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Early View

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ASSESSING CLIMATE CHANGE KNOWLEDGE AMONG THE UNIVERSITY STUDENTS

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Abstract

The study was carried out at the University of Liberal Arts Bangladesh (ULAB), over a period of three months with the view to assess the knowledge of climate change among the university students. Total 75 students from different departments and different semesters, most of them being in their second or third year of university were selected. The study on climate change knowledge in university students shows us that not every student is actively aware about climate change, although there are some exceptions. Most of the students didn't know the exact causes of climate change even those who had the exact idea about what climate change was, were not sure about the causes that affect climate change. Students were not very confident about their source of knowledge unless it comes from some environmental scientists or environmental organisation, which showed us the necessity of more active environmental workers and the idea that they should spread the knowledge more. The level of misconception is still very noticeable and to reduce that we need more awareness. Students really didn't think that Climate change actually affects their personal life which is again a very big misconception. Yet the positive part is they still think that we can change things if we want. According to our knowledge, it is high time to work on these things and gather as much knowledge as possible to handle Climate change together.

1.0 INTRODUCTION

Two very common concepts that we come across everyday are weather and climate. Weather defines the conditions of the atmosphere in day to day basis (Climate & Weather, 2017) whereas; climate is the average condition of weather prevailing in an area for a long time (Damien Howard, n.d). The most important aspect connected with these two is climate change. Climate change refers to the change in the earth's usual climate trends, like an increase in temperature, shift in the patterns of rain and snow etc. (What is Climate change, 2014). The Earth's climate has always changed throughout history. There is no doubt that climate change currently is and will continue to be a matter of great international concern, with many economic, social and political implications (Leal Filho, 2011). However, the recent changes in climate are particularly significant because there is

a 95 percent probability that these changes and global warming are occurring due to human activities since the mid 20th century (Intergovernmental Panel on Climate Change, 2015). The large amount of carbon dioxide and other chemicals that is being emitted and burned by the various human activities is the most important reason of climate change today. Moreover, the greenhouse effect, trapping the excess heat is leading to an increased temperature and thus moving towards climate change (Causes of climate change, 2016). Also, cutting down of forests, increasing of livestock farming are also very notable causes of climate change (Causes of climate change, 2017). In fact, deforestation is said to be the second largest cause of climate change (Deforestation and Climate Change, n.d). These activities are now rapidly proceeding to cause further damage to the environment. The oceans are being acidified causing damage to the marine life, the ice in the poles and the mountains are melting fast, extreme weather conditions from floods to tropical storms are increasing day by day. Climate degradation also gradually alters the terrestrial landscape and leads to species extinction (Alexandra Lewis, 2018). These effects on environment in turn lead to various social and economic complications. To take any step towards mitigating the effects of climate change first of all extensive public awareness needs to be ensured. Most importantly, the young generation, the university students need to have a very clear concept about this climate change trend, because this young generation will be the adults of the future. They will have to face the future impacts of climate change and so they need to know how to prevent the spread of the problem and, most importantly, how to adapt to the changing environment. But, the complexity of the topic often makes it difficult for the general public to grasp the correct concept of climate change and leads to various misconceptions (Gowda, Fox & Magelky, 1997). In addition, much of the information the public receives comes from non-scientific subjective sources, such as the Internet, the popular press, or interpersonal communications, giving them a distorted picture (Mc Bean and Hengeveld, 2000). People with less knowledge on the topic are more likely to believe in less trustworthy sources and often cannot differentiate between relevant and irrelevant sources (Bråten et al., 2011). For example, when students were asked to explain global warming, many of them had the idea that global warming is synonymous to ozone layer depletion; that holes in the ozone layer allow more solar energy to enter the earth's surface and thus cause the warming (Jeffries et al., 2001). There is also a misconception that all environmental damage causes climate change and that weather and climate conditions are the same (Fortner 2001). These are enormous misconceptions and they are alarming because they exist in our educated community. The situation is worse in a country like ours where the students and in general all people are more inclined to learn about things which are directly related to their life and living. They don't take much interest in how their activities are affecting their surroundings or know what long lasting effects climate change is going to bring. In the field of climate change, an educated citizenry is very important for reducing the human impacts on the environment and to take wise decisions about the policies and procedures aiming to reduce the rate of climate of change (Cordero et al., 2008). To increase students' knowledge on the subject, we at first need estimation about how much they actually know about it, what are their thoughts and misconceptions on the matter and how best we can impart climate education among them. A better understanding of student ideas and how they

