



A Study on Teacher-Student Interactions in STEAM Inclusive Educational Assistance Project to Cambodia Remote Rural Primary Schools

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ARTICLE INFO

Keywords:

rural primary school in
Cambodia
STEAM Inclusive education
Assistance Program
teacher-student interactions
grounded theory

ABSTRACT

Based on the research method of grounded theory, this paper conducted in-depth interviews with ten teachers in Cambodia's STEAM Inclusive Educational Assistance Program and obtained the original data. After the research process of open coding, spindle coding, selective coding, and theoretical model saturation test, the teacher-student interaction model of Cambodia's STEAM Inclusive Educational Assistance Program is constructed. It finds that the interaction subject, interaction carrier, interaction content, and interaction environment are not only the essential elements of the interaction, but also the influencing factors of the interaction process between teacher and student. The teacher-student interaction mechanism of the STEAM curriculum is a structural and ecological dynamic system. In the process of interaction, there is a dynamic interaction between the factors. Through the interview and follow-up analysis of volunteer teachers, this study puts forward suggestions for promoting the teacher-student interactions of STEAM Inclusive Education from the four perspectives of interaction subject, interaction carrier, interaction content, and interactive environment.

1. Introduction

At present, the unbalanced development of education is a prominent problem. There are many disadvantaged groups (DG) in the world, such as the poor, disabled, left-behind children, children of special families, etc. The existence of many DGS is not conducive to the stability and unity of society, nor to the popularization of education equity. Therefore, it is an essential educational issue to promote the popularization and quality of education for international DG. For the people in DG, whether they can receive a good education, in a sense, can determine whether they have the chance to change their fate. However, for the least developed countries (LDC) represented by Cambodia, there are still some problems in the education of DG. Asia Pacific University Volunteers Association (APUVA) is a public welfare organization that grew out of Taiwan University Alliance. It launched in 2017 by President Qingrong Liao of National Taiwan University of Science and Technology (NTWUST) and Affiliated Hospital of Taiwan University. In the early stage, only students from NTWUST, Taiwan Normal University (TWNU) and Taiwan University (TWU) participated. Later, with the participation of exchange students from universities in the Asia Pacific region who came to Taiwan, the organization's staff includes universities in China and Southeast Asia. Universities in Taiwan area include TWU, TWNU, and NTUST. The mainland includes universities in Shanghai, Xiamen, Guangzhou, and other regions. There are also about 20 universities in Southeast Asia. APUVA public welfare includes Environmental Protection, Free Clinics in Remote Villages, and STEAM Inclusive Educational

Assistance Project in remote villages, among which the latter is an important part. APUVA has been assisting Cambodia's remote rural areas since August 2017. By the end of 2019, four aid plans have been completed, with the specific time in August 2017, July 2018, August 2018, and July 2019. In the four Projects in three years, APUVA Project led by Mr. Xu not only provided support for STEAM Inclusive Education in remote rural areas of Cambodia but also accumulated much valuable practical experience in this process. The course content of this Project includes seven parts: Chinese Story of Filial Piety to the through Color Drawing, Interesting Sports Competition, STEAM Science Education, English teaching, Art, Groundhog Project and Computer Teaching. Except English, other subjects are taught in Chinese. In this Project, the teacher in charge of the curriculum designs the syllabus and discusses it with the TA. And then, the teaching content and relevant implementation arrangements are established. The final teacher must have a teaching certificate. In the process of teaching, teachers are required to treat students with empathy, put themselves in a position to understand students' feelings in the learning experience, adjust their pace in time, and guide students to grow up through verbal or non-verbal communication. During the three years, 21 teachers participated in the Project. We got their contact information from the leader. After further communication, a total of 10 teachers agreed to receive in-depth interviews. Based on this, this study focuses on Inclusive Educational Assistance Project in remote villages of Cambodia, analyzes the implementation of inclusive education of STEAM, explores the interaction mechanism between teachers and students, and puts forward suggestions. Hopefully, this paper can enhance the attention of the academic

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Accepted 31 Dec. 2021, Available online 30 Nov.2022

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community to the STEAM education in remote rural areas, and provide a reference for the implementation and innovative application of STEAM education for the international SG.

2. Literature Review

The teacher-student(T-S) interaction in classroom teaching and extracurricular education activities is an essential part of the education process. Functional interaction between teachers and students is not only the cornerstone of a good relationship between teachers and students but also a necessary factor for students to learn effectively. A considerable amount of literature has been published on T-S interactions from the aspect of the research subject, which can be divided into three categories: the influence of teachers, students, and the environment on the interaction process.

