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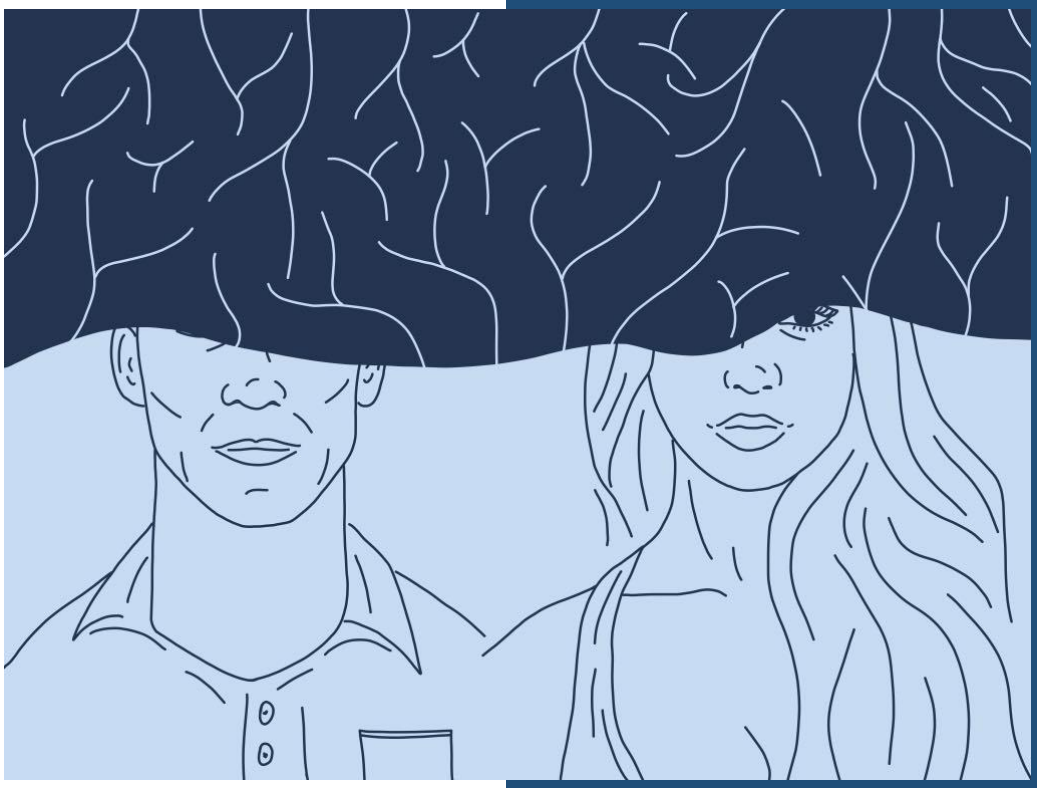
Facilitate the exercise of futures thinking



Bachelor's thesis nominated to the

getting the degree:

Bachelor of Social Educational Carework

Bachelor of Applied Psychology

Bachelor of Social Security

Selection process: eSociety

Academic year: 2019-2020

Promoter: Thomas D'hooge

vives

Preface

This bachelor thesis will close a chapter in our life. This is the last task in completing the course eSociety and our education as a whole.

eSociety has been a very refreshing course, giving us new insights and exploring topics we haven't seen yet in our education. We had a variety of subjects. We learned about technologies in the course 'Internet of things'. We saw how the past has shaped our future in 'An evolutionary journey'. We also learned more about 'The human factor' and lastly we had interesting dialogues on 'The ethical and legal framework' of technology.

The course has taught us many skills we hope to put to use in this bachelor thesis.

The thesis is a team effort, we are working in a **multidisciplinary group** of six students. We all have **different backgrounds** and follow different educations. We have two students 'Social educational care worker', three students 'Social security' and one student 'Applied psychology'.

We hope to bundle our strengths and use these different perspectives to our advantage.

In the eSociety course we had a brief introduction to **futures thinking**. This topic has intrigued us and we would like to dig deeper into what futures thinking is and how it is practiced.

We are making this bachelor thesis during a pandemic. Although this posed an extra challenge, it was also a unique opportunity to explore new ways of working together. The severity of the pandemic is why we were assigned to use the current **COVID-19 crisis** as a case study.

We could not create this thesis on our own so we want to take the time to thank those who have been of great help. We want to thank our promoter and teacher Thomas D'hooge for guiding us during this process and giving us useful insights. We also want to thank Henk Vandaele and Veerle De Marez for teaching us some important skills and knowledge we have put to use in our thesis.

Summary

During these stressful times we are experiencing, we are faced with a future that is clouded in uncertainty. Because of the current **COVID-19 crisis**, now more than ever we can see our habits and way of living shattered and many uncertainties are being brought to the surface. We can't be selfish and only focus on the present. we need to have a long term vision to develop a better future. In this thesis we want to try to teach people to live with these **uncertainties**, to cope with them and use them to formulate visions of the future. These times have granted us an **opportunity** we won't be seeing again soon. It's up to yourself, as an individual to be critical about future scenarios.

This concept of thinking about **possible futures** and being critical about yourself and the visions of others is futures thinking. There is not one sole definition of this term but we can agree that the importance of this skill is tremendous in the period we live in and even more in the current crisis we are facing. The main question and the driving factor of this thesis is: **'How can we facilitate futures thinking in uncertain times?'** Which skills are necessary to try and answer this question? When we asked this to ourselves, the concept of **futures literacy** was introduced. A concept in which a person has 'mastered' skills necessary to try and understand the future and the matters that influence it. We focused ourselves on **two target groups** where these skills can be learned. Our primary target group are students in secondary school, more specific students aged 14 to 18 years old. They are in a stage where these skills can be efficiently taught to them and these skills will prove valuable to their later development. Our secondary target group are the people that have to teach these skills to the students, in other words the teachers.

Through diligent research on different subjects that have an influence on futures thinking we have formulated a **literary study**. This literary study involves the different scenarios we had before, during and after COVID-19. Through the ways of a DESTEP-analysis we have structured these scenarios. The DESTEP-analysis has proven to be a very valuable analysis throughout our whole thesis. The 21st century skills, the black swan and many other subjects have also proven valuable.

The diligent research was further used in formulating questions for our **qualitative research**. In this qualitative research we contacted many futures thinking experts that work in different fields that have to do with our subject. We contacted experts from our own country but also internationally. We succeeded in bringing in eight experts to work with us. The interviews have been of unfathomable value to our thesis. While we had already done our diligent research, the opinions and knowledge of these experts broadened our vision and made us more into experts than before. After thorough interviews with the experts we concluded that many of them have their own opinion on futures thinking and futures literacy. One opinion they all share is that these skills are quite important to everyone.

In the **quantitative research**, we held a survey targeting teachers from multiple secondary schools. We focused on the 21st century skills that should be present in these teachers. Afterwards we held a survey trying to reach students from our target group to research their opinion on the future, how they cope with it and if they have ever learned 21st century skills. Because we didn't reach the right size for our sample tests we can't generalize our test to the target group. Although we did everything we could to pull as many respondents in as possible, we didn't reach our goal. Nonetheless we were able to find some valuable

insights out of our quantitative research. Teachers feel that they have a great focus on 21st century skills in their curriculum and students also perceive that they are being taught these skills.

After our thorough research we started developing our **tool** to teach these students the skills we ought necessary for them. Through the means of brainstorming in the beginning, we concluded on multiple common points that we all deemed necessary for the tool. This tool, a lesson package, consists of a theoretical bundle and a bundle filled with thinking exercises. The theoretical bundle explains the terms used in the lesson and are the core of the lesson package. The bundle of thinking exercises are a collection of methods to think about the future that have been 'gamified'. To share our work with the public we have developed a website that is filled with information on our thesis and who we are. The tools are available for everyone, without a single cost.

In **conclusion**, we want to emphasize that we are not the experts that know everything about the future. With this work we want to try and convince teachers of secondary schools to teach these valuable skills to their students. The future is uncertain, it can't be predicted, but we can try to document it, think about it and explore it. Throughout these different methods and theoretical explanations about futures thinking, we have a goal in mind. We want to see a future where everyone has become future literate and concerns themselves about the future. The importance of futures thinking and futures literacy lays in the fact that can help in making a preferable and sustainable future.

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Introduction

Futures thinking isn't something new. In the past there were different kinds of people who tried to predict the future. Back in the old days, religion and faith were the only truth when it came to predicting the future of our existence. In our time, **predictions** of the future are made on the basis of science and claimed as the truth.

We do notice that we are being affected about what appears in the daily **media**. We don't know what the future will hold for us, but now more than ever people speculate about the future. Different experts claim that they know what the future will hold for us. But the average person also speculates about the future and comes up with their own ideas. Different experts claim that they know what the future will bring and that they can accurately **predict the future**. It is up to us to question these experts. We can't fully assume that what they are saying is the one and only truth. Examples about these are doctors and virologists who predict a second COVID-19 wave where we would have to go into lockdown again, with stricter measures.

We asked ourselves what futures thinking exactly consists of. A ready-made **definition** of futures thinking isn't available. You question the future and link certain emotions to this. You should not try to predict the future as it is not possible. However, it can be useful to have a certain idea of what the future can hold. It's in our human nature that we like things to be predictable. This way we know what to expect and it gives us a feeling of safety. But it's important to remember that you can't say with 100% certainty what the future will hold.

We want to be sure that we don't only focus on one vision while working on our bachelor's thesis. That is why we think it is important to go through as many sources as possible and take on as many **perspectives** as possible.

Defining the problem

Reason:

Commissioned by VIVES University College in Kortrijk we have been assigned to write a thesis in context of the course '**eSociety'**. We have chosen to work around **futures literacy** with the following central research question:

"How do we facilitate the exercise of futures thinking in uncertain times?"

This is a broad topic that can be interpreted in multiple ways. We can divide that question into two parts. The first being the definition of '**futures thinking'**, for this we will need to gather as much information as we can. This through a literary study and interviews with experts on the topic. The second part mentions '**uncertain times'**. Which is kind of paradoxical, because the future is inherently uncertain. To make our investigation more specific we will apply the COVID-19 crisis on our findings.

Objective:

All of our research will be focused on the final part, being the **methodology**. We will create a **tool** to make students (second and third grade of secondary education) look more **critically** at media posts who claim to 'know' the future. The essence of this tool must be that the user(s) come to **self-understanding** through discussion with others.

Context:

In this bachelor thesis we will be researching futures thinking and focus on COVID-19 as our case study. Futures thinking is a method of **reflection** of the past and the current tendencies to try and formulate **possible futures** taking these aspects into account. In our case we study previous pandemics and epidemics and look at the way life was before and after these pandemics. Past pandemics and epidemics have greatly impacted the way society functions during and also after the pandemic or epidemic. Prime examples are the black plague, swine flu and many other diseases or viruses. Experts studied the happenings in the past to try and find out which parts of society have been impacted the most and how they have evolved during the years afterwards. We focus on six different aspects of a society through the means of a **DESTEP-analysis**. The demographic, economic, social, technological, ecological and political aspects of life during and after COVID-19 will be studied and researched.

Through **creative means** we will try and make futures thinking a possible subject in **courses** of teachers. Futures thinking is more important now than it has ever been. Students have to realize that in order to think about the future, they first have to understand the past. Scientists and other so claimed future

predictors say they can predict the future. A critical view is necessary to look at the future they're claiming will be real.

Recipients:

We want to focus our tool on **youngsters aged 14 to 18.** The skill of critical thinking is important and we find that youngsters at this age are most apt to master the skill. With our tool we want to teach them futures literacy, the capability to have insight on how and why humans anticipate their behavior. With futures literacy you can use the future to innovate the present. ("Futures Literacy", 2020)

Research questions

What is our research question?

"How can we facilitate the exercise of futures thinking (in a professional context) in (extreme) uncertain times for young adults?"

During the COVID-19 crisis it is often difficult to have a vision for the future. We have few certainties about the future. We have to fight against an enemy unknown to us.

Our thesis should provide insights about the post COVID-19 era divided into different topics (based on the DESTEP analysis).

We do not want to predict the future in our thesis, but to give advice. Advice on how we can possibly deal with everything that will come our way.

We do not only want to talk about the future but also about the past and the present. In order to try to understand the future, you must have insight into what preceded it.

What goals do we want to achieve with our bachelor thesis?

Before we start we want to set a few goals for ourselves. This will help to work as efficiently as possible and focus on what's important. We will be setting some goals for each part of our thesis. We will be applying these on the level of the **research phase**, the product we want to deliver, and the process we go through as a group.

Research

- **Future thinking**: we want to ...
  - define what future thinking is.
  - analyze how future thinking has evolved over time.
  - learn different methods of looking at the future.
  - explore some predictions people have made about the future.
  - try some of these methods out for ourselves and experience what future thinking is like.
  - talk to experts in future thinking.
  - explore different technologies that could shape the future (general).
- **COVID-19 as a case study**: we want to ...
  - look back at the past and study other 'uncertain times' and how these shaped the world (f.e. the Spanish flu).
  - explore different predictions about the future after COVID-19.
  - analyze the present effect of the coronavirus (using different sources and/or surveys)
  - explore different technologies that could help us in the future, with the focus on corona.
  - use the different future thinking methods and apply these on our case study.
- **Product:** we want to ...
  - define a problem worth solving.
  - create a solution to this problem.
  - talk to people from our target group.
  - create a tool to show others what future thinking is.
  - find creative ways of introducing people to future thinking.
  - help people be more critical of future predictions.
  - create something that will be useful in the future.
- **The process:** we want to
  - each have an equal contribution to the bachelor thesis.
  - communicate well with each other.
  - have a nice atmosphere in the group.
  - give each other feedback.
  - create something we are passionate about.
  - deliver something we are proud of.

What is our target group?

Our **primary target group** will consist of students of the second and third grade of high school in Flanders. We would like to propose a new course. This course would be about futures thinking, not to predict but to show these students that while knowing the future is unsure, unpredictable and something scary, you can explore it.

The teachers will also be part of our target group but as a **secondary target group**. They will be the ones closest to the course, as they would be giving the course about futures literacy. We have to give them as much attention as the students as they are just as important. We want to provide them with the necessary tools to become futures literate teachers. They are the **stakeholders** of our project as they give us the means to reach our primary target group.

The needs of our target group would be a clear and consistent schedule on how and what the lessons of this new course will be. Precisely teaching a critical thinking skill. A skill needed to not believe everything the media feeds them but also come up with their own ideas of the future.

The values consist of everyone having a **safe and healthy learning environment** while still being able to learn from a qualitative curriculum, being taught new ideas and learning new perspectives on the future.

The wants involve knowing which precautions will be used in a future similar situation, but also being able to create a new mindset for the students following this course.

Our fears of the future may not keep us from being hopeful for what's to come. The future isn't set in stone, the possibilities are endless. With this message we want to make students less afraid of the future. Another future virus like COVID-19 is something to prepare for and not live in fear of.

COVID-19 has had an impact on our future in different aspects of life. The effect on the economy, health and others has shown us another view on the future. Also the social and psychological impact of the isolation may have left an influence in behavior, thoughts and habits.

Literary study

COVID-19

What is COVID-19?

COVID-19 is the abbreviation for Coronavirus disease 2019. The full name is; **SARS-CoV-2** (severe acute respiratory syndrome coronavirus 2). Because of its resemblance to the SARS virus which officially bears the same name, but without the serial number 2 (World Health Organization, 2020).

The virus is thought to originate from a bat on a market in China (Wuhan). A local outbreak, a new type of **pneumonia** was detected close to the market in December 2019. It was soon established that this was caused by a new coronavirus, 'the severe acute respiratory syndrome coronavirus 2'. It did not remain a

local outbreak, but spread across several provinces of mainland China and 27 other countries and regions. By 17 February 2020, there were more than 70 thousand confirmed cases. (World Health Organization, 2020).

COVID-19 has affected many countries **globally**. (World Health Organization, 2020). COVID-19 started as an epidemic, but became a **pandemic**. A pandemic spreads across continents and an epidemic only affects a few people (E.Hickok, 2020). The disease is believed to have a zoonotic origin (WHO, 2020). Some harmful germs can transmit from animals to humans, that transmission means defines a zoonotic virus (CDC, 2017).

Scientific explanation

'Coronaviruses are non-segmentally developed, positive-sense, single-strand RNA viruses.' (American Society for Gastrointestinal Endoscopy, 2020)

The group of viruses to which Corona belongs is a large group/family of viruses that cause disease in both animals and humans. In humans, several coronaviruses are known as destroyers of the **respiratory tract**. This varies from a cold to serious diseases, such as MERS (Middle East Respiratory Syndrome) and SARS (Severe Acute Respiratory Syndrome). (World Health Organization, 2020)

Because this virus is spreading very fast, an online dashboard has been launched, hosted by the CSSE (Center for Systems Science and Engineering) of Johns Hopkins University, Baltimore, MD, USA. This fast way of **tracing** had to ensure that people had representative and real time figures, in order to be able to visualize and trace (possibly) multiple cases. This dashboard was made public for the first time on the 22nd of January 2020. It shows how many people, when and where were infected, died and were cured for all affected countries (E. Dong, H. Du, & L. Gardner, 2020).

Symptoms

COVID-19 also has some typical **symptoms**, like other illnesses. You can feel and see the symptoms two to fourteen days after exposure to the virus; the cough, shortness of breath or difficulty breathing, fever, diarrhea, chills, muscle pain, sore throat and a loss of taste or smell (Centers for Disease Control and Prevention, 2020).

Adults could be very sick, children on the other hand can have mild illness with the same symptoms. (This list of symptoms are not the only symptoms you could have. But they are the most common.)(Centers for Disease Control and Prevention, 2020).

Repression

Prevention

A virus is always there before the vaccine. How long it takes to make a **vaccine** depends on the complexity of the virus. Since COVID-19 is very complex, it can take a long time before one has a vaccine. That is why some preventive measures have to be taken.

Social distancing

The virus is **transmitted** from person to person mainly by direct contact or by bodily fluid droplets in the air. The risk is head-on when one stands or sits approximately within a circle of 1 meter of an infected person (with COVID-19). The maximum **distance** is still unknown. A distance of 1.5 meters is mandatory if someone cannot be fitted with a mouth mask. (American Society for Gastrointestinal Endoscopy, 2020).

Wearing a mouth mask

A mouth mask consists of a unitary membrane with an inner wall section and an outer wall section. The unitary membrane ensures that the mouth is closed off from the air particles that are located on the outside of the mask. It covers not only the mouth, but also the nose (EOS, 2020).

Reporting obligation

COVID-19 has been classified as a group A notifiable disease with effect from 28 January 2020. This normally means that in case of suspicion of the disease, the Municipal Health Service (GGD) of the patient's place of residence or stay must be notified immediately. Because in approximately 80% of the persons with COVID-19 the infection is (very) minor and there is **limited testing capacity**, a restrictive testing policy applies. As a result, most patients with complaints suited to COVID-19 are no longer tested at home. As a result, the reporting of a suspicion of this disease has lost its function (LCI, 2020).

Quarantine

Quarantine is the **isolation** of people and animals for a certain period of time. The purpose of quarantine is to **reduce** the risk of these people or animals infecting other(s). The GGD informs housemates (including children) with the advice verbally and in writing; Go into quarantine for 14 days after the last moment of contact with the index patient; quarantine means staying strictly at home; observe good cough and hand hygiene (LCI, 2020).

What impact does COVID-19 have? (DESTEP-analysis)

Demographic

The first part of our DESTEP analysis is the demographic aspect. The demographic has a lot of influence on social factors and economics. During this pandemic specifically **age** and **population density** also played a big role in the spread and the amount of casualties suffered by the virus. We know people of older age groups (65+) were at a higher risk of severe symptoms. We also know that denser, more mobile populations mean that the virus can spread more easily and faster.

Hindsight

The population of 11,6 million in Belgium was aging. This **aging** happens because of a few different factors and in 2017 it was calculated to increase until 2027. One of the factors for this aging is that from 1945 to 1955 there was a massive wave in birth-rate, this wave is called the **baby boom**. Most of these people will be reaching the milestone of 65+ years old. From that age they are counted as the older population in demographic studies. A second factor that increases the percentage of 65-plussers is the fact that the **life expectancy** is still slowly increasing, with the current expectancy in Belgium being 81.44 years. In 2017 the percentage of people with the age of 65 or over, was 20% (Statistiek Vlaanderen, 2017).

Belgium has a **population density** of 383 people per km² with 98.3% living in an urban location. ("Worldometer Belgium," 2020) Hotspots are of course Brussels, Antwerp, Gent, Charleroi and Liege. On the density map we can also see a difference between Flanders and Wallonia. Flanders counted 6,59 million people in 2019, Wallonia 3,63 million and The Brussels Capital Region 1,2 million.

Eyesight

As said previously, people of the older percentile are at a **higher risk** of succumbing to COVID-19. This means we have quite a bit of people at risk, considering over 20% of our population fits into the 65+ category. Up to this point Belgium had 50.262 confirmed cases and 7.924 confirmed deaths at the hands of COVID-19. This mortality rate is slightly higher than places with younger and less dense populations.

Foresight

It is said that the quarantine introduced to prevent the spread of COVID-19 may cause more divorces, marriages or a baby boom. Nobody knows what the outcome will be, including sexologist Wim Slabbinck. A study from 1989 shows that in the period after a hurricane there were more marriages and babies. A hurricane can't be compared with a contagious virus (S. Cardoen, 2020).

In **developing countries** they have another problem and that is: weak health care. COVID-19 is depleting the medical services and food supply. The invisible victims are the many children in these situations. Basic elements such as education, basic care from healthy food to a safe home cannot be counted at all in these countries. This applies especially to Bangladesh, Brazil, Democratic Republic of Congo, Ethiopia, India, Indonesia, Nigeria, Pakistan, Uganda and Tanzania (LC, 2020).

Social

The COVID-19 virus has caused our social life to take on a different meaning than before. We are expected to be creative. Humans are social beings and therefore feel better around their social networks. You can fall back on it and they are a mainstay in difficult moments. A variety of people within a social network helps to improve resilience.

Hindsight

Previously, social contact was not a problem. Everyone was allowed to go wherever they wanted. People greeted each other with a kiss or a handshake. We live in a culture where physical contact is normal.

Mass events such as festivals etc. are also part of the Belgian culture. With some hits like Rock Werchter, Pukkelpop, TomorrowLand,.... Belgium is known in the world for these festivals.

These festivals have also been cancelled, just like many other social events.

The Belgian citizen loves coziness and likes to organize a barbecue with the nice weather.

