Application of Kagan's Cooperative Learning Structures to Maximize Student Engagement: An Action Research

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Authors' contributions

This work was carried out in collaboration between the authors. All the authors have equal contribution in this paper. All the authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Aims: This action research attempted to apply and evaluate the impact of Kagan's Cooperative Learning Structures at Gedu College of Business Studies.

Study design: Lim's [1] Balanced Action Research Model was used in this action research as it captures wide range of action research processes and provides the researchers to validate one's actions through critical analyses and reflections.

Place and duration of study: The study was conducted in one college under the Royal University of Bhutan for a period of one year (2019-2020).

Sample: One first-year Management class was selected as the focus of this action research using purposive sampling technique. Observation and a five-point Likert scale questionnaire were used as data collection tools. There were 45 students and all of them participated in filling out the questionnaire.

Methodology: Data were collected using observation and questionnaire. Observation data were analysed using content analysis technique. Out of two general categories of content analysis (conceptual analysis and relational analysis), the researchers used conceptual analysis. A five-point Likert scale questionnaire was administered to collect data on CL structures and student engagement, its feasibility and impact. Responses from the completed questionnaires were entered

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into SPSS for descriptive analysis.

Results: The findings revealed that CL structures like team builders, class builders and team cheers helped the students know their friends better, created a positive learning environment and helped in gaining and retaining students' attention. Similarly, the findings revealed that CL structures helped in developing positive interdependence and individual accountability, ensured equal participation and encouraged simultaneous interaction in the class. In contrast, the findings revealed that small classroom size, large class strength and classroom furniture that do not support CL structures hindered the application of CL structures.

Conclusion: In view of these findings, the researchers recommend that the college plan and come up with classrooms and furniture that support the CL structures in teaching and learning. Further, the college should bring the class strength down as per the teacher-student ratio maintained by the Royal University of Bhutan and provide training and workshops to teachers on CL structures. Finally, teachers should make use of CL structures while teaching to engage, encourage and empower the learners.

1. INTRODUCTION

The lack of student engagement in classrooms is a widespread problem in schools and colleges [2] as a result of the use of conventional teaching methods [3]. Conventional teaching, which is also called traditional teaching, refers to a teaching method that puts the teacher in the centre, instead of the students [4]. In conventional teaching, teachers focus more on the content while students receive the information passively and reproduce what they have rote-learned in the exams [5]. As a result, these conventional methods hinder students from achieving better marks in exams and gaining experiences from the lessons as their engagement is minimal [6,7]. Thus, the need for the change of paradigm in teaching is felt necessary (Ministry of Education) [8].

Introduction of cooperative learning structures as transformative pedagogy in Bhutanese Education system is an attempt to revolutionize teaching methods to increase student engagement and achievement through interactive classes [8]. Studies conducted in the schools of Bhutan have found that CL structures are effective tools to engage students positively in the class besides helping them achieve better academic scores [6,9,7]. As a result, the Education Ministry of Bhutan took the boldest decisions in substituting conventional teaching methods by providing nation-wide transformative pedagogy training in to the teachers in 2016 [9].

Similarly, studies conducted in colleges and universities abroad show that CL structures help in creating interactive learning environment as students are mature and responsible, resources are comparably abundant than schools, and

lecturers and professors encourage student engagement [10-13], Slavin, 2010. Despite the provision of similar training to the teaching faculty of the colleges, there are no studies conducted in the colleges of Bhutan supporting the practice and impact of CL structures in tertiary education. This action research attempted to apply and evaluate the impact of Kagan's Cooperative Learning Structures at Gedu College of Business Studies (GCBS). Management Theory and Practice was selected as the module in focus for this action research as the researcher(s) teach this module to the under-graduates at GCBS.

The following research questions helped in achieving the aims and objectives of this action research.

1. What is the effect of CL structure on 1st year students' classroom engagement?
2. What factors impact the implementation of CL structures in MGT class?

