opinions, and choosing appropriate words to make rebuttals in academic discussion forums. Student demonstrated respect can be trained through collaborative learning and cooperative learning.

CONCLUSION

The conclusion in this study is that in general the profile of students' collaboration skills in science learning still needs to be improved, this is based on the results of research which show the low level of student collaboration skills, namely productive collaboration skills in working at level 2 basic category was 55.71%. shown the highest award at level 2 basic category of 54.29%. The highest compromise was at level 1 for the novice category at 55.91%. the highest share responsibility at level 1 for the novice category of 51.43%.

Student collaboration skills can be empowered through collaborative learning and cooperative learning. However, to empower students' collaboration skills,

teachers need understanding and awareness of the importance of collaboration skills for students to face the challenges of the 21st century..

References:

1. A. N. Lay andK. Osman, “Developing 21st century chemistry learning through designing digital games,”Journal of Education in Science, Environment and Health (JESEH), vol. 4, no.1,pp. 81-92, 2018.
2. C. M. Evans, “Measuring student success skills: A Review of the Literature on Collaboration 21st Century Succes Skills,”National Center for the Improvement of Educational Assessment, 2020.
3. Musurmanova, A., Jumaniyozova, M. T., Isaqulova, N. J., & Jumaev, A. (2018). General Pedagogy.
4. D. Kuhn, “Thinking together and alone, Educational Researcher,” vol. 44, no. 1, pp. 46– 53, 2015.
5. H. Boholano, “Smart Social Networking: 21st Century Teaching and Learning Skills, Research in Pedagogy,”vol. 7(1), Serbian Academy of Education, vol. 7, no. 1, pp. 21–29, 2017
6. Musurmanova, A. (2018). Issues of strengthening the family institutions in Uzbekistan: Theory and practice. ACADEMICIA: An International Multidisciplinary Research Journal, 8(10), 4-11.
7. Мусурманова, А. (2011). Формирование духовных основ социальной защиты молодежи в процессе профессионального образования. Образование через всю жизнь: непрерывное образование в интересах устойчивого развития, (9), 282-284