

# **United Nations Educational, Scientific and Cultural Organization Study Guide**

*Singularity Foundation Model of United Nations*

*S'MUN 2030*

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## Table of Contents

<b>Welcome Letter</b>	2
<b>Introduction of the Chairs</b>	2
<b>Introduction to the committee (UNESCO)</b>	3
<b>Introduction of the topic</b>	4
Historical Background	4
Current Situation 2030	6
Artificial intelligence Diffusion and Development	7
The implementation of Artificial Intelligence in Education Systems	9
<b>Block Positions</b>	15
<b>Questions a Resolution must answer / Guiding Questions</b>	18
<b>Glossary of Key Words</b>	18
Further Readings and UNESCO Past Resolutions	16

## **Welcome Letter and Introduction of the Chairs**

Distinguished Delegates,

Welcome to S'MUN2030 and welcome to the United Nations Educational, Scientific and Cultural Organization. Both the secretariat and all the chairs of the committees have worked unsparingly during the previous months to the conference in order to make your experience as fulfilling as it can possibly be. The topics proposed introduce challenging discussions whose ideas may not be under the general focus nowadays, notwithstanding, the result of which will be important for the future of our generations. Henceforth, we want to encourage you all to prepare for the committee in which you will be participating, and to get to know your country as if you lived in it. The population and the institutions of these nations are in your hands, and we look forward to seeing you debate carrying this great responsibility.

### **Introduction of the chairs**

*Chair Director:*

Cheers delegates! Allow me to introduce myself, my name is Martí Rossell Lama and I will be enthusiastically chairing this committee. I am a third-year student at Pompeu Fabra University where I am majoring in International Business Economics. My MUN experience began in 2018 when starting University, I joined the United Nations Students Association of Barcelona. With them I travelled to different countries like the UK or Italy participating in MUNs there and here in Barcelona. I have also engaged actively in internal simulations within the association both as a delegate and as a chair. I will work to make your experience in this committee unforgettable, to guide you towards finding solutions to this issue and to end up acquiring a greater insight into the world of International Relations. Good luck and see you soon!

*Chair Assistant:*

Greetings! My name is Leyre and I am beyond excited to be co-chairing this years' debates. Summing up my life, I am a freshman at IQS majoring in Industrial Engineering, who also enjoys skiing and hanging out with friends. My MUN journey started in 2018

when I was a high school junior I attended my first international conference. After that, I completely engaged with these conferences, and to this day, I have had the chance to participate in several more in countries including Germany and Hungary. Back in the fall, I joined UNSA to be able to continue involved in MUN. I am looking forward to the conference to arrive and without further ado, I would like to wish you all the best.

*Chair Assistant:*

Hi there everyone! My name is Laia and I am a nature enthusiast and environmentally responsible 20-year-old Student at Univeristat Pompeu Fabra. Since very little I have shown interest in world's affairs, politics and international relations, so when I started college I had the opportunity to have a first contact with this world joining UNSA Barcelona. I had the chance to participate as a delegate in Maastricht's MUN, and I have been chairing some committees inside UNSA. I am passionate about sports, such as mountain trails, running and skating. Moreover, I also paint whenever I have free time, but I have to confess that my real hobby is learning new languages.

I am here to be your chair but also I want you to have fun, learn and grow your diplomatic profile. Nothing else, to say, looking forward to sharing the UNESCO Committee with you guys!

## **Introduction to the committee (UNESCO)**

UNESCO is an agency created in 1946 by the United Nations with the objective of building peace through international collaboration in education, sciences, and culture. With this mandate, the organisation has put 193 countries together launching projects that promote research, recognise different cultures, and spread knowledge around the world.

The institution is widely known for the World Heritage Sites list where it recognises the cultural and natural heritage of each country. Beyond this, under UNESCO's scope, hundreds of projects have been established including youth network programmes, investigation teams, conferences, cultural exchanges, etc. The institution fights on a daily basis for basic human rights such as freedom of press, religion and education while it stands against discrimination and hatred.

Moreover, since 2015, UNESCO operates under the mandate of accomplishing the 17 Sustainable Development Goals (SDG). During our session, we will focus specifically on one of the goals which refers directly to the topic we have in hands. This is the Sustainable Development Goal 4 (SDG4): "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all".