develop can help us to develop better teaching methods and, in the long run, can improve their understanding of the issue (Brody, 1994). Over the years, numerous studies have been conducted on students from various countries to assess their knowledge of climate change. From these studies first of all, we learn that individuals play a very important role in implementing the climate change policies and their attitude and opinions towards the matter influences what steps they take in reducing the rate of climate change (Tjernström and Tietenberg, 2008). According to Sunstein (2006), knowledge of a certain topic will enhance an individual's concern with this topic and according to Tjernström and Tietenberg, not having proper knowledge about climate change is the biggest reason for people not being concerned about it. In the present times in order to raise awareness about climate change, promoting policy development and social engagement is very important; and for that, it is necessary to know how the opinion of an individual correlates with his knowledge on the topic and what factors influence their opinions (Harker-Schuch, 2013). Moreover, the studies and researches indicate that the students have various misconceptions about climate change. Many of them think that the climate is deteriorating more due to the variability of nature rather than human activities. Some have the opinion that it is the government's responsibility to tackle climate change and individuals are not concerned (Leal Filho, 2011). Many students have been confused about basic concepts of climate change and global warming. Again, the university students around the world have often been found to think that the habits of a single person or a single household don't affect the environment significantly. But studies indicate that this is not true. Each of the choices that we make in our personal lives regarding how we live, how we travel and even what we eat have its impacts on the environment. Understanding the anthropogenic causes of climate change can help us strongly predict the risks of the change (Lee et al., 2015). However, all these studies have been conducted with students from various American and European countries and also a few Asian countries, but such studies are scarce in our country. Bangladesh today is one of the worst sufferers of climate change (Rahman et. al, 2014). As a part of the developing world, it is imperative for the students of Bangladesh to be as aware of this situation as others around the world. They also have to be concerned about the causes and effects that climate change is having globally. Bangladesh also has to take part in the activities to mitigate the increasing rate of climate change. A few researches have been carried out with the high school students of Bangladesh and a number of them have been done with the professionals. We even have an organization named 'Gobeshona' related to climate change awareness in our country and students of different public and private universities are also a part of it (Saleemul Huq, 2016). But these awareness programmes are not widespread and yet there are a lot of students who are ignorant about the changing situations. These more recent studies can tell us exactly where we are in terms of what we know about climate change.

1.2 OBJECTIVES

In general, the objective of our study is to assess the knowledge of climate change among the university students.

We specifically want to direct our study towards the following points:

- Are the students actively aware about climate change?
- What are the causes of climate change according to the students?
- What is the source of knowledge for the students to learn about climate change?
- What are the common misconceptions among the university students regarding weather, climate and climate change?
- Do they have the idea how their personal lifestyle choices are affecting climate change?
- Their opinions on how best this situation can be handled.

2.0 METHODOLOGY

The study was carried out at the University of Liberal Arts Bangladesh (ULAB), over a period of three months. Total 75 students from different departments and different semesters, most of them being in their second or third year of university were selected. Of these, 39 were female while 36 were male. At first a sample study on a group of 5 students were carried out and when that was a success then proceeded with the actual study. The questionnaire was developed and tested it with the sample respondents that was used for this study included both open ended and yes/no based questions. Data were analysed on the basis of percentages for the yes no questions where the greatest percentage of response was considered as the general view. In case of open ended questions, we summed up the responses to give the points which were mentioned frequently.

3.0 RESULTS

3.1 Departments and respondents

The research seeks opinions from 75 students from different departments of the university (figure 01). Maximum number of respondents was from Electronics and Telecommunication Engineering (ETE) Followed by Bachelor of Business Administration (BBA), Electrical and Electronic Engineering (EEE), Computer Science and Engineering (CSE), Media Studies and Journalism (MSJ) and Department of English and Humanities (DEH).

