# SOCIAL MEDIA, AS A GLOBAL TOOL FOR SUPPLEMENTING THE TEACHING AND LEARNING OF PHYSICS IN RIVERS- STATE DURING THE COVID-19 ERA

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#### Abstract

This paper looks at the use of social media as tool for supplementing the teaching and learning of Physics in secondary schools during the Covid-19 era in Rivers State. Three objectives, three research questions and three hypotheses guided this study. A population size of a hundred and twenty –four students comprising of 67 male students and 57 female students from selected secondary schools in Port Harcourt local Government Area of Rivers State were used for the study. The senior secondary (2) classes were used to teach Physics using Facebook, WhatsApp and Goggle search. The descriptive survey research design was adopted and the simple random sampling technique was used in selecting the respondents for the study. The research questions were answered using structured questionnaire comprising of items, used for data collection and validated by two experts from the Ignatius Ajuru University of Education. The reliability index of the instrument was tested at 0.85. The instrument for data collection for the study was a self- structured closed-ended questionnaire titled, 'Influence of Social media on Physics Students, During the Covid-19 Era (ISPSDC). Data's were analyzed, using the mean and standard deviation for the research questions while the hypotheses was tested at 0.05 level of significance using the t-test statistics. The hypotheses indicated that there was no significant difference in the ratings of the social media (Facebook, WhatsApp and Goggle search) amidst male and female students in secondary schools in Port Harcourt local Government Area of Rivers-state, during the Covid-19 era. It was recommended amongst others that more 21st century resource Physics personnel should be dispatched to train more Physics teachers on the use of social media in the teaching and learning of Physics as the older ones must blend or go for a compulsory retirement.

**Keywords:** Social Media, Tool, Teaching, Learning, Physics, Covid-19

#### Introduction

Nigeria remains one of the countries, said to be on the fast lane towards digitization. The social media remains a global tool in facilitating the teaching and learning of Physics in the 21<sup>st</sup> century. The sudden emergence of the Covid-19 spurred Nigerian schools towards a 360°convergence to the use of the Social media (SM) in subjects especially in the appending of the teaching/learning of Physics. Though the extent to which majority of the students in today's world are participating in academic practices through online activities is not yet feasible. The advent that ushered in the pervasiveness of the covid-19 virus era was the introduction of digital gadgets in a dispensation were the Nigeria system had ill structured and haphazard strategies in the teaching and learning of Physics. It became so crooked that Physics teachers needed more time to put structures in place. It was phenomenal in that, teachers now have to adapt to a new wave in practices towards technological teaching

approach in Physics This progression presented a high level of evolution towards sustainability in innovative education irrespective of famine, insecurity and the experienced pandemic, Covid-19.Bao (2020) quipped that schools, around the world had to close their institutions down in the wave of Covid-19 and all academic programmes moved online. It was a reminiscence wakeup call to the educationists, Physicists, teachers, students and the society in general, that a new dawn has emerged, which must be addressed pragmatically.

Technological advancement among students involves an application of supplemented learning through the use of social media as a tool in the teaching and learning of Physics such as: Instagram, WhatsApp, Facebook and Goggle search. The Social media enable peer groups constructively perform specific roles and obligation in diverse dimension to quench the underlying quest of global reforms through teaching methods and critical problem solving. Solving problems as a young scientist needs a full shake of adjustments targeted in designated field in technology and as a teacher serves as a pedagogical tool used in the teaching and learning of Physics due to its reflection in the outcome of the students' performance. Rika, Doni and Iwayan, (2020). The success of any Physics teacher therefore, lies on a wide knowledge on the proficiency of the use of computers, which is so receptive in their level of connectedness towards digitalization. The dire passion of students towards the use of social media projects the future enveloped in massive advancement and innovation practices as young technocrats, in sciences when properly indoctrinated. The use of the social media will also make remarkable progress in understanding difficult concepts, mathematical problems and in unraveling the difficulties experienced in proofs and theorems in the study of Physics as a Science subject. A gradual acceptance of advanced in digital studies must embrace the will power of accelerating the study of Physics through the use of supplemented social media instruction in the teaching and learning of Physics in the spate of future occurrence.