2. LITERATURE REVIEW

Cooperative Learning (CL) is a teaching strategy in which small groups of students work together to accomplish individual and shared learning goals [14-17]. To implement CL structures, there are various structured CL techniques. It is referred to as structures as these are strategies which are conducted strictly adhering to the steps outlined for each activity to help in organizing students and their work in cooperative learning teams [18]. CL helps in organizing classroom activities that provide academic and learning experiences to the students as it encourages students to work with partners, in group or as a whole class [19]. The members in each group are responsible not only for

independent learning but also for helping their group members learn. CL as a teaching method is student-centred as it helps teachers to put students and their learning in the centre by promoting student engagement through cooperative learning activities.

According to Johnson and Johnson [17], there are five basic principles of cooperative learning:

1. Positive Interdependence: Cooperative learning classroom promotes positive interdependence in three ways: first, Positive Interdependence is strengthened when students in a group are assigned a common learning material to learn together and assure that all group members understand the material. Second, everyone in the group gets the chance to contribute to the learning. Third, to promote positive interdependence, each member in a group gets a role to play, which if ignored impacts the group from succeeding.
2. Individual Accountability: Individual Accountability as a principle of CL ensures each learner to be accountable for one's and as well as the group's learning. In other words, as Kagan puts (2011), each member is in charge of his or her learning besides the learning of the teammates.
3. Face-to-face Interaction: Learners are encouraged to take part in Face-to-face Interactions through discussion, debate, argument, explanation and through peer-tutoring. To ensure maximum face-to-face interactions, classrooms are arranged in a way to facilitate sharing of learning experiences, ideas and knowledge, giving feedback and supporting each other in accomplishing the learning goal [17].
4. Social Skills: Social Skills as one of the principles of CL helps the learners to experience leadership roles, improve communication skills and practice conflict resolution skills to function effectively as a pair, group or whole class.
5. Group Processing: Another important principle of CL is Group Processing. CL activities are designed in a way to help the learners reflect consistently on their learning experiences [18]. Group processing helps teachers to evaluate learners' understanding on a particular topic. Similarly, students assess their own learning by sharing their learning experiences on the topic and on the use of CL structures [18].

There are other CL principles proposed by Dr Spencer Kagan. Kagan based his CL on a single precept: engagement [18]. These principles are referred to as "PIES". PIES stand for Positive Interdependence, Individual Accountability, Equal Participation and Simultaneous Interaction. Positive Interdependence as the first principle is positioned at the heart of CL. Student engagement and learning takes place when they depend positively on one another. CL offers students to maintain resource interdependence, task interdependence and reward interdependence. The second principle is Individual Accountability. This principle focuses on each of the students being accountable for themselves as well as whole class learning and engagement. Whole class engagement and learning is achieved when students get equal opportunity, the third principle. CL provides many ways to promote equal participation among group members. The fourth principle focuses on the total amount of engagement for each student. The use of CL structures in the classroom increases active engagement. Therefore, engaged and motivated students who are accountable for self and group learning are developed through CL [18].

In addition to the various principles of CL, Johnson & Johnson [17], Slavin [18] and Kagan et al. [20] proposed many cooperative learning techniques which were further developed over the years by other scholars. Some examples of CL structures used in this research are provided below and these structures put the students in pairs or in small groups of four to five learners:

- Think-pair-share
- Student Team Learning
- Jigsaw
- Learning Together
- Three-step-interview
- RoundTable
- RoundRobin
- RalleyRobin
- RalleyTable
- Inside-outside Circle
- Numbered Heads Together

A sample structure for Numbered Heads Together is provided to maintain clarity in interpretation of CL structures. The activity happens in sequence as numbered:

1. Number students from 1 to 4 in their group.

2. Call out a question or problem.
3. Provide think time.
4. Students in group puts their heads together to discuss the answer.
5. Randomly call a number from 1 to 4.
6. From each team, the student whose number is called writes the answer on the board or speaks it aloud to the class.
7. Repeat the steps with additional questions.

3. RESEARCH DESIGN

Teaching is an important facet of education. Effective teaching requires teachers to reflect and "exercise judgment in deciding how to act" [21]. One of the ways to reflect and improve one's teaching is by conducting action research. McKay and Marshall [22] describe action research as a meeting point for action and research as it focuses on finding solutions to practical problems. Action research in teaching is research conducted on one's teaching conduct to improve pedagogy that promotes student achievement and teachers' professional development. Schmuck [23] defines action research as a recursive process in which teachers systematically investigate their teaching and learners' learning by observing, sharing, reflecting and reporting on one's teaching conduct and students' learning experiences to improve classroom practice.