In 2001, Duffy et al. published a paper in which they described the impact of teacher gender on T-S interaction. Their research found that female maths teachers, literature/language teachers tended to interact somewhat more with male students than with female students (Duffy, Warren, & Walsh, 2001). Those teachers who have an excellent ability to interact with students, to a certain extent, owing to their systematic knowledge of the subject, which can strengthen the guidance of students in T-S interaction. Findings indicated that teachers' improvement in classroom interaction was, to a large extent, dependent on their deep understanding of classroom interaction. Through reflection, teachers can improve their knowledge and skills of teacher-student communication, which is an effective way to support teachers to reach their full teaching potential (Ksenia, Ertesvag, & Grete, 2018). Research shows that emotional support is positively correlated with students' emotional input and help-seeking, while classroom organization is positively correlated with students' behavior and cognitive information. Student participation can be fostered through supportive T-S interaction. Teachers must take affective interventions to promote positive interaction between teachers and students (Poysa, Vasalampi, Muotka, Lerkkanen, Poikkeus, & Nurmi, 2018). Also, some studies have pointed out the importance of teacher empathy in physical education learning through T-S Interaction (Yannick, Richard, & Philippe, 2015).

Coplan and Prakash (2003) explored the relationship between children's social-emotional characteristics and the nature of their interaction with teachers. It was found that the children who initiated interactions with teachers were rated by teachers as more aggressive than their peers. In contrast, children who most frequently received initiations from teachers were shy and more anxious than their peers. Compared with peers with higher interaction frequency, children who spent less time with teachers were more communicative, less lonely and show fewer behavioral problems. Also, other studies have shown that T-S interaction related to students' learning interests and motivation. It has also been found that when teachers think students' motivation level is low, they will initiate more communication, interaction, and encouragement (Sarrazin, Tessier, Pelletier, trouilloud, & Chanal, 2006).

Finally, in addition to the relevant factors of teachers and students, T-S interaction may also be affected by many environmental features. Many studies show that there is a close relationship between classroom environment and students' learning achievements, and a positive classroom environment can improve students' learning effect. The size of the classroom can affect the quality and effect of T-S interaction. The smaller class has higher-quality teaching and emotional support, and the interaction between teachers and students is more personalized. The more extensive classroom shows more group activities, and the T-S interactions are more frequent (Allhusen, Belsky, Booth, Bradley, Brownwell, & Burchinal, 2004). From the perspective of time and

space, the longer the time, the larger the scope and the wider the space of T-S interaction, the more conducive to the communication and understanding between teachers and students. The spatial location has a significant influence on the interaction between teachers and students. The closer the children are to teachers, the more likely they are to interact with teachers. In terms of frequency, the deeper the understanding between teachers and students, the easier it is to develop positive T-S Interaction (Bridget & Robert, 2001). Climate has a particular impact on the interaction between teachers and students in the classroom. Anne and Robert (2014) used the same classroom observation tools to observe the teaching video in January, and the data kept in September had apparent differences. In January, teachers provided more teaching support to students. Also, teachers can promote children's cognitive development by creating a positive and structured classroom environment. For example, teachers recognize and respond to children's feelings and needs, provide children with challenging classroom activities, and give useful feedback on their behaviors and performances.

3. Method

Being one of the Qualitative Research Methodology, Grounded Theory was first proposed by American sociologists Glaser and Strauss. Starting from observation, researchers research bottom to the top based on systematic data collection. Through continuous comparison, induction, and analysis, they find the core concepts and core categories that reflect the nature of phenomena, and then find the relationship between concepts to build relevant theories (Glaser, Strauss, & Fulton, 1965). We use Grounded Theory to conduct in-depth interviews with volunteer teachers in the natural environment to collect their experience and feelings in the process of Project implementation. According to the basic principle of Grounded Theory, we use NVivo11 to encode the original interview data with open coding, spindle coding, and selective coding.

The research steps are as follows:

Develop an Interview Outline

Based on the existing research and understanding of the STEAM Inclusive Assistance Project, we have compiled a semi-open interview outline, which covers the process, difficulties, influencing factors, and effects of the T-S interaction. Specific interview questions include:

- 1) What factors affect the interaction between you and your students in classroom teaching?
- 2) What problems have you encountered in your communication with students?
- 3) Please introduce some memorable events during your interactions with your students.
- 4) What is the implementation effect of the Project?
- 5) What do you think about this Project?