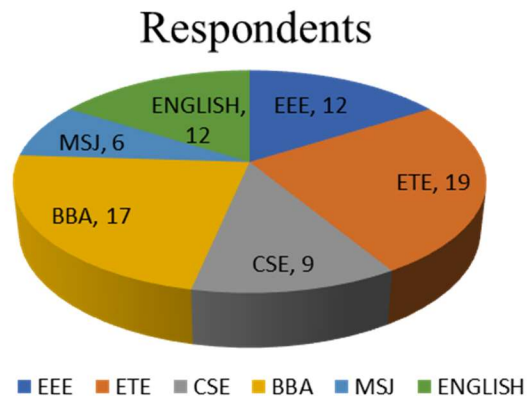


Figure 01: Type of respondents

3.2 Concept on climate change

The very first objective was to know if the students knew about climate change at all, and if they did, what did they think it was. From the answers, it was found that about 84 percent respondents reported that they know about it. About 13 percent students think that they do not have a very clear idea about it and that only two students who said that they don't know about climate change at all (figure 02).

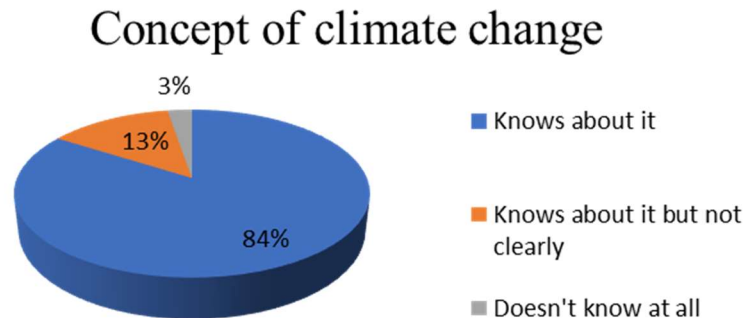


Figure 02: Concept of climate change

3.3 Climate change definition

However when asked the students to define climate change, almost 72 percent of the students gave a wrong answer. So, actually even though a lot of students claim that they know about climate change, most of them have a very wrong idea about it (figure 03). Many of the students have termed climate change as the change of weather by various factors or have mixed it up with weather and environment pollution.

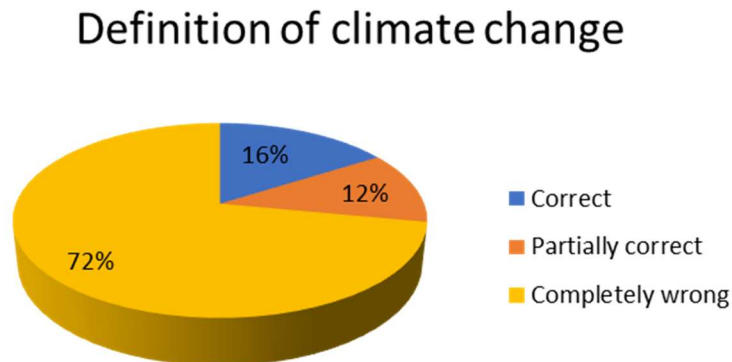


Figure 03: Definition of climate change

3.4 Causes of climate change

Next, the students gave their opinions on the causes of climate change both in our country and globally and the cause that came out most was deforestation or lack of sufficient number of trees. And according to them the second most important cause is use of fossil fuels (figure 04). Whereas, the most important cause of climate change, carbon dioxide emission comes much later in their list.

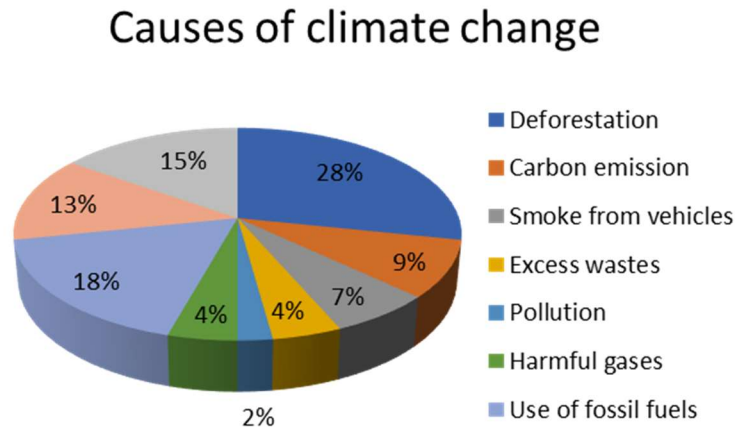


Figure 04: Causes of climate change

3.5 Sources of climate change knowledge

Moreover, it was seen that most of the students learned about climate change from the internet and television or from their educational institutions. A few of them who came to know from their families mainly learned it from their mothers or fathers (figure 05). However, they are more likely to believe any information on climate change if it comes from an environmental organization or a scientist or researcher from the related fields rather than or any other sources. They seem to have less faith on media or the government regarding this issue.