## **Introduction of the topic**

Education as a mean to a developed world:  
*Plan for the adaptation of all countries to the AI revolution*

In an interconnected world that moves at a fast pace, the natural evolution of the human race is lagging behind the changes in our environment. The very same species which thousands of years ago had to hunt to survive, lived in small communities and explored every hill as if it was a new continent; is the same that nowadays inhabits crowded cities, works six days a week and plans vacations on the other side of the planet.

This change has not been steady throughout time, yet it has been accelerated during the last two centuries. Progress started to happen right at the same time as human beings started to rely on science to explore the unknown, and left mythology and religion aside with another dedicated role. Ever since then, light has been shed on issues affecting

our wellbeing in many different ways, and inventions have been developed to make our lives easier. Their success is noticeable differently across countries, however, the positive effect that this shift had on each and every human on earth is undeniable. To our topic discussion, two perspectives this phenomenon underlie through relating the last of the advancements of the scientific community, Artificial Intelligence, with the base of our status quo, education.

Commonly referred to as AI, Artificial Intelligence is a technology that a few decades ago could only be dreamed of in sci-fi movies. Today it is right around the corner. This advancement is not only capable of finding a solution to problems but can potentially identify new issues and develop solutions to them just like a human brain does. In spite of not being vastly developed yet, questions on the impact that it will have in our lives and economies are already on the table of experts and policymakers: How many jobs will this advancement destroy? Is it safe to rely on a machine in order to solve our problems? To what extent should we give control to machines over aspects that directly affect our safety?

Altogether, this brings us to the next question which includes all of the former: How do we prepare the new generations for this process of transformation? Up to this day, humanity has only found one answer to this question, and its name is “Education”. It will be the mandate of our committee to determine how this process is going to be carried out, putting a special focus on how the new technology will be adopted on the curricula of each country, and their process of development; and how it can revolutionize teaching methods inside the classrooms. We expect an international and coordinated response, where the focus of the debate is guaranteeing the future of our sons and daughters, and their descendants.

Speaking in legal terms, UNESCO focuses on a wide scope of objectives, and this specific session will lie upon the impact that AI has, and will have, in the SDG 4. Just like with every other matter, UNESCO plays a role in seeking the spread of knowledge and the development of all nations. At the same time, we will have to bear in mind the opportunities that it grants and its potential threats.

## Historical Background

### ***Education***

In order to understand the importance of our mission, we must first acknowledge the historical weight of the subject we have in hands.

One of the main factors that differentiated the first humans from other animals was language. It empowered them to live in bigger groups and consecutively to transmit knowledge from one generation to another. Thanks to this, advancements in technology were distributed between different civilizations, converging the ways of living of different societies. In this context, the figure of the educator has played a major role while being widely respected across societies.

Culture and educated individuals have been given special consideration throughout societies, sometimes considering them as icons or even attributing magic powers to them. This credit also extends to the civilizations which are remembered today for their contributions to knowledge. It is the case of Greece, Rome, the Ottomans or the Egyptians who made crucial advancements to the development of the human species as we know it. The transmission has not always been easy, which is why improvements in the channels of distribution, such as the invention of writing, the creation of manuscripts or the printing press supposed great breakthroughs in our history. The footprint of this veneration for culture can be observed in museums or in libraries which, in cities like Alexandria or Constantinople, became historical monuments<sup>1</sup>.

Having mentioned this, if we look at the data of the Ancient Civilizations and the Middle Ages, we will soon see that creation and innovation were the exceptions of a very different reality. Far from what some may think, education and books were monopolized and managed by elite groups and religious institutions<sup>2</sup>. It was not until the 15<sup>th</sup> century that a very small number of countries created their first educational systems and curricula, and even then, these did not cover most of the population. Humanity had to wait until the Industrial Revolution to see efficient systems granting widespread education. It was then

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<sup>1</sup> The history channel Iberia. 2018. *8 Legendary Ancient Libraries*. [\[Link\]](#)

<sup>2</sup> It is also important to give credit to these institutions for the costly task of conservation and preservation of knowledge that they carried out throughout centuries.





Domestic Product (GDP) per capita of the world; the average income produced by each individual in a specific country.

Notwithstanding, it is highly important to note that this development process did not happen at the same time throughout countries, even continents. Several reasons have been pointed to explain this, being some colonialism, national conflicts, commercial blockades, wars over natural resources, etc. None of these factors stands alone, but the important fact here is that some countries, are still in very preliminary phases of this transformation and have a long path to walk.

