

# The effectiveness of cooperative learning in enhancing student participation among grade 10 English students in Jordanian public schools

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## ABSTRACT

This study responded to the problem of classroom participation among Jordanian public school students, whose education has been mainly teacher-centered and has constrained students' learning autonomy. This study seeks to explore the impact of cooperative learning methods for increasing classroom participation among Grade 10 students. A quasi-experimental pretest-posttest design was applied with 80 participants labeled as an experimental group (40 participants) and a control group (40 participants). The treatment group received cooperative learning approaches, including Think-Pair-Share (TPS), Numbered Heads Together (NHT), and Teams Games Tournament (TGT), while the control received regular instruction. Measures that were used to collect data included a 10-item observation checklist questionnaire, a 15-item student self-report questionnaire, and teacher reflection logs. The finding suggested that the experimental group had a marked improvement in mean participation, from 1.9 to 3.2 (+1.3 or +68.4%), while the control group had a minimal increase from 1.8 to 2.1 (+0.3 or +16.7%). A separate-samples t-test likewise determined that the improvement in the experimental group was significant ( $p < 0.05$ ), and the students demonstrated more confidence and responsibility. In general, the application of cooperative learning techniques greatly increased student participation, which was a welcome change in the Jordanian academic setting, especially English lessons. However, study limitations include overreliance on subjective rating, single-site design, and self-reporting by teachers, with suggestions for future research including the incorporation of objective performance measures and exploration of digital substitutes to increase ease of deployment.

**Keywords:** Cooperative learning; student engagement; accountability; Think-Pair-Share; Numbered Heads Together; Teams Games Tournament

## 1. Introduction

As group learning is documented to increase student participation and interpersonal development, schools are deploying cooperative learning regularly. Ismail et al. [1] present evidence in their study that the Think-Pair-Share strategy promotes both participation and success in academic and technical related subjects. Tadesse et al. [2] also offer support to Ismail et al. by documenting that in teacher education programs and other university contexts in Ethiopia, cooperating, but not competitive, methodologies improved student participation, interaction, and ultimately achievement, even in environments somewhat limited in resources. A study conducted by Meena [3] demonstrated student improvements in speaking skills surrounding cooperative learning methods with EFL learners. These studies lend credence to the notion that acquiring a new language can benefit from cooperative group learning methodologies.

In reading courses, Mahmudah and Rasyid [4] observed that the Numbered Heads Together strategy would enhance student interaction and understanding of materials and content studied. Van Ryzin et al. [5] found that cooperative learning was a strong mediator of prosocial behavior surrounding motivation in middle school

students. Mohzana et al. [6] demonstrated how using the Group Investigation model, collaborating as a group leads to academic success because cooperative learning can nurture inquiry and collaboration. Qureshi et al. [7] conclude that engagement through collaborative learning consistently leads to improved performance in all contexts. Using both primary and secondary sources. Sugino [8] reported evidence from Japan about synchronous online cooperative classes, where students respond positively to peer-led activities. Millis [9] stated that cooperative learning is an established theory for shifting from passive to active forms of instruction in higher education and pedagogy. Namaziandost et al. [10] reported that EFL learners who engaged in cooperative tasks demonstrated improved fluency and participation in speaking tasks and shared experiences of emotional and social support offered by this model. Silalahi and Hutauruk [11] used cooperative learning approaches to sustain interaction whilst providing online learning experiences that emerged during COVID-19. Wyman and Watson [12] considers the group composition for cooperative learning, specifically homogeneous vs. heterogeneous, and groups that are homogeneous or balanced will maximize the benefits. Apriyanti and Ayu [13] focus on the Think-Pair-Share method in speaking classrooms, indicating the use of the Think-Pair-Share method increased student confidence and participation. Najmi et al [14] researched the Teams Games Tournament (TGT) model; their findings showed that the TGT model improves students' achievement, and that peer motivation and collaborative gamified environments were significant factors to be considered. Finally, Hamadi et al. [15] offered a case study to show how social media can enrich cooperative learning environments through connecting to groups, forming discussions, and collaborative platforms with digital engagement and shared responsibility of the group.