Not everyone has a large **social (support) network** he or she can count on. That is why some people go to a psychologist/psychiatrist. They do this to promote their **mental well-being** and this is an important social contact for them (L. Heylen, J. Knaeps, L. Lommelen & G. Peeters, 2020).

Eyesight

On Friday March 13th it was announced that Belgium was going into **lockdown**. The schools closed their doors on the 6th of March a week before (not primary school). From then on social contact was more and more forbidden. The first rules of the lockdown were, **1,5m distance** and meet with a maximum of 1 person outside the family. People who can go to family, friends or others still have a certain small circle with which they come into social contact. For people without a partner, family, close friends, ... this was (and still is) a very lonely period (D. Baert & F. Bruggeman,2020).

The **social distance** rules that came into force, by first closing the schools and then the companies, completely changed social life. Supermarkets were allowed to stay open, but had to follow strict rules. Many were afraid they would run out of supplies. So people started **hoarding** and masse (doing a lot of shopping at once). The behavior hoarding was immense, the employees were tired of the behaviour hoarding because they couldn't replenish in time. People hoarded because they were afraid they were not going to survive. Everyone wanted to enjoy the last moments of 'social contact'. The human is not made to be isolated and is therefore afraid of loneliness (W. Vistrein, 2020).

Elderly people are often lonely during this period, because they may not have a partner or they are in a residential care center. In order to give the spread of the virus little or no chance, the residents usually stay in their rooms, alone. As a result, they see very few people. (Grand)children are not allowed to visit. Not only the elderly are lonely, but also young people. Some of them rent an apartment in the city and often meet up with friends, but now this all fades away.

Depression, suicidal tendencies, self-mutilation, etc. can be a theme that is present in some people, is still present or becomes present during the lockdown. Because the step to a psychologist online is no longer so easy, it becomes difficult for some people. Lockdown can also have a positive effect. (see catharsis) (W. Vistrein, 2020).

Foresight

Are we going to keep greeting each other with a handshake or a kiss later? Are we going to shop with a mouth mask? Times after corona are still cloudy, no one has an answer. All we can do is prepare as well as we can.

People might start living more in the now. With a period like this behind you, you know what it's like to have to put everything on hold. Dreams fall into the water, you can't realize projects the way they are. It is possible that people will seize every opportunity in life and do what they want.

Catharsis is a term from narratology that means **"emotional purification".** One has time to think about the future. In that future one may be completely purified and with a new outlook on life. Certain questions can be answered and can be continued.

In post-corona times, **video chatting** may become the norm. We now notice that video chatting works very efficiently. **Teleworking** can also become more and more the norm. Working can also be without the social aspect. In the long run we may miss it, but the economy may take precedence over people.

We might be a little more tolerant, because we realize what it's like to suddenly have 'nothing' anymore. The tolerance and solidarity that prevails today can be permanent and have a positive effect (Vistrin, 2020).

Economical

Economy is the way of production, distribution and consumption of goods and services in a society. This system of economic trade is the subject of the economics science studies. Economy can be divided into **four sectors**. The primary sector is the sector that delivers resources and food through agriculture, fisheries and mines. The secondary sector or also called the industry. The tertiary sector are the commercial services. The quaternary sector are the non-commercial services. An economic sector is part of an economy existing out of all companies that are all active in a certain category of products and services (Elgar, 1998).

Hindsight

Before the COVID-19 outbreak happened Belgium had a decent economic growth in the year 2018 to 2019. The yearly GDP growth in 2018 was relatively good. Through impuls of the internal question to storages and more specific, investments, the GDP growth did relatively well. This **growth** would continue in the year 2019 and most likely into 2020. The **unemployment rate** was decreasing from the year 2018 to 2019 and would have continued to decrease (FOD Economie, K.M.O., 2019).

Eyesight

The economic impact of the COVID-19 outbreak will be felt throughout all sectors of the economy. Because of the hard lockdown of shops and physical stores and other emergency measures to decrease the growth of the virus, the economy will be suffering for a while. According to the Economic Risk Management Group (ERMG), the businesses will see a decrease of 33% in their revenue. In the horeca sector they will probably see a 90% decrease in revenue. Art, entertainment and recreation will see a 85% decrease. Non-food and smaller businesses that are not essential will see a 80% decrease. Investments will be held on a hold or will likely never happen. To overcome the **economic crisis** that the businesses are currently facing they will have to save most of their money. New businesses that just came onto the market will suffer greatly (FOD Economie, 2020).

We owe the economic crisis caused by corona to the fact that we have a **globalized** crisis. Almost every part and every corner of the world map is (in one way or another) economically connected. We have built a global economic network. Globalization only had its advantages until the beginning of this crisis. People were 99% convinced that this economic model could handle virtually any shock (De Langhe, 2020).

> "Each too short on one side of the world is done too little by producing more on the other side, so that there's always enough."
> -De Langhe, 2020

Because this chain is very closed and strongly attached to each other, the failure of one link causes the others to feel the damage or even fall out (De Langhe, 2020).

Foresight

After the COVID-19 outbreak and when all emergency measures are being lifted, the economy will probably see a great **influx**. A lot of people will want to go outside and spend money. Most economics expect that the Belgian economy will quickly heal from the COVID-19 outbreak. Some expect a 12% growth next year. But some economics warn that the economic effects from an outbreak can still be felt 40 years after the outbreak. Even if the economy can quickly heal from the outbreak, the government will be left with quite a lot of **debt**.

But the International Monetair Fund (IMF) expects that the countries in the eurozone will see their economy decrease with an average of 7.3 %. Belgium would do a little bit better says the IMF, they expect a decrease of 6.9 %.

Technological

Technology is something that has become increasingly important over the years. The impact of technology should not be underestimated. It goes beyond a direct application in products or services. It also influences society in ways that scientists and designers did not foresee. (Joosten, 2020)

Hindsight

Technology is a concept that has been around **since prehistoric times**. Archeological finds made clear which technologies mankind had in the past. In the past, technologies were mainly used to provide mankind with the necessities of life.

At the beginning of the 18th century a new era, the Industrial Revolution, began. Technological knowledge increased. Mankind also learned to control the operation of electricity.

The period after 1975 is without a doubt the time of high technology. Digital watches and computers are being modernized and radios are becoming smaller and more compact.

In 1991 the **internet** made a breakthrough. This has major consequences for the development of computers. It has a lightning fast volume. There are also some important steps within science. More and more diseases are being conquered (Carlo, 2020).

Eyesight

In these dire times it is important to use all the technology we have. Technology is mainly used in hospitals and is being produced at an accelerated pace. The **medical sensor patch** is a good example. It is worn on the chest area and measures heart rate, temperature and breath on a regular basis. Health care providers can consult the measured information. Right now it is not available but the CEO of Byteflies, says it will be available in autumn for a possible flare-up of the COVID-19 virus (Preter, 2020).

Different sources talk about a new vaccine being made to battle COVID-19. Several apps have also been developed to battle the different aspects from the deadly virus. An example for this is the startup 'MoveUp' which is known for the **mobile app** made for revalidation of the knee and hip. They made a new app where patients who have been infected with COVID-19 can be followed up at home. "the platform can ease the initial evaluation and follow-up of the patients", says Gaëtan Haenecour, Sales Business Development at MoveUp (Reflexion Medical Network, 2020).

Not only is technology important in hospitals today, but it is also frequently used on a daily basis in **education**. They are expected to provide the minimum amount of teaching material and to adapt the learning objectives per school, per learning year. Digital lessons are recorded or given using Zoom, Microsoft Teams, and others (Klasse, 2020).

After the quarantine measures, digital education could be something still in use. The shift from class-based lessons to online lessons might be something to look into in the future (Visterin,2020).

Foresight

The outbreak of COVID-19 as an engine for **digitalization**: 'This is the time for companies to reinvent themselves' (Dewulf, 2020).

Thanks to the crisis that the COVID-19 outbreak has brought with it, some digital tools will grow a different or a larger userbase. Every platform on which videocalls can take place makes use of this. The apps also respond to this, for example Instagram. Until a few months ago it was not possible to video chat via the Instagram app. After the crisis, we can expect sick people to video chat to each other sooner. People are used to it and might keep that habit (Dewulf, 2020).

COVID-19 has given us a push to **work contactless**. We have noticed that this works more efficiently and so we want to keep it. It is quite possible that such meetings, webinars, etc. will be held online more frequently. It would be less stressful to be able to plan your days yourself (Visterin, 2020).

"We have rediscovered the value of technology". Dewulf, 2020) That's why people think we'll make the best use of them in post-COVID-19 times. The world is confronted with a world in which working exclusively digitally is the only way (Dewulf, 2020).

Since the development of technology has accelerated, one may expect that in post-COVID-19 times one will not go down a gear, on the contrary, one may go up another gear. New or better technologies will then be developed at a **rapid pace** (Dewulf, 2020).

Elderly people will be victims of this again. Seniors are more likely to fall behind. And (grand)children can hardly help them, says Lieven Demarez. He calls it a digital gap, a gap in which not everyone can be part of the digital society due to a lack of skills or material (Demarez, 2020).

Ecological

Hindsight

In the past, as early as 1970, experts have made different predictions about **global warming**. They tried predicting how much the average temperature would rise. Multiple models estimated the temperature would rise by 0.9° between 1970 and 2019. This is very accurate with the numbers we see today. Some models did miss the mark with about 0.1 degrees per decade. But the majority were correct (Cornwall, 2019).

Some sources predict that it will get even warmer. By 2100, we would be heavily dependent on emission scenarios.

We are also faced with serious air pollution because of the high CO^2 emissions from cars, machines and factories. Since the Industrial Revolution that took place in the 18th century, our society has shifted into a consumption society. **Air pollution** is both a global and a local problem (European Energy Agency, 2019).

Global warming is something that sounds familiar to us. In recent years it's a popular media topic. Various associations and people have committed themselves to the environment. The figures for the past year (2019) did not look good. "The average temperatures for the periods of five years (2015-2019) and ten years (2010-2019) were the highest (in Europe) ever measured." (European Energy Agency, 2019)

Eyesight

In articles where they write about the current crisis because of COVID-19 they often make a comparison to **climate change**. This is because they are both similar in the sense that they are a socially driven issue. The big difference between the two is the global responsiveness to the problem. With COVID-19, the global responsiveness is much bigger and has come much faster. Not long after being exposed to this threat the government immediately took action to prevent a catastrophe. With global warming we have a different response. Experts call this the **Giddens paradox**. This means people sit on their hands and don't do anything about it (Fisher, 2020).

There are a few questions you could ask yourself when it comes to this subject: what were past predictions about global warming? How will global warming be affected by COVID-19? How can we practice future thinking on an ecological level?

Today we see that the average temperature has in fact risen by 0.9 degrees, although some areas in the world have warmed more than others. Current models predict that in the 21st century we will see a rise of 0.3 to 1.7°C. Other more negative models such as that of the NCAR, short for National Center for Atmospheric Research, predict the average temperature will rise with 5 degrees Celsius (Perrett, 2020).

So what's the link with COVID-19? In an indirect way, global warming contributed to the spread of the virus. This is because us humans keep destroying (ex. the Amazon jungle) animals' habitat. Because of this we get in touch with animals we would never meet in a normal situation. This is a huge **risk factor** for

spreading viruses. There is also a big risk for the future. There are viruses stuck in the **permafrost** or in gletsjers. When these melt because of global warming, humans might get exposed to viruses that are not yet known to mankind (De Wever, 2020).

We can also speak of a paradigm shift with global warming. Because of the pandemic, all the attention is being put on COVID-19. Global warming has been put to the side and is barely getting any **media** coverage.

So is the lockdown good for global warming? In the news we see that the channels in Venice are filled with fish again, there are much less cars on the road, we are seeing more animals on the streets etc.

But experts say we shouldn't be too hopeful. The decline in emissions is most likely temporary. The economy will also suffer a large impact. Companies aren't likely to invest in clean energy because they might be facing large debt. People sometimes say that the earth is healing now but this lockdown will be far too short to make any big difference on a larger scale (De Paula & Mar, 2020) .

Foresight

This crisis is able to teach us something. This crisis has shown us that **governments** all over the world are able to make changes when they are facing a threat. No matter if a country is poor or rich, they all made the necessary changes for public health. This shows us that governments everywhere are more capable of making big changes than we thought. We can take all these **lessons** that we've learned with us. When rebuilding the economy we can strive for a green and **sustainable** economy (Fisher, 2020).

Political

Last but not least we frame the political aspect of our DESTEP-analysis. The political climate has a lot of influence on all other macroeconomic factors. In most cases an organized political structure will have a stabilizing effect, however a problematic political structure will destabilize the other factors. Since the COVID-19 crisis, a lot of countries (84+) have declared a **state of emergency**. Because of this declaration a government is able to suspend the constitutional procedures. Under the guise of regaining control of order in response of the current pandemic. This however leads to massive protest. Citizens are afraid of the abuse of this power. Many countries plan to invest in the '**contact-tracing'** concept to intervene on a preventive way. Contact-tracing is a way to trace contacts in a way to identify people who came in contact with possible contaminated individuals. Also here there is agitation with the people, as this can be seen as a massive intrusion of their privacy.

Hindsight

We can see that Belgium has multiple governments. One locally for each city or township (total of 581). One regional for each region and community. One nationally, the federal government. The local and regional government are pretty stable and well organized. However there is a recurring complication with the federal government. There is a certain **complexity** to constitute a majority. Within the possible coalitions there are still too many political differences. Almost a year after the elections the politicians haven't been able to create a federal government.

Eyesight

As previously quoted, Belgium is one of the countries that declared a state of emergency. Giving power of attorney to a minority of politicians. This gives them a certain right to rule, but also a big responsibility to lead.

Foresight

Power of attorney should be retracted as soon as possible, as this is a violation of the concept of democracy. What will happen after this is a big question mark. Will we relapse into habit, back to the ongoing dispute of a federal government? Or will politicians make a decision with an acceptable and achievable government plan for the upcoming legislature?

Is COVID-19 a black swan?

In **economic science**, a **black swan** means an unexpected event that no one sees coming, nor can predict. It damages every existing economic model/system and is detrimental to prosperity. In current economics science, the early detection of black swans is seen as a means of risk management. Trying to manage a black swan and calculate the risks is a **paradox** (Gunnink, 2011).

Opinions about the outbreak of COVID-19 being a black swan are **divided**. Some say that the outbreak of the virus can be seen as a black swan, it disrupts the whole existing economic model/system and changes the way we have to live. While others state that the risks of COVID-19 can be calculated and are in essence not a black swan. As stated before, a calculation of the risks and effects of a black swan is a paradox (Ambrosini, Mazzoleni, Turchetti, 2020).

The outbreak of COVID-19 has had an enormous impact on our society. Not only **economical** but also in the **social** aspect. The **behavior and lifestyles** of people have changed all over the world due to the lockdown and other measures. Throughout the years, many governments all over the world have been reducing the amount of money they put into healthcare. They mainly see it as a cost, while it has to be seen as an investment rather than a cost (Ambrosini et al., 2020). Because of the unpreparedness of the governments and the healthcare, the outbreak has made a huge change in this. Many tools and people are now needed to battle against COVID-19. Funds are being raised and transferred into healthcare. While the fight against COVID-19 is still raging, it will be difficult to see the aftermath. It is the moment we can look at the aftermath, that we can decide if this is actually a black swan and that the whole normal standard of our society has been turned upside down (Ambrosini et al., 2020).

Another opinion on the outbreak of COVID-19 being a black swan is negative. This source claims that COVID-19 is not a black swan but a **technicolor** one, it involves multiple aspects of society. Pandemics are hardly unforeseeable and unimaginable and some pandemics have had a greater impact on the demographic aspect of society. COVID-19 might not be seen as a true black swan, the way it is seen as a technicolor one makes a lot of sense. Now more than ever our lives are intertwined, locally and globally through the internet and other means. The outbreak has had a huge impact on every aspect of life and that is clearly seen in our way of living now. Once urban cities where millions of people passed by each other on the sidewalk have virtually turned into ghost towns. Industries that depended on the day by day delivery of goods have shut down, again showing the dependency on other businesses. The outbreak has as stated before not only impacted one aspect, but many, showing that the feathers of this swan have multiple colors (Chambers, 2020).

Futures thinking

What is futures thinking?

After World War II, the future became a more explicit and spoken dimension. Mainly in the social sciences. These **social sciences** gained a whole new package of work and tasks that they had to fulfill. To support the new **welfare state** that was raised after the Second World War, the social scientists didn't have an easy task. In order to support the welfare state the social scientists became pressured by society. They had to work on solving problems the welfare state was facing. The way things were evolving from a past before the welfare state where the government was shortsighted, into a more future sighted state is a great change (Van Steenbergen, 1973). This kind of structure is called a kind of sociological Keynesianism. **Keynesianism** is actually an economic theory but in this case it was used for a more sociological oriented sciences. Keynesianism is future oriented, not short sighted. The future of the economy is influenced by a lot of factors and some factors behave irrational. The government also has to take part in trying to foresee the evolutions of the market and take measures at the right time (Coddington, 1976).

The engineers of the welfare state had a need for a future oriented applied social sciences. From a more self-oriented society, we made the switch to a central body. Our society became more and more dependent on scientific innovations, inventions, planning and making a prognosis (Van Steenbergen, 1973).

Futures thinking is of course as it clearly says, thinking about the future. But it's more than just thinking about it. Futures thinking is the process of **mapping** the current and past **trends**. There are many methods possible to try and map trends. When we have mapped the trends we see there are different kinds of trends, they have another kind of curve throughout the years. Curves that go up diagonally, down diagonally, an U-curve or a J-curve. Physical phenomena like: rising carbon emissions, water usage and energy consumption are examples of a J-curve. They rose quickly and will continue to rise. But we know that they can't keep on rising. Different factors will influence the curve and make it go down. They have to become S-shaped as fast as possible or they might crash (Mulgan, 2019).

But there are also other kinds of J-curves. Technology is a new J-curve. It quickly rose in the past decade and will continue to do so. When we look at trends and proper future products that might be made or are on their way in development, we can assume that technology will become better in the future (Mulgan, 2019).

But one must always remember that futures thinking, making future predictions and guesses are not the hard truth. Futures thinking is greatly influenced by public visibility. The more it is seen by the public and interpreted by it, the more it could be a wrong prediction. Holding on to a single dominant explanation for change can limit you. Serious analysis is necessary and requires a lot of humility. The more arrogant a futurist becomes, the more mistakes they can make if they assume they're always right (Mulgan, 2019).

What different ways is this practiced?

The economic world already has fleshed out a few methods of looking at the future and predicting certain possibilities. These **strategic analysis** use either current trends to make guesses about future scenarios or they use more complex relationships between different **macroeconomic factors** to identify and develop useful strategies to improve growth. In theory these tools could also be used on a broader spectrum to sketch possible futures. Different variables could be applied to uncertainties and within these systems formed into educated guesses about what the future might hold.

Scenario analysis

Scenario analysis is a process used to analyze the future. It is based on the principle that it's impossible to show an exact picture of the future. Instead it tries to present **several** different **possibilities** for future developments. These scenarios are usually based on a single uncertainty and enriched by related events and circumstances. This type of thinking is mostly used in strategic market analysis. It is of course possible to come up with a wide array of scenarios, but the optimal number seems to be three, each having a mix of optimistic and pessimistic developments. In the business world the next step after identifying possible scenarios is developing strategies to deploy if said scenario plays out. After that the likelihood of each forecast is estimated with a deeper understanding of underlying causal factors. The final step of such an analysis is a regret assessment. In such an assessment one compares the expected outcomes of each strategy if the wrong scenario happens. After this step one can potentially quantify the expected value of each strategy and see what actions would be most beneficial to take (Aaker, 2001, pp.108-109).

Another way of identifying scenarios is by extrapolating current **trends**. This method has been used a lot in the past to create compelling science-fiction scenarios. Looking how people interact with technologies right now can give ideas for future prototypes and can give an idea of how certain technologies might evolve in terms of shape and use cases (Auger, 2010).

Another way of dividing the different scenarios is by layering the scenarios and their respective variables over two different axes. The **four quadrants** made by these axes can each represent a different scenario. An example of this can be found in the research of physical-spatial future developments in Ghent made by Thomas Block, Jo Van Assche and Erik Paredis in 2016. They put variables such as socioeconomic status and 'city-mentality' against each other on the 2 axes and derived 4 possible scenarios from it. These possibilities were then used in a panel to discuss the plausibility of each (Block, Paredis & Van Assche, 2016).

Canvas

The Business Model Canvas is a **template** used to develop new or document existing business models. The chart consists of nine elements and helps to make sense of ''doing business'', (Keane, Cormican, & Sheahan, 2018). It is a cognitive tool that can help visualize the relationship between the nine different elements (Customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partners, and cost structure) and shows the logic behind how a business strives to make money (Osterwalder, Pigneur, Oliveira, & Ferreira, 2011). Although this tool is tailored for

entrepreneurship it can easily be used to **brainstorm** about possible futures by visualizing the relationship between nine different macroeconomic factors.

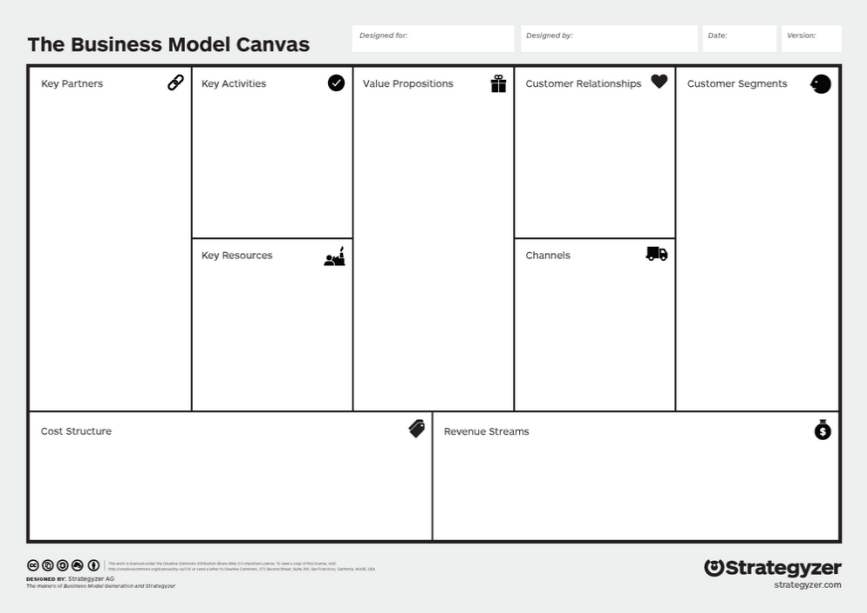


Fig.1. Business model canvas, Strategyzer AG. (n.d.)

