

Dilemmas and Improvement Strategies for Learners' Collaborative Learning in Online Education

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Abstract: Online education, as an emerging form of education, provides learners with flexible, convenient and diverse learning opportunities. In online education, collaborative learning is of great significance. However, there are some challenges and dilemmas when learners collaborate in online learning, such as lack of deep interaction, uneven teamwork, deviate from the Topic, and low motivation to participate in collaboration. In this regard, the article proposes some improvement strategies, such as designing more diverse interactive activities, optimizing grouping strategies, improving the consistency of the design and implementation of learning activities, and enhancing the evaluation of learners' individual contributions.

1. Introduction

Online education, as an emerging form of education, has been developing rapidly and gaining popularity around the world in recent years, especially under the influence of the New Crown Epidemic, which has highlighted the advantages and potential of online education. OECD (2005) classifies core literacy into three categories: "using tools interactively (e.g. language, technology), interact in heterogeneous groups, and act autonomously". [1] The European Union (2006) core literacy framework focuses on communication skills in the mother tongue, communication skills in a foreign language, basic literacy in mathematics and science and technology, digital (information) literacy, learning to learn, social and civic literacy, innovation and entrepreneurship, and cultural awareness and expression. [2] After a comparative analysis of the eight world-renowned core literacy frameworks, Dutch scholar Joke Voogt and others came to the following conclusion: the core literacies advocated by all the frameworks are four: collaboration, interaction, ICT literacy, social and cultural skills, and civic literacy. [3] This also suggests that these are core literacies that are common to humanity in the information age.

Online collaborative learning has significant advantages in developing core literacy in learners. The report "The World Bank: Realizing the Future of Learning: From Learning Poverty to Learning for Everyone, Everywhere" argues that the greatest potential of online education lies in fostering collaboration and exchange among learners, and improving the quality and effectiveness of learning. [4] It provides learners with a virtual, globalized learning environment that enables them to communicate and collaborate across cultures and contexts, thereby enhancing their social and cultural skills, and civic literacy. At the same time, online collaborative learning also emphasizes the importance of ICT literacy, enabling learners to better master and use modern information technology tools, and to improve their collaboration and interaction skills. Therefore, online collaborative

learning should receive extensive attention and research. The article analyses the difficulties faced by collaborative learning in online education from the learners' perspective and proposes improvement strategies to help learners achieve better online collaborative learning results and enhance the quality of online education.

2. What is Collaborative Learning in Online Education?

2.1. An Analysis of the Connotations of Collaborative Learning

With regard to collaborative learning, there are many different definitions by scholars at home and abroad, so it is necessary to discuss them here. Dillenburg, a Belgian scholar, defines collaboration as "a group of people engaged in sustained, coordinated, and continuous activities to maintain interaction and dialogue, to work toward a common conception of a problem or a project, and to achieve a common goal", and proposes three criteria for collaborative interactions, i.e., interactivity, synchronicity, and negotiability.[5] Collaborative learning takes advantage of the real-life experiences of individual learners and enriches the practical experience of all participants by providing opportunities for exploration from different perspectives and co-construction of solutions.[6] Chinese scholar Zhao Jianhua believes that collaborative learning is a strategy of organizing learners' learning through groups or teams, and he also emphasizes that collaborative learning is not only beneficial to improving learners' academic performance and developing their critical and innovative thinking, but also has an obvious positive effect on learners' communication skills and the handling of respectful relationships between individuals.[7] According to Chinese scholar Zhang Qianwei, collaborative learning is a form of teaching in which two or more individuals come together, engage in learning activities, and promote each other's learning in order to improve the effectiveness of learning; collaboration in this kind of learning includes not only collaboration between individuals, but also collaboration between individuals and groups, and between groups and groups.[8] Although there are different definitions of collaborative learning, almost all scholars have reached a consensus that collaborative learning is orientated towards the achievement of common goals by learners and relies on the mutual contribution of all participants to the group.[9]

2.2. Collaborative Learning in Online Education

Online collaborative learning refers to a learning mode in which learners, through a variety of information technology tools, work in groups to carry out learning activities, such as interactive communication, resource sharing, and knowledge construction, in order to achieve common learning goals or tasks in an online environment.[10] This learning style not only focuses on cooperation and communication among learners, but also on developing learners' sense of collaboration, communication skills and team leadership. Collaborative learning in online education has the following characteristics:

(1) Collaborative: learners work together in groups or teams to complete tasks and promote each other's learning and development through division of labour, mutual support and knowledge sharing.