An action research is generally conducted using some action research models [24]. There are different action research models proposed by scholars (1,25,26,24,27,28]. These models guide the researcher through the course of research. However, these models have two things missing in common [1]. First, these models do not adequately capture the validity of the action plan developed for the action research. In order to enhance the quality of action research studies, the validation of an action plan is crucial [24]. It validates the whole process of the action being exerted, changed or discovered for the improvement of the problem [29]. The second most important content of an action research is the coverage. These models do not sufficiently cover the wide range of action research studies. Lim's [1] Balanced Action Research model was used in this action research as it captures wide range of action research processes and provides the researchers to validate one's actions through critical analyses and reflections.

There are six phases in the Balanced Action Research model. The first phase is known as an identifying step. Researchers identify a problem or problems in this phase. Sensitizing is the second phase. After identifying the problem, the researcher then acquaints oneself with the problem by reviewing the literature. After collecting sufficient literature support and evidence, the researcher then works on developing strategies and action plans. This phase is referred to as strategizing phase. The fourth phase is implementation phase. Here, the researcher carries out the action plan in the earlier phase. The fifth phase is validating phase. After implementing the action plan, the researcher evaluates and validates the actions through careful analyses and reflections. The last phase is reporting phase and the findings are reported in this phase. Thus, the researcher implements the new knowledge to improve the problem in his lessons. The Balanced Action Research model is presented in Fig. 1.

3.1 Population and Sampling

One first-year MGT class was selected as the focus of this action research using purposeful sampling technique. This action research study being action oriented in nature requires a definite class for the stipulated time frame in order to make the research successful. Purposeful sampling as a non-random method of sampling was used as it helps the researcher select strategies to conduct an in-depth study [30]. Therefore, the class and the learners being known to the researchers as their MGT tutor served as a positive point in participant selection. Total population sampling was taken as the population is composed of the entire group of students involved in this action research.

3.2 Data Collection Tool

Action research, unlike other scientific research, does not necessarily require complex data collection tools. Observing one's actions and maintaining a report after reflection in addition to observing the learners and collecting their views generally are treated as action research findings [31]. Observation and reflection reports help the researchers to alter one's actions or promote the same if it works. However, to gather adequate data to enrich and validate the findings [32], observation and questionnaire were used as primary data collection tools.
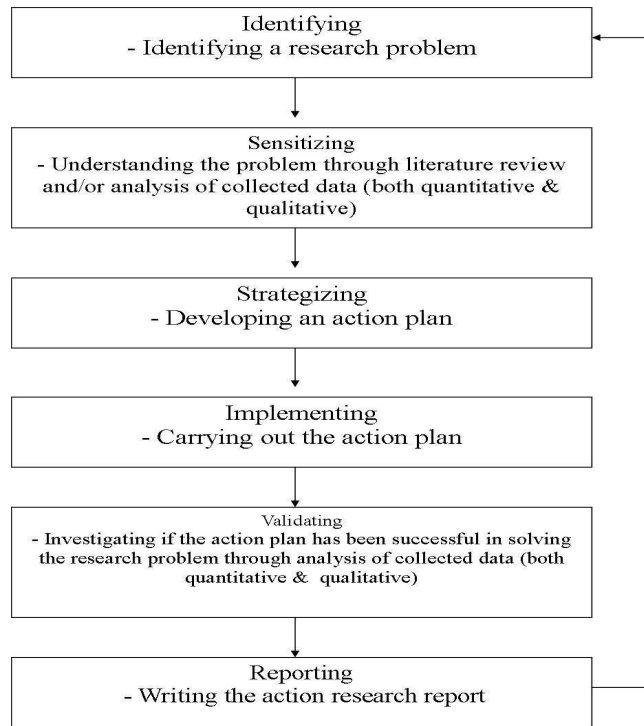
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│   - Identifying a research problem           │  │
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│            Sensitizing                       │  │
│ - Understanding the problem through          │  │
│   literature review and/or analysis of       │  │
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│            Strategizing                      │  │
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│            Validating                        │  │
│ - Investigating if the action plan has been  │  │
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│            Reporting                         │──┘
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Fig. 1. Lim's Balanced Action Research model [1]