Interview

From the end of December 2019 to the beginning of January 2020, with the introduction of Xu, the organizer of APUVA Project, the author interviewed ten teachers who participated in Cambodia's steam inclusive education assistance Project. With the consent of the interviewees, the interview process was recorded. The total length of the interview was 441 minutes. After the interview, the recording was compiled into 40165 words of text, which is the primary data of the study.

Coding

According to the relevant research steps of grounded theory, the coding process follows the order of open coding - spindle coding - selective coding.

1) *Open coding*. In the Open Coding stage, the original data are scrambled, split, and coded step by step and the concepts reflecting the essence of the problem are extracted step by step (Glaser, 1978). In this stage, we classified, compared, screened, and marked ten

original materials for many times, and finally summarized 17 categories. Open coding is shown in table 1 (to simplify the content, we list only one of each first category to reveal the source material).

Table1 Open Coding Category of T-S Interaction in STEAM Inclusive Education Assistance Curriculum

Initial category	Original Data (Some Cases)
Appearance and Dress	"The teacher's appearance will have an impact. If you dress beautifully, the children will be curious about you, pay more attention to you, and be willing to interact with you. " (Teacher 3)
Subject Expertise	"Teachers' professional knowledge is an influential aspect. For example, when children sing, they may not be able to pronounce a specific sound. At this time, they should distinguish and correct their pronunciation in a professional way. " (Teacher 6)
Teaching Experience	"I think teaching experience and teaching ability have a greater impact on the interaction between teachers and students." (Teacher 4)
Instructional Design Ability	"I think another critical point is the design of classroom activities. The ability of teaching design is vital in this rural STEAM Education because you will face many problems. " (Teacher 10)
Classroom Management Ability	"I think the most crucial point is the ability to control the classroom. We should learn how to control the classroom. It is different in an outdoor environment from a classroom environment. It is difficult, and we should ensure that the classroom is managed. " (Teacher 10)
Teachers' characteristics	"I think the most critical thing should characteristics, which is an external character shown by the teacher's teaching style and his state. " (teacher 5)
Patience	I think the teacher's patience is crucial because some children draw very slowly and crudely. You must be patient in correcting what is wrong with him. It is all out of the teacher's concern for the students. It is the way teachers are. (Teacher 9)
Values	"I think teachers' emotions have a more significant impact on the interaction between students and teachers. What is more important is not technical things, but values. " (Teacher 8)
Students' Age	"The age of students is an influential aspect. " (Teacher 6)
Students' Gender	"The interaction between boys is better but not as good as that between girls. "(Teacher 10)
Learning Experience	"Children who know more interact with teachers more often and speak more actively." (Teacher 6)
Chinese Level	"Some children who understand Chinese may communicate more deeply and have deeper feelings. " (Teacher 7)
Students' characteristics	"More active Children have more interaction with teachers. "(Teacher 5)
Learning Motivation	"Some older children take the initiative to learn Chinese. Chinese is a useful tool for their future, and the interaction between them is better. Some younger children may think it is fun and are interested in it, which can also affect the interaction process. "(Teacher 1)
Nonverbal Behavior	"Interactions with students depend more on body and eyes. " (teacher 7)
Teaching Environment	"Environment also affects the process of T-S Interaction. " (Teacher 3)
Course Content	"I think the content of the course can also affect the interaction between teachers and students, because some courses have higher requirements for T-S Interaction, while others have low requirements. "(teacher 10)

2) *Axial Coding.* The main task of Axial Coding is to find and establish various connections between conceptual relations to represent the organic association of each part in the data (Glaser, 1978). In this stage, the inner relationships among various categories were explored through cluster analysis, and a total of 7

main categories were obtained, namely, background dimension, knowledge dimension, skill dimension, emotion dimension, process dimension, environmental dimension, and content dimension. The principal axis coding is shown in table 2.

Table2 Factors Affecting T-S Interaction in Axial Coding Category

A. Background Dimension	B. Knowledge Dimension	C. Skill Dimension	D. Emotion Dimension	E. Process Dimension	F. Environment Dimension	G. Content Dimension
A1. Appearance and Dress	B1. Teachers' Professional Knowledge	C1. Instructional Design Ability	D1. Teachers' Characteristics	Nonverbal Behavior	Teaching Environment	Course Content
A2. Students' Age	B2. Teaching Experience	C2. Classroom Management Ability	D2. Patience			
A3. Students' Gender	B3. Learning Experience	C3. Chinese Level	D3. Values			
			D4. Students' Characteristics			
			D5. Learning Motivation			

3) *Selective Coding.* Selective coding is a process of classifying conceptualized categories in a wide range, that is, core-coding. In this stage, it is required to dig out the core category from the main category, analyze the logical relationship between the core category and other categories, and summarize various related variables into the theoretical framework in the form of storylines (Pandit, 1996).