Social media(SM)) are Web 2.0 Internet-based applications that promote the development of social network online by connecting a profile with other individuals and groups. (Obar and Wildman, 2015).Due to the educational inadequacies featured in the social media, the researcher views the social media as an educational site in which teachers can truly access the learning potential of their students through proper designation of learning activities, plans and the curriculum in general. The social media is the 21<sup>st</sup> learning skills, involving information and communication techniques that play a pivotal part in alleviating the pains of the teacher and students. Thus, to guarantee optimum performance, there must be features of educational access to communication and technological application in adverse conditions. Ordinarily, physical schools could be shut down but not the entire system as online classes in advanced countries, showcased the edge these countries had, over developing countries like Nigeria.

The researcher comprehends that, professional teachers have the need to embrace the technological aspect of teaching Physics, due to its merit. There is an urgent need in utilizing the positivity of the social media in online activities which had persistently lagged and did not surface until the Covid-19 flooded the country while the Government imposed digital practices in schools, media house and socialization centers which yielded little or no fruit while the use of the social media has been me of teenagers and within the auspices of the early senior secondary school learners aged (12-17years) and are all billed in setting the pace towards converting more of their time towards the use of social media, academically. The researcher admonishes that millennial students must be further exposed to trio functions: academics, communication and entertainment. This triplicate function encourages students towards the part of seriousness, adaptability and digitization.

The students must help to modify learning in digital ways by learning to do assignments and homework's online and associating themselves with diverse students outside the school terrain and the Diaspora in general. As communication paves room, in crises, insecurity, pandemic and famine, there will still be a wide access to the power of studying especially in Physics through online activities through a technological driven scientific classroom. Chinweizu (2015) mentioned that, technology enable web based services through social media devices such as: iPads, smartphones, tablets and other computer appliances. These tools play dominant roles in the teaching and learning of Physics all over the world by inculcating various skills that ensures that there are good communicating drives between different students of like minds all over the world. These students are communicated though voice and video calls in the quest for technology despite the invasion of the Covid-19 virus.

Interest is an ultimate function of a sound Physics student, as the target lies on the readiness of the students in exploring diverse medium to achieve academic prowess. The quest to use the social media to goggle search and source for e-materials, facilitates reading and learning in Physics. WhatsApp, is a tool that must be earnestly embraced in an unusual way. It is looked by many as a stream of entertainment and communication while the pros of the SM using WhatsApp should be channelled towards embracing and realizing the merits that it is placed in an educational decorum. The aim being towards realizing set goals that are utterly recognized in constructing, collaborating and achieving obligations through team work. It also involves an arena, where information is downloaded and sent to a group formed towards achieving academic excellence especially in the study of Physics. Therefore, understanding Physics is incomplete, without mentioning the social media as student interact progressively on reaching goals towards achieving a maxim in diverse topics in Physics.

Communication ensures that student interact meaningfully on what they understand in a particular topic and try to solve problems that they failed to know constructively through discussion and interactive sessions amidst peer groups on deferent platforms. Parental guides must be set in place to restrict students from accessing indecent sites, as social media has both positive and negative effects on students. Strict parental controls could be adopted as students must take positive steps through a right direction to prove a difference. On the part of entertainment, students could dramatize on various topics in Physics through Tik-Tok display, were videos are displayed prominently and conspicuously for viewers; other sites for teenagers such as messenger kids, kids place under parental control are downloadable through play stores teaching and learning are made much easier through the use of social media. Though there are misconceptions on time wastage as some teachers become furious when parents expose their children to the use of phones with little or no parental guide. This is quite true as parents and teachers must collaborate towards resourcefulness in children and wards; checks are therefore congaed through the use of parental guides (PG) as a crisscross, towards misguidance.

SM, serves as a modification tool in facilitating the use of technology in the teaching and learning of Physics. Social media is, 'a global boon', but it depends on how, we use them, whether to improve teachers and students' interest or remain stagnant in the field of technology by showcasing our digital insufficiency in the teaching and learning of Physics. This challenge does not even lie cogent on the fact that, the male students tend to do better in the use of social media than the female students as orchestrated by Ntaka (2019) on the use of the simulation as an innovation technique as she revealed that, the females had a higher mean interest score than the male. Thus, the female students performed better than their male counterparts in the simulation strategy. The fact remains that; an innovative teacher must meaningfully embrace the merits of the social media and inculcate these features towards the

proper utilization in the teaching and learning of Physics. Agbarakwe and Ntaka (2021) quipped that, modernized way of solving Physics and understanding formula's in Physics are through interactions where access to learning is gainfully done in circles of peer groups by shopping for capable teachers.