There were 45 students and all of them participated in filling out the questionnaire. In addition, the researchers maintained an observation and reflection journal for a period of six months (one semester— a complete action research cycle). Further, a questionnaire was prepared and administered to gather the data on students' perceptions about the use of Kagan's CL structures. The questionnaire was developed using Kagan's CL structures and distributed to the participants on the completion of the action research process.

3.3 Data Analysis Procedures

Observation data were analysed using content analysis technique. Content analysis as a flexible method for analysing text data [33] helps in generating information for independent themes as it describes a group of analytic approaches [34]. Out of two general categories of content analyses (conceptual analysis and relational analysis), the researchers used conceptual analysis. Through conceptual analysis, researchers established the existence and frequency of concepts from the interview and observation data.

A five-point Likert scale questionnaire was administered to collect data on CL structures and student engagement, its feasibility and the impact. Responses from the completed questionnaires were entered into SPSS for descriptive analysis. Reliability of the questionnaire was established before administering it. All the items have Cronbach Alpha values ranging from .75 to .88, indicating high reliability as presented Table 1.

Table 1. Reliability Statistics

Theme	No of Items	Cronbach's Alpha
Engagement	4	.75
Feasibility	4	.86
Impact	4	.88

Interpretation of Likert Scale: Ab Latif, Dahlan, Abdul and Mat's [35] interpretation of Likert Inventory (Table 2) was used to interpret the 5-point Likert scale. Ratings for strongly disagree fall in the range between 1.00 - 1.50, showing the lowest level, while the ratings for disagree fall in the range between 1.51 - 2.50, indicating a low level. Ratings for neutral or medium level fall in the range between 2.51 - 3.50, ratings for agree fall in the range between 3.51 - 4.50, indicating high level, and the ratings for highest level fall in the range between 4.51 - 5.00.

Table 2 Interpretation of Likert Scale

Mean Score	Level
4.51 - 5.00	Highest
3.51 - 4.50	High
2.51 - 3.50	Medium
1.51 - 2.50	Low
0.00 - 1.50	Lowest

4. RESULTS AND DISCUSSION

This section presents the analysis of data gathered through observation and survey questionnaire. Demographic details of the participants and the answers to research questions are presented in this section.

4.1 Demographic Detail

There were 45 students in the class, of which 24 were female and 21, male. All the students filled out the questionnaire. Fig 2 shows the demographic detail of participants.

4.2 Descriptive Analysis on CL Structure and Student Engagement

With the application of CL structures in the MGT class, students have built better relationships with their colleagues and enhanced a positive learning environment in the classroom. Moreover, CL structures have enhanced a positive team atmosphere and increased their attention span for the lesson.

As presented in Table 3, use of CL structures like team builders and class builders have helped the students know their friends better than previous years (M = 4.1, SD = 1.13), apart from helping them in creating positive classroom environment. Similarly, team cheers used while working in teams helped in building positive team atmosphere (M = 3.9, SD = 1.37) while attention grabbers (like class, class, yes, yes; one-two, eyes on you, etc) used by the teacher and the students before teaching or group presentation helped in getting and retaining their attention (M = 3.82, SD = .89). All in all, the results revealed that student engagement is high when CL structures are used in the classroom.

4.3 Descriptive Analysis on CL Structures and Feasibility

The results of the descriptive analysis on CL structures and their feasibility revealed that the MGT classroom at GCBS lacks space, furniture and comfort required to practice CL structures. The findings show that the classrooms do not have adequate space to support the practice of CL structures (M = 2.13, SD = .82), furniture in the classroom do not support the practice of CL structures (M = 2.11, SD = .71), a greater number of students in a class impede the practice CL structures. (M = 1.84, SD = .79) and, the current sitting arrangements are not feasible for CL structures (M = 1.47, SD = .51). These findings are presented in Table 4.