Through an in-depth analysis of the seven main categories, we take "the influencing factors of T-S Interaction in STEAM assistance course" as the core category, and construct four categories as the constituent elements of the T-S Interaction mechanism. The four categories are "interactive subject, interactive carrier, interactive content, and interactive environment." See table 3.

Table3 Factors Affecting T-S Interaction in Selective Coding Category

Core Category	Interactive Subject			Interactive Medium	Interactive Content	Interactive Environment
Dimensions	Background Dimension	Knowledge Dimension	Skill Dimension	Emotion Dimension	Nonverbal Behavior	Course Content
						Teaching Environment

To research with the grounded theory method, it is necessary to continuously search for new data, conduct theoretical sampling, and repeatedly revise and compare existing genera. This process continues until no new concepts or genera can be found (figure 1). We reserved the original data of one respondent for theoretical saturation verification. The test results showed that in addition to the four main categories (interactive subject, interactive carrier, interactive content, and interactive environment) of the T-S Interaction mechanism structure of the STEAM course, no new types were found. No new initial concepts were found within the

categories. Therefore, the "T-S Interaction mechanism model of STEAM courses in Cambodia" based on grounded theory has been theoretically verified by saturation.

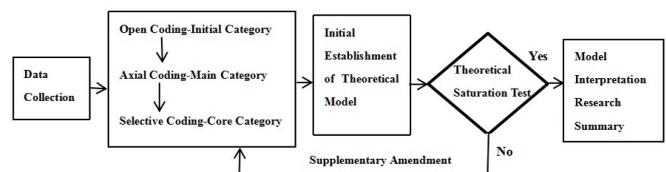


Fig. 1. Road Map for Grounded Theory Research

The reliability of qualitative research needs to ensure the consistency of data collection, recording, coding, analysis, and result interpretation. Therefore, this study guarantees reliability through three aspects:

1) In the process of interviewing the interviewees, recording verbatim was carried out. After the interview, the original recording was converted into text to ensure objective consistency and authenticity in the process of data collection.

2) The data collected by the researchers were coded, analyzed, and interpreted, and then two graduate students of this major were invited to code. Then the coding was compared and matched. After discussion, the reservation and rejection of coding, analysis, and interpretation of results were decided. According to the calculation formula of coder's reliability in qualitative data analysis of Miles et al., reliability = number of consistent codes/numbers of all codes (Miles, Huberman, & Saldana, 2014). In the first level of open coding, the consistency of the three decoding results was 84.52%, and the consistency of the two coding results was 86.36%, 87.2%, and 88.47%, respectively. Therefore, the structure of the influencing factors of T-S Interaction is stable, and the structural reliability is good. For the controversial indicators of individual-related categories, the team members also reached an agreement after full discussion and reference to relevant literature.

3) We invited the Postgraduate Tutor to check the coding to ensure its scientificity and preciseness.

In nature, qualitative research follows a different thinking paradigm from quantitative research. It focuses not on objective measurement, causal hypothesis demonstration, or statistical inference, but on the process of constructing social facts and people's experience and interpretation in specific social and cultural situations. This study strictly follows the grounded theory procedure, and the reliability of the study can be guaranteed. To ensure the validity of the study as much as possible, the researcher kept the Value Neutrality during the interview process, and neither did we evaluate the interviewees' conversation, nor made induced questions. During the interview, we also established a good relationship with the interviewees. The data collection and analysis are scientific and rigorous, deeply rooted in the first-hand data analysis.

4. Findings

The components of the interactive mechanism of Cambodia's STEAM Inclusive Assistance Project mainly include four parts: interactive subjects (teacher and students), interactive carriers (non-verbal carriers), interactive content (related teaching content of STEAM courses) and interactive environment (local resource environment). Based on the initial concept of open coding, we extracted 17 categories (exterior dress, subject expertise, teaching experience, teaching design ability, classroom management ability, teacher characteristics, patience, values, students' age, students' gender, learning experience, Chinese level, student personality, learning motivation, nonverbal behavior, teaching environment, and teaching content) and obtained seven main categories (background dimension, knowledge dimension, skill dimension, emotion dimension, process dimension, environmental dimension, and content dimension). On this basis, we trace back to the interaction subject, interaction carrier, interaction content and interaction environment, which four are not only the essential elements of the interaction process but also the influencing factors of the interaction process between teachers and students. Thus, we build a T-S Interaction model of STEAM Inclusive Curriculum. Therefore, the T-S Interaction mechanism of STEAM Inclusive Curriculum is a structured and ecological dynamic system. Among them, the interaction subject is the core element of the interaction, the interaction carrier is a useful tool to transmit the interaction information, and the interactive content is a bridge to connect the

interaction subject. Based on the interaction environment, these three elements constitute the STEAM Assistance Project interaction model. (Figure 2)