### *Artificial Intelligence*

Artificial Intelligence is a field of study and investigation that aims to develop systems or machines able to perform tasks for which a human mind would be needed<sup>4</sup>. Throughout history, philosophers have indagated on the different ways our brain works trying to define what intelligence or reason is. From Greek Plato in the ancient times, through René Descartes in the 16<sup>th</sup>-17<sup>th</sup> century, and up to the 20<sup>th</sup> century this was a field of study that fell under the competence of philosophers. They were able to analyze it effectively and proposed theories which would become very useful in the future. It was not until 1956 that a new research field would take over this task; born with the coining name of “Artificial Intelligence”, proposed by John McCarthy at a conference in Dartmouth College, Hannover<sup>5 6</sup>. From this moment on, advancements in the field were irregular; depending highly on the funds available for research coming and going with the waves of popularity on the media. In the 2000s, two key obstacles were overcome, which were: computer power and the availability of data.

From this moment on, the field started growing exponentially. Potential applications to the many aspects of our day to day lives make it the most promising sector of the next decades, being one of these applications education.

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<sup>4</sup> Lexico Dictionary, powered by Oxford. *Definition of “Artificial Intelligence”*. [[Link](#)]

<sup>5</sup> Tanya Lewis for Live Science. 2014. *A Brief History on Artificial Intelligence*. [[Link](#)]

<sup>6</sup> Note: Despite the fact that the concept of machines making decisions as humans had already been referred and developed in other scientific and literary works (e.g. McCulloch and Pitts' 1943 “Turing-complete artificial neurons”), the workshop in Hannover has been widely accepted as the birth of the research field.

## Current Situation and Legal Base

Before going deep into the topic, let's take some time to analyze the current situation of the world.

The brief existence of AI as a field of study with possible applications is a determining factor of why it is only developed in a few countries. It requires highly trained specialists and high investments without assurance of return. These factors have concentrated all the research in big cities of economically wealthy nations. These nations have been the first to react in order to legislate on the matter. Ethical principles and regulatory intentions have been published in reports and papers coming from various nations and supranational entities such as: China (with the *Next Generation Artificial Intelligence Development Plan*), the European Union (With the *Ethics Guidelines for Trustworthy Artificial Intelligence, 2019*; *Policy and investment recommendations for trustworthy Artificial Intelligence, 2019*; and the *European Framework for the Digital Competence of Educators*), or the USA (with *Guidance for Regulation of Artificial Intelligence Applications, 2019*). In these reports there is a big emphasis on ethical principles for the use of AI and mentions the role that the technology will have to play in the transition awaiting.

Though these reports were made for application in the countries of origin, they will serve as a reference for policymakers who legislate on the matter all over the world. Especially since they do not focus on national matters, but on preventing universal threats of the technology.

Diving into the current situation, one of the factors that cannot go unnoticed is COVID19. This has forced countries to put all problems aside to protect their citizens from the illness, and if before the Pandemic countries were running late for the Sustainable Development Goals, this Pandemic will only delay more their accomplishment. At this moment, inequality between and within nations is causing different opportunities in education<sup>7</sup>, and millions of children still do not have access to education in developing countries<sup>8</sup>. Fighting this inequality and achieving universal

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<sup>7</sup> Human Development Reports, United Nations Development Programme. 1980-2013. *Education Index*.

[\[Link\]](#)

<sup>8</sup> Humanium. *Right to education: Situation around the world*. [\[Link\]](#)

schooling are essential steps to reach SDG 4, and ensuring that this is made safely is a priority.

### Artificial intelligence Diffusion and Development

As we mentioned previously, nowadays there exists some form of compulsory education established in the legislation of most countries, however, countries with fewer resources have not been capable of universalizing their systems to grant this right. This supposes that their labor force is less trained and less productive relative to other countries, making it more difficult for them to adopt the newest technologies and to compete economically. In turn, this lack of stable growth and the low productivity makes the collected taxes lower, thus providing few resources to invest in infrastructure for decent education systems.