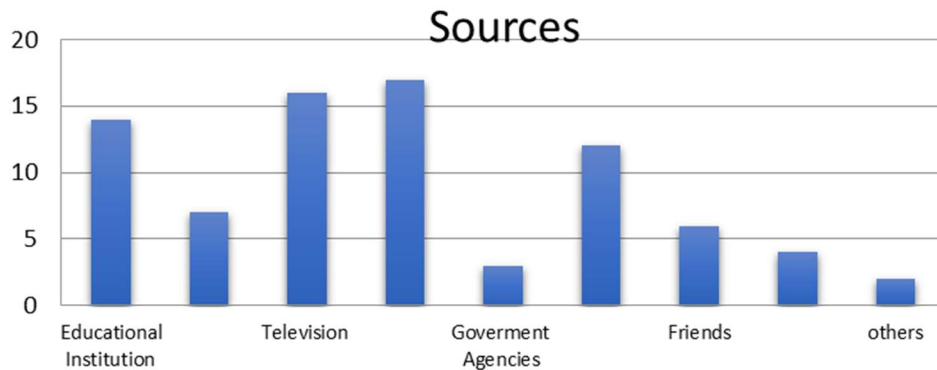


Figure 05: Sources of climate knowledge

3.6 Misconceptions on climate change

Another one of our objectives was to determine if the students had any misconceptions about the causes and effects of climate change. It was seen that the students from different semesters all had different types of misconceptions. Out of 75 students, about 45 students had different misconceptions (figure 06). The most common misconception that the students have is that they think climate change maybe is a natural occurrence or is just a part of the natural cycle. And we also found that a number of students had the idea that weather and climate is the same thing, or they thought that weather had a wider concept than climate.

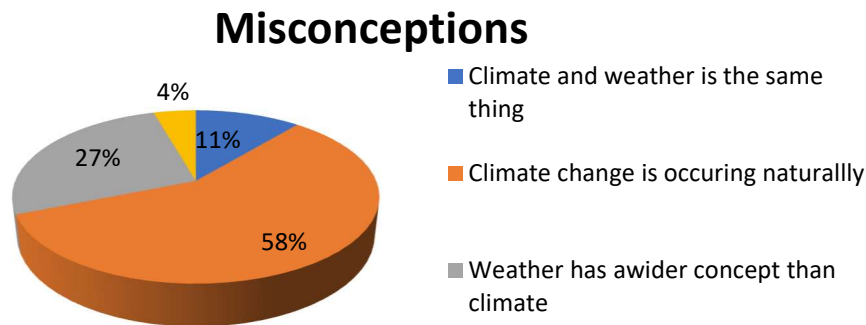


Figure 06: Misconception about climate change

Even after the misleading ideas almost all the students think that climate change is a very important concept today. But since there are exceptions in every case, we found 4 students out of 75 who think that climate change is not a very important thing to think about.

3.7 Effects of climate change on personal life

Next came into the idea about how they think climate change and their personal lives are related. Around 65 people from 75 think that climate change does have an adverse effect on their personal lives.