(2) Interactivity: Interaction between learners, between learners and teachers, and between learners and other participants is the core of collaborative learning. This interaction facilitates the transfer of information and the construction of knowledge.

(3) Autonomy: learners have a high degree of autonomy in collaborative learning, they can choose appropriate tasks and roles according to their interests, needs and abilities, and they can also manage and regulate their own learning process independently.

(4) Openness: Collaborative learning in online education is characterized by openness, where learners can communicate and co-operate with people in different fields across geographical, cultural

and background constraints, discussing problems and sharing experiences together.

(5)Diversity: the evaluation of collaborative learning is diversified, and learners' performance can be evaluated from multiple aspects, including task completion, participation, communication skills, team contribution and so on.

In conclusion, collaborative learning in online education is a kind of learning mode based on network platform, which promotes individual and collective development through collaboration, interaction and communication among learners, and is characterized by collaboration, interaction, autonomy, openness and plurality.

3. Dilemmas of Learners' Collaborative Learning in Online Education

In the context of the increasing popularity of online education, collaborative learning has received widespread attention as an important means of improving learning outcomes. However, the environment of online education is different from traditional face-to-face education, and learners face many dilemmas in the process of collaborative learning in the actual online education environment. These dilemmas not only affect the learning experience and effect of learners, but also restrict the development of online education. Therefore, it is crucial to analyze the dilemmas of learners' collaborative learning in online education, which helps us to gain a deeper understanding of the factors affecting the effectiveness of collaborative learning, and to explore and propose strategies and methods to improve online collaborative learning.

3.1 Insufficient Social and Emotional Engagement and Lack of Deep Interaction

In traditional classroom teaching, learners can express their emotions and thoughts to each other through face-to-face communication and body language, and this interaction can build closer interpersonal relationships and deepen mutual understanding and communication. However, online education platforms often lack the intimacy of this physical space, and learners can only communicate through text, images, or sound. This indirect form of communication can hardly replicate the social interaction and emotional connection in the classroom, resulting in a lack of learners' emotional engagement and social participation. Insufficient emotional engagement and social interaction can lead to learners feeling isolated and lacking a sense of belonging. Faced with a virtual learning group that lacks intimacy and emotional identity, learners' social needs cannot be met, and thus their motivation and initiative towards collaborative learning are reduced. In addition, the degree of interaction between learners is too superficial. In online education, learners mainly focus on information transfer and viewpoint exchange, lacking in-depth communication and exploration. This situation may be due to learners' lack of in-depth thinking and understanding of the topic or issue on the one hand, and on the other hand, it may be due to the limitations of the online platform and the design of the learning activities that result in learners only being able to engage in superficial exchanges and lack of opportunities for in-depth exploration and knowledge co-construction.

3.2 Unscientific Grouping Strategy Leading to Uneven Teamwork

The science of grouping strategies is crucial to the success of collaborative learning. The grouping strategy in online education for collaborative learning is often too simple. In order to save time and energy, teachers usually use random grouping methods, which can lead to possible differences in knowledge level, learning motivation, and skills among team members, which in turn leads to uncoordinated team work. For example, in some teams, all members may specialize in the same field and lack expertise in other fields, which makes the team incompetent when facing tasks that require multifaceted skills and leads to poor learning results; while some teams may achieve good

collaborative learning results due to the matching of professional skills and tacit cooperation among members. In the case of online collaborative learning, there is often an imbalance in the level of participation among team members, and the phenomenon of "free-riding" occurs, i.e., some members contribute less while others have to take on more work, and some members may be more active in sharing tasks and participating in the discussion, while others may appear to be more passive and lazier. This unequal distribution of work affects the cohesion and overall efficiency of the team, leading to ineffective co-operation within the team.