This is a hard situation to manage for these countries, however, it is of vital importance for them to find a way out. Richard Fisher, former President and CEO of the Federal Reserve Bank of Dallas, stated “A bad education system is the biggest threat to an economy and its surroundings in the long run”. It is for this reason that developing countries which are not able to stop this vicious circle have at their disposal institutions of UNESCO like the **International Institute for Education Planning (IIEP)**, the **International Bureau of Education (IBE)**, or the **Institute for Lifelong Learning (ILL)**. In these bodies, experts from all countries collaborate to support states at the different levels of education. Their main focus up to this day has been the creation of tools, strategies and materials which help governments be more efficient by making every dollar invested in education worth the most. In addition, they have also worked to keep all countries up to date on the changes that the new technologies bring to the educational curricula.

Like we saw in the previous points with other technological revolutions, their diffusion is not always the same everywhere, and sometimes can create inequalities among countries. For example, in the case of the Internet, its diffusion was very different depending on each region, and statistics of access to it by country clearly reflect it<sup>9</sup>. Many reports have been published studying the effects of the emergence of new technologies

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<sup>9</sup> World Bank. 2017. *Individuals using the Internet (% of total population)* [[Link](#)]

and, from trends observed in various historical moments, it has been proved that these changes tend to accentuate the distance between developing countries (unable to adopt new technology) and developed countries (easily adaptable to innovations)<sup>10,11</sup>

### *Artificial Intelligence and diffusion of innovations*

According to Everet Rodgers' "Theory of Diffusion", every time a technological cluster/revolution appears, there are five types of countries: The innovators, the early adopters, the early majority, the late majority and the unadapted. The theory suggests that depending on the type that every country becomes, the possibilities of taking advantage economically are different.

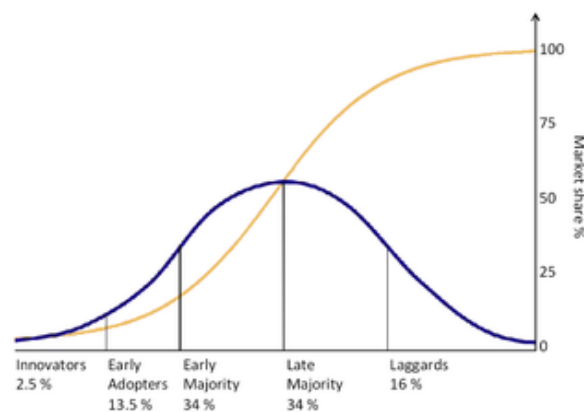


Figure 3: Process of diffusion and Market Share

In the graph of Figure 3 we can observe how according to this theory the first three groups of countries get the biggest part of the share of the market, therefore having more profits than the others.

Experts in the field of Artificial Intelligence still argue that due to the limited application of the technology in our day-to-day lives we still find ourselves in the first stages. Knowing this, developing countries have an opportunity to invest in adopting these technologies in their curricula in order to catch up with more wealthy nations and

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<sup>10</sup> World Bank. 2016. *World Development Report 2016: Digital Dividends*. [\[Link\]](#)

<sup>11</sup> The reason for this effect lies on the fact that some countries do not have resources to invest in adopting the new technologies, so the economic gap between the countries that adopt the technology and the ones that do not, grows larger. E.g. When Internet was invented, countries who could invest in computers and WIFI networks rapidly benefited from it, while other countries which were not able to do so fell behind.

reduce the inequality gap. At the same time, these investments will have to be protected to avoid that all the talent they create flees away to countries where technological firms offer job opportunities. In this sense, the negotiation between states will be key in terms of finding cooperation that helps each country keep its own trained workers.

### The implementation of Artificial Intelligence in Education Systems

Artificial Intelligence is a revolution that has been capable of transforming some aspects of the interactions between people. These changes are seen on a daily basis in the personalization of the experiences when navigating the Internet or using Social Media (during searches or when selecting results). Besides, the scope of the use of Artificial Intelligence as a tool to enhance the quality of Education Systems is closer every year.

The implementation of these systems into classrooms has created a debate on the advantages that they bring, versus the ethical controversies that they suppose. It will be essential, first, to know the advancements that were made up to date, second, to understand the functioning of these and their limitations, and third, the drawbacks and threats that come with them.