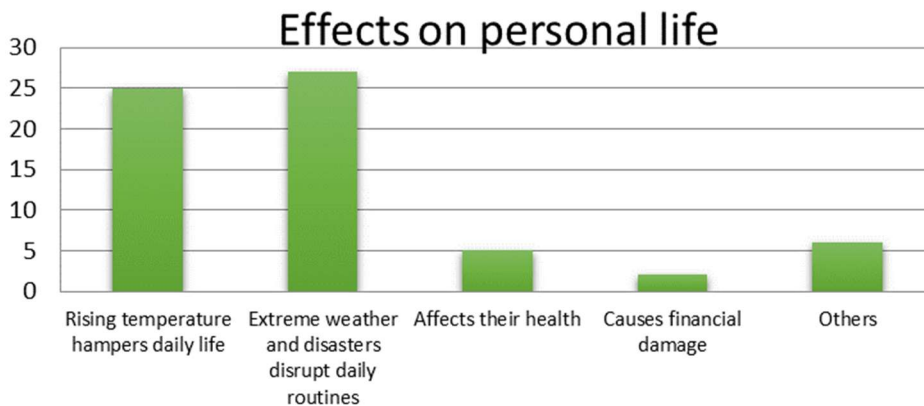


Figure 07: Climate change effects on personal life

Again an important objective of our study was to find out if the students think that the choices that they are making in their everyday lives like travelling by personal cars or using excess water or electricity is having any significant effect on climate change. About 50 percent students replied positively, they think that the choices they make do make an impact on climate change (figure 07). The remaining 50 percent have either never thought about it, or don't think it makes much of a difference. Respondents mentioned that the most adverse effects are being caused by our using of fossil fuels for various purposes and wastage of different resources.

3.8 Impacts of climate change

Climate change is the extreme weather conditions and next comes the adverse effects on our ecosystem causing the extinction of various species (figure 08). However, very few students mentioned about the melting of ice and sea level rising which is a major impact.

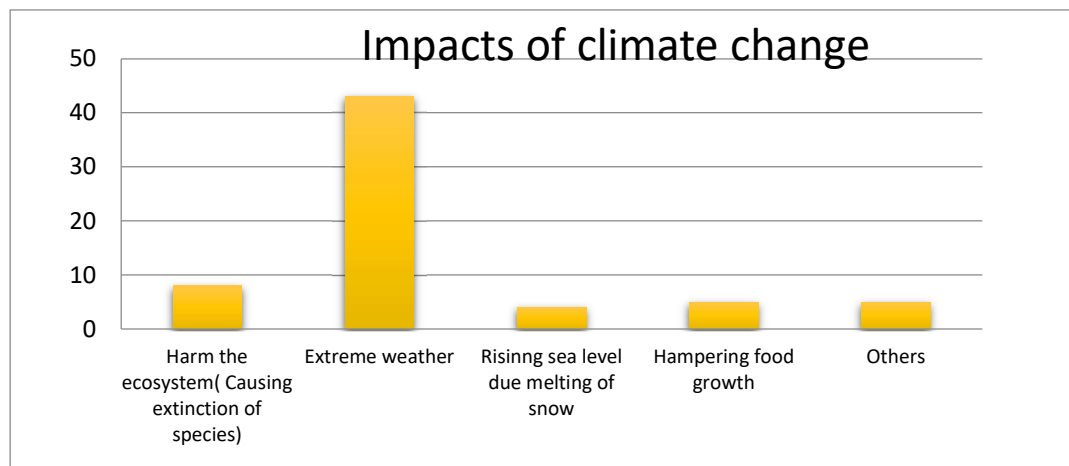


Figure 07: Climate change impacts

Finally the research shed light on the fact that most of the students do think that we can still handle climate change and it can also be done through our small initiatives.

4.0 DISCUSSION

As mentioned before, various other studies have been conducted in our country and abroad on this topic. From our results we can see a number of similarities with those topics. First, most students in our study (84 per cent) said they know about climate change. Previously, studies held on some high school students in Bangladesh showed that about 60% of them knew about climate change (S.M.A Rahman et al, 2014) and a similar study held by the general people from various parts of the country showed that about 54% of them heard of climate change (Kabir et al, 2016). Thus, from these points, we can see that our university students are comparatively ahead in this case. But, most of still couldn't give a satisfactory definition of climate change. As for the causes of climate change, most of our students (about 28%) attribute it to deforestation, then to pollution,