In brief, descriptive analysis on CL structure and its feasibility revealed a low level of feasibility to practice CL structures.
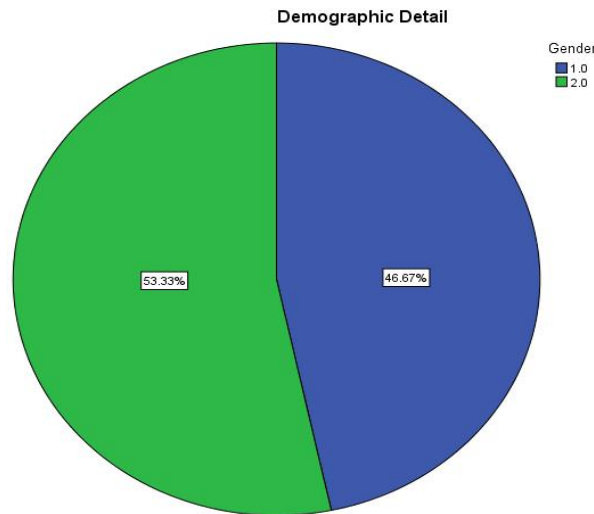
Demographic Detail

Fig. 2. Demographic detail

Table 3. Descriptive analysis on CL structures and student engagement

	N	Mean	Std Deviation
A2. I feel that I got to know my classmates better this year than in previous years because of the team builders and class builders.	45	4.11	1.13
A1. We did team builders and class builders to get to know each other better. It helped in creating a positive classroom environment.	45	4.00	1.00
A3. When we worked in teams, we sometimes did team cheers. I think team cheers helped in building a positive team atmosphere.	45	3.98	1.37
A4. The attention grabbers (like class, class, yes, yes; one-two, eyes on you, etc) used by the teacher and the students before teaching or group presentation helped in getting and retaining our attention.	45	3.82	.89
Valid N (listwise)	45		

Table 4, Descriptive analysis on CL structures and feasibility

	N	Mean	Std Deviation
B1. Our classroom is spacious enough to support the practice of CL structures.	45	2.13	.82
B3. We have furniture in the classroom that can support the practice of CL structures.	45	2.11	.71
B2. Our class strength is comfortable enough for us to practice CL structures.	45	1.84	.79
B4. Our sitting arrangement supports CL structures.	45	1.47	.51
Valid N (listwise)	45		

4.4 Descriptive Analysis on CL Structures and their Impact

Descriptive analysis on CL structures and their impact on students revealed that CL structures have ensured equal participation in the class. It also revealed that the practice has ensured simultaneous interaction in the classroom. In addition, CL structures have helped in developing individual accountability and positive interdependence in the class. On the whole, CL structures have high impact on ensuring equal participation (M = 4.24, SD = 1.00), simultaneous interaction (M = 4.02, SD = 1.18), individual accountability (M = 3.64, SD = .88) and positive interdependence (M = 3.64, SD = .88). These findings are captured in Table 5.

Table 5. Descriptive analysis on CL structures and students' perception

	N	Mean	Std Deviation
C3. CL structures have ensured equal participation for all.	45	4.24	1.00
C4. The classes were not noisy as CL structures ensured simultaneous interaction.	45	4.02	1.18
C2. CL structures have helped in developing individual accountability.	45	3.64	.88
C1. The use of CL structures has helped in developing Positive Interdependence in the class.	45	3.64	.88
Valid N (listwise)	45		

4.5 Observation Report

Based on Creswell's [36] qualitative observation technique, the researchers used a four-step observation protocol. The researchers planned and prepared for observation as the initial step. Observation notes were prepared while observing the class as the second step. Notes were interpreted according to relevant criteria as the third step and a write-up was prepared to present the observation and interpretation to answer the research questions as the final step. These observation reports are presented under three different themes: CL Structures and Student Engagement, CL Structures and their Feasibility and CL Structures and their Impact.