Horizon scanning

Horizon scanning is a sort of integrated foresight process, used by UK policymakers to get ready for changes. It is used systemically to allow tracking of links between emerging issues and ongoing trends. This is a powerful tool that can be used for **planning** and **decision making** on the cusp of change. This integrated foresight consists of five key activities:

Key activity	*Identify and monitor change*	*Assess and critique impacts*	*Imagine alternative outcomes*	*Envision preferred futures*	*Plan and implement change*
description	Identify patterns of change: trends in chosen variables , cycles, issues	Research primary, secondary, tertiary impacts	Identify, analyse, and build alternative images of scenarios	Identify and articulate images of preferred futures	Identify stakeholders and resources. Design strategies; create change
Examples of methods	Data collection/mining, surveys, focus groups, cohort analysis…	Causal analysis, focus groups, futures wheels, systems models…	Content analysis, econometric models, system dynamic models, matrix,…	Future search, workshop, community visioning, learning organisation,…	Backcasting, SWOT, Strategic choice, PERT and GANTT charting.

(Schultz, 2006)

This methodology has been used by UK **lawmakers** in the past, but there are cultural contradictions between scanning and evidence based policy-making. In our culture we live by science and fact. We see good research data usually as credible, well documented, authoritative, statistically significant, coherent, theoretically grounded, and monodisciplinary. 'Hits' from scanning will usually be on the opposite end of the spectrum within these criteria. Emerging issues that seem a bit unusual will lack apparent credibility. Because they are emerging issues or trends, there will be little to no documentation. Because the number of cases is still small they will be statistically insignificant, and so on… We can conclude that scanning is a useful tool as it helps identify emerging opportunities for a forward-looking policy, as well as find possible security risks and vulnerabilities. These scanning results, however, are hard to submit in an evidence-based environment because of the reasons stated above. With clearly thought out strategies, scan sources, and data, however, the usefulness and acceptance of this foresight can be increased (Schultz, 2006).

Delphi

The Delphi method is a **framework** used to make **forecasts** about the future through consensus. Several rounds of questionnaires are sent to experts and after each round the results are shared anonymously. For the next round experts are allowed to change their answers. Pros of this method are that it aggregates expert opinions on certain topics and the anonymity of the individual panelists allows them to speak freely. Cons are that it doesn't provide the same level of interactions as a live discussion would, Delphi having slower response times, making the formation of ideas less dynamic (Okoli, & Pawlowski, 2004).

Insights gained after qualitative research:

TAIDA method

After our qualitative research where we had a really good interview with Martine Delannoy, we came to a further insight in a method to facilitate future thinking. The TAIDA method: Tracking, Analysing, Imaging, Deciding, and Acting (Delannoy, 2020). The TAIDA method is a method that has been carried out in hundreds of projects throughout the past decade. In most cases they were part of a project with an expert character. But the method has also been used in a more **interactive** process during workshops (Bandhold, Lindgren, 2003).

The first step of the TAIDA method is **Tracking**. In this step we have to trace changes and describe them in the best way possible. Changes in the surroundings and other aspects of life might have a significant impact on the original question (Bandhold, Lindgren, 2003).

The second step of the method is **Analysing**. We have to analyse the changes that are happening in the world and we have to generate different scenarios our future could go to (Bandhold, Lindgren, 2003).

The third step is **Imaging**. When we have gathered enough insights in plausible futures, we proceed to create a vision in our minds or on paper. We visualize the future and try to work with it (Bandhold, Lindgren, 2003).

The fourth step of the method is **Deciding**. When we arrive at this part of the process, we identify the areas we can develop on. We set up a strategy in order to meet the possible threats of the future and this strategy will help us achieve our visions and goals (Bandhold, Lindgren, 2003).

The last step of the TAIDA method is **Acting**. If we only keep our method to planning we will most likely never see a result, only a theoretical framework. In this phase of the process it's necessary to take action in order to achieve goals or visions and to get rid of the threats. It's important to follow up your actions and judge them (Bandhold, Lindgren, 2003).

Scenario planning is a method of looking into the future, but it's rather **short-sighted**. Scenario planning is only viable for five to fifteen years. It's important to analyze it yourself and be realistic in your approach. It's plausible to take two uncertainties and place them on axes in order to form four quadrants and create multiple scenarios (Bijlage 7).

Although TAIDA is a great method to do scenario planning, we can't say it's the best way to look into the most further future. One of such methods is **backcasting**. Backcasting looks beyond the fifteen years that scenario planning does. Backcasting is more science fiction thinking and wishful thinking, but also taking into account the current trends and the way society is evolving (Bijlage 7).

The futures triangle by Sohail Inayatullah

Sohail Inayatullah is an Australian futurology researcher. He is well-known for his introduction and pioneering of 'the futures technique of causal layered analysis (CLA)'. Which is a technique where strategic planning is used in combination with **futurology**. This specific technique is used to shape the future more effectively. It works by identifying the many different levels in an attempt to make synchronized changes, in this way we can create a coherent new future (Inayatullah, 2014).

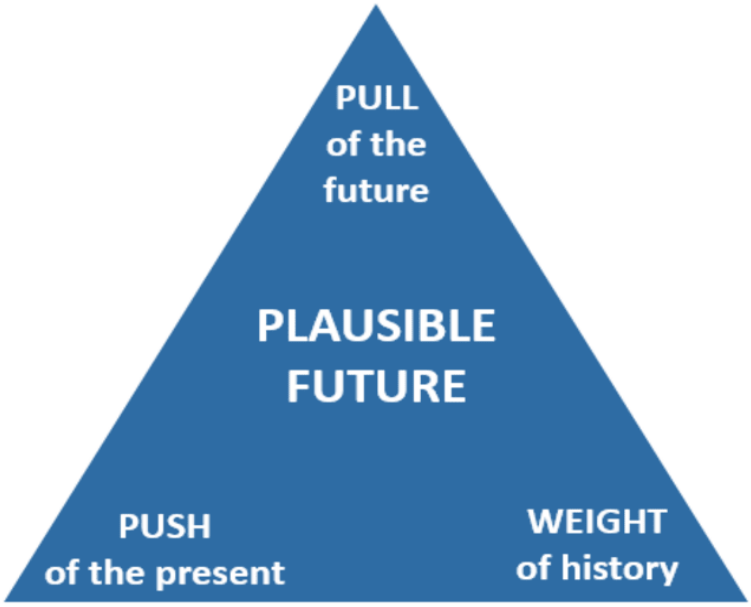
He divides CLA into four levels:

1. The **litany** includes the quantitative trends. Most of the time they are used for political purposes as they are exaggerated. A possible result of litany is helplessness, feeling of apathy or projected action.
2. **Social causes** which include different factors like cultural, political, economic and historical.
3. **Structure and discourse** legitimize and support the structure.
4. The last one is **metaphor** and **myth** or the unconscious emotive dimensions of the issue.

Sohail also created the **futures triangle.** It helps explore the space of possible futures. In other words it is a foresight method used to identify possible futures.

The idea behind this particular triangle is that the three sides are dimensions that shape possible futures. The pull of the future, the push of the present and the weight of history. The possible future is made between the tension and interaction of these three forces (Riedy, 2012).

The **pushes of the present** are changing the future as quantitative drivers and trends.



The **pulls of the future** consist of five different pulls.

The Evolution and progress as humankind is the center of the world, as more technology, and a belief in rationality are available.

The second one is collapse. A belief that humankind has reached his limits and has overshot them. Examples are world inequity, fundamentalism, tribalism, nuclear holocaust, climate disasters all point to a worsening of the future.

The third one is Gaia. Sohail says: “the world is a garden, cultures are its flowers, we need social technologies to repair the damage we have caused to ourselves, to nature and to others, becoming more and more inclusive is what is important. Partnership between women and men, humans and nature and humans and technology is needed. This is challenging the very notion of ‘‘man””.

The fourth one is Globalism. The need to focus on ways to come closer as economies and also as cultures. The borders need to break down and the technology and free flow of capital can bring riches to all of humankind.

The last one is back to the future. Sohail says “we are past our prime; we need to return to simpler times, when hierarchy was clearer, when technology was less disruptive, when the Empire was clear. Change is too overwhelming; we have lost our way, and must return.”

The last and third part of the futures triangle are the **weight of history**. These represent the barriers to the change the humankind wants and wishes to see. There are different weights to every idea.

“Those who imagine a globalized world are weighed down by nationalists and the brutal fact that while capital may be freer, labor is still tied to place. The Gaian image is weighed down by the dominance of hierarchy – male, empire or expertise. ‘‘The boss is always right,’’ is the guiding myth.”

While analyzing the interaction of these three forces in the futures triangle and working together. It helps us develop a plausible future. (Inayatullah, 2008)

To be able to identify possible futures, questions like these can help explore these possible futures.

Weight of history:

- What could hold us back?
- Which barriers are necessary to change?
- What deep structures are resisting the change?

Push of the present:

- Which trends push the people towards specific futures?
- What quantitative trends and drivers are or may be changing the future?

Pull of the future:

- What is going to pull us towards a specific future?
- What is a compelling image of the future?
- Which images in the future are competing?

This tool is simple, yet useful in a group to get into the futures mindset. It can be used anywhere with minimal resources and opens the discussion about possible futures.

Education

What is the current curriculum for secondary education in Belgium?

Before we can explore how we can possibly integrate futures thinking into the educational system, we need to know what children are currently taught in school. We've decided to only look at the ordinary education and not special needs education because we would need to develop a different version of the product to cope to their needs.

The government has set certain **goals** the need to be achieved within the educational system in Belgium. They've set minimum goals, development goals and end terms that need to be reached at a certain stage in a student's education.

The minimum goals are the very basic knowledge, insight, skills and attitudes students need to be taught. These will differ based on what grade you're in and the educational form you're following (ASO, TSO, BSO, KSO).

Schools then are free to decide what else they want to offer in their courses on top of these minimum goals. They're also free to decide how they want to do this.

Then we also have the **end terms**. These are end goals that need to be reached by each student. These consist of broad skills that are essential to function in society. By the end of the first grade each student must have basic literacy. This isn't linked to a certain educational form or course. Each student must possess this skill when they finish the first grade. Basic literacy consists of: Dutch (in Flanders), math, digital literacy and financial literacy. Schools also need to teach a certain attitude to their students. Students also need to be taught a certain attitude at school. These end terms can be found In the curriculum of each school. (Onderwijs.Vlaanderen, n.d.)

So let's take a look at the end terms set for **each grade**. The first grade consists of the first and second year of secondary education. The second grade is the third and fourth year and lastly the third grade is the fifth and sixth year. In the educational form 'BSO' students follow a seventh year. This seventh year is not included in the end terms.

We will be talking about the general end terms that are not specified to a certain course.

Grade	End terms
First grade	• Students work orderly • Students are aware the knowledge and skills can be obtained via different learning strategies. • Students can memories theory via different tools • Students can orientate themselves in information sources via titles, subtitles, images and highlighting. • Students can adequately use a table of contents and register. • Students can adequately consult a documentation center, a library and multimedia.

	• When studying new content students consult their previous coursebooks, notes, exercises etc.
	• When studying new content, students …
	  • Form questions about the content and answer there.
	  • Highlight important parts of a text.
	  • Complete a schedule
	  • Make connections between different elements of the content.
	• Students can understand information by analyzing the meaning of words, sentences and context.
	• When solving a problem students can …
	  • Formulate the problem.
	  • Construct a way to solve the problem (with the necessary guidance).
	  • Put this solution to the test.
	• Make a selection of the material they need and plan their working time.
	• Students can work with an answer sheet and correction key.
	• Students can compare their way of working to that of other students and can learn from their mistakes.
	• Students have insight on the general structure of secondary education in Belgium.
	• Students can explore different study fields and jobs.
	• Students can estimate their own interest and abilities in the interest of picking the right study field for them.
	• Students explore different strategies for picking a field of study going into the second grade.
	
	(OnderwijsVlaanderen, n.d.)

Second grade	• Students work systematically. • Students reflect on their own learning views, motives and strategies. • Students can critically choose between different sources of information with their goal in mind. • Students can practice and recite content. • Students can critically analyze and summarize content. • Students recognize different strategies to solving a problem and can evaluate these. • Students can make a realistic short term work schedule. • Students can judge their own learning process and adjust accordingly. • Students can learn from their own or others learning experiences. • Students are aware of the different reasons you can succeed or fail at something. • Students understand that their own interests and values have an influence on their learning process. • Students have insight on their future job our education options. • Student can estimate each job or education option for the future and keep their own interests in mind when doing this. • Students understand the consequences of choosing for a certain job or education. (OnderwijsVlaanderen, n.d.)

Third grade	• Students work systematic. • Students choose their study strategies based on the goals they want to reach. • Students can critically choose between different information sources and channels with their goals in mind. • Students can apply their knowledge in different situations. • Students can summarize information. • Based on hypotheses and expectations students can pick and use the best solution method. • Students can evaluate the method and solutions and find an alternative when necessary. • Students can make a realistic long term work schedule. • Students can guide and evaluate their learning process and adjust when necessary. • Students can give and receive feedback. • Students can estimate their own influence in failing or succeeding. • Students recognize the influence of their own interests and values on their motivation. • Students gain useful insight in future education or job options and have insight on what services can assist in jobhunting or picking the right education. • Students can estimate each job or education option and keep their own interests and abilities in mind. • Students can reflect on their own job or education decisions. (OnderwijsVlaanderen, n.d.)

How is futures thinking present in this current curriculum?

Previously we went over the different end terms for each grade. These are general end terms that are not specific to a certain subject.

Futures thinking is not explicitly mentioned in these general end terms.

When looking at the kind of literacy schools want to teach, they mainly focus on Dutch (in Flanders), math, digital literacy and financial **literacy**.

They do expect students to think about their future education or what job they would like to practice but we wouldn't particularly call this 'futures thinking'.

We decided to take a deeper look at the end terms per course.

In 2019 a few **new end terms** were introduced. We will be including these in the research. The introduction of new end terms doesn't mean that the previous end terms were thrown away. Some of these will be filtered out over time but currently they are still present. They are also introducing these new end terms year by year, starting in the first year before moving on to the second, third etc.

First grade

When looking at the end term for the **history** course they put their focus on the past and present. Student are taught to practice cause-effect thinking and see how the past influences today's society. This is great but why not take it a step further and look at how the past and present will shape the future. There is currently no mention of the future within the history end terms.

This could change with the newly introduced end terms. These state that students need to understand the correlation between the past, present and future. However when you read further into this end term there is no further mention about the future.

Within the '**Technic'** course the teach students to look at how adjusting technology could lead to innovation or new inventions. Unfortunately this is the only small mention about the future. The main focus is still on current technologies.

We were surprised to see the climate mentioned a lot within the '**geography'** course end terms. But again they focus on how the climate is currently influencing weather, plant growth, animals etc. Students also learn about how our current behavior is influencing the climate (traffic, agriculture, …).

There is no mention about how climate change could influence our future.

The **ICT course** focuses on making students digital literate. Unfortunately students only learn how to work with current technologies. The future of technology is not mentioned here. Within the 2019 end terms the focus on digital literacy grows even more. Not only do students know how to work with technology but they also learn about the effects on society. Digital etiquette and computational thinking is also mentioned. The focus stays on current technology.

Within the new end terms, introduced in 2019, there is a bigger focus on **sustainability**. They teach students to make sustainable choices and keep in mind the short term and long term effects of their choices. Future thinking could certainly have a place here but is not explicitly mentioned (Onderwijs Vlaanderen, n.d.).

Second grade

In the second grade the effects of climate change for the future is briefly mentioned in the end terms of geography. Depending on how schools interpret this, future thinking could be present within this end term. Within the history course the focus hasn't changed. Hindsight and eyesight is present but there is no attention being put on the **foresight**. Geography is still focused on current events regarding demographic trends, the climate etc. New end terms for the second grade will be introduced in september 2021 (Onderwijs Vlaanderen, n.d.).

Third grade

Within the third grade the end terms become **more specific**. There is also a big variety between courses for each educational form. We took the end terms for each course in ASO, BSO, TSO and KSO under the

loop. Digital literacy is very much present here. They also focus more on teaching students certain attitudes and values, especially within the BSO educational form because these student will go into the work field when they graduate. Unfortunately futures thinking was nowhere to be found within these end terms. New end terms for the third grade will be introduced in September 2023 (Onderwijs Vlaanderen, n.d.).

In conclusion

Futures thinking and futures literacy are not present in the current secondary education curriculum. Courses focus on current themes, technology, trends and science. Courses like **geography** and **history** could definitely benefit from including futures thinking. They already reflect on how the past is influencing the present but have not made the bridge to the future yet. Within the new end terms for the first grade the future is briefly mentioned within the end terms for history. This is a small step in the right direction.

What technologies are currently present in education?

Education has changed a lot over the years. From being something for the rich to being obliged for every child and teenager. Different **technologies** have been invented since. In the twentieth century, the past, these technologies made education work.

- Fountain pens or in other words a dip pens. Filling the reservoir manually with ink.
- Pencils.
- Markers.
- Chalk boards and erasers.
- 3-ring binders.
- Folders.
- Ditto machines also referred as spirit duplicators. Mainly used in schools, churches and other small organizations because of the amount of copies anyone could make for a low cost and low quality of copies.
- Filmstrip machines, a form of still image media mostly for instructional use.
- Physical filing cabinets.
- Overhead projectors with transparent slides. Under a light source, a page-sized sheet made of transparent plastic film placed on a glass surface is used to project.
- Early computers, using floppy disks.

The first small computer labs were a steep climb forward to the technology we use today. It has played an increasingly big role in our day-to day education. Two main needs are the use of technology to help improve the learning experience for students and getting those students to prepare and use the technology to better navigate the world.

In the current times these technologies are available in some schools:

- Modern computers
- Electronic files and storage
- Computer networks
- Mobile devices
- Tablets
- Smart boards
- Teleconferencing, as the COVID-19 virus has limited the ability to teach in a face-to-face environment. Teleconferencing has become quite popular. Teachers use Zoom, Microsoft Teams, Google meet as a form of teleconferencing.

All of these are the latest **'new' technologies**.

E-mail has a big role in the communication between students, teachers, and parents. The **internet** also has a major role in the daily tasks of a student, as before the internet, everything had to be learned and researched from libraries.

We can't know what **technologies** the future will give us, particularly in education. It will surely change the learning experience of the future students. Right now the Smart boards, the Cloud, etc. are already very advanced. To predict how the technologies will advance even more is very difficult.

Information integration is something we might see in the future. Information integration is merging information from heterogeneous sources with different conceptual, contextual and typographic representations. It is used in data mining and data consolidation from unstructured or semi-structured sources. The access and better collection of important information could help to customize the future education experience. A new variety of high-quality mediums, with interactive mediums, could magnify the understanding of new concepts with students. It may be that in the next twenty-five to fifty years, the classroom will change in big ways. Comparable to the differences in classrooms in the present time and in the twentieth century (CXTEC, n.d.). Some **new trends** have been coming to the education system. As written before, custom learning experiences will be available because of **modern technology**. The initiation of custom teaching, learning methodologies, and present day experience will be obtainable in the educational infrastructure with modern gadgets and interfaces. One-size-fits-all will no longer exist. The new way of need-based learning will take its place. As well as Cloud computing, unlocked a door to high tech education. Information that is available anywhere and anytime stored in remote cloud servers makes it possible to access educational materials from any device in any place and at any time. Cloud-based education apps solve the problem of storing data.

Another popular part of a majority of devices is the **speech-to-text** option. It is coming with virtual assistant apps and features, e.g. Apple's Siri. Smart devices like these respond using voice commands, it becomes easier for learning. It makes note taking and writing more comfortable and fast-paced.

Virtual and **augmented** learning experiences have been slowly introduced into the education system, as a big boost in online education. It makes it possible to actually get an immersive learning experience without needing to move the body too much. Medical students are able to learn critical surgical operations through this immersive experience. Using VR headgear and 3D space videos.

Prototyping or **3D printing** allows the student to have a more tangible and physical learning experience. It can give shape to the student's imagination, to unleash creative ideas and hands-on experiences.

Data has become something huge on every online platform, even in the educational system. The increasing pace of tech adoption increased the learning data available. Driven decisions and decision-making procedures are becoming easier. The huge volume of education information and data are increasingly important to assess and evaluate the student's engagement, traction, and learning output.

In the coming future, **learning analytics** will warn teachers about certain issues, warn students about some of their deadlines and their progression, etc. It will give a view of the way education is remitted by teachers and experienced by the learners of this system. These analytics will boost the learner's engagement in the education. In other words, technology has an impact a big impact on today's youth. And in the future the traditional approach in education will change and a new enhanced way of interacting during the learning process (Jobanputra, 2018).

What are 21th century skills?

The world has been changing since the digital revolution. With the rapid change and the transformation that took place and is still taking place, geographical boundaries have been diminished and are still fading away. Due to the borders fading away, a **global competitive environment** has been formed. With the spread of technologies where we can easily find information that in the past had to be taught, the use of memorizing information through school has greatly diminished. It was the new skills to cope with the **new technologies** that became much more important. Society changed from a knowledge based to a skill based society. It became much more important to have know-how instead of a having raw knowledge (Cevik & Senturk, 2019). The spread of information also comes with negative news, all information that is being spread needs to be studied and thought about. It's important to find the truth in all the information. This is where the 21st century skills come into play. 21st century skills range from learning and renewal skills, critical thinking and problem solving skills, communication and collaboration skills, media and technology literacy skills and many more (Cevik & Senturk, 2019). 21st century skills are always categorized into **three categories**. Depending on which organization they might have another name for their categorization. The Partnership for 21st century skills classifies 21st century skills as: learning and innovation skills, information, media and technology skills, and, life and career skills. The American National Research Council categorizes the 21st century skills as: cognitive skills, interpersonal skills, and, intrapersonal skills. There are more categorizations by other organizations or institutions. We can clearly see that there is no certain common ground on the categorization of 21st century skills. But they all clearly lead to the fact that 21st century skills lead to a digital literacy with a new perspective in the light of recent historical events, globalization and digital era, creative thinking, effective communication and high productivity (Cevik & Senturk, 2019).

What is futures literacy?

According to UNESCO futures literacy is a **competence**, a **skill**, that allows people to understand the role of the future in our behavior. Future is about the **unknown**, it does not yet exist, causing us to live in uncertainty. But it can be imagined. Humans are capable of imagining the future with different outcomes or nuances. Someone can become more futures literate by substantiating their predictions. But it remains a prediction as it is not possible to foretell the future. We already take the future in account when we make decisions, some conscious other unaware like an instinct. The future we envision generates meaning (hope and fear), it gives our lives sense. Our expectations and disappointments are driven by it. But so is the willingness to invest in change.