carbon dioxide and other emissions. According to a research held in Guyana, 30% students stated it is caused by deforestation, 26 percent attributed it to carbon emissions and 25 percent to the burning of fossil fuels (Stacy, 2016). These are quite similar to the results that we obtained from our studies. However, in current situations, the most important cause for climate is the emission of carbon from a variety of sources that has become less important among students. Next, almost half of our students attributed television, internet and their educational institutions as their source of knowledge of climate change. We also see that they don't really trust the information from the media rather they are more prone to believe any information coming from an environmental scientist or any environmental organisation. Similarly, from the study in held in Bangladesh, it was seen that most people came to know about climate change from either television (55%), radio (39%) or from their friends and neighbours (54%) (Kabir et al, 2016). This shows much similarity with our results. Our study brought forward the fact that the students have various misconceptions regarding climate change, the leading one being that climate change is a natural process (58%). Around 30% students have mixed up weather and climate. A previous held in Dhaka city showed that about 70% people thought that climate change is a natural occurrence (Hossain et al, 2013). Moreover, in their mental model interviews, (Bostrom et al, 1994) reported that many U.S. respondents had difficulty distinguishing between weather and climate and various studies were held afterwards all of which indicated that people in fact did have a lot of problems in separating weather from climate (TW Reynolds, 2010). This lines up with our findings. Next comes the topic of personal choices for climate change. About 51% of our students believe that their personal life choices are making an impact on the climate change. A similar research held in Pennsylvania shows us that about 75% of the respondents agreed that their individual choices are affecting climate change (Bostrom et al, 1994). So our students are actually falling behind in this case they are less aware about the fact that what they do in their lives can also be a possible cause of climate change. Our students think that the greater uses of fossil fuels in their lives for drivers or burning and excessive wastage of resources are the things affecting climate from their parts. For the study mentioned, people were more concerned about the conduct and use of aerosol cans that release CFC gases into the atmosphere. From this, we can deduce that our students do need to gain some more depth about how their choices are affecting the changes. According to our students, the worst impact of climate change is the extreme weather and the second worst is losing the balance of the ecosystem through the extinction of species. A study conducted for students in Tanzania showed that 85% of students showed the effect of climate change as the occurrence of severe weather conditions. However, very less students could identify the damage to the ecosystem as an effect (Paul Carr). Our students seem to be more knowledgeable in this particular case. However, in our study and in the study mentioned, students neglected to mention melting ice caps and rising sea levels as an important effect of climate change. Most of our students (72%) have the opinion that we still can handle climate change and it can be done by taking small initiatives from our own places. Similar results have been found from researches held previously as well. Some of the steps that our students mentioned about combating climate change are decreasing deforestation, reducing wastes, using renewable sources of energy, raising awareness, reduce use of fossil fuels

and so on. From the research held in Pennsylvania, we can find similar recommendations made by the people which included planting more trees, using alternative energies, reducing consumption, reducing driving (which decreases carbon emission and pollution) etc. (TW Reynolds, 2010). Thus we can actually see that if compared to the rest of the world, our students are not falling back in their of climate change, but like the rest, they also need to develop a better learning of the matter.

5.0 CONCLUSION AND RECOMMENDATIONS

The study on climate change knowledge in university students shows us that not every student is actively aware about climate change, although there are some exceptions. Most of the students didn't know the exact causes of climate change even those who had the exact idea about what climate change was, were not sure about the causes that affect climate change. Students were not very confident about their source of knowledge, unless it came from certain environmental scientists or the environmental organization, Which showed us the necessity of more active environmental workers and the idea that they should spread the knowledge more. The level of misconception is still very noticeable and to reduce that we need more awareness. Students really didn't think that Climate change actually affects their personal life which is again a very big misconception. Yet the positive part is they still think that we can change things if we want. Based on what we know, it's time to work on these things and gather as much knowledge as possible to manage climate change together.

After doing the study the main thing that aroused is that although students of university have better knowledge than students of lower education level, but there are still many misconceptions. To give our future a better understanding of climate change, we can begin at least at the academic level by adding a few additional courses on climate change. Although our University offers some courses regarding this but not everyone takes these courses, so it might be a better choice to make some courses mandatory. Workshops regarding these matters could be taken more often. Some experimental studies could be done as course work or even as an extra activity. In the fight against climate change, they proposed the following measures:

- Creation of awareness among common people
- Increase tree plantation
- Reduce pollution in all forms
- Use fossil fuels as less as possible
- Decrease carbon emission
- Use renewable energy resources
- Minimize and properly manage wastes

6.0 Policy implications

Climate change and environmental knowledge should be incorporated into high school and higher education. In this respect, a healthy education policy should be prepared and must be effective in educating students and developing their skills.

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