#### ***Opportunities***

Experts have shown that AI in education is more than a science fiction matter nowadays. A study on the effectiveness of Duolingo<sup>12</sup> proved that by studying in the app for 34 hours, individuals could get the same results as if they had taken a University course throughout a year<sup>13</sup>. Yet, the scope of application doesn't end here. Companies like Squirrel AI, which apply innovative strategies of learning and provide complementary tools for students, have become increasingly popular in some countries like China<sup>14</sup>. At the same time, distance learning platforms like ALEKS further provide resources at different levels of education (from Kindergarten to 12<sup>th</sup> grade, including university level) in the fields of mathematics, chemistry, introductory statistics, and business<sup>15</sup>. Furthermore, in Sweden, a company named "Lexplore" has developed a system that quickly scans for students at risk and detects dyslexia by tracking reader eye movements. In all the previous examples, students interact with adaptive interfaces that

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<sup>12</sup> *What is Duolingo* – Duolingo Help Center [[Link](#)]

<sup>13</sup> Roumen Vesselinov, Queens College City University of New York. 2012. *Duolingo Effectiveness Study* [[Link](#)]

<sup>14</sup> Our Story – Squirrel AI Learning [[Link](#)]

<sup>15</sup> *What is ALEKS?* - [[Link](#)]

personalize learning experiences based on the student and his or her current level of learning.

More examples of AI applications in education which are worth taking into consideration are: iTalk2Learn, Thirdspace Learning, Thinkster Math and EdTech Foundry<sup>16</sup>.

### ***Basis of new methodologies***

As we have witnessed, the use of AI in classrooms brings many advantages that can suppose a breakthrough in the efficiency of previous models, but the understanding of these systems is essential to understand its limitations as well.

The role that Artificial Intelligence plays in these frameworks is very well described by the Knowledge Space Theory which comes from the approach of mathematical psychology on learning<sup>17</sup>. The theory intends to describe the knowledge that each individual possesses as space where concepts learnt appear as dots which can be interconnected and related in the process of learning. With this framework, computer programs of Artificial Intelligence can break down the process of knowledge acquisition that people go through as a process of integration of concepts which can be divided into the simplest form. The role of Artificially Intelligent platforms is to guide the student throughout the whole learning process by making sure that he has assimilated all the concepts inside a subject and that he has understood the network of relations between them. Although the student might not be conscious of the whole process, the machine successfully detects the parts which the student may fail to understand immediately and puts a remedy to them faster than a human professor would do.

A final remark that becomes key when approaching the creation of tools for learning is the fact that Artificial Intelligence relies on the data sets that are taken as a reference. This translates as follows: The efficiency of the systems depends directly on the size of the datasets in which all future responses are based. As an illustration, when AI seeks to recognize images of “Cats”, it is only able to do so when it is given a large number of pictures of different cats from which it is able to find patterns. However, if the patterns that it contains are not exactly replicated by the images that it tries to identify, it

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<sup>16</sup> *Top 5 Intelligence Tutors in education*. Richard D. Eddington, Big Data Made Simple [[Link](#)]

<sup>17</sup> *Knowledge Space Theory*. Christina Stahl and Cord Hockemeyer (2019) [[Link](#)]

will get confused and perform poorly. For this reason, in this example if the amount of reference pictures of cats that it possesses is greater, it will be able to be more accurate in detecting Cats in the future<sup>18</sup>.

### ***Drawbacks and threats***

- **Personalization and creativity**: As these supervised AI learning algorithms are based on historical data, they can only see the world as a repetition of the past. This has deep ethical implications. When, for example, a student and its achievements are assessed using these systems, the assessment is based on a criterion that mirrors cultural past interpretations of success. From an ethical point of view on the role of education, children should be educated in order to develop the ability to think by themselves, and not only repeat the past. From this perspective, we must consider that AI is not able to develop essential competencies like creativity, analysis and innovation.

Defenders of AI often argue that every day more complex systems are able to allow a higher degree of personalization and diversity. Nevertheless, these competencies consist of categorizing students into pre-defined classes, which again does not solve the root of the problem. For this reason, it is necessary to constantly evaluate the performance of these systems, a task that generally can only be carried out by a teacher or another educational expert that is not a machine or a program<sup>19 20</sup>.

- **Ethical implications of the usage of data from users**: At present, the most important technical limitation of AI is the availability of data. This is why, many of the sources for the improvement of the algorithms are data from the same users of the interfaces. In this sense countries must find a balance to regulate the usage that developers can make of the students' data without putting at stake their privacy.