This research builds upon previous studies to investigate student participation and performance in cooperative learning methods, specifically Think-Pair-Share, Numbered Heads Together, and TGT, and how the cooperative learning strategies employed in these methods work to enhance student participation and performance. It examines recent empirical studies conducted in classroom settings as well as online settings to evaluate the effectiveness of cooperating strategies, student engagement, and learning performance.

## 2. Theoretical framework

The theoretical framework for this study is largely founded on social constructivism and Vygotsky's Zone of Proximal Development (ZPD), which highlights the value of social interaction and mutually collaborative dialogue for learning. With this view, learning is built through interaction with other people and more capable others; thus, cooperative learning is best suited to foster growth development. Johnson and Johnson's Social Interdependence Theory also has good theoretical foundations for how positive interdependence and individual responsibility (two of the most important features of cooperative learning) can enhance motivation, group responsibility, and participation. This group of theorizing is receptive to advocating formalized peer collaboration for enhanced cognitive and affective productivity in learning.

### Prior Research, Chief Variables, & Hypotheses

The prior research has confirmed the positive impacts of cooperative learning methods on students' engagement levels, participation, and performance. Some of the cooperative learning methods are such models as, but not limited to, Think-Pair-Share, Numbered Heads Together, and Teams Games Tournament. Most of the cooperative learning models have shown promising outcomes in different dimensions and at different levels of education. The variables described in this study are:

- Independent Variable: Cooperative learning strategies;
- Dependent Variable: Student engagement and participation; and
- Moderating Variables: Gender, previous academic performance, learning environment (online vs. in-person).

In terms of the theoretical framework and previous empirical literature that has attempted to explore motivations in students, the following hypothesis is posed:

H1: Students exposed to cooperative learning strategies will have significantly higher levels of class participation than comparable students where traditional instructional methods are implemented.

The mean score on the 10-item observation checklist, which measured behaviors like on-task attention, coming up with ideas, participating in group projects, asking and answering questions, and providing peer support, was used in this study to define student engagement. Higher engagement levels were indicated by higher scores. Four items in the self-assessment questionnaire were used to measure students' self-reported readiness, role fulfillment, and peer support, which was known as responsibility (accountability). Greater accountability in group tasks was indicated by higher values.

Engagement is a construct well understood in developing engagement and accomplishment of students. It is largely the lack of engagement, particularly in teacher-centered classrooms, that tends to decrease the possibility of responsibility and engagement. The studies further posit that engagement aids academic accomplishment, motivation, and teamwork skills [7, 16]. Cooperative learning (CL) has been supported as a learner-centered technique that enhances academic and social competence development in learning [17, 18]. It combines the assumptions of social constructivism, which also focuses on interaction during the process of learning [19], and interdependence theory, which focuses on group responsibility [20, 21]. These frameworks indicate that a well-defined cooperation will increase participation and responsibility [22, 23]. Empirical studies have provided premature evidence to the reality that CL approaches lead to increased participation and learning achievements in any environment. Think-Pair-Share (TPS) has increased performance as well as collaboration in the mathematics and English courses [24]. Alternative teaching strategies, including Numbered Heads Together (NHT) and Teams Games Tournament (TGT) have been found to increase motivation and engagement with reading tasks [25] and enhance achievement through active learning [26, 27]. Other investigations corroborate that cooperative structures yield a sense of responsibility, collaboration, and pro-social conduct [10, 28]. Similarly, in online environments and higher education learning, CL proved effective in maintaining engagement in a remote/ blended classroom [29, 30]. International evidence strongly points to the use of CL, but its use at the secondary level, and in particular in English language classrooms in Jordan, has been underrepresented. Available research on this topic is limited with studies either primarily focusing on different topics [23], [31], younger learners [3, 32] or higher education settings [33, 34]. It thus points to the necessity of a context-sensitive research project concerning how communication strategies in cooperative learning, including TPS, NHT, and TGT can improve engagement among the Grade 10 students at the Jordanian public schools.

### 3. Methodology

The researcher used a quasi-experimental research design with a pre-test and post-test control group design. The overall objective was to determine the effect of using cooperative learning strategies on student engagement in English classes over a four week intervention.

The participants comprised of 80 students from two sections of Grade 10 of a Secondary School. The sample was divided into:

- Experimental Group: Forty students (50%) who were taught using cooperative learning strategies
- Control Group: Among students 40 of them were those who were taught using traditional instructional approaches were 50 percent.