Therefore **anticipation** is a powerful source, shaping our daily decisions and furthermore our ideologies. However we don't tend to stop and think about how or why we use the future. Being futures literate enables to appreciate the world more fully. A way to enhance this skill is through Futures Literacy Labs. These workshops learn by **action-research**, through **self-understanding** the participants are able to reframe or rethink the assumptions they utilize for future thinking (Hanzehogeschool, 2020).

Uncertainty (added after research)

When speaking with experts during our research we came to the conclusion that people always face uncertainty. This is because the future is per definition uncertain. No one knows what the future will hold for us. When we conducted our research with our target group (young adults between 14 and 18) many of them confessed that they often feel uncertain when thinking of the future. This triggered us to find an answer to the following question:

What makes uncertainty so difficult?

First we need to define **what we mean by uncertainty**. An important part of uncertainty is the unknown. People don't know what to expect, the inability to predict what will happen. This can be on a smaller scale, such as driving to an address you've never been too. But the unknown could also be on a larger scale, such as not knowing what the future will hold for you. This unknown creates a feeling of insecurity (Corporate Finance Institute, 2020).

Feeling uncertain is also a very personal thing. Each individual will cope differently with this emotion. Some people like to live life day by day. Others love to plan out every move of their life. What's uncertain to one person might not be to someone else. Uncertainty also covers a large scope. You can experience financial uncertainty, psychological uncertainty and many others (Cambridge Dictionary, 2020). To understand the present it is important to take a look at the past.

Has uncertainty always been a part of life or is this a more recent phenomena?

Multiple sources state that there has always been uncertainty. Challenges we are facing today don't make the future more uncertain than it has always been. People are now just faced with their uncertainty a lot more. Times of crisis, such as the current COVID-19 crisis, force you to reflect on life. You question what's really important and second guess your view on the future. This might make it seem like the times now are more uncertain but you've just become more aware of it (Ritholtz, 2020).

"Uncertainty is the only certainty there is,
and knowing how to live with insecurity is the only security."
- John Allen Paulos

The psychological aspect of uncertainty

Now that we know the meaning and history of uncertainty, let's take a look at **the psychological aspect.** The unknown has always been a **fundamental fear** throughout the history of mankind. This can be explained from an evolutionary view. Humans in the prehistoric age were able to survive thanks to planning. They had to predict possible danger and anticipate this threat. Planning and having a certain predictability gave us a feeling of safety.

Today we still experience **negative feelings** when we undergo high levels of uncertainty. This is also because we are so used to the answers just being one click away. In today's age we have many resources available to us. This creates a false sense of control of our situation (Stieg, 2020).

However, uncertainty does not always have to be something negative. Some people associate **positive** feelings with uncertainty. They even seek it by gambling or reading mystery novels. Uncertainty is what makes these activities fun. Uncertainty can also make emotions feel more intense or even the opposite, it can dampen your emotions. This can be with both negative as positive feelings. Research also showed that humans often primarily think about possible negative outcomes. This leads to more negative feelings towards uncertainty.

How someone experiences uncertainty is also very **personal**. Many factors have an influence here. Context, individual experiences, uncertainty tolerance and someone's emotion regulation all play a big role here (Anderson, Carleton, Diefenback, Han Paul, 2019).

What makes thinking about the future so difficult?

What makes thinking about the future so difficult? How come we are facing a hard time when we try to look at the future? The difficulty of futures thinking lies partly in the fact that the present is certain but the future is a territory that is filled with uncertainties. Humans **crave certainty**, the same impulses that caused our ancestors to stress about food is seen in today's businesses. Our sense of certainty is being threatened by the uncertainty we feel. It has even been proved that we can feel an actual registration of pain in the brain when feeling this uncertainty (Weller, 2019).

Many have thought why it is hard to come up with new things, or why they never see the new mainstream concepts. It is because our habits and believes are mostly fixed. Changing them is a hard task for ourselves. This concept is called the **cognitive bias** by psychologists. Over the millennia of evolution we have developed a lazy way of thinking that hinders our innovational thinking (Nilehq, 2018).

Our strategy for fighting these problems for a good way of futures thinking is introducing foresight as a practical application. While some may say this is a new concept, facts prove otherwise. In the past we've had a long history of **devising plans**, although mostly war-related, to develop strategies in order to influence our future. These kinds of strategies are in essence a short-term solution that has been inspired by futures thinking. For the majority of the population this short-term thinking is as far as our mind would allow us to reach (Nilehq, 2018).

In order to make futures thinking more available for the majority of the population, we have to focus on more exercises to perform futures thinking. The short-term thinking is outdated and needs to be gathered in one concept together with mid- and long-term thinking: futures thinking. To incorporate more exercises into the population, a focus can be laid on the developing members of our society. Facilitating these exercises to students that are becoming the new working generation of the future is the first step in the process.

Why is it important to practice future thinking?

In the educational system

With our tool we choose young adults, between 14 and 18 years old. This is because young adults are the people that will lead and carry our county when they grow up. They are the future. It's important to be **resilient** and have a **dynamical** mindset. These are the two must have skills of this century. We believe that futures thinking is a skill that everyone should possess. This will come in handy in their personal and professional life. The educational system is the perfect place to teach this important life skill and make pupils ready for the future.

On a professional level

The world is evolving very fast on many levels (economical, socially, technologically …). In the past a **business plan** would last you a couple of years. You did not need to revise these. Now you have to reevaluate business plans quicker and anticipate on the future. We need to be ready for the rapid changing society.

As a company it's important to anticipate on the future. This has many functions. It will help create a sustainable business plan that will last. It will keep your company relevant for years because you change as society changes.

It will also help you prepare for certain events. This to protect your company against **possible threats** (f.e. bankruptcy). When practicing futures thinking you can analyze possible scenarios and prepare for them. You can set up certain plans of action for these possible scenarios. This will make you more resilient as a company.

This can be applied on **multiple sectors**. It's important for the health care sector, social care sector, retail sector, food sector and many other sectors. Everyone can benefit from futures thinking!

For politicians/ the government

The current **COVID-19 crisis** is the biggest proof of how important it is to practice futures thinking. Although the government is doing their best, it has not been easy. Some decisions that are being made are difficult to understand. They also have had to revise some of the measures they put in place because of how society reacted to them. Some errors were made, some of these could have been prevented.

Some experts (virologists) have come forward and said that this pandemic could have been predicted. It's unfortunate that the government did not act on this. A lot of chaos and possible fast rise in contaminations could have been prevented had they already worked out a possible **plan of action** in case of a pandemic.

That's not to say that the government did not try their best. It's very hard to act quick in situations like this, although it's very necessary here. Usually it takes months or years of preparation to put new laws or regulations into place. It's very normal that errors will occur if you did not have the time to anticipate on the future.

Research

Qualitative research

In order to get to know more about a subject it is necessary to **research** it. Through **qualitative** and **quantitative** methods we study a subject in two different ways. In this section we will mostly focus on qualitative research.

The difference in qualitative and quantitative research lies in the **method** and the **methodology** and also what they want to achieve with the research (Camara, Drummond, Jackson, 2007). Qualitative research is primarily aimed at the understanding of a human beings' experience on a subject. Their experience is vocalized through this research and it is more subjective than a quantitative research that mostly focuses on numbers and data (Camara et al., p.2, 2020).

Goal

Our goal with the **qualitative** research is to gain further **insights** on our subjects. Future thinking, future literacy, the current curriculum and COVID-19 are all subjects we have already seen but don't have the real expertise about as real experts. In order to grant us more insights, we have contacted multiple people that we consider to be experts in future thinking from Belgium and other countries to acquire their insights and beliefs. Luckily for us, we have been positively received by these experts and have had a lot of responses.

With the results of the **qualitative** research, we will further research the new insights that have been given to us by the experts. The methods they tell us, shall be researched and tested to form a well thought out product. The information of the experts shall mostly be used and will not be forgotten about or put away in a dark closet.

Research method

To research the experiences and insights of these future expert thinkers, we have decided to develop an **interview scheme** and interview our experts. This interview scheme consists of an introduction where we shortly speak about the formalities that should be known before the interview starts. In the mid-section we have our questions in which we try to delve into the different subjects that have been stated before. At the end we have a small acknowledgment and a statement that we will keep the respondent up to date with our thesis and the summary of the interview.

After we have done the interview, we make a **summary**. In contrast to the normal way of working - typing out the interview word-by-word - we have been granted permission to formulate a quality summary of

the interview. This summary is then sent to the expert we have interviewed and is returned with feedback and corrections.

Below we have made a short **overview** of the experts that we interviewed.

Name	**Job**
Maya Van Leemput (BE)	Senior Researcher Erasmus University College Brussel
Sven Mastbooms (BE)	Trusted advisor
Martine Delannoy (BE)	Foresight officer
Loes Damhof (NL)	Docent Hanze University College Groningen, Chairholder Unesco
Mark Schipper (NL)	Owner Freshmark, Docent University College Tilburg
Stefaan Vandist (BE)	Independent freelancer
Stijn Janssen (BE)	Coördinator AUHL (Associatie Universiteit Hogescholen Limburg)
Leah Zaidi (CA)	Futurist

Summary interviews

Curricula

Stijn has not followed any class or education about future thinking. In function of his job he regularly occupies himself with this concept. He believes that future thinking should be something everyone has to be busy with. Stijn also believes that future thinking is a **21th century skill**. However this is not an easy concept to teach others. Future thinking is not just a parcel of subject matter that can be learned by heart. He emphasizes that future thinking is a skill that can be stimulated through dialog.

Loes has been working on futures literacy for about four and a half years. She was a college **professor** at the time and taught 21st century skills to prepare students for the future. She did this within the programs Multimedia Design and Game Design. Within the curriculum of the 21st century skills she missed a bit of the critical view on the future. At a symposium in the Netherlands, she came into contact with Riel Miller who was a speaker on the concept of futures literacy. From that moment of contact, Loes decided to

explore the concept as well. When she was crowned the winner of the 'teacher of the year' election in 2016, she received a grant of 50,000 euros that she could spend on improvements within education. She used this budget to set up a pilot for futures literacy in HBO. She made sure that it got a place within those 21st century skills, of which it wasn't originally a part. For Loes, learning these 21st century skills is certainly an added value for students. Not to be able to make predictions, but to teach students skills that they will be able to use throughout their entire lives. Education is based entirely on **preparing** young people **for the future**. The young people are trained to work within a certain field of work, with technologies that will be important. They think it is important to think about the now. Loes teaches her students at the college how to apply and facilitate these methods in their own context.

Sven has learned this by reading futuristically oriented books, by his own **curiosity** and often by questioning things. He mentions the latter because he was often the 'rookie' in various sectors, which gave him a fresh perspective on the sectors in which he was active. But he emphasizes that his sickly curiosity was the reason why he learned so much himself. His interest is mainly focused on how it used to work, how it works now, how people think, etc. In summary, his tip is to read a lot, be very curious, follow things up, where does it come from, where does it go, etc. He thinks these skills should be taught much more to young people. The speed of the evolution we go through increases. Everyone should be attentive when making decisions. If we don't do this, we are going in the wrong direction. A well-informed citizen can no longer just let himself or herself be led. But learn more reflexes to deal more easily with these critical thoughts. Also to be prepared for challenges.

Martine studied **long-term thinking** for a long time and used it as an extra perspective for future thinking. By mapping out different perspectives, it became a familiar subject for her over the years. It all started with the subject of participation. Martine indicated that she learned about this subject in the process.

Stefaan explains that he was **never taught** futures thinking to its full extent. He studied **marketing** and during those studies he came into contact with **trendwatching**. After that he delved deeper into the topic and by just practicing it more and more he got the hang of futures thinking methods. He says that futures thinking is not a 21st-century skill because the roots of the American school can be found in military strategy where they did the first scenario planning. Also the European school has been active since the 1950's, focusing more on socio-economic themes. Stefaan does think however, that the open mindedness required to practice good future thinking, can be placed under the 21st-century skills.

Maya started researching futures thinking when she was working on her **master's thesis**. For the subject of the thesis she had to research how content was being shown on television. The programs she chose to research were all programs that talked about the future. This was her first formal endeavor into the field of futures thinking. According to her, 21st-century skills are all required to perform future thinking. To her it is important that teens learn these skills but they cannot be taught. A teacher has to motivate them to cultivate the skills on their own.

Concept 'Futures science'

When you want to apply future thinking, the past always plays a role here. In this way you can look at figures and facts about past and present in order to anticipate the future. That's why Stijn believes that a subject such as time study would certainly offer added value.

According to Mark, **futurology** would be an interesting subject in secondary education, most students already have social studies (feedback to the concept of eyesight) and history (feedback to the concept of hindsight). But there are no lessons about the future yet. It would be interesting to cram the concepts of social studies and history into a subject together with futurology in order to create a dynamic subject. Mathematics or futurology would also be the extension of **history**, on top of that it would promote self-esteem according to Mark. People would also be stimulated by such a subject to look at the world differently. What we see today is that when you graduate 10 to 15 years ago, it is sometimes no longer relevant after a year (out of date). A profession that tests competencies such as agility would be useful.

Loes thinks that a subject such as **time studies** is a good idea, but only if it is accompanied by critical thinking. Just like the future, the past is based on assumptions. The past is written out on the basis of artefacts but is also colonized. Just think of the quote: "History is written by the victor." For her, being critical must be central.

Sven has given us the tip to see history as a constant line that has evolved continuously. To transform a subject like history into a subject like temporal science in which the different connections are looked at and to see where we are now and what is going to happen.

According to Martine, getting education interested in a subject such as time studies is a wonderful idea. There is a great need for this. She advises to offer future thinking in a part of the lessons. In this way you can gradually get the education interested in the whole area. The focus is mainly on primary education when it comes to this subject. Martine is not in favor of replacing the subject of history. She thinks it is difficult to replace a certain subject such as history. She does think it is feasible as an addition. The two subjects complement each other. A course such as **history** can possibly be divided into: insight, hindsight and foresight, thus offering the future.

Stefaan likes the idea of **future sciences** because in the current curriculum we are only taught to look back during history, never forward. Because the period we are in right now is going to be ‘the long difficult’ (a culmination of all types of uncertainties coming at us) it is important to have the mental flexibility and resilience to navigate these uncertainties. These skills will help teens in that navigation. The course will still have to prove itself though, which will be a difficult task.

Maya believes that if we want to change how students look at the future, we also have to pay attention to how they look at the past. People are taught a very **linear path** of history where everything seems to be set in a logical order. People also use this thought to look at the future, but that is wrong. The future is a wider array of options.

Provision

To teach this skill, Loes offers futures **literacy laboratories**. These are hands-on **workshops** in which participants are asked to think further in the future about probable and desirable futures. After they have worked out these visions, a reframe scenario is introduced. Reframes are unpredictable events that sweep both probable and desirable futures off the map. Such a reframe is also the element that exposes many assumptions of the participants.

Stefaan says there are a lot of websites that do **trendwatching** and combine observations. He also recommends two books. one of them is by Martin Raymond, the creator of the futures laboratory in London.

Maya gave us the organization **'teach the future'** as a source for future thinking methodologies. They are an organization that teaches futures thinking to primary and secondary schools. there is a lot of pedagogic material on their website.

Concept Future thinking and futures literacy

There is a clear demarcation between futures literacy and future thinking according to Loes. For her, future thinking refers to all ways of thinking about the future. Future studies, on the other hand, is a large interdisciplinary umbrella within which -from all kinds of sciences- predictions are made about future scenarios of society. Loes is less concerned with these early forms and focuses mainly on future literacy. According to her, future literacy is more about **anticipatory assumptions**. People automatically make a lot of assumptions and many of these assumptions set us free because it takes away worries. An example of this could be: "We shouldn't worry if the sun will be back tomorrow. We assume that it will be". This is an assumption everyone makes. Unfortunately, there are also assumptions that limit our freedom. For example, the assumption that technology will solve climate change. Futures literacy is a skill that helps you to expose your own assumptions in the present and to look at them critically. In other words, you use the present to form a critical view of the future. Futures literacy is now a very useful skill because it provides resilience and mental stability during this period.

Sven thinks future thinking is a **skill of all times**, from the moment people could think, anyone can do it. An everyday example is looking at today's weather forecast. This is a rather **pragmatic** approach to. Future thinking is now more appropriate and more accessible than before, but nowadays everyone seems to be a futurist as well. While they tend to be more of a trend watcher. Above all, they can indicate practical things. Sven finds the difference between future thinking and futures literacy difficult, but describes it as such: Futures Literacy is about learning grammar, being aware of methodologies. Future thinking is more about applying and studying these methodologies. The difference between trend watching and future thinking is like a potato. In trend watching you see how the potato is cooked in future thinking you ask yourself how you could use this potato and why you would use it for the next time.

According to Martine, future thinking is something of all times. Future thinking is not only thinking about the future, but also doing something with that knowledge. Creativity is very important in learning future thinking, but also linking different areas that could have something to do with futures thinking. According to Martine, futures literacy is about learning to think about the future. She finds it important to anticipate the future, but not to predict the future.

Stefaan says that futures thinking is a practice that allows someone to improve their futures literacy.

Maya says that futures literacy and futures thinking are different in the sense that you have to do futures thinking deliberately. Futures literacy means that you are aware of your own skills to perform futures thinking. Being literate will also help you discover your own anticipatory assumptions you are holding.

Future

Stijn finds the term 'uncertain times' very **subjective**. Its definition depends very much on person to person.

"Uncertain times" are an illusion, according to Loes. We are always in **uncertainty** because we simply cannot predict the future. Nor is this a time of great change, because everything is always changing and it is not more complex now, than it was a century ago. The illusion that the nature of change is very different now is formed because now we just have a lot more data that can quantify and describe it. She also adds: "The stupidest thing we can do now is make decisions that try to eliminate this 'uncertainty'.

"There are always uncertain times." tells Sven. No one has ever been able to know at 100% what the future was going to bring. **All times are uncertain**, but for those who think more about it, this is no surprise. It would be better to worry about things we have an impact on and things that have an impact on us than things we don't have an impact on. Sven finds it crucial to **anticipate** the future. Ordinary citizens need to be much more prepared. Every citizen is now engaged in future thinking, but there are also algorithms and programs in which future scenarios can be made.

According to Martine there are people who call themselves a futurist and are certain about the future, but certainty is never there and we are in a good time to realize that. Things that started very small can have big consequences, COVID-19 is the best example of this. The future is always uncertain. Now people are much **more aware** that it is so uncertain. Maybe people will take more into account that **the future cannot be predicted**. This is not special, times are always uncertain.

Stefaan says that the more technology we have, the more we could be able to 'predict' the future in theory. But that is a **paradox** he says, because the more technology we have the more unpredictabilities are added. We cannot predict the future, only document it. On the topic of uncertain times he adds that we as people are always looking for certainty, it gives us stability. But sometimes are in fact more uncertain that other, those times can be described using the VUCA method.

According to Maya there is a definition for uncertain times. Our environment becomes more and more chaotic because the pace of change has increased tremendously. This acceleration of change introduces uncertainty. There are surface level uncertainties and deep uncertainties. She also adds that uncertain times are an opportunity to change for the better, they give us a chance.

In general, using the term 'uncertain times' proved to be a little bit controversial because in essence times are always uncertain, the future can never be predicted. A better description is the term **turbulent times**.

Methods

We interviewed experts from different fields, this means that the way in which they practice future thinking is different. For many DESTEP-analysis is the base because it gives a deeper understanding of how society is construed.

We have trendwatchers like Mark Schipper and Stijn they use emerging trends in the present to try and gauge future changes. Mark also mentioned three ways in which the future can be 'made'. The first being **serendipity**, the idea of randomness and coincidence. A Second is **crisis**, during a crisis people get scared but they also become more aware because of the distress. Because of this distress people get more entrepreneurial. A third way of making the future is **synchronicity**. Synchronicity means that when a lot of

people are wishing for the same thing in a society, said change is more likely to happen. These three ways influence change in our society, according to Mark.

Another method Mark brought up is the **cross cultural analysis**. To do this analysis you need to collect signals about the topic you want to research. After collecting these, you look both on- and offline to see what changes happen in these spheres. After getting an idea about these trends, you cluster similar signals together. This method is used by business to predict what **business models** would better suit the needs of their clients.

The most well-known method of future thinking is **scenario planning**. This means as much as making up a couple of possible scenarios based on uncertainties. These uncertainties are put on **2 axes**, allowing for **four different scenarios** to be made, one for each quadrant.

Finally we have the method of **backcasting** in which we fantasize about the far future.

A method that was brought up by one of the experts was **the triangle** of Sohail Inayatullah. The triangle comprises a push mechanism from the present, a pull towards the future and the weight of the past.

Stefaan is a proponent of personal futures reconnaissance, design thinking and storytelling. He also theorised four windows through which you can look at the future. A zombie apocalyps, a great pause, big awakening, a long difficult. scenarios can be created within these windows.

COVID-19

The experts had many different opinions about the COVID-19 crisis. Most of them agreed on the fact that future thinking is useful in the current context because in these times people are searching for answers.

Loes deems predictions valuable because it gives people a general idea of what to expect but her preference remains looking at the present.

Martine says that encouraging people to adopt future thinking has become a more urgent matter now. For her it changed the view she had on the future only partly because she already had the possibility of a pandemic in the back of her mind.

Sven's view on humanity has changed in another way, his **view changed** from a colourful one to a more grey/black one. He was surprised by the negativity some people had in them and his idea about leadership got affirmed.

Another expert already had the idea that time was like an upward **spiral**. This current crisis will be a step back, but in the future it will help us advance.

In general they agree on the fact that **technology** is playing a big role in how we will get through this crisis. They all agree on the fact that this event is a catalyst that sped up technological advances that were already happening in society. Things like working from home and health monitoring are big examples.

On the topic of COVID-19 being a **black swan** there were different opinions. Most of them do say that COVID-19 is a black swan because the effects are tremendous. Evolution has made a little jump because of the crisis. A lot of the interviewees equate black swan events to the economic sphere, but this event goes beyond that. Loes also says that it has uncovered a lot of flaws in our current thinking and mental models.
On the other hand we have a couple experts, like Martine and Sven, that don't really see it as a black swan event. The main reason being that health experts probably saw it coming. Sven likes to use the term Black elephant, because it's something they knew about, but didn't want to talk about.

COVID-19 hasn't introduced more uncertainties into society, according to Maya it has only made people more aware of them. She says the crisis is a big force that pushes technological solutions to be created more rapidly. She doesn't believe that technology will have a fundamental impact. The teacher-student dynamic, for instance, hasn't changed because of the online classes, it is a technology that helps us hold on to the ways we used to do things. For some people it will be a black swan, she says but others did see it coming. Because of the crisis Maya now understands people that used to say: "There is so much to think about in the present, I don't have time to worry about the future."