4.5.1 Observation Report on CL Structures and Student Engagement

Researchers observed the class in which Kagan's CL structures were implemented. When the teacher assigned group work to the students using RalleyRobin, RalleyTable, Round Robin and RoundTable, it was observed that students gave better answers when they were provided with think time after posing the question. Moreover, as RallyRobin and RalleyTable require students to share their answers with their immediate friend, it gives opportunities to all the students to share their answers. Similarly, think time provided to students after posing the questions using these CL structures helped in maintaining silence for them to brainstorm, which otherwise, did not happen in normal classes where the teacher poses questions to the class and the whole class gets into chaos and disorder. Further, when the teacher assigned activities to recapitulate the lesson at the end of the class using Inside-outside Circle, it was observed that all the students got actively involved and the learning became fun. It can, therefore, be concluded that CL structures help in gaining and retaining attention, help in maintaining order and harmony, and ensures equal participation of the students.

4.5.2 Observation Report on CL Structures and their Feasibility

The researchers also recorded some limitations faced by the teacher while applying the CL structures. First critical observation made by the researchers was the classroom size. It was found that the classroom not being spacious hindered the application of CL structures. Moreover, large class strength (45 students crammed inside one small classroom) obstructed the teacher and students from using CL structures in the classroom. Arrangement of seats and the types of furniture found in the classroom were other weak areas in the application of CL structures. As CL structures require enough space, relevant tables and chairs, and a comfortable number of students [37,38], the absence of these requirements often obstructed the flow of the lesson.

4.5.3 Observation Report on CL Structures and their Impact

Observation records show that the use of CL structures in the class promoted positive interdependence among the students. Positive interdependence was strengthened when students were assigned a common task to be completed in a group, as they learn together and support each other in learning using a common learning material. In addition, positive interdependence was promoted as each member in a group got a role to play, which if ignored impacted the group from succeeding.

CL structures not only promoted positive interdependence but also instilled the value of individual accountability in the learners. Individual accountability as a principle of CL structures ensures each learner to be in charge of one's as well as the group's learning. Researchers have observed that each learner responsibly engages to learn for oneself and at the same time helps friends in learning.

Another striking observation made by the researchers is students' participation in group activities. The researchers have observed that everyone in the group gets equal opportunity to participate in the class when activities are designed and executed using CL structures. Apart from guaranteeing equal participation, CL structures have helped in engaging the whole class which finally contributed in achieving the learning outcomes.

Similarly, as every student gets to take part in the class activity, observation records indicate that CL structures have helped the students to remain engaged and motivated. The records also show that noise and disruption in the classroom became easy to manage by the teachers. Use of CL structures, therefore, helped in encouraging simultaneous interaction in the class.
Altogether, observation revealed that CL structures helped in developing positive

interdependence and individual accountability, ensured equal participation and encouraged simultaneous interaction in the class.

5. CONCLUSION AND RECOMMENDATION

This action research attempted to apply and evaluate the impact of Kagan's Cooperative Learning Structures at Gedu College of Business Studies. The findings revealed that the use of CL structures like team builders and class builders helped the students know their friends better besides creating a positive learning environment. In addition, team cheers helped in building a positive team atmosphere while attention grabbers helped in gaining and retaining students' attention. Similarly, the findings revealed that CL structures helped in developing positive interdependence and individual accountability, ensured equal participation and encouraged simultaneous interaction in the class.

On the contrary, it was also found that classroom size, class strength and the furniture available in the class hindered the application of CL structures. The small size of the classroom, a greater number of students and the furniture that do not support CL structures are some of the constraints that impede successful application of CL structures at GCBS.

In view of these findings, the researchers recommend that the college should plan and come up with classrooms and furniture (in future) that can support the transformative pedagogies like CL structures. Further, the college should revisit the current sitting arrangement, bring class strength down as per teacher-student ratio maintained by the Royal University of Bhutan, and provide training and workshops to teachers on CL structures to meaningfully engage students in their learning. Finally, teachers should make use of CL structures while teaching to engage, encourage and empower the learners.

CONSENT

The researchers sought consent from all the participants as well as the authorities concerned. Interviewees were asked to sign the consent forms prior to taking part in the interview.

ACKNOWLEDGEMENT

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
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