Social Media is a tremendous supportive platform, for secondary students in the present dispensation, this trendy evolution must not be overlooked among teachers but efforts must be made in ensuring the superimposition of the social media and teaching techniques in achieving academic goals among students and teachers. Though the literature review on the use of the social media among senior secondary school students on Physics appears relatively scarce but the awareness is quite obvious as it must be harnessed towards progressiveness among students, teachers and the society at large. The world would have to accommodate these changes and trends in the use of social media.

The advent of social media has made a case for modern schools, which are now provided with Wi-Fi to ensure that students are unified towards connecting to internet facilities. Senior secondary school authorities are already modelling students towards the early use of passwords, as an added advantage in equipping students towards digital transformation by ensuring that they are innovation driven and aligned towards teaching and learning of difficult concepts and mathematical problems in Physics without constraints. As, one must note that, adaptability varies from learners to learners based on early exposure. So, students must be geared to explore the best in their field of endeavor, by realizing the beauty of captivating diverse interphase designs through the use of social media. The end point is amazingly appealing and fascinating to lure more students to embrace Physics as a Science subject and retard the earlier misconception of Physics been a difficult subject. As, advancement has exposed the wide fire of the social media as a lot of students have gained and imparted vastly to the world development since the progressiveness of students lies in Physics resourcefulness through academic strength, exploration, creativity and development. Though, the extent is still quite sloppy but as more academic cartels patronizes the social media in teaching and learning of Physics.

Students, now feel relatively more confident in the usage of social media to supplement the study of Physics through the use of: WhatsApp, Instagram, Goggle search, You Tube,Twitter and Snapchat to ease learning Students and teachers are now adequately guided towards digital learning tools and must stand tall by upholding digital techniques, Similarly, secondary school teachers are now been revived through diverse commitments, such as: modification of the curriculum in line with digitization, inculcation of on-line instructional activities in schools through prolific codes, review of lesson plan and technological methodologies. Therefore, the essence of this paper is to draw an attention on the need for students and teachers to retrace their notion towards the use of the social media in the teaching and learning of Physics.

#### **Statement of the Problem**

The importance of the social media, no doubt plays an accelerating role in the teaching and learning of Physics. The social media has been known for entertaining students but the educational inclination has not readily been assessed by students in the learning of Physics. Mojeed (2021) and Umeh (2020) reported that in the last two years, the unified Tertiary Matriculation Examination (UTME) revealed a lag in the performance of students in Physics especially in the use of computer devices. Unarguably, several factors have been hinged on the failure in the use of the social media in teaching Physics, such as: a botch in recruiting technocrats, high cost of digital facilities, lack of skills and knowledge in integrating social

media in the teaching and learning of Physics, restiveness and lack of interest on the part of teachers and students. The researcher is of the view that, the social media being a tool that reviews past questions on UTME especially on goggle search among others has not been holistically harnessed by Physics students .Therefore, the problem of the study is the inability of teachers to inculcate the use of the social media in the teaching and learning of Physics as a science subject. As the above challenge gave room for the researcher to examine the effect of the social media as a tool for supplementing the teaching and learning of Physics in secondary school, during the Covid-19 Era.

#### Purpose of the Study

The purpose of the study was to examine the influence of the social media as a supplemented tool in teaching and learning of Physics in secondary schools, during the Covid-19 Era.

- 1. Ascertain the influence of face book as asocial mediain secondary school students taught Physics..
- 2. Determine the influence of WhatsApp as a social media in secondary school taught Physics during the
- 3. Influence of goggle as a social media in teaching Physics in secondary school,.

### **Research Questions**

To achieve the aims specified above, the following three research questions were posed:

- 1. What is the influence of Facebook as a social media in secondary school students, taught Physics?
- 2. What is the influence of the WhatsApp as a social media on secondary school students taught Physics?
- 3. What is the influence of goggle as a social media on secondary school students taught Physics?