Stefaan says that the crisis shows that sudden impactful events are way stronger forces for shaping the future than slow evolution.

Impact

COVID-19 has already **changed the way we think**. According to Martine this can go two ways. One option is that we become more aware of each other and we will be able to count on each other more after this or, we could just go back to business as usual because the crisis had such low impact.

Polarisation and **inequality** got brought up a couple of times as well. First we have Sven that says certain groups will be disadvantaged. People will lose their jobs, small business won't be able to adapt, young people or families that don't have enough resources. All these groups will feel the impact of COVID-19. On the other hand we have people like Jeff Bezos that just made more profit during this time. The groups of people for whom this is a difficult time will suffer a lot of stress but this won't change a lot because the economy will just keep rolling. We, as people, will have to give extra attention to the people that were hit the most, when this crisis is over.

There is also polarization happening on a **political** level where the parties are just throwing mud at each other. On a more personal level, however, citizens are more united.

Stefaan thinks a positive change during the crisis is the fact that decisions get taken more quickly. He also feels like some trends that were already happening have now received more momentum.

Effects

The crisis will have effect on a lot of industries. Sven says that the impact on **learning** will be enormous. Learning at home will become the norm because vulnerable people will stay inside. He thinks there will be more **training** aimed at sick people, like call center jobs, etc. He also thinks that because we are moving to an even more digital world, we are moving towards more of a **surveillance capitalism**, with employers being able to digitally see a lot of data about their employees. Sven hopes there will be new ideas about what we find valuable and things like Instagram photos will lose value. He thinks these changes will make it harder for some people to thrive and those people will fall off.

The experts also say that currently is a great time to bring new and different technologies on the market because we are more accepting as people. An example of this is the robot dog to keep people apart. When this is over we will not accept such technologies anymore as we go back to partying and traveling.

Stefaan shared with us the window of Overton. In the window are all the political ideas that are currently acceptable in society. He said that the crisis has opened up this window and allowed for some more far out ideas to be accepted.

Visions

Only Sven really gave his idea about how the future might look after COVID-19. He is not sure if there will be a second wave but he recognizes that this is a very likely scenario. He thinks this **second wave** might be milder but maybe it will also hit more than just older people. **Economically** this wave will hit harder because now we will go in quarantine faster and there will be stricter rules.

Maya thinks a second wave is very likely and it will have an even bigger impact. It will not, however, change the rate of change. Maya would love that instead of predictions we also think about how we can do things differently. We need to describe a broader array of possibilities instead of trying to describe one path we should walk down.

Conclusions

We interviewed experts on the topic of futures literacy. In these interviews we tried to get a **deeper understanding** of the subjects: futures thinking and futures literacy. We also tried to get more information on the methods in which these people practiced futures thinking. Lastly we inquired about how COVID-19 changed the way in which these people thought about the future.

First of all the interviews made it clear that futures thinking is not something that is taught in secondary schools. The only people that had received some education where they looked at the future were the trendwatchers. Most other people had to do their own research and teach themselves the ways. Most of the experts became proficient in the skills by just practicing it. There are books and resources available to learn these skills yourself. There are online tools like trendwatching websites and one of the interviewees even offers 'futures laboratories' which are hands-on workshops where they show people the importance of future thinking.

"Futures thinking is not a package of subject matter you can memorize. Rather, it is a skill that you can stimulate by investing time in it and engaging in conversation. Teachers or professors have more of a guiding role here."

Our proposition to introduce futures thinking into the educational system for young people was well received by all these experts. Currently we only get to look at the past in our formative years, in a subject like history we are taught a linear path of time. The key to futures thinking is realizing there are **multiple paths** we can go down. They believe that it is a **strong skill** that really fits in with the 2**1st-century skills.** These skills are necessary for people to retain a mental **flexibility** towards the future for the rest of their lives. It isn't very clear however what the best way would be to introduce these concepts to the students. A couple of the experts say that a teacher can only motivate and stimulate the students to start training the skills. They hand the students some methodologies and give them theoretical explanations about why and how the skills are important, but the training itself to reach futures literacy will have to come from the motivated students themselves.

Methods for futures thinking that were recommended to us were all based on the idea that there are many factors influencing how society changes and evolves and those factors themselves also affect each other. So the common thread that flows through all methods is that they are a way to chart and visualize possible interactions of factors and events on society. These factors are described in the use of **DESTEP** (Demographic, Economic, Social, Technological, Ecological, Political), the building blocks of society. The product you have after using these methods on trends/uncertainties/events are always scenario's. These scenarios are never predictions because none of the scenarios will become 100% reality. These are estimations that range from positive to negative, having these possibilities in the back of your head improves the mental flexibility towards the future.

"Futures literacy is the skill that helps you uncover your own anticipatory assumptions in the present and look at these through a critical lens."

When we applied these concepts to our **case study**, the **COVID-19** crisis. The experts agreed on the fact that the crisis does have an impact in the way people think and act right now, but this time isn't inherently more uncertain than other times. In general, using the term '**uncertain times'** proved to be a little bit controversial because in essence times are always uncertain, the future can never be predicted. A better description is the term **turbulent** times. That choice of wording makes it clear that there is in fact change happening and that the rate of change is also faster now. One of the experts even said that there aren't more uncertainties now, people are just more aware of them.

The experts are saying that this crisis is an opportunity for society to make changes. We can already see that some technological advances that were happening slowly before the crisis now received a big push towards the mainstream (like digital conference platforms, working from home,…).

In general none of the experts tried to give us a possible post-COVID-19 scenario they had thought up. None of them felt like they were educated enough in the medical field to give good estimations. A second wave, however, was something that none of them wrote off as impossible. Economically some industries will have suffered hard, but this crisis could prove to be a huge leap for future thinking.

"This crisis is a huge gift to the field of Futures Thinking, because now the interest in the practice has grown to a level we have never seen before."

Quantitative research

Research Method

For this research we opt for an online survey with a convenience sample. We chose for an online survey because in times of lockdown it is not desirable to conduct surveys from door to door. We developed a survey (survey A) with the target group youngsters from age 14 to 18, and we developed a survey with teachers of secondary education and students of the bachelor Secondary Education as target group (survey B). To insure representativeness for survey B we contacted 952 secondary schools from 300 cities and municipalities in Flanders, we were able to gather 253 respondents. For survey A, which was spread through social media, we were able to gather 78 respondents. In order for our results to be generalized we needed at least 358 respondents for survey B. For survey A we needed at least 384 respondents.

Goals

Our goal with survey A is to find out how youngsters think about the future and how it is linked with the 21st century skills. With survey B we want to find out what mindset teachers teach linked with the 21st century skills. We also asked a series of questions to figure out to what extent teachers know about futures thinking and certain tools to do so.

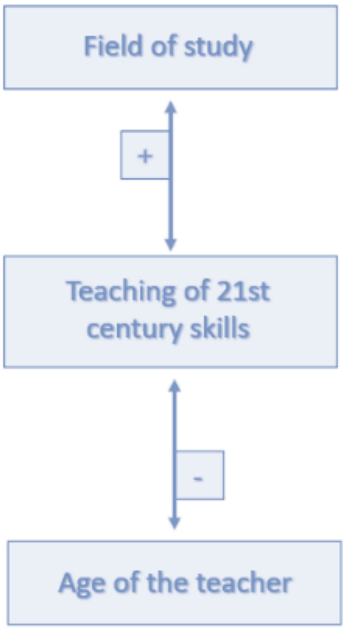
For this we divide the central research question into sub-research questions. We derived two explanatory research questions and five descriptive research questions. First we need to determine the variables. To do this we first must define them. What do we want to know?

Explanatory research questions:

Is there a correlation between the age of the teacher and their focus on teaching 21st century skills?

Is there a correlation between field of study and the experience of getting taught 21st century skills in Flanders?

Conceptual model:



Type of relations:

The variables 'age' and 'gender' have a reciprocal/symmetric effect relationship with the variable '21th century skill'.

With the variable 'field of study' there is an asymmetrical effect relationship that we want to research with the variable 'Teaching of 21st century skills'. This relation has a positive denominator, which means: with a higher field of study level, the respondent possesses more 21th century skills. With a lower field of study level, the respondent possesses less 21th century skills. This is a hypotheses.

With the variable 'Age of the teacher' there is an asymmetrical effect relationship that we want to research with the variable '21st century skills'. This relation has a negative denominator, which means: with a higher age of the teacher, the score for teaching 21st century skills goes down. With a lower age of the teacher, the score for teaching 21st century skills goes up. This is a hypotheses.

Descriptive research questions:

- To what extent are youngsters in Flanders concerned about the future?
- How do students perceive the focus of 21st century skills in their current curriculum?
- Where did teachers learn to exercise futures thinking?
- To what extent do teachers focus on teaching 21st century skills?
- To what extent do teachers find 21st century skills an added value within secondary education?

'Gender' and 'age' are plain variables. The variable 'field of study' is a complex one. Further definition is required. With this variable we implement the characteristic educational form: secondary education. The indicators with this are ASO, TSO, KSO and BSO (these are the four main educational forms in Belgium). We also implement the grade hereby are the indicators : 1st grade (1st and 2nd year of high school), 2nd grade (3th and 4th year of high school) and 3th grade (5th and 6th year of high school).

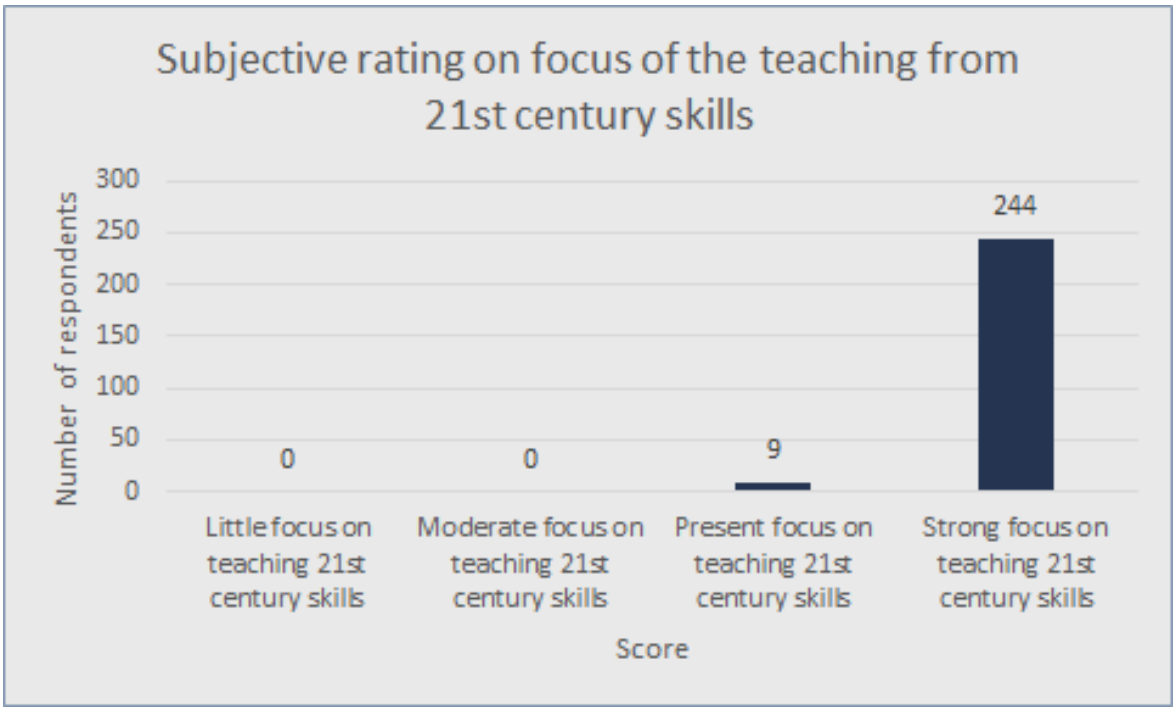
We also need to define the components of the variables we want to investigate. With the above descriptive research questions there are four components we want to analyze. Being: the age, the gender, the level of education and the grade of their secondary education. '21th century skills' is as said a complex variable, therefore we decided to question this with a Likert scale. In there we fathom the eleven aspects of the 21th century skills (see list below). These will give us a subjective approach of how the respondent rates themselves. To create more reliability we formulated two theses negatively. Every single component which will be questioned will be given a value. With these values we can calculate a total variable. This makes it possible to give each respondent a score on their abilities with 21th century skills. The eleven components of 21st century skills:

- Critical thinking
- Creative thinking
- Problem solving
- Computational thinking
- Information skills
- Basic ICT skills
- Media wisdom
- Communication
- Teamwork
- Social and cultural skills
- Self-regulation

DISCLAIMER:
Because we had a lack of time and resources to perform this quantitative research at an utmost efficiency, we weren't able to gain a sample test that can be generalized. The findings in our research is the conclusion from the respondents we have questioned. Sadly enough as stated before these results and conclusions can't be generalized to the whole population. Nonetheless we were able to gain some valuable insights out of our quantitative research.

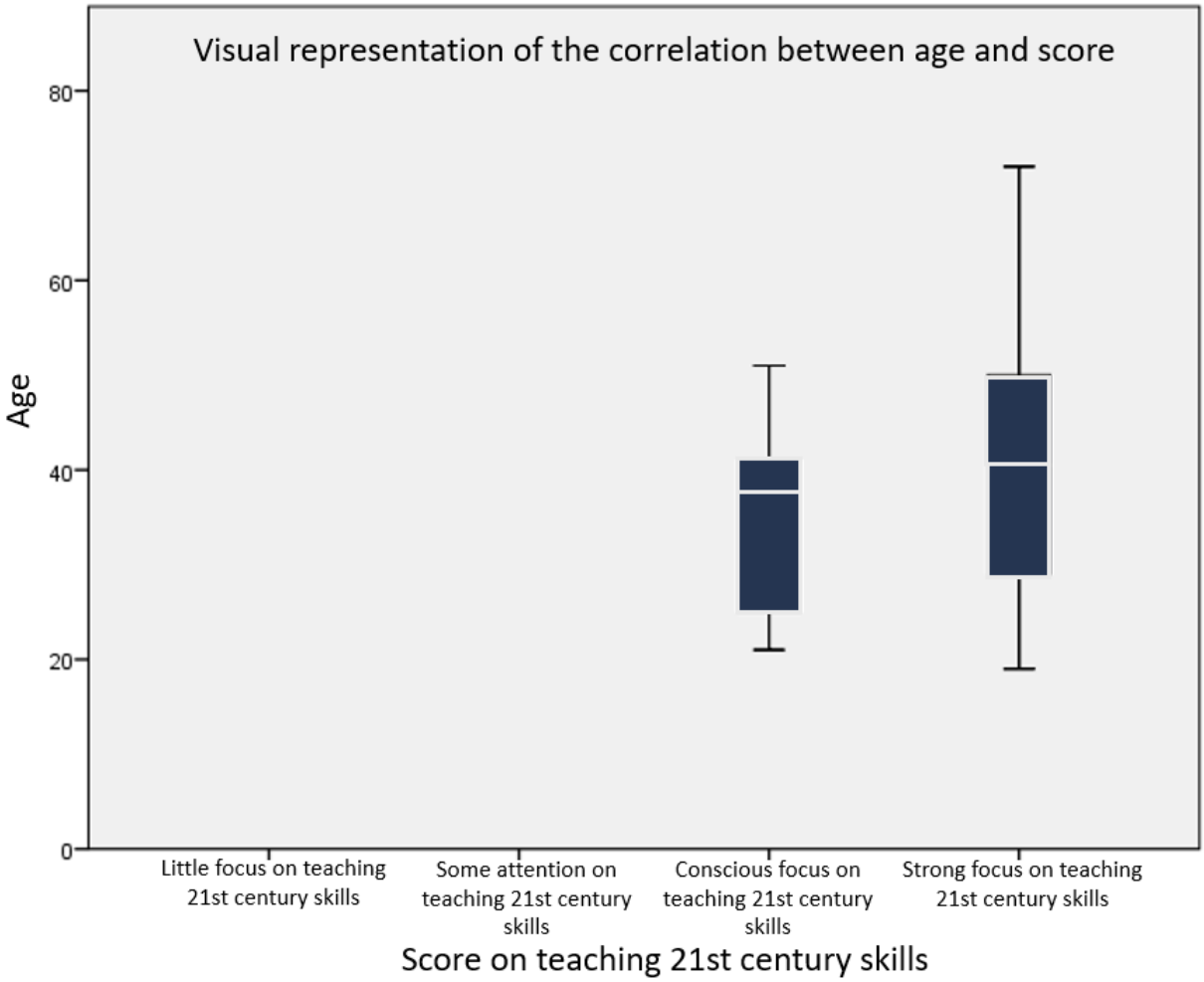
Survey B

To what extent do teachers focus on teaching 21st century skills?



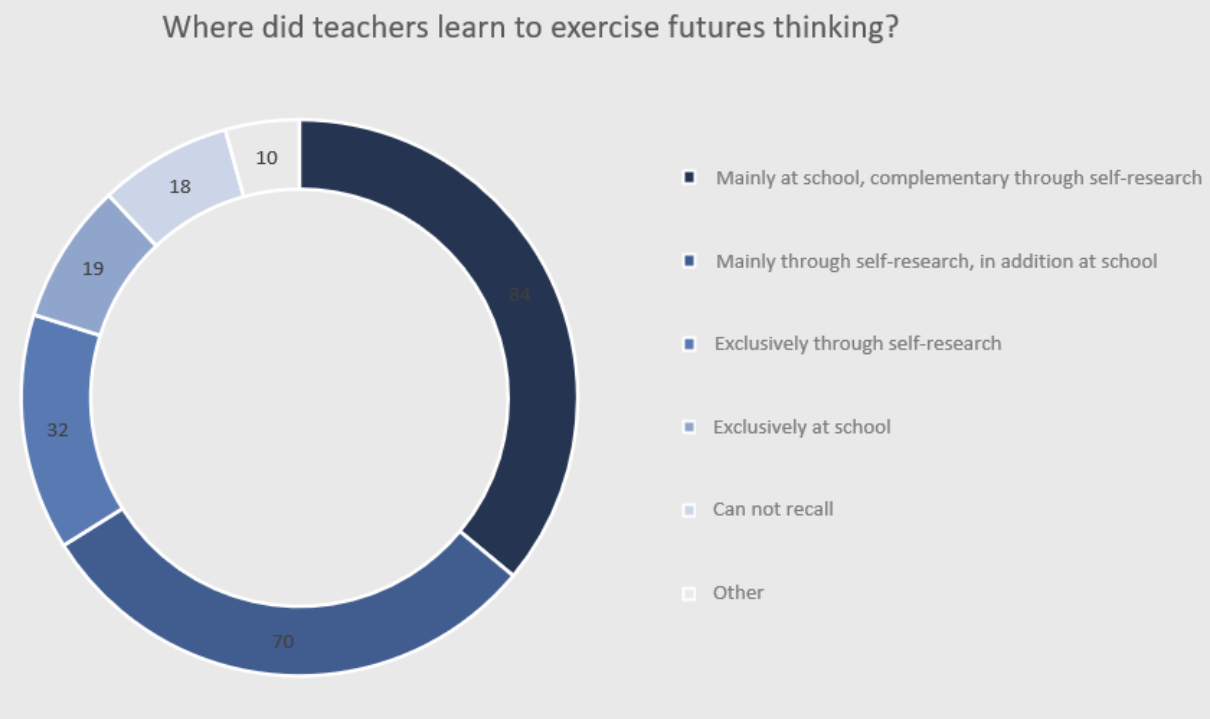
We asked the teachers to rate themselves in terms of 21st century skills. This via a Likert scale with eleven theses. With a reliability analysis we checked the Cronbach's alpha, through this we eliminated three theses. Leaving eight theses with a score from 1-5, if we add all scores from each individual respondent we have several scores with an interval from 8-40. We divided this interval into four parts and nominated these parts into 'Little focus on teaching 21st century skills' (score 8 till 16), 'Moderate focus on teaching 21st century skills' (score 17 till 24), 'Present focus on teaching 21st century skills' (score 25 till 32) and 'Strong focus on teaching 21st century skills' (score 33 till 40). However these are subjective scores, because the teachers rated themselves. This should be taken into account. We can conclude that teachers in Flanders secondary education emphasize 21st century skills greatly.

Is there a correlation between the age of the teacher and their focus on teaching 21st century skills?



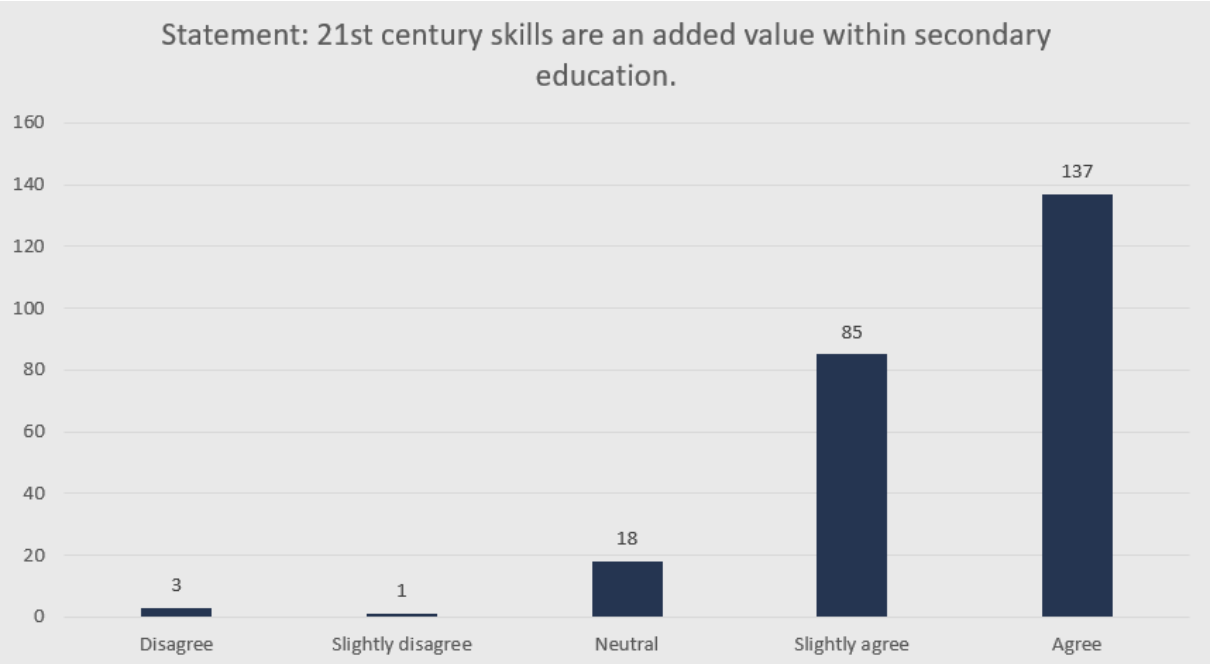
This graphic was further based on the one before (in relation to the subjective rating). This graph containing box plots represents the distribution of scores over all ages from the respondents. These look fairly normally distributed. In conclusion there is no correlation between the age of the teacher and their focus on teaching 21st century skills, in Flanders.