3.3 Learners Tend to Deviate from the Topic in the Collaborative Process

In online education environments, learners are often prone to stray from the subject matter when discussing and completing tasks due to the lack of face-to-face communication and real-time feedback. The reason for learners to deviate from the topic may also lie in the teacher. Firstly, the objectives of online collaborative learning activities are not clear enough and lack relevance and challenge. Due to the constraints of the online environment, the design of collaborative learning activities may be too simple and lack elements to guide learners' thinking and problem solving, resulting in a superficial and mechanical learning process. Some activities lack clear guidance and objectives, and learners may not be clear about the expected outcomes of collaboration, which may also make the learning activities deviate from the established track. Secondly, inconsistency in the design and implementation of learning activities can also lead learners to deviate from the subject matter during the collaboration process. Even if learning activities are carefully designed, in practice, they often struggle to be carried out as expected due to a lack of clear guidance or insufficient technical support. For example, if an activity designed to improve critical thinking skills is implemented but with an overemphasis on memorization and repetition of information, learners may neglect the training of critical thinking and just complete the task mechanically. In addition, due to the special characteristics of the online environment, teachers may not be able to monitor and guide the learners' collaborative process in real time, which may also lead to teachers not being able to detect learners' deviation from the topic in time, and it is difficult to provide timely guidance to online learners.

3.4 Learners are Seldom Individually Evaluated and are not Motivated to Collaborate

In online collaborative learning, evaluation is an important method to strengthen the interdependence of learning and improve collaborative performance. However, current evaluation methods for collaborative learning often place too much emphasis on the evaluation of the team as a whole and neglect the evaluation of individual learners, which leads to low motivation of learners to participate in collaboration. Each learner plays a unique role in a team and has unique skills and experiences, and individual contributions should be accurately assessed and recognized to motivate learners to participate more actively in collaboration. However, online collaborative learning evaluations usually give a uniform score to a team member, and do not provide differentiated evaluation results for each learner's specific input and contribution. So, the value of individual learners in collaborative learning is not reflected, which leads to a reduced sense of autonomy and responsibility among learners, as they may believe that their contributions will not be adequately reflected and recognised, or that they can rely on other members to complete the task, thus reducing their own efforts and participation. At the same time, the neglect of individual evaluation can also lead to lower learning effectiveness and satisfaction of learners, who do not receive sufficient feedback and guidance to improve their learning process and results, and are dissatisfied with the fairness and effectiveness of the team's evaluation, which affects their learning attitudes and confidence.

4. Improvement Strategies for Collaborative Learning in Online Education

Improvement strategies for collaborative learning in online education is an important topic that relates to the quality and effectiveness of online education, as well as learners' learning experience and achievement. In online education, educators, as guides and supporters of learners, play a crucial role in improving the effectiveness of learners' collaborative learning. Therefore, it is necessary to propose some improvement strategies from the educator's point of view. By proposing these improvement strategies, educators can better guide and support learners in online collaborative learning and help them overcome difficulties and improve their learning effectiveness. At the same time, proposing improvement strategies from the educator's point of view can also help promote the further development of online education and enhance the overall quality of education and teaching.

4.1 Deepening Interaction between Learners through Diversified Interactive Activities

Online educators should develop and implement diversified interactive activity strategies, build a virtual social ecology rich in emotional color, and deepen the interaction between learners by introducing diverse interactive means in order to improve the quality and effectiveness of collaborative learning. Firstly, educators should focus on creating a virtual social platform to provide learners with an open and interactive community environment that accommodates learners' sharing of personal views and experiences and prompts them to establish closer social connections in the virtual space. At the same time, educators also need to introduce real-time discussion forums and online group projects to provide immediate communication opportunities and promote in-depth exchange of ideas and interaction among learners. In addition, diverse engagement methods are key to deepening learner interaction. In addition to written text communication, educators can also introduce multimedia forms, such as voice and video, to broaden learners' means of expression, which not only promotes a more comprehensive understanding of the learning content, but also helps to establish a more authentic social relationship in the virtual environment, thus increasing learners' participation in collaborative learning. On the other hand, the design of interactive activities should be challenging and interesting to stimulate learners' interest and motivation. Through the introduction of project-based learning and practical tasks, learners can apply what they have learnt to real-world situations, which will lead to more profound exchanges and discussions and promote the depth of collaborative learning.