## **Research Hypothesis**

The following null Hypothesis were tested at 0.05 level of significance

- 1. There is no significant difference in the mean ratings of male and female students taught Physics using Facebook
- 2. There is no significant difference in the mean ratings of male and female students taught Physics using WhatsApp.
- 3. There is no significant difference in the mean ratings of male and female students taught Physics using goggle.

#### Methodology

In order to achieve the purpose of this study, the population size comprised of, 124 Senior Secondary School students (67 males, 57 females). The study was conducted in Port Harcourt local Government Area of Rivers-state. The descriptive survey was adopted for the study as the collection of information from a sample of individuals formed their responses to questions. The simple random sampling technique was used in selecting the respondents for the study while the research questions were answered using a structured questionnaire comprising of items, used for data collection and validated by two experts. The reliability of the instrument was tested as it yielded a reliability index of 0. 85. A hundred and thirty-two copies of the questionnaire were returned for data analysis.

#### **Research Instrument**

The instrument for data collection for the study was a self- structured closed-ended questionnaire titled, 'Influence of Social media on Physics Students, During the Covid-19 Era (ISPSDC). The cut-off point for answering the research questions were obtained at 2.50, based on the obtained cut-off point value any item with the mean value of 2.50 and above was interpreted as, 'Agree 'while those less than 2.50 were interpreted as 'Disagree' The hypothesis of no significant value was accepted when the t- calculated (t- cal) value was less than the t-critical (t-tab)value of 1.96 at 0.05 level of significance while the hypothesis of 1.96 at 0.05 level of significance.

## **Method of Data Analysis**

Data were analyzed, using mean and standard deviation for the research questions while the hypotheses was tested at 0.05 level of significance using the t-test statistics

#### Result

**Research Question 1:** What is the influence of Facebook as a social media among secondary school students taught Physics, during the Covid-19 era?

The data for answering research question one were presented in table 1.

Table1: Mean Ratings of Respondents of Students taught Physics using Facebook as a Social Media, during the Covid-19 Era

S/N	Variables	$\overline{\mathbf{x}}$	S.D	Remark
1	The use of Facebook did not affect the study of Physics, during the Covid-19 era	3.47	0.48	Agree
2.	Networking on Facebook, did not disrupt learning of Physics during my study time	3.73	0.58	Agree
3.	I do not procrastinate, my learning session online because of my activities on Facebook, during the Covid-19 pandemic	3.66	0.62	Agree
4.	I sourced for useful learning materials from Physics peers on Facebook in the event of the virus	3.69	0.56	Agree
5	In the event of the Covid-19 virus, I ensuredthat my mobile phone was always onto receive messages from the group platform		0.59	Agree
6.	During the Covid-19 virus ,Facebook increased my curiosity and motivation of studying Physics	3.67	0.44	Agree
7	Students used Facebook for collaboration, discussion and obtaining extra help during the Covid-19 era	3.48	0.63	Agree
8.	Teachers use Facebook groups to send reminders to their students about assignments and tests during the pandemic period	3. 54	0.60	Agree

- 9. It helped students to facilitate changes from passive to active 3.59 0.75 Agree learning during the Covid-19 era.
- 10. Facebook enhanced communication amongst teachers and 3.73 0.66 Agree students, during the pandemic

The data presented in Table 1, showed that the mean rating of the responses of students taught Physics using Facebook as a social media, during the Covid-19 era on the 10 items in the table ranged from (3.47 to 3.73) were all greater than the cut-off point value of 2.50 on the 4-point rating scale. This indicated that, the 10 identified items in table one, was agreed by the students taught Physics using Facebookas a social media, during the Covid-19 era. The standard deviation value of the 10 items in the table ranged from (0.44 to 0.75) signified that, the responses of the respondents were close to each other.

**Hypothesis 1:** There is no significant difference in the mean ratings of male and female students taught Physics using Facebook as a social media, during the Covid-19 era.Data for presenting Hypothesis one are presented in table 2 below:

Table 2: Test of Significant Difference in the mean rating of male and female Students, taught Physics using Facebook as a Social Media

Variables	N	x	SD	Df	Std Error	t-cal	t-crit
Male Students	67	3. 60	0.53	122	0.023	0.35	1.96
Female Students	57	3.62	0.49		0.025	0.55	1.50

Note: X = Mean, SD = Standard Deviation, n = number of respondents

The data presented on the t-test for hypothesis one in table 2 showed that, the t-calculated (t-cal) value of 0.35 is less than the t-critical (t-tab) value of 1.96 at 122 degree of freedom. This indicated that there is no significant (p<0.05) difference in the mean ratings of male and female students taught Physics using Facebook as a social media, during the Covid -19 Era. Hence the null hypothesis of no significant (p< 0.05) difference in the mean ratings of the responses of male and female students is accepted for hypothesis one.