Where did teachers learn to exercise futures thinking?

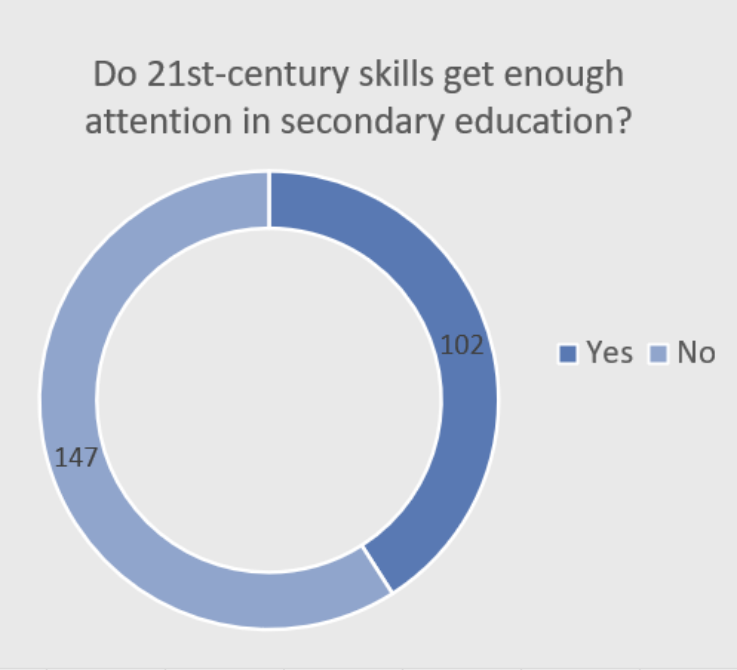


According to our research 33,2% of the respondents learned the exercise of futures thinking mainly at school and complementary through self-research. 27,7% learned it through mainly self-research and in addition at school. 12,6% learned it exclusively through self-research. 7,5% learned it at school. 7,1% cannot recall where they learned it and 4% learned it in another way.

To what extent do teachers find 21st century skills an added value within secondary education?

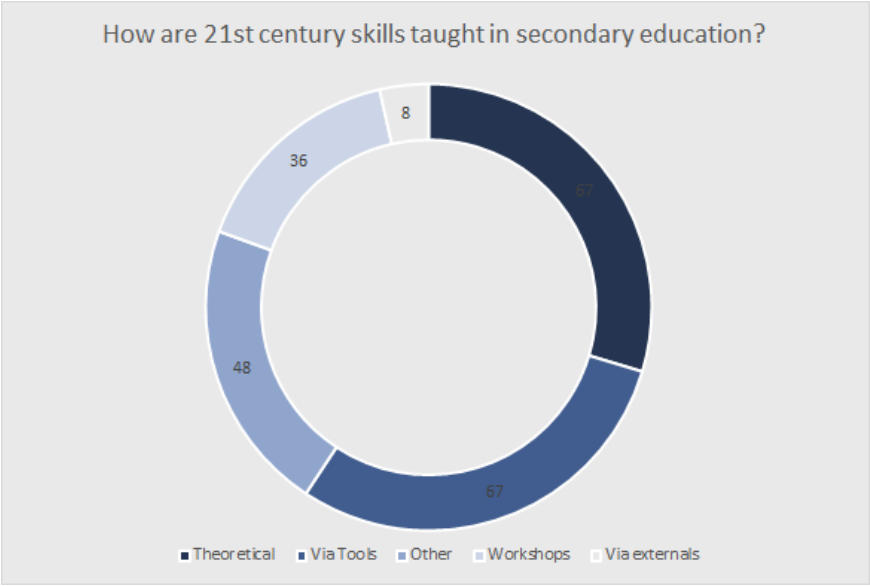


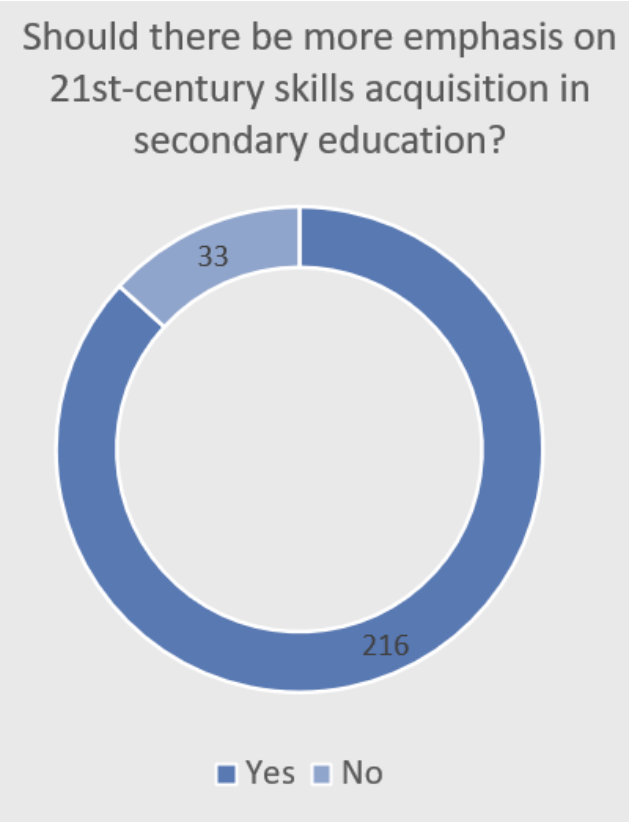
We see that almost all teachers agree that 21st century skills have an added value to secondary education. Logically, because when we look at the focus graph of 21st century skills by teachers we see that nearly all of the teachers have a strong focus on teaching 21st century skills. Through our qualitative research we experienced that the experts hold these skills in high regard. Luckily we can see that it channels through to 'non-experts'.



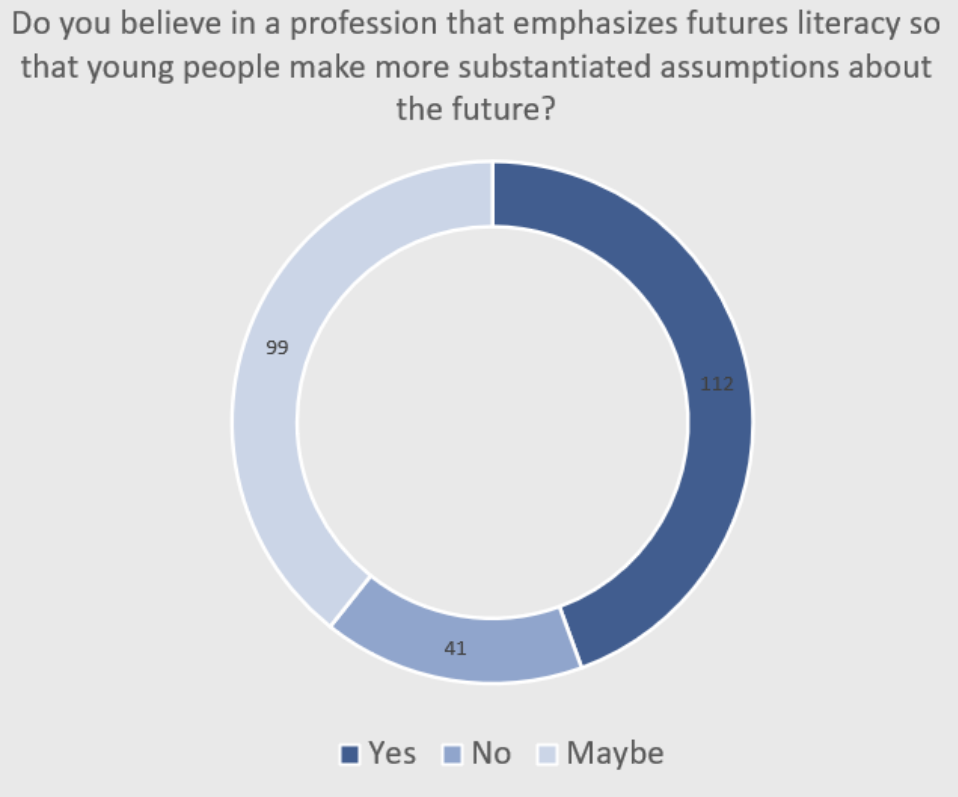
Although we can see in the previous bar graph that most of the respondents agree that 21st century skills is a great added value, we notice that more than half of the respondents agree that these skills don't get enough attention.

According to the respondents, the main three ways in which 21st century skills are taught in secondary education in Flanders is in a theoretical way, via various tools and workshops.





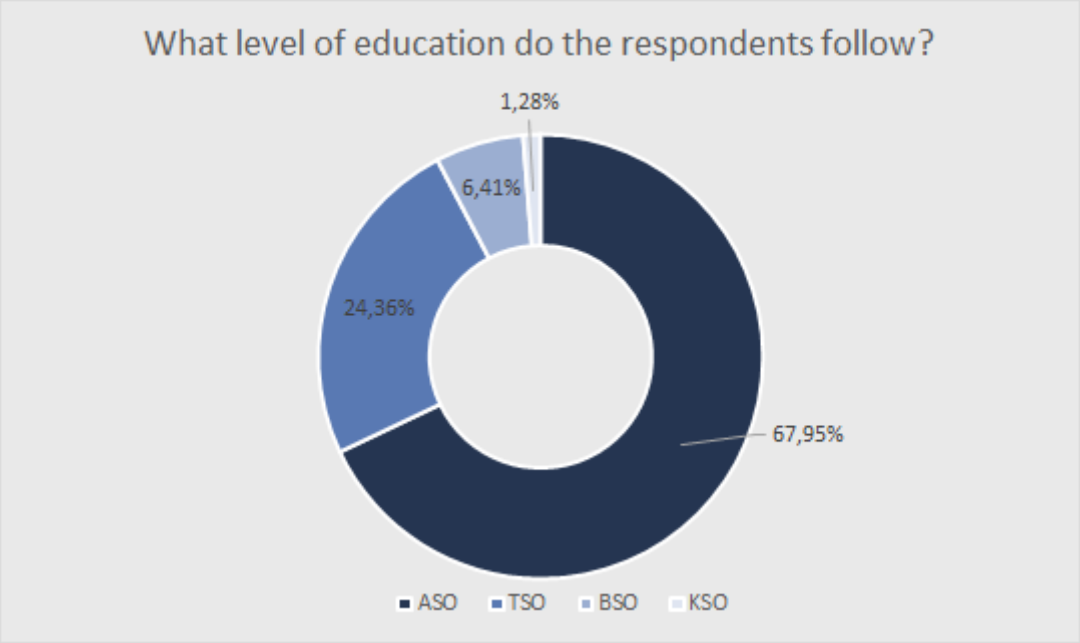
Referring back to the attention graph for 21st century skills, we see that the respondents agree that there isn't enough attention for teaching these skills. Luckily nearly all of the respondents agree that there should be more emphasis on teaching these skills. We can see a gap between the attention that is laid on these skills and the will to teach it. Luckily it is a positive gap that might bring forth a positive evolution if we pursue it.



A clear half of the respondents believe in such a profession while the other half doesn't believe in it or don't exactly know of it. Through better explanation it might be possible to convince the non-believers and those who doubt it. But looking at these results we can currently conclude that there is no need for such a profession.

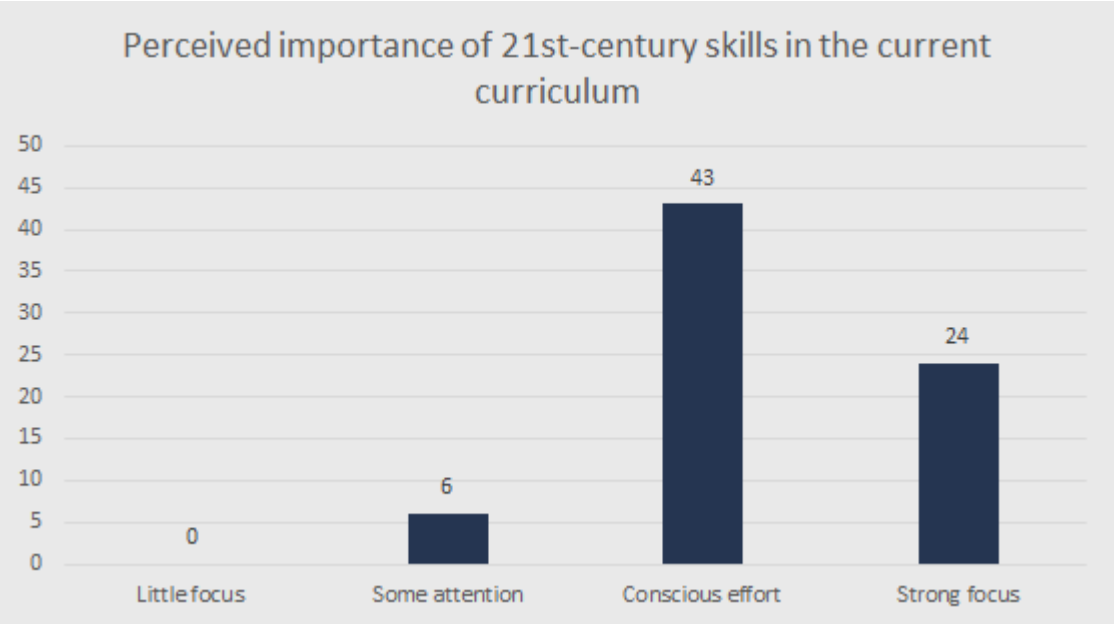
Survey students

What level of education do our respondents follow?



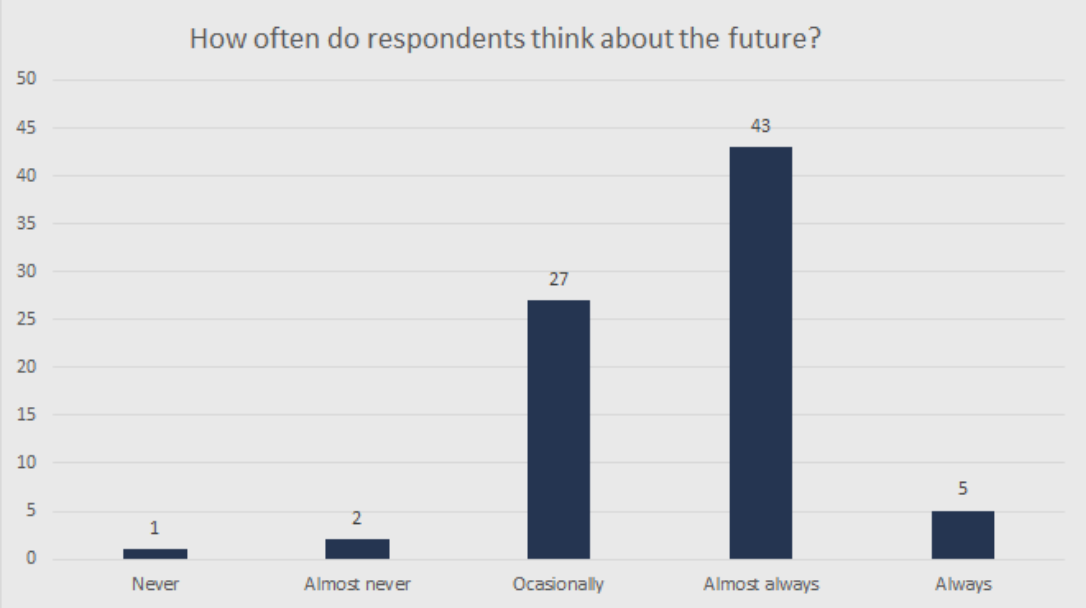
In order to get a global idea of our group of students we thought it would be interesting to ask them what level of education they currently follow. We can use this data to see how 21st century skills might get more or less attention in each of these fields.

What is the perceived importance and focus that is being laid on the 21st century skills taught by the teachers by the students?



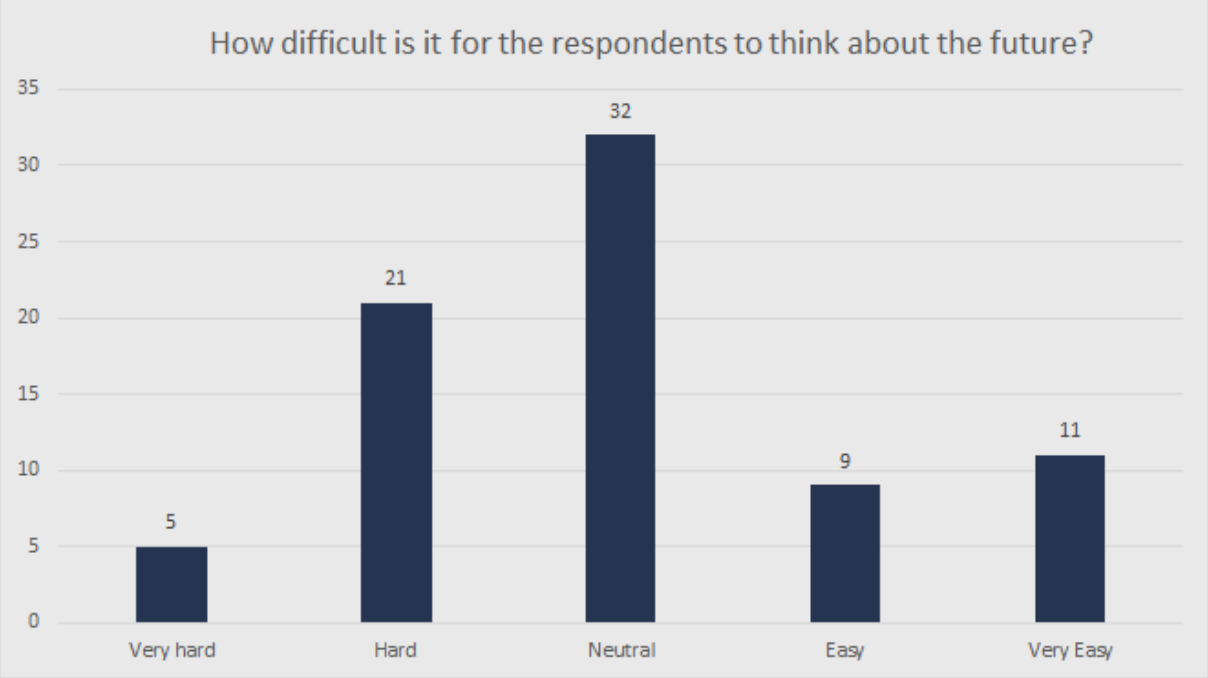
When looking at the graph we can be enlightened that there is an effort perceived by the students. We see that 24 students feel a strong focus on 21st century skills while 43 students perceive a conscious effort. If we compare this with the results of the subjective focus on 21st century skills by the teachers we see that their focus is flowing through to the students. Although both perceptions are subjective we can be glad that there is a focus on 21st century skills by both the teachers and the students.

How often do students think about the future?



We asked the students how often they think about the future. We received 78 responses and poured them into a column graph. We see that most students do have a habit of thinking about the future. This shows us that there is an inherent interest in young people for looking at the future. This means that we could use this existing interest to get a wedge between the door and introduce them to more scientifically grounded ways to practice futures thinking.

How difficult is it for the respondents to think about the future?



We asked the students about the difficulty they experience when they have to think about the future. We see that more than half of the responding students answered this question with neutral or less. We can conclude that the respondents have difficulty with thinking about the future. This means that with our lesson package that includes some tools for the students to use, they can start to think about the future more easily.

Conclusion

When we look back at both our surveys, it saddens us that we couldn't generalize the results we came to after analyzing the data. The focus on 21st century skills by teachers channels through to the students that have to be taught these skills. We clearly see that teaching these skills is valued by the teachers. Although they have the feeling that there isn't enough focus on the 21st century skills, they see the added value of the 21st century skills. A clear gap is seen, the teachers have the will to teach more 21st century skills but the presence of these skills and the attention it gets is lacking. From our responding students we see that they think about the future but they lack the tools to do so. The students find it difficult to think about the future, but they find it quite important to do so. Another gap is clearly visible, although the students are motivated and try to think of their future, they lack the tools and skill to efficiently think about the future.

Product

Reasoning

After discussion and revision of our product we eventually decided to create a lesson package that includes a **theoretical** bundle and a bundle of **thinking exercises**. This lesson package will teach students from our target group the **critical skill** of futures thinking and in order to improve their **futures literacy**.

The reasoning behind the way we formed our bundle is fairly easy. In order to incorporate these lessons into the **curriculum** of students and to motivate them to take part in the lessons, we focused on **gamification**. In order to make our toolkit attractive we created a well thought out theoretical part that leans on exercises that transforms the theoretical into the practical. Through exercises that have some aspect of a game and can be done in groups, between students, we think we will have a product that will be used and will be easy to use. These exercises will promote **discussion** and **conversation** between the students and develop them into students that are taking their first step towards becoming futures literate.

Being futures literate and able to think about possible futures is a skill that is necessary in these times. We want students to be able to think about and possibly work towards a sustainable and preferable future through decisions they make in the present. We want to give the teachers an easy and accessible tool to develop these skills in the students and possibly teach themselves something through this lesson package.

The evolution

Creating our first concept

In order to think about our product we started with a **brainstorm** session that each group member had to hold individually. After each member created a concept for the product, we presented our ideas to each other. We swiftly came to the conclusion that we wanted to include following aspects into our product:

- Inclusion of scenario thinking.
- Usage of “what if …?” questions.
- Gamification
- Group exercises in order to let the students discuss and talk to each other
- Incorporating the DESTEP-analysis.

The previous list is a list of concepts we surely wanted to include in our product. After discussion we unanimously agreed on producing a **toolkit**. This toolkit includes theoretical information that goes hand in hand with the thinking exercises we will develop for the toolkit.

Because we were quite unversed in producing a toolkit we started analyzing different sources and toolkits in order to gain inspiration. Methods of futures thinking that we had researched in our research and methods we learned through our interviewees were incorporated in the exercises.