In terms of gender, the distribution of the total sample was as follows:

- 42 females (52.5%)
- 38 males (47.5%)

15 was the average age. About 40% of the pupils were 16 years old, and 60% of them were 15. The particulars of the students used in this study were obtained through simple random sampling from a population of 160 Students which made the subject of this study.

A simple random sampling technique was used to collect the study sample to equal degree and minimize selection bias. The sample students randomly assigned to either the control group or experimental group.

Three tools were used for data collection:

1. A 10-item observation checklist with a 5-point rating system from 0 to 4 was used to gauge student involvement. A score of 0 on this scale denotes no evidence of the behavior, while a score of 4 denotes consistent demonstration. In order to represent the highest level of participation possible, the tables present the mean scores "out of 4." Over the course of eight sessions, each group received 320 observations in total, eight for each student.
2. A student self-assessment questionnaire consisting of 15 items using Likert-scale ratings. The self-assessment questionnaire was administered to each student before and after the intervention. The completion rate of the self-assessment questionnaire was high (97.5%).
4. Teacher reflection logs, teacher qualitatively recorded their observations of students' behavior and participation after each session.

The intervention comprised eight sessions of 45 minutes that followed a reading and discussion instruction model in English. Think-Pair-Share (TPS), Numbered Heads Together (NHT), and Teams Games Tournament (TGT) were among the tactics that adhered to the cooperative process.

The implementation of the intervention was preceded by a formative phase to determine the effectiveness and clarity of the principles of the experimentation and equipment. At this level, the English teachers involved were given short trainings on how to use the cooperative learning activities, i.e., Think-Pair-Share, Numbered Heads together, and Teams Games Tournament in their classrooms conspicuously and efficiently.

A pilot test was also undertaken on a small sample size of students (not included in the sample) to determine whether the observation checklist and that of self-assessment were clear enough and practical. The constructive criticism about this trial assisted in improving the wording of the questions in the questionnaires and observation criterion. The formation phase also consisted of a simulation session that involved the primary experimental group to make the students accustomed to the cooperative learning structure and roles prior to the actual intervention. These procedures also made the implementation of the intervention to be smooth and also increased the validity of the data obtained.

The quantitative data were analyzed through descriptive statistics and paired sample t-tests to determine the significance of change related to student participation scores.

- The participation data recorded in observation checklists were averaged and compared pre- and post-intervention.
- The responses from the self-assessment questionnaire were analyzed for perceived engagement.

The qualitative data obtained from the teacher reflection logs and open-ended responses in the self-assessment questionnaire were analyzed thematically to build upon and explain the quantitative findings.

SPSS version 26 was used to analyze the data. Students' participation scores in the control and experimental groups were compared before and after the intervention using a paired-sample t-test. A significance level of  $p < 0.05$  was established. The purpose of this test was to ascertain whether the variations in average participation scores following the implementation of cooperative learning techniques were statistically significant.

To ensure reliability of instruments:

- Three university faculty members conducted a pre-test of the observation checklist.
- Items in a questionnaire were evaluated for clarity and internal consistency.
- Consistency in observers was maintained by asking the researcher to supervise all of the sessions.

The response rate (97.5%) also supported the reliability of the data.

Prior to data collection, all participants and their guardians provided informed consent. Participation was voluntary, and all responses were kept anonymous. The study adhered to institutional ethical standards and guidelines to protect participant rights and due diligence for data.

### 5. Results and discussion

The results of this study in numerical form are as follows grouped according to the type of instruction given out of 80 pupils (40 in the control group and 40 in the experimental group): They are separated into observational data, questionnaire survey, and comparative improvement studies.

As shown in Figure 1 Therefore a 10-item observation checklist with a 5-point rating system from 0 to 4 was used to gauge student involvement. A score of 0 on this scale denotes no evidence of the behavior, while a score of 4 denotes consistent demonstration. In order to represent the highest level of participation possible, the tables present the mean scores out of 4 observation checklist in the eight sessions the scores in terms of participant involvement were as follows:

Table 1. The mean scores out of 4 observation checklist in the eight sessions the scores in terms of participant involvement

Group	Pre-Test Mean (out of 4)	Post-Test Mean (out of 4)	Change	% Increase
Experimental	1.9	3.2	+1.3	+68.4%
Control	1.8	2.1	+0.3	+16.7%

Cooperative learning resulted in a significant 68.4% increase in participation levels for the experimental group and a 16.7% increase for the control group, there was a statistically significant difference in the experimental and control groups' gains ( $p < 0.05$ ).