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<sup>18</sup> *The Danger of AI is weirder than you may think*. Janelle Shane, TED2019

([https://www.ted.com/talks/janelle\\_shane\\_the\\_danger\\_of\\_ai\\_is\\_weirder\\_than\\_you\\_think?language=en](https://www.ted.com/talks/janelle_shane_the_danger_of_ai_is_weirder_than_you_think?language=en))

<sup>19</sup> Tuomi, I. *The Impact of Artificial Intelligence on Learning, Teaching, and Education*. Policies for the future, Eds. Cabrera, M., Vuorikari, R & Punie, Y., EUR 29442 EN, Publications Office of the European Union, Luxembourg, 2018, ISBN 978-92-79-97257-7, doi:10.2760/12297, JRC113226. (**Executive summary**), (Link: <https://ec.europa.eu/jrc/en/publication/impact-artificial-intelligence-learning-teaching-and-education>)

<sup>20</sup> *AI in Education: Where is It Now and What is the Future?*. Andrea Kulkarni, Lexalytics (2019) [Link](#)

Moreover, they will have to decide whether or not to allow invasive methodologies such as monitoring the facial expressions of students to enhance their personalized User Interfaces. After all, most of the time, the privacy that is at stake is one of under-age children, which makes it an even more delicate matter.

- Lack of human contact: Finally, another limitation of AI is the limited scope of conversation that it can hold with another person. When studying the insights of business opportunities that AI presents, it is always considered that interactions with human beings always provide higher satisfaction among users. In the same way, permanent contact with robotized agents can lead students to phases of frustration which can be detrimental to their educational progress. It is for this reason that countries will have to evaluate the extent to which they ought to accept the robotization of their classrooms, and to redefine or restate the role of the professor.

## **Block Positions**

It is key to understand that every nation in the world is different in many aspects and shaped by its culture, values and institutions. It is also important that the position of the country which you represent sticks to a realistic background. However, in this analysis, it will be useful to divide the positions of countries based on the similarities that exist within them. In a sense, relying on the fact that we find ourselves in an increasingly globalized world where the path towards growth is quite defined, it is not imprudent to presume that some countries hold similar interests and face resembling problems. Following this line, we will classify countries depending on the broad problems that they currently have, making sense of a position that tries to resolve them in the best manner possible while preserving each state's sovereignty.

The two recurrent blocks proposed for this committee are: a block of countries in the process of development, facing the group of countries which have already developed.

Here below, the positions of the two blocks are defined, but, since not every country may feel identified, and the chairs will be open to new blocks during the committee.



### ***Developing countries:***

In this block, we find the countries which were not able to grow and develop in the past century, or that (for different reasons) at this point find themselves in a bad institutional or economic situation. The motives behind their situation vary from case to case, but generally are due to internal or external conflicts in the present or in the recent past. Also, many of these countries were former colonies and did not enjoy sovereignty to promote their development until they achieved independence from colonial countries, a factor which should be taken into consideration.

In the committee, the position of these countries can be defined with a clear tendency to be irritated with the inactivity of big powers in the past five years who have not done enough to ensure that the 17 Sustainable Development Goals are achieved. Following this line, they will demand a change in attitude, which should grant them a real opportunity to prosper. Their countries probably lack the resources to make investments in AI, so they will need all the help that they can get. The main objective of these countries is to not fall behind, once again, with this technological advancement, and to become as competitive as possible in the international spectre.

On the other hand, there is the possibility that more advanced countries demand some actions in return for this, and their objective is that these demands do not undermine or affect negatively their populations and the power of their governments. It will be key during the alliances to take into consideration the affinities that countries have between them, trying not to reach nonsensical agreements with nations which are absolute enemies.

At last, the objective of any resolution should be to materialize agreements between countries, and to elaborate the guidelines for a Plan of Action on how to transmit this technology widely.

### ***Developed countries:***

In this other block, we find quite a variate scope of nations. With different ideologies and cultures, this block is characterized by the fact that the countries that form it have strong economies and efficient institutions. Their Human Development Index<sup>21</sup> is high, and their economies present stability. Taking this into consideration, we will see

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<sup>21</sup> *Human Development Index* – UNDP Human Development Reports  
(<http://hdr.undp.org/en/content/human-development-index-hdi>)

that in this same block, some countries have more economic and institutional power than others on the same side. This may create conflicts that will have to be sorted out for the good of their interests. For sure we will find former Colonialist Countries in this block together with other powers which have been consolidated perhaps recently.