Our first version of the toolkit consisted of a **theoretical** bundle and a bundle with the different **thinking exercises**. We created a long and short version of the toolkit. The short version was 50 minutes, approximately one lesson, and the long version took 100 minutes approximately two lessons.

Evaluating our first product

In order to evaluate the first version of our product we decided to test it ourselves. We performed the exercises together in a group, one of the members took notes of how it went and another member played the teacher. After each exercise we held a short break to listen to the feedback.

After a firsthand experience of how difficult it can be to make everyone **participate**, we decided that we had to create more tips and tricks for the teachers. We also came to the conclusion that distraction and losing **focus** can be a disturbing factor to the exercise.

From this experience we also learned that we had counted on **too little time** for each method. We then opted for a modular version. This gives teachers more freedom to make the lesson as long or as short as they want. They will have the possibility to create one or multiple lessons in order to perform all the exercises and theory.

We experienced that we were sometimes too focused on a negative scenario. It's important to motivate the students to explore the **positive and negative** scenarios. We need to create a **safe space** where all students feel comfortable stating their opinion. We don't want them to blindly agree with statements of other students. To stimulate every student to speak up we gave the teachers the tip to work with a 'speaking stick'. Students can pass this stick after they have had their say. Debate and open communication is very important in all exercises. When creating scenarios we often stayed still in the present, we didn't think far enough into the future.

Testing our first product

How did we test our product?

After testing our own product we wanted to organize a **testing** with people from our **target group**. We were able to organize two tests. These both took place on the 13th of June 2020.

The first group organized a testing via Google Meet with a group of 5 girls that are in their fifth year of secondary school. We were able to connect with this group through Ona's youth group. All the participants knew each other, just like it would be in class.

One person was assigned the role of **teacher**. they gave the general explanation of the toolkit and guided the students along the process. Another person took on the role of **reporter**. They shared the templates on her screen and wrote down the answers. The other group organized a one on one testing. They tested the exercises 'A letter to the future' and 'The futures wheel'. The participant did the exercises **individually** and not in group.

Introduction: statements

(Tested in group with five participants)

This was a good exercise to start off with. They started off a little slow but once we moved on to the second statement it went a lot smoother. Not everyone had an equal contribution with each statement. This was mainly because they didn't always feel like they had enough **insight** on each subject. In general everyone was able to state their opinion and viewpoint. We did notice that they sometimes focused too much on the negative depending on the statement. This problem can be solved with the right **guidance** of the teacher. We will incorporate this in the tips for the teachers.

Chapeau

(Tested in group with five participants)

Before each exercise the students were given a **thinking hat**. This signified the way they needed to think. Through this we wanted to challenge them to step outside their own view point. This was received well by the students. We did have to clarify that this is not a persona you need to take on, like in a play, but a **mindset** to look at things.

'Chapeau' was previously based on the thinking hats of Edward de Bono. Because this is a trademarked technique we later on decided to put our own creative spin on it. We then opted for a technique using 'spirit animals'.

Quadrant in your hand

(Tested in group with five participants)

This exercise was at first glance clear to the students. When picking their set of cards, some questions did arise, such as "What do we have to do with these cards?". After explaining this again they understood what was expected of them. When creating their scenario they found it easier to create a **negative** scenario rather than a **positive**. When writing out a positive scenario they had to remind themselves not to think negatively. There was a lot of interaction within the group, everyone seemed comfortable stating their opinion. They would build off of each other but would also question each other's ideas. When picking a date for their scenario they decided to stay as close to the present as possible. They said that this was easier for them to imagine. Thinking far into the future seemed more difficult to them. The **phenomenon** card afterwards was rather difficult. Their phenomenon was "you go viral on social media''. They were very focused on the positive because this phenomenon is generally seen as something good. We let them create two different scenarios in group, this was definitely possible within the time frame (15 minutes).

Branches of the future

(Tested in group with five participants)

This exercise was very clear to everyone. They didn't have any extra questions for us. This task demanded a little more time to think than the last one. They started off a little unsure but once they got the hang of things it went very smoothly. We gave them 15 minutes to complete this task, 20 minutes would have been better. That way you don't need to rush the students. Everyone used the 'thinking hat' that we gave them. This created more dialogue and discussion. They explored different viewpoints. The phenomenon card was again rather difficult. This was because this completely changed their scenario. This is also the lesson we wanted them to learn, so in that sense it was a success.

Somebody else's shoes

(Tested in group with five participants)

This exercise was also clear. This task created a lot of dialogue and discussion. Everyone was able to state their opinion. They also felt **comfortable** to question someone's beliefs. They would erase things or change things within the scenario to something they all agreed on. They tried their best to do this with their thinking hat on but this was a challenge sometimes. However it was an interesting way to showcase more **perspectives**.

A letter to the future

(Individual testing)

After filling the questionnaire for his letter, he wrote a small letter to his future self. Our participant, liked this thinking exercise because he can think about his future and reflect on where he is now. He liked the questions reasonably well, but he often had to think for a long time because he doesn't know exactly where he will be later. The participant found writing his personal letter **difficult**.

Futures wheel

(Individual testing)

Our participant had to think less than in the previous exercise because he had to think logically in this exercise of the Futures Wheel. He did find it **difficult** to say much and to think about many aspects of the impact. He found this exercise to be thinking more about the world than the previous one where you had to think about yourself. During the exercise of the Futures Wheel he struggled to pay attention to several aspects while thinking about the impacts. Maybe a **DESTEP**-analysis could be useful here as well.

Phenomenon cards

(Tested by Ona, Amber with a group of five girls)

It's very important to explain these phenomenon cards. We experienced that this was a little more difficult to understand. Some of the students were **confused** by this and did not know how to integrate this into the exercise. This needs to be made very clear to the teachers and students within our explanation.

Ending

(Tested by Ona, Amber with a group of five girls)

To wrap up our testing we asked the student what futures thinking means to them. This way we wanted to see what they had learned and if we reached our goal.

These were their statements:

- "Futures thinking is thinking about what your life could look like in a couple of years, but also what the whole world could look like, it's more than just yourself. It's about different situations. Beforehand I thought it would only focus on my own life but actually this impacts the whole world."
- "Futures thinking is thinking about the future on different levels, such as economical, social, political etc. You think about different situations around the world and how this impacts your own life."
- "Futures thinking is thinking about the future and what different scenarios could come from one event."
- "Futures thinking to me is thinking about your own future and what different phenomena could impact this. These phenomena can influence you on a personal level but also the whole world."
- "Futures thinking are the different ideas you have of what could happen in the future, your vision on the world in x amount of years."

We then also asked them if their vision of what futures thinking was had changed and if they had learned anything new. They stated that they definitely **learned** a lot of **new things**. In the past they only thought about the future on a personal level. These exercises were able to open their view.

Everything was rather clear to them and they found the thinking exercises **fun** to do. They found it very **interesting** to think about these topics but they don't often get the chance to do this. They also said that this was more fun and **more interesting** than some stuff they see in school. They would really like for this to be part of the history course. They would prefer to learn more about the future instead of the past. We are very happy with this testing. It made us feel confident about our toolkit. We feel like we have reached a lot of our goals.

Evaluation

We felt like the participant were definitely able to think critically about their own and others ideas. They felt **confident** enough to question their and others ideas and **debate** about these. Through the thinking hat's that we used we let them explore different **perspectives**. Through the thinking exercises we were able to let them experience futures thinking. When we asked them to define futures thinking afterwards we definitely felt like we taught them some **valuable lessons**. We made room for as much **creativity** ass possible although we did experience that this can be stimulated more. The participant didn't opt to draw any exercise, they also were hesitant to explore more 'farfetched' future scenario's.

Though the use of the **phenomenon** cards we let them experience that there is not just one future. This also learned them how important it is to be resilient and flexible. This exercise was difficult for some, the necessary guidance is very important here!

Within the different thinking exercises there was a lot of interaction each time.

Overall we were very happy with this testing. It made us feel confident about our product.

Creating the final product

After we made the first version of our product. We craved feedback because this was all of our first ideas and thoughts made tangible. But what were our blind spots?

We asked several people to look at the first version of our product and to give us their ideas of an improved product. Our promoter Thomas could pinpoint a lot of little details that went over our heads. We tried to contact some teachers so that they could have their input. We even had two separate testing groups. And last but not least, our experts gave us some feedback too!

What did we change and why?

We changed the name from methods to **thinking exercises** as it was more of a practice of futures thinking. We also changed some of these names of our thinking exercises to present the exercise and purpose more clearly (e.g. Alter ego and somebody else's shoes). At first we used the **thinking hats** made by Edward de Bono. Because this is a trademarked technique we later on decided to put our own creative spin on it. We then opted for a technique using '**spirit animals**'. Another change we did was that we added some more **tips** to support the teachers better!

In our first version we were going to use two different versions: a short and longer one. The problem was that in the short version, some thinking exercises would be omitted. We didn't like that. So we changed that to a **modular** way where the teacher has more power in choosing which exercises to do when there's less time available. In the new version every thinking exercise has a set amount of time it should take. This makes it easier for the teachers. We changed our explanations about futures thinking to show that we don't 'undergo' change, the human plays an active role in it. Humankind can constantly adapt to new changes. After the testing we had a lot of positive feedback which gave us a lot of confidence in our product.

How do we hope to integrate our product?

When doing our research we sent out a survey to our secondary target group (teachers in secondary education). At the end of our survey we gave the teachers the chance to submit their **email address** to receive the final version of our product. We had 53 amount of teachers who submitted their email.

Then we also became members of a **Facebook group** where teachers share lesson material with each other. When our product is finished we will share our toolkit with this group. This group has 8000 members.

Lastly we have created a **website**. On this website we want to offer our toolkit for free to anyone that is interested.

Website

In order to get our products on the market we created a website, www.projectforesight.eu. This website serves the purpose of **marketing** our whole project. It is a beautiful platform where everyone interested in the topic can find **information** about our **research**. We also offer our **tools** and thesis as **free downloads** so that everyone can enjoy and use them. Hopefully this extends the life of our creation and makes it so our work won't be forgotten.

Reflection

Topic

We had some freedom in the selection of the topic we based our thesis on. When we first brainstormed about possible subjects for our bachelor thesis, the topic: 'a post COVID-19 society' and 'futures thinking' came to mind. But the concept **'futures thinking'** was introduced by our promoter, with the COVID-19 crisis as our case study.

We are a **multidisciplinary group**, our background studies consists of: Applied Psychology, Social Security and Social Education Care. Different fields of education emphasize different competences, which is certainly an added value. However none of these educations focus on topics such as futures thinking. With the exception of the common minor **eSociety**. Because of this minor we acquired some basic information, but beyond that we basically started from scratch. Topic wise, this was definitely out of our comfort zone.

The **COVID-19** measures made **communication** a bit more difficult but also gave us an amazing case to work with. Taking this as our case was both confronting and powerful in a way. As we were actively researching and trying to find a solution for a current and future problems. The whole collaboration had to be done **online** because of the COVID-19 crisis. This was a new way of working together and it definitely didn't make things easier but we managed to deliver a decent product nonetheless. During this process we learned a lot about working in groups. It has not always been easy for us as a group. We definitely went through some difficult times. We had our fights, our laughs and we got to know each other so much better. This taught us how crucial **open communication** is. We think it is important that every member of the group is aware of every document. That is why we gave feedback on each individual task and then discussed it in a group so that we could improve ourselves and our product together.

Process

In the field of **research** we have always made great strides. From the beginning we were directly in line with the DESTEP analysis. By means of qualitative research, we also expanded our **literature study** with matters that the interviewees told us. Sometimes we had some difficulties with our preliminary research, we started on the same line but some had different ideas about the further research than others. Fortunately, we came out of this well and compromises were made. If we look back on our qualitative and quantitative research, we find it quite successful. In a relatively short period of time we were able to develop research with quite a lot of response. This allowed us to incorporate interesting insights into our product.

Our product contained a **website** and a toolkit (modular lesson package). Within the toolkit there is a collection of various thinking exercises in the form of games. These thinking exercises seem to us to be a first step to integrate the skill of futures thinking into the current lessons at school. Through the theory that is linked to the thinking exercises, we were able to create a total picture. This can be a prelude to the subject 'Time Science/Time Study'.

To improve our product we asked for feedback from teachers and experts on the topic. The first version was very enthusiastically received by the experts. It also felt good to have all these people believe in our project, after a 'long' journey of hard work. We also **tested** the toolkit with a target group (pupils aged 14-18), giving us new insights and shrewd remarks.

Just a couple of days before the deadline of our thesis we had an interview with Leah Zaidi. Leah is a futurist that got her Master's Degree in Strategic Foresight and Innovation. She is experienced in giving workshop about futures thinking. We wanted to have an interview with her because her input could help us create a better product. In general she was very happy with what we are trying to do. She says that our package of futures thinking methods is very exhaustive, she even recommended that we cut down our toolkit a little bit so that workshops could be given in shorter durations. We should also make it easier for teachers to select which of the games they choose to give during a lesson by clearly defining which of the parts fit together. A second point of feedback she gave is that sometimes our explanations aren't clear enough and could benefit from some visual guides. She says that during a workshop, the teacher won't have the time to guide every single student. We decided that it is a bit late to start making these structural changes but do agree that her feedback is grounds for further research.

Closure

Looking back, we are impressed and **proud** of what we have achieved in only eight weeks. We are happy with the product that we have made. We definitely gained a lot of new knowledge and **insight**, but also some important life **skills**. We are now fully convinced that futures thinking is something everyone should learn about. We owe a lot of these insights to our promoter **Thomas D'hooge**. With his positive and enthusiastic mindset he carried us through the lesser moments and used the moments of glory to lift us to a higher level. We sincerely hope that our product will be used in the (near) future.

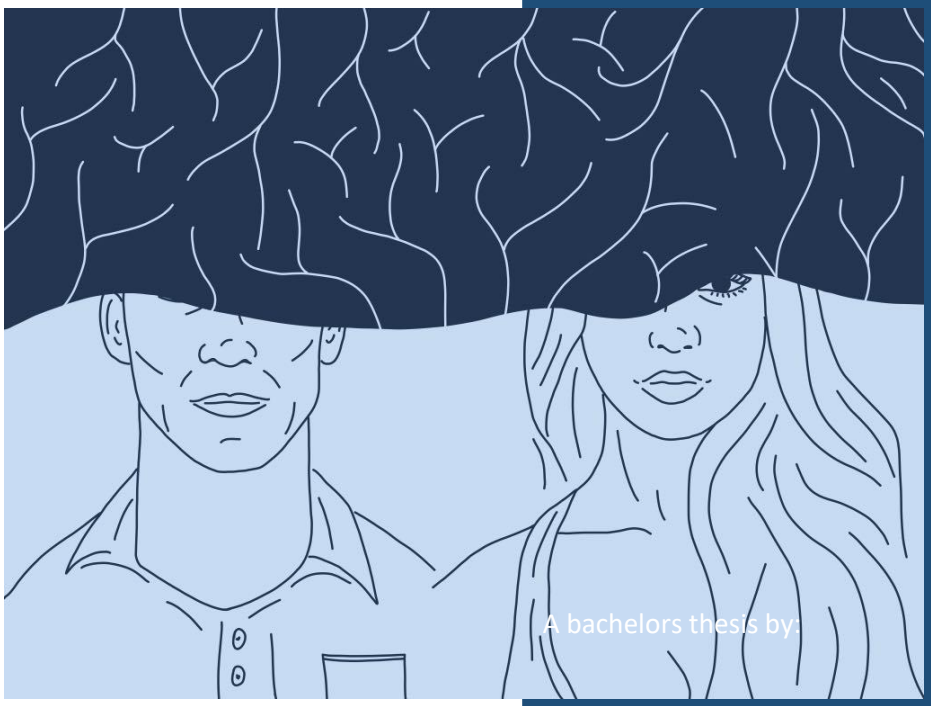
PRODUCT

Following pages contain the toolkits and their explanation (both for the teachers as for the students)

Theory for teachers

ProjectForesight

LESSON PACKAGE FUTURES THINKING



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Introduction

This toolkit was developed by a multidisciplinary group of six students from the VIVES University College in Kortrijk. The study areas we represent are educational sciences, Social Safety and Applied Psychology. The eSociety course brought us together to deliver a bachelor's thesis on this concept. Our central research question is:

"How can we facilitate the exercise of futures thinking in uncertain times?"

From our research, which can be found at www.projectforesight.eu, we have obtained a lot of relevant information. For example, we have had interesting conversations with various experts in futures thinking. We also carried out research among teachers and pupils in secondary education.

This toolkit comprises several methods that contain a theoretical explanation, a general explanation and a way to apply it in the classroom. Each exercise has an explanation about what is expected. The students will bring their different perspectives together and utilize our templates to complete each task successfully.

Why?

Why do we find it so important now that young people can think about and anticipate the futures? Why did we find it necessary to develop these tools?

"Learning to adapt!"

The young people of today are the people who will carry the nation in the future. Our literary study and several interviews with experts show that resilience and a dynamic mindset are two must-have characteristics in this century. Technology is changing rapidly along with the economy and the social aspect. Where people used to look at the world with a more rigid view, this is no longer possible today. We need to be ready for rapid change so that we don't miss the boat. For this reason we want to have an extra emphasis on adaptation, being able to deal flexibly future-oriented changes. A 'wonderful' example of this is the Corona crisis. In the blink of an eye everything changed. For many, their worldview has been affected. Several business models will or have already been reformed. That is why we believe that students should be able to anticipate the futures. Our research (consisting of interviews, surveys, literary studies and other insights) has all been carried out with the same goal in mind. Namely, to facilitate the exercise of futures thinking. Of which the main goal is: to teach a (21st century) skill by applying different analyses in an educational and creative way.

Futures Science

What is futures thinking?

Before we provide you with the necessary tools to let your students experience futures thinking, we would first like to clarify a few concepts. In the following chapters you will find all the necessary basic knowledge to get started with our toolkit. In this way you can support your students where necessary. At the end you will also find some extra literature that can be consulted, should you be tempted to learn more about the topic.

"Exposing your own assumptions."

Futures thinking is, a bit self-explanatory, thinking about the future. The most common form of thinking about the future is scenario thinking, which means making up stories, something everyone can do and definitely has done before. Thinking about the future is therefore of all times. However, it is not just about thinking about the future, but about what you can do with that knowledge when you can make links between the different domains. We think it is valuable that everyone does their part in futures thinking. Creating space for this is the first step. Here we go a step further. We want to teach specific methods that will enable people to make futures thoughts in a critical and well-founded manner by taking into account all kinds of social factors that interact with each other (WWF, 2019).

By teaching these methods, we want to lift young people to a higher level of futures literacy. **Futures literacy** is the skill that helps to expose one's own assumptions. Assumptions are things we no longer think about but assume to be true. These assumptions, or 'anticipatory assumptions', play a major role in how we make up our mental image of the future. Assumptions also have an influence on how we act and can therefore, in themselves, trigger certain future scenarios. Taking a critical look at your own assumptions will help to form a more objective picture of the future. Futures literacy is therefore an important skill because it provides resilience and mental stability (Vanderstraeten, Van Assche, Block, 2015).

The rise of futures thinking

The world and society are constantly changing. Because of this dynamic character it is therefore logical that thinking about the future is as old as the thoughts of mankind itself. Man has always wondered what the future will bring. The subject does always get more traction in the aftermath of world-changing events. 'The future' only became an explicitly discussed dimension for social scientists after the Second World War. When scientific innovation and inventions became more and more central in our society, people started to delve more and more into the domain 'future'. This increase in popularity led to the emergence of experts and trend watchers who are actually constantly looking at the present in order to form a vision of the future.

21st-century skills

What are 21st-century skills?

The world has been changing since the digital revolution. With the rapid change and transformation that has taken place and continues to take place, geographical boundaries are 'blurring'. The disappearance of borders has created a global competitive environment.

With the spread of technologies that allow us to easily find information that had to be learnt in the past, remembering information through school has decreased dramatically. It was new skills to deal with new technologies that have become much more important. Society is changing from a knowledge-based society to a skills-based society. It became much more important to become a know-how person instead of a knowledge person.

This is where the skills of the 21st century come into play. 21st century skills range from learning and innovation skills, critical thinking and problem solving skills, communication and collaboration skills, media and technology skills and many more (Cevik, M. & Senturk C., 2019).

These consist of eleven categories:

- Critical thinking
- Creative thinking
- Problem solving
- Computational thinking
- Information skills
- Basic IT skills
- Media literacy
- Communication
- Collaboration
- Social & cultural skills
- Self-regulation

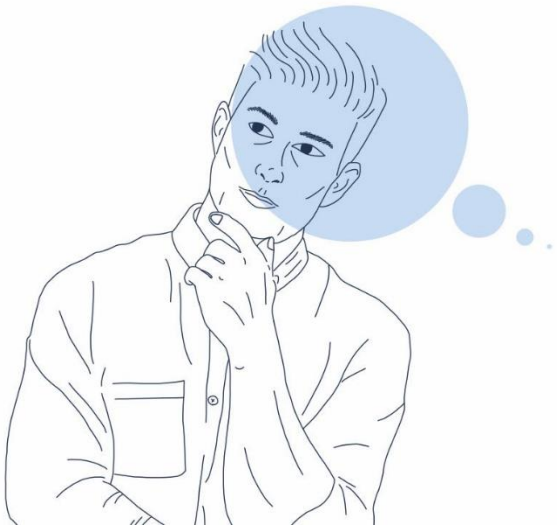
Being able to independently exercise critical thinking is essential in the digital age in which we live. Every day we come into contact with different information on social media. Often the distinction between correct and wrong information is not noticeable. With the emerging phenomenon of fake news being spread, it is even more important to be able to think critically. The information we get to see should not immediately be seen as true. This way of thinking makes us think more about the origin of information.

Because companies, schools and other educational institutions attach more and more importance to these contemporary skills and know-how and less to the knowledge acquired, it is important for everyone to learn these (Cevik, M. & Senturk C., 2019).

Different Methods

There's not one way to do futures thinking. During our research, we looked at various methods. We made a selection of them. These methods give the students some guidelines in order to experience in an accessible way what it is like to think about the future. We converted these methods into playful thinking exercises, to make it more interesting for the students.

For these thinking exercises, students will be divided into groups of four to six students. Each group will be given a different type of exercise that proposes a method for thinking about the future. While doing these thinking exercises, the students should draw up a scenario for the future using the explanations given in the manual.



After doing the exercises and learning to use the methods, the groups can present their scenario to the other students. It is best to also explain the method used during this small presentation. If the students succeed in explaining the method and its process excellently, you as a teacher do not need to give any further information. If this is not the case, you can always choose to give further information using the explanation below.