Table 2. Participation Score Distribution (Post-Test)

Score Range (0–4)	Experimental Group (n=40)	Control Group (n=40)
3.5 – 4.0 (high)	22 students (55%)	8 students (20%)
2.5 – 3.4	12 students (30%)	14 students (35%)
Below 2.5	6 students (15%)	18 tudents (45%)

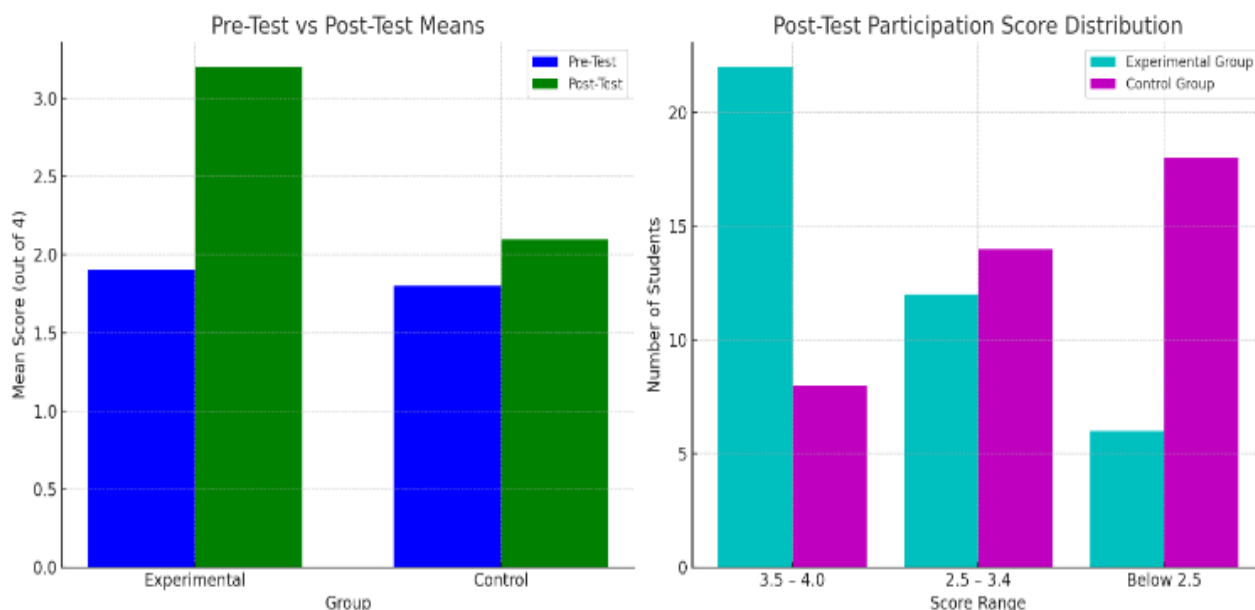


Figure 1. Pre-Test vs Post-Test Means for both the Experimental and Control groups. And Post-Test Participation Score Distribution for the Experimental and Control groups across different score ranges

As table 3 Perceived participation and confidence in class were measured by the student self-assessment questionnaire. Analysis was done on 78 valid responses (97.5%) as in Figure 2, Only the four most pertinent items that demonstrated a significant difference between the experimental and control groups are shown below, despite the fact that the questionnaire had fifteen items. Upon request, the entire survey and all response data are made available.

Table 3. Selected Results for post-Intervention Agreement Levels

Questionnaire Item	Experimental Group (Agree + Strongly Agree)	Control Group
“I regularly participate in class discussions”	85% (34/40)	52.5% (21/40)
“Group work helped me engage with the material”	90% (36/40)	55% (22/40)
“I share ideas more confidently in class”	80% (32/40)	50% (20/40)
“I feel responsible for my group’s learning”	88% (35/40)	48% (19/40)

According to these findings, across several important participation metrics, students in the experimental group reported 30–40% more positive answers than those in the control group.