**Research Question 2:** What is the influence of WhatsApp as a social media among secondary school students taught Physics during the Covid-19 Era?

Table 3: Mean Ratings of respondents on the Significances of Students Taught Physics Using WhatsApp as a Social Media, During the Covid-19 Era

S/N	Variables	$\overline{\mathbf{X}}$	SD	Ranks
1	WhatsApp was a useful medium to source for materials from peer-groups during the Covid-19	3.46	0.52	Agree

2	I and my friends used WhatsApp to discuss about topics in during the Covid-19 Era	3.52	0.61	Agree
3.	It was so easy to ask questions on Physics through the WhatsApp platform during the Covid-19 Era	3.38	0.50	Agree
4.	In the face of the pandemic, I interacted with my friends and I learnt new ideas on WhatsApp,	3.71	0.45	Agree
5.	I did not allow WhatsApp interaction to distract my learning time online, in the event of the pandemic.	3.55	0.52	Agree
6.	WhatsApp encouraged me in real time communication between teachers and students and teachers and parents, in the advent of the pandemic	3.57	0.61	Agree
7.	WhatsApp fostered collaboration between students, to enable them study together in the face of the Covid-19 era.	3.34	0.72	Agree

The data presented in table 3 revealed that, the mean ratings of the responses of the student taught Physics using WhatsApp on the 7 item in the table ranged from (3.34 to 3.71) were all greater than the cut-off point value of 2.50 on a 4- point rating scale This implied that, the 7-identified items on the table was agreed by the students taught Physics based on the result of significance of the social media, during the Covid-19 Era. The standard deviation values of the 7items in the table ranged from (0.45 to 0.72) indicated that, the responses of the respondents were close to each other and were said to be homogenous

 $H0_2$ : There is no significance difference in the mean ratings of male and female students taught Physics using WhatsApp as a social media, during the Covid-19 Era.

**Table 4:** Test of Significance Difference in the mean Ratings of male and female Students Taught Physics on the Significance of WhatsApp as a Social Media

Variables	N	X	SD	Df	Std Error	t-cal	t-crit level of	Remarks
							Sig	
Male Students	67	3.61	0.55		0.054	2.271.9	6 0.05	
				122				
Female Students	57	3. 46	0.71					

Note: Sig= significant at 0.05

The data presented on the t-test hypothesis 2 in table 4 showed that the t- calculated (t-cal) value of 2.27 was greater than the t-critical (t-tab) value of 1.96 at 122 degree of freedom. This implied that, there was a significant (p<0.05) difference in the mean ratings of male and female students taught Physics on the significances of WhatsApp as a social media, during the Covid-19 Era. Therefore, the null hypothesis of no significant difference (p<0.05) in the mean ratings of the responses of male and female student is rejected for hypothesis 2.

**Research Question 3:** What is the influence of goggle as a social media amongst secondary school students taught Physics, during the Covid-19 Era? The data for answering research question 3 are presented in Table 5

Table 5: Mean Ratings of Respondents on the Significance of students taught Physics using Goggle as a Social Media

S/N	Variables	X	SD	Ranks
1.	I got relevant materials for Physics lessons and assignments from goggle search, during the Covid-19 Era	3.68	0.54	Agree
2	I searched for difficult topics, I had learnt previously through goggle search during the covid-19 pandemic	3.71	0.48	Agree
3.	I goggle on practical's to enable me know the weight to use on Archimedes' principle, during the Covid-19 Era.	3.63	0. 52	Agree
4	I goggle on important materials in Physics whenthe need be, in order not to get so addicted to the social media.	3.78	0.39	Agree
5	I did not allow the use of Google search to conflict with my leisure time	3.59	0.68	Agree