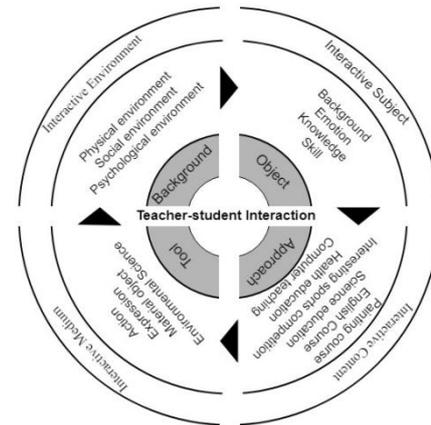


Fig. 2. Teacher -Student Interaction Model of Cambodian STEAM Inclusive Education Assistance Courses

Interactive Subject – the Core Element of Interactions

The subject of interaction is not only an essential part of the T-S interactions, but also some of its factors can have a specific impact on the process of T-S interaction. Teachers are the leaders of educational activities. The analysis of the interview results shows that the factors affect T-S interaction: teachers' appearance in the background dimension. The elements are the subject knowledge in the knowledge dimension, the instructional design ability, teaching experience, and classroom teaching management ability in the skill dimension, as well as the personality, patience, and values in the emotional aspect. Students are learning subjects in educational activities. The analysis of the interview results shows that the students' age and gender in the background dimension, the real experience in the knowledge dimension, the Chinese level in the skill dimension, and the personality and learning motivation in the emotional aspect affect the interaction between teachers and students in the STEAM course.

Teachers' influence on T-S Interaction in the STEAM curriculum.

Firstly, Teachers' background factors include a series of information such as age, gender, nationality, health status, etc. According to the interview results, teachers' appearance is one of the factors that affect T-S interactions. The current cognitive level of primary school students is at a fundamental level. Most of their perception of teachers' characteristics focus on external factors. Such as the visual impact of appearance, children are more sensitive to color, like bright color. Therefore, teachers with good appearance and beautiful clothes can attract students to interact with them. "Teachers' appearance will have an impact. If you dress beautifully, children will be curious about you, pay more attention to you, and be willing to interact with you" (teacher 3). Teachers' appearance and dress will affect the interactive atmosphere with students.

Secondly, in the teacher knowledge dimension, through interviews and analysis, we can see that the subject knowledge and teaching experience of teachers have an impact on the interaction between teachers and students in the steam inclusive education assistance Project. Some teachers think that professional knowledge and teaching experience are some of the crucial factors affecting the interaction between teachers and students in the Project. "In the course of teaching drawing pictures, if a teacher did not learn Art, he has no way to guide the form and beauty of the picture" (teacher 4). "Subject knowledge is an influential aspect. For example, when children sing songs, they may not pronounce a certain sound clearly. At this time, the teacher should distinguish and correct the

pronunciation" (teacher 6). "I think the teaching experience is more influential, just like Teacher Xu, who is a very experienced teacher, can engage all his classmates and interact with children more effectively" (teacher 7).

Thirdly, the teacher's skill dimension, such as teaching design skills and classroom management, can influence the T-S interaction in the STEAM Assistance Project. In the interview, the volunteer teachers mentioned that "the ability of teachers to organize activities is also vital. For example, if the activities are well organized, the children will be particularly engaged, but if the activities are boring, the children will not be willing to participate" (teacher 3). "I think it is more important to design teaching activities and manage the classroom. Teachers should learn how to control the classroom and teaching order. Outdoor activities are different from indoor activities, and classroom management is more difficult." (Teacher 10). Teachers with strong instructional design ability can design and develop curriculum content that conforms to the cognition level of students. They can eliminate the gap with students, enhance the interaction with students, and make the implementation of the curriculum smoother. At the same time, teachers' classroom management ability is essential for the open teaching scene in the aid project. Only by maintaining the classroom order can teachers ensure the smooth progress of teaching and the active promotion of T-S interaction.