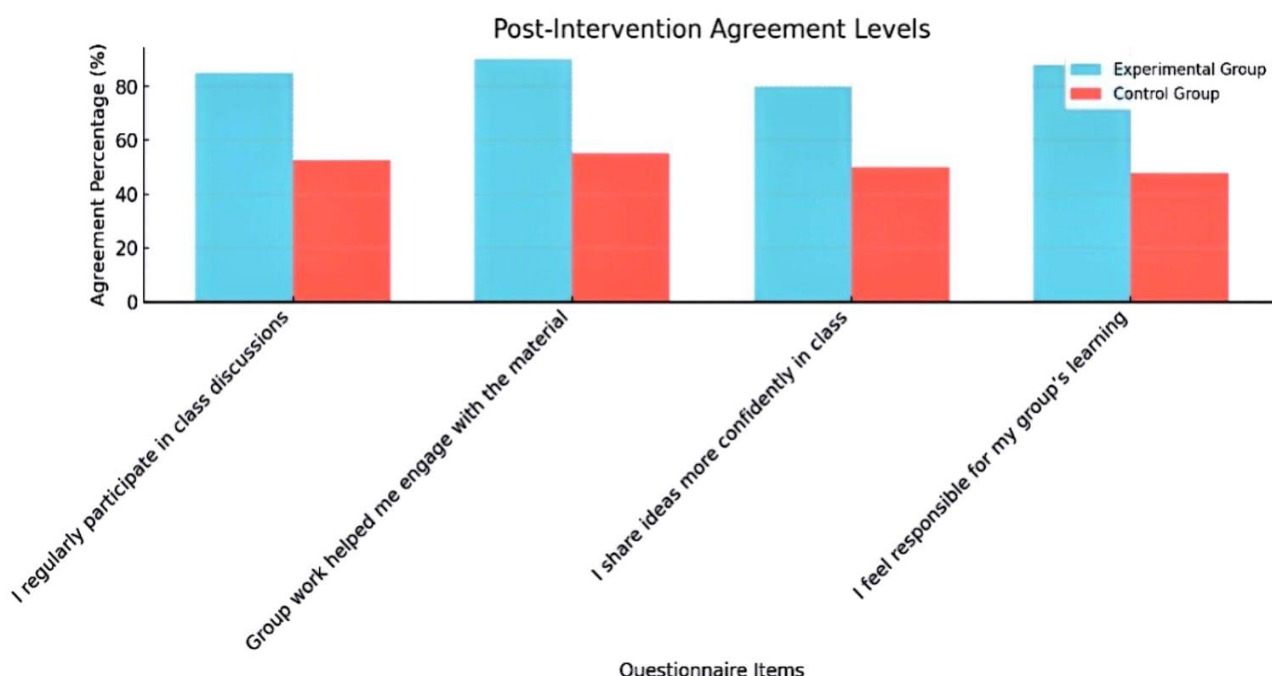


Figure 2. Post-Intervention Agreement Levels

Based on both self-reported perceptions and observed behavior, the following table provides an overview of the overall improvement in student participation:

Table 4. Summary of Comparative Improvement

Measurement Tool	Experimental Group	Control Group
Avg. Checklist Score ↑	+68.4%	+16.7%
Avg. Questionnaire Score ↑	+33%	+12%
High Engagement Frequency	55% of students	20% of students

When compared to conventional approaches, cooperative learning techniques significantly increased participation. The experimental group showed improvement that is statistically significant ( $p < 0.05$ ) Cooperative group students demonstrated greater responsibility, confidence, and engagement. These findings were corroborated by qualitative teacher reflections, which consistently praised peer interaction and cooperative behavior.

The study's finding supports the hypothesis that cooperative learning (CL) use aids in increasing student participation in the classroom, both in terms of observable behaviors and students' perceptions of themselves. This finding aligns with articles that emphasize the importance of collaboration for students' engagement in the benefits of engaging in active learning environments.

This study found that the participation scores of the students in the experimental group increased by 68.4% as a question at the service of structured peer interactions. This finding corroborates Loh and Ang's [34] findings regarding cooperative learning practices in higher education, which concluded that cooperatively based practices facilitated student engagement and the development of interdependence. Likewise, Marcos et al. [35] demonstrated that cooperative environments can elicit creativity, and student commitment, especially in reading and writing contexts.