The data presented in table5 shows the mean ratings of the responses of the students taught Physics online using the goggle search as a social media during the Covid-19 Era. On the 5 - items in the table ranged from 3.59 to 3.78, results showed that theywere all greater than the cut-off point value of 2.50 on 4- point rating scale. This indicated that, the 5 identified items on the table agreed by the students taught Physics was as a result of the significance of goggle as a social media. The standard deviation values of the 5 items in the table ranged from (0.39 to 0.63) indicated that the responses of the respondents were close to one another, and are said to be homogenous

Ho<sub>3</sub>: There is no significant in the mean ratings of male and female student taught Physics on the significance of goggle as a social media, during the Covid-19 Era.Data for testing hypothesis 3 are presented in table 6 below

Table 6: Test of significance Difference in the mean ratings of male and female taught Physics on the significance of Goggle as a social media, during the Covid-19 Era

Variables	N	X	SD	Df	Std Error	t-cal	t-crit	
								Sig
Male Students	67	3. 67	0.57		0.015	0.20	1.96	
				122				
Female Students	57	3. 68	0.55					

Note: NS= Sig= significant at 0.05

The result on the t-test for hypothesis 3 in table 6 showed that the t-calculated (t-cal) value of 0.20 was less than the t-critical (t-tab) value of 1.96 at 122 degree of freedom. This showed that there was no significant (P< 0.05) difference in the, mean ratings of male and female students taught Physics on the significance of goggle during the Covid-19 Era. Hence, the null hypothesis is of no significant (P< 0.05) as the difference in the mean ratings of the responses of male and female students taught Physics is accepted for hypothesis 3.

### **Discussion of findings**

The study on research question one, found out that the influence of Facebook as a social media amongst secondary school students taught Physics during the Covid -19 Era. The use of Facebook was researched on the following variables: :networking, procrastination, learning material, peer groups, distractions, satisfaction and motivation. The hypothesis indicated that there was no significant difference in the mean ratings of male and female students taught Physics using Facebook as a social media, during the Covid-19 Era. The finding of this study was in line with Kurniati, Andra and Distrik (2019) while Papademetriou, Anastasadou, Konteos and Papalexandri (2022) reviewed works on the social media and discovered that there were higher reported levels of higher learning in the use of the social media, during the Covid-19 Era. The study on research question 2, found out the influence of WhatsApp social media among secondary school students taught Physics. Hypothesis 2indicated that, there was a significant difference in the mean ratings of male and female students taught Physics on the significances of WhatsApp as a social media while the study on research question 3, on the influence of Google as a social media amongst secondary school students taught Physics, during the Covid-19. Hypothesis 3 indicated that, there was no significant difference in the, mean ratings of male and female students taught Physics on the significance of goggle search.

#### Conclusion

Hypothesis1 indicated that there was no significant difference in the mean ratings of male and female students taught Physics using Facebook as a social media. During the Covid-19 Pandemic. Hypothesis 2 indicated that, there was a significant difference in the mean ratings of male and female students taught Physics on the significances of WhatsApp as a social media, during the Covid-19 pandemic .Hypothesis 3 indicated that, there was no significant difference in the, mean ratings of male and female students taught Physics on the significance of goggle search, during the Covid-19 pandemic..

#### Recommendations

- 1. The area of marginalization is fast eroding and to ensure more of this reality, more female Physics teachers should be given room to teach Physics online to demonstrate a fall in disparity amongst the females.
- 2. Allocation should be channelled towards the line of power supply, and the readiness to revert to the use of generators to ensure that there is steady power supply to enable students interact freely under strict supervision with adequate parental guide
- 3.More digital textbooks should be allowed to infiltrate the market in line with the educational statutory in Physics as such, Physics teachers should be encouraged to go for the 21<sup>st</sup> century skills, instead of embracing a 15<sup>th</sup> century learning found in 15<sup>th</sup> century textbooks that will misguide student'sconceptions, while professional teachers should be encouraged to get abreast with digital skills, so as to cope favorably, towards harnessing the learner's curiosity in the ace of any pandemic .

- 4.More 21<sup>st</sup> century resource physics personnelshould be dispatched to train more Physics teachers on the use of social media to teach Physics as the older ones must blend or go for a compulsory retirement.
- 5. The educational system in surety should be flocked withmore digital equipmentand the system must be saturated with the best human and material resources, in order to hasten the growth of technocrats at an early stage in building roads, assembling automobiles and inventing modern appliances.

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