Finally, three aspects of the teacher's emotional dimension (teacher's characteristics, patience, and values) affect T-S interaction in STEAM Inclusive Education Assistance Project. The tested teacher said that "the teacher's personality will also be affected. I think affinity is one aspect of personality. Students will feel better and prefer to interact with those teachers if they are gentle and lively and laugh more." (teacher 2). "I think the teacher's patience is vital, because some children draw very slowly, very rough. We must be patient to help them." (teacher 9). Teachers' values refer to the deep-seated values, ways of thinking, aesthetic interest, and ethical fashion contained in Teachers' behaviors, which reflect the overall spiritual outlook and professional attitude of teachers. In the STEAM Inclusive Education Project, teachers' values can significantly affect the interaction process with students. If teachers' values tend to be positive, they are more positive about the teaching process. The process and atmosphere of T-S interaction will be better. "I think it is the emotional aspect of teachers that has a greater impact on the T-S interaction. What is more important is not the technical aspect, but the impact of values" (teacher 8). Through the analysis of the interview content, teachers' emotional dimension has become an essential aspect of the interaction atmosphere between teachers and students.

The influence of student factors on T-S interaction in STEAM courses.

First, the background dimensions of students include a series of information such as age, gender, nationality, health status, etc. According to the interview results, students' age and gender are the factors that affect T-S interaction. Due to the imperfect development of their psychological cognition, young children may not have the ability to listen quietly, and they will be more relaxed in the teaching process. The older children are more conscientious and have a better interaction between teachers and students. "The age of the students is crucial. The interaction between different ages is not the same. The class of younger children is not very serious. If kids want to interact with the teacher, they will come forward." (teacher 2). Similarly, the gender of students will also affect the interaction between teachers and students during the implementation of this project. Among them, the interaction between little girls and teachers is generally more than that of little boys. The little boy pays more attention to the interaction with his peers. "Boys interact better, but less with teachers than girls" (teacher 10).

Secondly, in the dimension of students' knowledge, students' experience is a complex of values. Their ways of thinking,

knowledge and skills, emotional maturity, and reflective behavior about their lifeworld constructed and generated by students in practical activities and life experiences. Children with more learning experience can interact with teachers through learning content and feedback from their learning experience. According to the analysis of the interview text, "children with more knowledge interact more and speak more actively" (teacher 6). Students' experience is different not only in the same class but also in different regions. "Children of Phnom Penh and the countryside do not perform the same in the teaching process. Children in Phnom Penh will have some eye contact with the teacher while teaching. Even if the language is not available, they can use some non-verbal forms to show that they like to listen in class. The facial expression of the children in the countryside is not rich in the teaching process. They are more reserved and introverted. They cannot draw what they want to show. This is related to their previous knowledge and experience" (teacher 5). The imbalance of regional development level leads to the difference in students' existing learning experience, and further leads to the difference of T-S interaction.

Thirdly, in the dimension of students' skills, students' Chinese level has an essential impact on the process of T-S interaction. Language is a necessary carrier of communication. In Cambodia's STEAM education assistance project, the language gap is a significant obstacle that affects T-S interaction. Some local students can speak Chinese, and some students do not understand Chinese at all. Even if there is a translator present, there are significant difficulties for those students with language barriers, which block their intention to interact with teachers. "Some children who understand Chinese may communicate more deeply and have deeper feelings. If we cannot communicate with language, we can only interact with the body and eyes." (teacher 7). "The foundation of Chinese has an impact on the process of interaction" (teacher 4). Also, through learning, "The foundation of Chinese has an impact on the process of interaction" (teacher 4). Also, some students are very interested in Chinese through immersive Chinese learning in STEAM Inclusive Course. This also shows that interactive content can affect students' Chinese level in turn, which reflects a two-way process.

Finally, in the emotional dimension of students, students' personality and learning motivation can affect the T-S interaction in the STEAM Inclusive Assistance Project. Personality refers to the internal organization that can predict human behavior, determine individual response style and behavior style. The interview results show that students' character is an essential factor affecting the interaction between teachers and students. Extroverted children can actively interact with teachers in a pleasant atmosphere. "Children who are more active interact more" (teacher 5). Personality refers to the internal organization that can predict human behavior, determine individual response style and behavior style. The interview results show that students' character is an essential factor affecting the interaction between teachers and students. Extroverted children can actively interact with teachers in a pleasant atmosphere. "Children who are more active interact more." (Teacher 5).