The reputation of this whole block is at stake in this committee after realizing that they have not achieved the SDGs, to which they compromised in 2015, and they will have the intention to at least make up a bit for what they have not been doing in the past. However, they will try to get some benefit out of it if possible, by asking in return from developing countries, which may or may not be related to AI development.

Since these countries will have already introduced some incentives to adopt AI and some startups will have started to emerge providing certain basic services like the ones mentioned in previous parts of the Study Guide.

### ***Conclusion***

Both positions have room for negotiation in order to make the most out of this summit. The key for a good performance and good deals in the committee will lie in the originality of the proposals of each delegation and its ability to convince others of accepting them. We encourage you to prepare and to be ready to bring forward your proposals and listen to the ones brought by others’.

As a final remark, we want to remind you all that these proposals must be realistic and adequate to the committee. Furthermore, keeping diplomatic behavior and respect is absolutely essential, and the most important trait of each delegation.

Good luck Delegates!

## **Questions a Resolution must answer / Guiding Questions**

1. How will states ensure that by 2030 SDG4 is accomplished? (both developed and developing)
2. What actions will states take in order to ensure Artificial Intelligence is an innovation adopted by the whole world?
3. What is the position of the international community regarding the implementation of AI in schools?
4. To what extent should AI be present inside the classrooms?
5. How will creativity be handled in classrooms which use AI as a tool?
6. What will be the role of the educator or the teacher in the classrooms of the future?
7. How will states ensure high-quality protection for the privacy of its students?
8. How will the field grant further research on the topic? (Origin of funds and where should data for further investigations come from)

## Glossary of Key Words

*Gross Domestic Product (GDP)*: It is the monetary value of all finished goods and services made within a country during a specific period. **GDP** provides an economic snapshot of a country's wealth, used to estimate the size of an economy and growth rate<sup>22</sup>.

*GDP per Capita*: GDP divided by the number of inhabitants of a country.

*(Economic) Growth*: Increase of GDP of one year with respect to the level of the year before, usually expressed in percentage points.

*Technological Advancement/Innovation*: the generation of information or the discovery of knowledge that advances the understanding of technology, and which's appropriate use can have a positive impact on the Economy.

*Technological Cluster*: A coordinated advance in a specific field of study which becomes revolutionary for society and can be applied in other fields of study.

*Hunter-Gatherers*: members of a nomadic tribe, people who live chiefly by hunting and fishing, and harvesting wild food<sup>23</sup>.

*Curriculum, curricula (plural)*: Set of subjects comprising a course of study in a school or college<sup>24</sup>.

*Literacy Rate*: Number of people with the ability to read and write among a certain population.

*Economic Instability*: Periods of time in which the reliability of predictions over certain economic factors is low. It is an important indicator of an economic crisis<sup>25</sup>.

*Labor Market*: Place where workers and employees interact with each other. In the labor market, employers compete to hire the best, and the workers compete for the best job offers<sup>26</sup>.

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<sup>22</sup> *Gross Domestic Product – GDP*. Jim Chapelow, Investopedia (2019); [\[https://www.investopedia.com/terms/g/gdp.asp\]](https://www.investopedia.com/terms/g/gdp.asp)

<sup>23</sup> Definition of "Hunter-Gatherer". Lexico Dictionary, powered by Oxford

<sup>24</sup> Definition of "Curriculum". Lexico Dictionary, powered by Oxford

<sup>25</sup> Further reading at: *Economic Instability*. Tejvan Pettinger, Economics Help (2017)

<sup>26</sup> *Definition of 'Labour Market'* – The Economic Times

*Productivity*: Effectiveness of productive effort, especially in industry, as measured in terms of the rate of output per unit of input<sup>27</sup>. In other words, how much is produced per person in a country, which can be compared to the same value of other countries (in monetary units).

## **Further Readings and UNESCO Past Resolutions**

### ***Useful Reports:***

Francesc Pedró, Education Sector UNESCO. 2019. *Artificial Intelligence in Education: Challenges and Opportunities for Sustainable Development*.

[<https://unesdoc.unesco.org/ark:/48223/pf0000366994>]

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