For example, the level of engagement found in this study (55% engagement in the experimental group compared to 20% engagement in the control group) aligns with Garcia's [33] quasi-experimental study of computer programming education, where Jigsaw strategies contributed to improving students' verbal participation and peer teaching interactions.

The post-intervention survey data suggested that 85–90% of students in experimental groups felt that cooperative learning impacted their engagement within classes. These findings are consistent with those of Fernández-Espínola et al. [36] who concluded in a meta-analysis that cooperative learning increased intrinsic motivation, a key aspect of continued engagement. Likewise to this study, 88% of students reported feeling accountable for the learning of their peers. The results support research around engagement dynamics. For example, Kristianto and Gandajaya [37] found that peer collaborations increased student engagement in both online and face-to-face environments. Klang et al. [28] indicated that peer acceptance and friendships developed during cooperative learning experiences positively impacts the participation of unmotivated learners. Johar et al. [17] also suggested in their research that the use of learning analytics in participatory learning designs might provide information for improving student engagement, and that future studies might incorporate these analytics into cooperative learning conditions.

In addition, the versatility of cooperative learning is illustrated across disciplines. For instance, Jakavonytė-Staškuvienė [30] demonstrated success in language acquisition with cooperative learning, and Rahmatika [24, 26] proved that with GeoGebra, cooperative learning improved critical mathematical thinking. Korkmaz and Öztürk [26] used gamification with cooperative strategies in their social studies study to improve students' academic predictors and cooperation skills. Morais et al. [38] proved the CL with project-based education in higher education by reiterating that it works beyond primary or secondary study.

This evidence agrees with Yang's [21] historical and theoretical analysis connecting cooperative learning models to educational theories of constructivism and social learning. Lastly, Brown et al. [16] offered a conceptual framework showing the importance of cooperative structures to help create community and enhance learner interaction in both face-to-face and online learning outlets.

There are several limitations to the study. One, the findings rely in part on teacher reflection logs and self-report data that are vulnerable to observer bias and social desirability. Two, internal validity may be restricted due to the fact that random assignment was at the class and not individual level. Third, the research was conducted in a single public school in Jordan, which confined the generalizability of the results. Finally, teacher preparedness and access to classroom resources can influence the application of cooperative learning approaches. Thus, in looking at longer-term effects, future studies should apply longitudinal designs, larger and representative samples, and performance assessed objectively.

## 6. Conclusion

This study showed that cooperative learning strategies helped Grade 10 students to be more participative in English class. Besides the statistical finding, the results also have some self-evident implications regarding the

classroom practice. They can, for example, take 10-15 minutes at the start of any lesson with Think-Pair-Share (TPS) and prior-knowledge activation, or they can use Numbered Heads Together (NHT) and develop it with rotating positions so that each and every one of them is responsible, and they can use Teams Games Tournament (TGT) once a week as their reward review activity. The policymakers would be interested to these findings as much as the matter of ensuring proper provision of training and resources so that teachers may implement these strategies in practice.

At the same time, there are contextual factors that may affect implementation and include teacher readiness, classroom diversity, and access to resources, which should further be addressed in future programs. Additional research must follow up on long-term outcomes of cooperative learning and seek to find out how much of the same type of learning can be blended with different levels of learning and how to blend it with technology to render it more applicable to modern times in learning.

### **Declaration of competing interest**

The authors declare that they have no known financial or non-financial competing interests in any material discussed in this paper.

### **Authors' contributions**

Mousa Khaleel Abunawas: Developed the study concept, developed research design, and helped in data analysis and interpretation. He also helped in manuscript development and revision. Ahmed Fares Albadareen: Helped in literature review, helped in developing the survey tool, and helped in data collection. He also made critical comments on the manuscript. Yazan Khaled Daifallah AlZawahreh: Performed statistical analysis, interpreted the findings, and assisted in the discussion section of the paper. Also assisted in the general improvement of paper organization. Mansour Ali Falah Alzyod: Assisted in communication with the participating schools, coordinated logistics for data collection, and made comments on applied uses of the results. Assisted in editing the paper for consistency and clarity. Mousa Hamed Mohammed Abu Suailik: Had a role in general study design, helped in interpretation of data, and gave editorial assistance in manuscript preparation. All authors accepted the final version of the manuscript and approved the sequence of authorship.

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