Nonverbal behavior – an Active Carrier of Interactive Information

In the process of project implementation, the language barrier is the main obstacle to the T-S Interaction between teachers and students. "Because children are young, they like teachers' rich body language, exaggerated actions, and expressions" (teacher 2). In this project, the primary carrier of teacher-student Interaction is nonverbal behavior. Nonverbal behavior is an essential supplement of speech behavior, which refers to the use of silent speech or behaviors, such as actions, expressions, physical objects, environment, etc., to carry out information transmission and communication. During the implementation of the Cambodian STEAM Project, language interaction is limited to communicating with students who understand Chinese or in the presence of

translators. Most of the classroom T-S Interaction mainly depends on facial expressions, eye contact, and gestures. "Teachers had better encourage students when interacting. Although language communication is not available, teachers can give students a smile or a thumbs up. After receiving the encouragement, I feel that the students will be more active "(teacher 9). "Because we can't understand each other, eyes and gestures are the most important things in the Interaction between teachers and students. When I look at students and guide them with gestures, they can feel it. " (teacher 10). It shows that teachers' non-verbal behavior is also gradually established and improved through the teaching process, which can cross the gap of the language barrier and realize the "silent interaction" with students.

Interactive Content – a Bridge of Interactive Process

The teaching content of the STEAM Inclusive Course includes Drawing, English, Science Education, Sports Competition, Health education, and Computer, etc. The results show that the content and organizational form of the curriculum have an impact on the T-S Interaction. For example, in drawing class, students spend most of the time drawing. Teachers only interact with students more when evaluating. Other courses, such as English, Science Education, Health Education, etc., only through the interactive process with teachers, can students learn knowledge and experience some humanistic care. P.E. class is to train students' awareness of rules almost entirely through games. In the process of Interaction with teachers, students have a sense of rules. "I think the content of teaching can also affect the T-S interaction, because some courses require higher interaction between teachers and students, while some courses require lower interaction" (teacher 10). The content of Interaction is another important factor affecting the Interaction between teachers and students.

Environment -- the Background Factor of the Interaction Process

According to social psychology, the behavior is the result of interaction between internal factors and individual environment. In the setting of the classroom, the relationship between people and the atmosphere is interdependent and complementary. The psychological state and behavior of teachers and students in a different classroom environment will be different, and the classroom environment will have a particular impact on the classroom T-S Interaction. Relevant empirical research on the classroom environment shows that an active classroom environment has a significant role in promoting students' learning input. Such as improving academic performance, focusing on learning more, enhancing the sense of pleasure in the learning process, etc. so that students can deal with challenging learning tasks with vitality (Shernoff, Ruzek, & Sinha, 2016). Noisy Environment will lead to a low level of students' input and poor classroom discipline, which will affect the interaction between teachers and students, "environment also has an impact on the interaction between teachers and students" (teacher 3). Also, the openness of the classroom environment and educational materials will affect the process of T-S interaction. "We once built a shed on a site outside the house, which is a bit like an open-air site. Children sat together, and adult's watch. In this open area, adults' encouragement and guidance affected children's performance and interfered with our teaching order "(teacher 10). "I think the influence of teaching equipment and teaching environments, such as desks and chairs, is relatively large" (teacher 2). "The most important thing is the poor hardware environment on site. They do not have a classroom at all. The activities are all outdoor. " (teacher 8). "I plan to show them some English movies. However, there was no projection equipment "(teacher 9).

5. Discussion

Through the extraction of interviewees' views and study of relevant literature, we put forward suggestions on T-S interaction strategies in the Cambodian STEAM Project. The four dimensions

of interaction subject, interaction carrier, interaction content, and interaction environment give some enlightenment to the development of T-S Interaction in this Project.

First, Establish a Local Inclusive Educational Support Team for Sustainable Development

To make full use of inclusive education assistance and promote its sustainable development, we should actively establish a local linkage guarantee mechanism. For example, we can cooperate with local college students to encourage their participation, which can radiate more local people, and maybe more meaningful. In the long run, it is also a sustainable driving force. After all, the time of summer assistance is fixed, and teachers' time in the local area is limited. Also, there is no language barrier between local college students and disadvantaged groups. If the local college students can get the essence of the project implementation, they can carry out their teaching based on common language and customs, which will surely achieve good results.