4.2 Optimizing Grouping Strategies to Balance Collaboration within Teams

Online educators need to conduct scientific grouping based on multi-dimensional information such as learners' abilities, knowledge levels, learning styles, and personal interests to ensure that each team is able to achieve a certain balance in terms of abilities and resources, and to improve the efficiency of collaboration within the team. When optimizing the grouping strategy, a data-driven approach can be adopted to carry out intelligent grouping by analyzing indicators such as learners' historical learning data, participation and performance. At the same time, educators should adopt a dynamic adjustment strategy to optimize grouping. At the beginning of team formation, initial groupings can be made based on learners' characteristics and needs. However, as learning deepens and team members grow and change, educators should adjust the grouping strategy in time to ensure that the team always maintains the best state of cooperation. In addition, educators should pay attention to the participation and contribution of each team member, and promote equal co-operation among team members by setting clear team goals and assigning roles. On the one hand, when grouping, the number of team members and their roles are reasonably determined according to the characteristics and requirements of the learning task, so that each member can give full play to his or her expertise and

contribute to the success of the team. On the other hand, in the process of collaboration, teachers can guide learners to rationally divide labor, support each other and share responsibility, so as to ensure that every team member can participate in the collaboration and avoid the phenomenon of free-riding.

4.3 Educators Should Improve Consistency in the Design and Implementation of Online Collaborative Learning Activities

Consistency in the design and implementation of learning activities refers to the fact that all design elements can be implemented during the implementation process, and the consistency in the design and implementation of online collaborative learning activities is a major factor influencing the effectiveness of learners' online collaborative learning.[11] The core of this strategy is to ensure that learners are always discussing and collaborating on topics during the collaborative learning process through careful design and clear guidance. Firstly, it is crucial to optimize online collaborative learning tasks. Educators must clarify the collaborative learning objectives to ensure that the design of learning activities is consistent with the learning objectives, and at the same time, they can prompt learners to improve the level of collaborative knowledge construction by refining the collaborative learning tasks to ensure the consistency of the interaction theme. Second, when implementing learning activities, educators should provide clear guidance and requirements to ensure that learners understand the purpose, requirements and specifications of the activities, such as providing learners with clear guidance documents, task instructions or reference templates; at the same time, teachers can also provide examples or demonstrations to help learners understand the core points of the theme. In addition, educators should be actively involved in the collaborative process. Not only do educators need to provide timely feedback and guidance to guide learners to stay focused on the topic during collaboration, but they also need to provide additional information as necessary to help learners develop a deeper understanding and exploration of the topic.

4.4 Enhance the Evaluation of Individual Contribution to Improve Learners' Motivation to Collaborate

Individual contribution refers to the contribution that learners make to the achievement of team goals and the learning development of team members in collaborative learning, including cognitive, affective, behavioral and social aspects. The evaluation of individual contribution is the quantitative or qualitative assessment of learners' individual contribution, which can be fed back to learners themselves or team members, in order to adjust and improve the process and outcomes of collaborative learning. Enhancing the evaluation of individual contribution can effectively increase learners' participation in collaboration. Specifically, the following aspects can be implemented: First, educators' evaluation of individual contribution should be based on clear criteria and indicators, to ensure fairness and objectivity. The evaluation indicators should cover various aspects of collaborative learning, such as learners' participation, interaction, knowledge construction, emotional attitude, metacognitive strategies, etc., and also consider the factors of collaborative learning goals, content, form and environment, to make the evaluation indicators targeted and adaptive. Second, educators can adopt diversified evaluation methods, comprehensively considering learners' various performances in the collaborative process. In addition to the traditional outcome-oriented evaluation, process evaluation can also be introduced, focusing on learners' initiative, communication skills, problem-solving skills and other aspects in collaboration. At the same time, peer evaluation mechanism can be introduced, allowing learners to evaluate the contribution of other members in the team, which helps to reduce the possibility of individual being ignored and enhance the interaction of collaboration.

5. Conclusion

Collaborative learning in online education can enhance learners' information literacy, communication, teamwork, organization and coordination skills, and improve their overall quality, which is an important learning mode for adapting to the future social development. However, compared with traditional face-to-face collaborative learning, the virtual and variable online environment increases the complexity of online collaborative learning, and hinders learners' development of collaboration skills, learning participation and personal performance. Therefore, it is crucial to clarify the dilemmas faced by learners in the collaborative learning process in online education and optimize the design and implementation of collaborative learning. By designing more diversified interactive activities, optimizing grouping strategies, improving the consistency of learning activity design and implementation, and enhancing the evaluation of individual contribution of learners, we can not only improve learners' enthusiasm and effectiveness in collaborative learning, but also promote the development and innovation of online education.

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