Second, Increase the Assistance of Educational Technology

In the classroom of technical support, students can participate more actively. The T-S interactions can be fully reflected, and students' subjectivity can be fully exerted, thus improving the quality and effect of the interaction between teachers and students. Technology can create situations and provide abundant teaching resources for classroom teaching, which is conducive to the formation of cooperative learning and knowledge sharing atmosphere. In the learning environment with technology, teacher-student interaction becomes more targeted. Students play a more independent role in a technologically productive climate than in a traditional one. In the process of project implementation, teachers can make use of educational media to create a productive educational environment when conditions permit. Use this environment as a tool to better enable students to participate in the classroom and actively communicate. Give feedback to teachers in time to better promote the effectiveness of classroom teaching.

Third, Put Learning into Practice and Strengthen Life Skills Education

Life skill education is a systematic educational activity to improve students' psychosocial ability. An individual can deal with various needs and challenges effectively in daily life. Research shows that life skills education has a significant effect on improving students' self-esteem and self-concept level, increasing pupils' active participation in the classroom, and reducing problem behaviors (Botvin, Griffin, Paul, & Macaulay, 2003). The acquisition of life skills plays an irreplaceable role in the promotion of lifestyle, and the formation of the right lifestyle is the most stable guarantee of a healthy life. To strengthen life skills, education in the curriculum of the Cambodian Assistant Project is not only the inevitable requirement of quality education but also the urgent hope of local economic construction for schooling. Education aid to rural areas in Cambodia should pay more attention to life skills teaching, such as preaching to them to make a simple water purification device, so that they can learn how to use it for later life. It has realized the transformation of technology, which can have a positive impact on growth and make help more targeted.

Fourth, Establish a Closed Teaching Environment

Children's attention is usually distracted if they are faced with a chaotic situation or under social pressure (Begeer, 1989). Children whose attention development is not perfect can get the best satisfaction in the independent classroom because it can keep external interference and excessive stimulation to a minimum. In the process of implementing the steam assistance project curriculum, the teaching sites are relatively simple, and some "classrooms" are only temporarily selected areas to teach in a hurry. In this process, due to the unclosed environment, they are much disturbed by the outside world. Through the previous literature review, we can see that the situation has a significant impact on the T-S Interaction. Therefore, we suggest that the organizers use

relevant materials to build a simple classroom to reduce unnecessary noise and interference from the outside and provide a quiet and independent environment for the active T-S Interaction.

6. Conclusion

In this study, we adopted a qualitative research method at the macro level, and we obtained the original data through in-depth interviews with ten teachers in the Cambodia STEAM Inclusive Education Assistance Project at the micro-level. Through the research process of open coding, spindle coding, selective coding, and theoretical model saturation test, we constructed a T-S interaction model of the Cambodian steam education assistance project. The results show that interaction subject, interaction carrier, interaction content, and interaction environment are not only the essential elements of T-S interaction but also the influencing factors. T-S interaction of the STEAM curriculum is a structured and ecological dynamic system. In the process of interaction, there is a dynamic relationship between the elements. Through the interview and follow-up analysis of volunteer teachers, we put forward the corresponding strategies to promote the T-S interaction between teachers and students. The T-S interaction is a common topic in the field of education, and its influence on learning and teaching is self-evident. However, it is rare to study the T-S interaction mechanism in assistance projects. Compared with the previous studies, the innovation of this study is mainly reflected in the following two aspects: The first is the innovation of research content. This study focuses on the T-S interaction in assistance projects, focusing on the internal mechanism and

promotion strategies of T-S interaction. Through in-depth interviews with volunteer teachers, this study collects first-hand information and collates it, summarizes the T-S interaction model of Cambodia's steam education assistance project. The second is the innovation of research methods. Most of the current research on T-S interaction adopts quantitative methods and uses data to explore the internal mechanism. Based on in-depth interviews, this study uses qualitative research methods to encode the collected original data layer by layer and extract the core concepts to construct the grounded theory. It analyzes the teacher-student interaction of the STEAM education assistance project from the perspective of the essential elements of education activities.

Compared with the previous studies, this study has innovation, but there are also two shortcomings. First, due to some objective reasons, this study failed to interview every teacher who participated in the assistance project in detail, which resulted in the limited number of samples, incomplete sampling, and not an in-depth analysis. So, there may be some less rigorous situations in the process of qualitative research. Secondly, due to language and spatial distance, we did not interview the educatees. The construction of this model is only from the interview data of educators, which may lead to some deviation. If there is an opportunity to carry out an on-the-spot investigation in the future, it is necessary to communicate with local educatees. We will carry out a comparative analysis to better build the interaction model between teachers and students and reveal the interaction mechanism.

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