Course

Below you will find an overview of the progress of this toolkit.

During the **introduction**, the intention is to get the students to debate various propositions. The recommended time for this is approximately 15 minutes. Research indicates that the attention of young people starts to wander after this time period (Save The Children, 2019). The teacher is given the choice to make it as extensive or limited as possible. How many propositions are discussed is less important. Above all, let the pupils do their thing!

In the table below you will find a summary of the different methods, the estimated time they take and a short explanation:

Thinking exercise	Time	Short explanation
Futures wheel	15 min	The students each fill in a circle of the futures wheel. They will work out the 1st, 2nd and 3rd impact of one scenario.
Quadrant in your hand	15 min	Here each student works out 1 quadrant. In a group of 4 you will have all 4 quadrants covered. After each student has made his quadrant they will discuss this in their group. They briefly present all 4 scenarios in the classroom.
Branches of the future	15 min	In a branch analysis, there are an infinite number of branches. In the long version, there is plenty of time to work out 2 branches. But there is also the option to expand this to 5 groups where each learner prepares one branch.
Somebody else's shoes	15 min	The student gets a persona and works out 2 scenarios around the same persona. Using the 'Chapeau!' thinking roles to be able to create and maintain different perspectives.
A letter to the future	20 min	Everyone reads his letter in their group. They talk about it and look for similarities and differences. These similarities and differences are explained in class.

For the **conclusion** we propose a little exercise that should take about 15 minutes. The students reflect on the lesson and, with the whole class, they try to formulate a definition of futures thinking and futures literacy. You take into account the different terms that certainly need to be covered. Feel free to let the students tell you how they experienced the workshop.

Goal

"Promote futures thinking among young people."

The aim of this toolkit is to promote futures thinking among school age youth **between the ages of fourteen and eighteen.** By using this toolkit we want to teach the pupils a complement to the 21st century skills. Future science allows pupils to think critically about their own assumptions and social trends and contrasts them with scenarios that can disprove these assumptions and trends.

During these thinking exercises it should become clear that certain trends are present in everyday life. The purpose of the thinking exercise and theory also includes understanding them and trying to see which ones are prevalent in society. When one knows which trends are present in society, one can already make better guesses for the future.

In addition to the goals indicated above, we have also listed the **learning goals** we would like the students to achieve with this toolkit.

1. We want to teach young people a critical eye.
2. We want to introduce young people to the concept of Futures Thinking or Futures Literacy.
3. We want to let young people experience what it is like to think about the future.
4. We want to let them discover multiple perspectives.
5. We want them to be open to different opinions.
6. We want to teach them to anticipate the future through the different trends of the past and the present.
7. Through a fun experience we want to show them that the future is not to be feared.
8. We want to stimulate the creativity of young people.
9. We want to make young people aware that there are multiple futures and not one future.
10. We want to teach them to enter into a dialogue with each other. We want them to argue their assumptions in front of the other students.
11. We want to make them aware that the image of the future can change because of sudden events.
12. We want to teach them the importance of healthy curiosity.
13. We want to make young people aware of the role that technology can play and that they should not be dependent on it.
14. We want them to be able to use this skill for the rest of their lives.

Your spirit animal

General explanation

The main question is, "How do you see the world and the future? Do you see the future from different perspectives or from a single perspective? It is important that you, as a teacher, can help your students draw up and view the future from different perspectives, scenarios, events, causes, consequences, impacts,... for the future. That is why perspective cards have been added to every thought exercise. The students need to draw one card per person (except for 'Quadrant in your hand').

Theoretical explanation

In the thinking exercises (except 'Quadrant in your hand'), the students should be able to obtain future outcomes that contain different perspectives. These perspectives are represented by animals. The animals all look at the world from a different perspective. It is not the intention that one student takes on different roles, one student takes on one role per thinking exercise. Below you see the explanation of the six different animals;

- The **Hedgehog**: The hedgehog is always neutral, not negative and not positive. He always substantiates his arguments with figures and facts. He finds honesty and objectivity very important.

- The **Okapi**: The okapi can react very impulsively. He is very subjective and lets his emotions run free. He always reacts from his gut feeling. He often clashes with the hedgehog, because their properties are opposite to each other.

- The **Beaver**: Our beaver is a suspicious and careful animal. He also points out the weaknesses of a scenario and idea. He draws everyone's attention to the fact that not everything is positive and that ideas / thoughts / scenarios have more disadvantages than advantages. He is bitter and pessimistic.

- The **Goose**: The Goose waddles happily through life from place to place. He's always cheerful. He sees a positive aspect in everything, is open to renewal. The Goose and the Beaver are not good friends.

- The **Eagle**: The all-seeing Eagle keeps the overview in the exercise and provides structure. He has a helicopter perspective on the exercise. He concentrates on the organization of the thought process and the use of the perspective maps. He is sober and stays with his feet on the ground.

- The **Guinea Pig**: The Guinea Pig is a creative jack-of-all-trades and has a creative solution for everything. Everyone is amazed by his new insights. He can seem chaotic. The Eagle ensures that

the chaos of the Guinea Pig gets structure.

Statements

Below are a few statements. We chose to take these as an introduction in order to stimulate young people to think about the future through debate. "What if?" Questions are an easy way to think about the future. This is also something that everyone does at some point in life. In this way, we hope to open up the young people to other points of view of fellow students.

These statements appear on a slide. The class can discuss each proposition. You can be creative with them, so you do not have to discuss every statement and you can always add new ones.

"What if ….?"

1. **global warming became the government's number one priority?**
   Extra explanation: Global warming has long been a much discussed topic. Due to various causes (greenhouse gas emissions, deforestation, emissions, ...) the earth is warming further and further.

2. **Donald Trump would dominate the world?**
   Extra explanation: Donald Trump became the 45th U.S. president on January 20, 2017. The United States of America has a lot of power and influence on a global level. Trump's ideology can be placed on the right-wing authoritarian side of the political compass. This means: strict immigration policy, placing responsibility on the citizen, limited social security, capitalist economic system, pro-weapons law, ...
   Trump also does not believe that global warming will have harmful consequences, so he does not invest in such bodies dealing with it.

3. **all jobs were performed by robots (such as: nursing, shop assistant, ...)?**
   Now a lot of people work as workers in a shop or in a hospital as nurses. But what would happen if the cash registers were replaced by robots that automatically scan your groceries? What if robots were to administer medication and take over basic tasks from healthcare personnel?

4. **water became a luxury product?**
   Maybe someday water supplies will run out. We still have enough water for everyone now, but what if there is water for only part of the population?

5. **using the internet became illegal?**
   Extra explanation: Use of internet services would be punished by the government. Perhaps the black market, for example, will create a support base for it.

6. **the population will have doubled by the year 2030?**
   Extra explanation: The capacity (enough raw materials to produce goods like drinking water, food, electricity, ...) of Mother Earth is estimated between 9 and 10 billion people. Now there are 7.8 billion people.

7. **we no longer have fossil fuels (petrol, kerosene, diesel)?**
   Extra explanation: Fossil fuels are one of our biggest sources of energy. According to scientists it is estimated that at this rate we will run out of fossil fuels in 2060.

8. **a nuclear bomb will fall on the United States of America?**
   Extra explanation: The U.S. is seen as the country with the most impact on the economy. In the presentation an illustration is shown showing the impact of a 50 Megaton atomic bomb (second largest atomic bomb).

9. **There is world peace (no discrimination, no war, ...)?**
   Extra explanations: World peace = no war, no geopolitical conflicts, no extremism, no racism, no discrimination, no poverty, ...

10. **we're going to colonize other planets?**
    Extra explanation: Within our solar system, Mars is the most suitable planet to colonize. There are also suitable planets outside our solar system. The closest one is at 4.22 light years, with today's technology we take 85,000 years to bridge that distance.

11. **there was no more social security?**
    Extra explanation: Social security is a government system that helps or provides people financially. So that every citizen can enjoy the basic needs.

These tips will certainly come in handy when discussing the statements:

- Encourage students not to stick to one future.
- Make students aware that both positive and negative scenarios exist.

- Give the students enough time to think about each proposition. The propositions are not easy and often a lot of thought is needed to form an opinion.
- Agreeing with someone else cannot be regarded as an opinion of one's own (often there are still nuances).
- Working with a talking stick is beneficial when working in larger groups (e.g. the whole class together).

Thinking exercise 1: Branches of the future

Branch analysis is the creation of futures scenarios by taking into account the most important questions and the impact of different events. Scenarios are not predictions. They offer interesting insights and challenging visualizations of the future. They are used to explore alternative ways in which the future can develop. It is important to consider more than one scenario and by having a set of scenarios you can test how different interventions can work under different circumstances (Block, 2011).

Branch analysis is especially useful for thinking about uncertainties and for relating them to possible future events such as elections. It is also important to ask the 'What if?' question, such as: "What would happen if we had another major stock market crash?" It is important to remember that we are not trying to predict the future, but to think about possibilities and anticipate accordingly (Bandhold, Lindgren, 2003).

There are several important elements that must be taken into account when drawing up the scenarios:

- There must be a clearly defined central focus.
- Scenarios are most effective when one thinks at least ten years into the future. In this way, current trends are taken into account and further thought needs to be given to how they would evolve in the future.

For 'branches of the future', these **tips** help to give a better **structure**:

- Encourage students to work out multiple scenarios. It is important that they do not have a tunnel vision on one possible elaboration of a scenario.
- The questions in the table motivate the student to see the trend between the different events.
- The student should be able to think broadly about the first event in order to draw up the following events in concrete terms.
- It is important that they think about what will happen in the next events, beyond the current reality.
- Be aware of the difference between anticipating and predicting.
- It is important that they all formulate their own opinions, not just agree with the others.

The **learning objectives** of this exercise are as follows:

- Teach the students to keep a critical eye.
- To familiarise students with the concept of Futures Thinking or Futures Literacy.
- Teach students to experience what it is like to think about the future.
- Allow them to experience what it is like to think about the future.
- They should be open to different opinions and stimulate creativity.
- Awareness that sudden events (such as Black Swan, Black Elephant & Black Jellyfish) can change the perception of the future.
- Make students aware that there are several futures and not one truth.

Thinking exercise 2: Quadrant in your hand

In this thinking exercise, the futures scenarios will be determined by drawing a few cards. The students draw as a group from the four stacks of cards. When the quadrants are formed after the cards are drawn and the students know which direction to go in, the quadrants are divided by the group and each student starts working with one quadrant. Based on a creative expression of the scenarios, drawing or writing or other, the scenarios will be formed.

Below you will find the explanation per type of card (King, K., West, J. R., & Damashek, S., n.d.):

There are four types of cards.
The **first deck** of cards are **year cards**. These give an indication of the year in which the scenarios occur. Possible date cards are: In 5 years', 'in 30 years', 'in 100 years', 'in 200 years' and 'in 1000 years'. From this pile, students take one card, which applies to all four quadrants.

The **second stack** of cards are **factor cards**. These indicate an additional factor to be taken into account when drawing up their scenario. From this stack, the students take one card, which also applies to all four quadrants. There is a wildcard where the students can make up their own factor. There is also a blank card where you, the teacher, can add your own factor if you wish.

The **third stack** of cards are **quadrant cards**, these decide which quadrant the students have to fill in. Here they take four cards, one card per student.

The **fourth** are the **DESTEP cards**, which contain a macro factor. Here the group takes two cards, these will form the axes. DESTEP is an acronym for:

- **Demography:** The size and structure of a population
- **Economy:** type of economy, GDP of a country, ...
- **Socio-cultural:** Characteristics of a culture or living habits
- **Technology:** advances in technology (e.g. medical devices in healthcare)
- **Ecology:** the physical environment
- **Politics:** government decisions,…

With quadrant in your hand, everything is determined by drawing a few cards. These **tips** can help ensure that this method runs smoothly:

- Through a clear explanation of the different cards, ideas for the assignment are immediately found.
- The DESTEP cards are the central concept for this scenario, the students should not forget this.
- The different arrows show the evolutions (in the example) between ecology and technology. This is a useful approach to extend the thinking with conditions. Encourage them to be as creative as possible.

The **learning objectives** of this exercise are as follows:

- Teach the pupils to take a critical look.
- Make students aware of the role that technology can play and that they should not be dependent on it.
- Make the pupils aware of the importance of futures thinkers.
- Let the pupils experience what it is like to think about the future.
- We want to make them open to different opinions and discover different perspectives.
- Finally, we want to teach them to anticipate the future on the basis of different trends of the past and the present.

Thinking exercise 3: A letter to the future

The students will write a letter to themselves. They will think about how they see the future, what assumptions they make and what trends they see, in their own lives. Of course it will not be a prediction of the future, the future remains unknown (Coddington, 1976).

Drafting a letter to the future is not easy. That is why below you will find some **tips** that can help students:

- The pupils can stick a year on it to make it clearer.
- Students should clearly reflect the positive and negative evolutions in their letter. Let them argue why they are evolving in this way.
- Let the pupils write about things that concern them. Current events in society, in their own sphere, ...
- Let the students think about the different aspects of the DESTEP analysis.
- Thinking together with other students can be good when they are stuck, but make sure that their own thinking pattern is not influenced too much by others.
- Encourage students to write enough key words.

The **learning objectives** for this exercise are as follows:

- Teach the pupils to keep a critical eye.
- Introduce the pupils to the concept of Futures Thinking or Futures Literacy and let them experience what it is like to think about the future.
- Demonstrate through a fun experience that the future is not to be feared.
- But also stimulate their creativity so that they can apply it and carry it with them for the rest of their lives.

Thinking exercise 4: Futures wheel

The futures wheel is one of the most widely used methods of futurists. It is a creative way of encouraging people to think about the future. It is usually about organizing a trend or about the ideas surrounding a future development (Bandhold, Lindgren, 2003).

In each wheel a central question/ theme is discussed, which is in the middle of the page. Subsequently, the pupils go in search of events, consequences, ... which may possibly result from the central topic. First there are the direct consequences around the first level and then the indirect consequences. The levels are characterized by concentric circles.

The arrows can be equated with connecting lines. These lines are a visual representation of the connections that visualise the relationships between the causes and the changes that flow from them. In this way, the futures wheel can help develop multi-concepts about possible futures scenarios. The futures wheel also helps with classroom brainstorming sessions.

It can be carried out alone or as part of a larger project in a group. Futures wheel challenges everyone to enrich their own perspective by giving it a different place. It is not a valuable exercise if everyone sticks to his/her idea. The core of this exercise is that complex problems can be investigated more effectively with a diverse team than by the best individual experts (Van Assche, Block, 2015).

There is nothing self-evident about Futures Thinking or about guiding the students. Below are a few **tips** to help:

- Let them think for a moment about the scenario without writing anything down. A little brainstorming.
- The pupils should write down/think about both the good and bad influences of this scenario.
- Several questions can be found in the game bundle for the pupils as extra help.
- Pupils are certainly allowed to use their imagination. This is very important, but should also remain reasonable.

The **learning objectives** for this exercise are as follows:

- Teach the pupils to keep a critical eye.
- Let them experience what it is like to think about the future and let them see the importance of futures thinkers.
- Using different trends from the past and present, they learn to anticipate the future.
- Stimulate young people's creativity and be aware that the image of the future can change as a result of sudden events.
- They show that they can apply these skills and carry them with them for the rest of their lives.

Thinking exercise 5: Somebody else's shoes

In this exercise, the students within the group will work on a more personalized scenario for the future. Several cards with the information about fictive people ('persona card') will be handed out to the students, one card will be drawn per group. Afterwards, a pile of cards will be placed on the table. These cards contain the text: 'over 20 years'.

For this thinking exercise it is best to make groups of four to six students. The intention is for the pupils to empathise as much as possible with the assigned persona. With the prescribed date in mind. Next question they will have to ask themselves:

"What will the life of person A look like in X number of years?

It is important that they base themselves on the individual and diverse characteristics specific to each persona. There is also a blank persona added where you can create a persona yourself. The future is not fixed, everything is possible (within the realm of reality). So let their creativity run free, but as a group they have to be able to motivate their findings. Eventually they will use **storytelling** to describe a specific situation of their choice, entering into a dialogue with their fellow students about this is important.

In the 'Somebody else's shoes' method, the students work in groups. These **tips** help:

- In this method, the pupils should be as descriptive as possible. Details are encouraged!
- It is important to think about the fact that the future of this fictional persona is not fixed!
- With these different persona, it is important to keep an open mind. Because it is only a short description, the creativity and the point of view of the students on different subjects can shine.
- If it proves to be a difficult exercise, the students can take turns saying a sentence from the scenario. They argue their point, so that there is room for discussion.

The **learning objectives** of this exercise are as follows:

- Teach the pupils to take a critical look.
- The pupils learn to enter into dialogue with each other and exchange ideas.
- Make them aware that there are several futures and not one truth.
- Learning the importance of curiosity.

Future shocks

We find it important that students experience that there is not just one future. There are multiple futures. They will never know with 100% certainty what will happen. We want them to experience this with these phenomenon cards. These will be added as an appendix.

"There is not one future!"

After the scenarios have been formed, the pupils are confronted with various phenomena in the scenarios they have drawn up. The teacher will hand out a card to each group with an event that is sudden and makes very drastic changes. It can sometimes seem easy to see trends and try to predict them during normal evolution. But sometimes different types of sudden events can occur, sometimes these can be totally unexpected but sometimes they can be things that have been looming over us but were simply ignored. These different kinds of unexpected events are explained in more detail below. A sudden event that can cause a turnaround in society is not always a bad thing. One can deal with sudden events in different ways. One can go back to the past, there can be a transformation, etc. Sometimes it's not about sudden events but just about phenomena that have been present in society for a long time.

A **black swan event** refers to the discovery of Dutch world travellers who discovered black swans in Australia (Chambers, 2020). This was never seen before in the West. The term then evolved to the fact that an impossible perception is later refuted. In other words, a black swan is an unexpected event that no one can predict or see coming. A black swan causes a sudden change in the current system. You cannot prepare for a black swan. It is precisely because it is perceived as an impossibility that we do not prepare for it (Ambrosini, Mazzoleni, Turchetti; 2020). You cannot prepare for it, because you don't know what event can happen.

A **black elephant** comes from the statement "the elephant in the room". With a black elephant we know there is a problem but we ignore it. Nobody addresses the elephant in the room. So a black elephant is a problem that is globally present and proven but that we consciously ignore. When it is addressed there are many disbelievers. A well-known example of this is the continuous climate warming.

A **black jellyfish** is the combination of a black elephant and black swan. A black jellyfish represents a number of events and phenomena that, if left unattended, can escalate dramatically. Ignoring the problem and the drastic impact that the escalation would have are drawn from the elephant and the swan. This is a hybrid of both.

We use the methods to learn to think about the future and to look at the different scenarios. However, it remains impossible to prepare for one possible future. It remains important to keep the pitfalls in mind when thinking about the future. No matter how well you want to prepare for later, these phenomena and events can cause you to suddenly need a **reframe** of the vision you had for the future.

Conclusion

To conclude, the intention is that the students in group (entire class) try to write down a definition for the concept of futures thinking. It is important that certain terms get brought up and emphasized:

- Thinking about the future is an age-old concept.
- You cannot predict the future.
- Creativity is important.
- There are an enormous number of factors that will shape the future.
- There are well-founded methods that help to map out these thinking patterns and their effects.
- Mastering these methods will help improve futures literacy.
- The importance of adaptability and flexibility when anticipating the future.

At the end of this toolkit, we hope to have made some concepts clear to students. When they become aware of these concepts they will have learned a skill that, if trained, will provide mental flexibility throughout their lives in the face of change.

"Futures thinking is a fantastic centuries-old concept where you can let your creativity run wild. But you can't predict the future."

Extra literature

If you want to learn more about this subject, we recommend the following sources:

- 'Toekomst verkennen' by Freija van Duijne en Peter van der Wel (Dutch)
- 'Trend forecaster's handbook' by Martin Raymond.
- 'Toekomstmakers' by Bruno Tindemans and Derrick Gosselin. (Dutch)
- 'Transforming the Future: Anticipation in the 21st Century' by Riel Miller.
- 'How to Research Trends: Move Beyond Trendwatching to Kickstart Innovation' by Els Dragt.
- '21 Lessons for the 21st Century' by Yuval Noah Harari.
- Trendwatching.com

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You win the lottery.


There is a stock market crash.


There is a natural disaster in your country.


You go viral on social media.

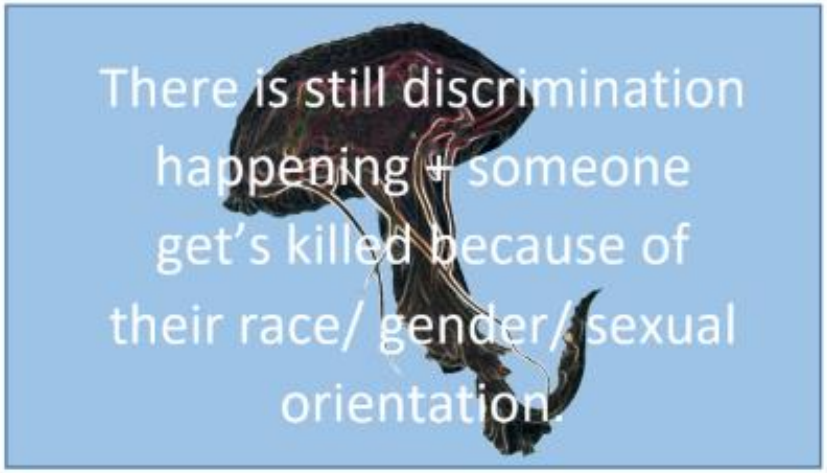

Climate change keep progressing at this rate.


A pandemic breaks out.


There continues to be a gap between the rich and the poor


There is still discrimination (based on race, gender, sexual orientation etc.)


A gap between the rich and the poor + a stock market crash.

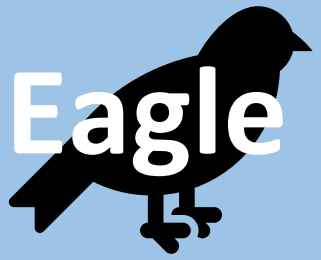

There is still discrimination happening + someone get's killed because of their race/ gender/ sexual orientation.


There is a pandemic + you win the lottery.


Climate change continues + a natural disaster happens in your county.

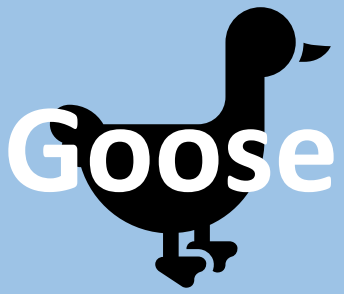
Guinea Pig

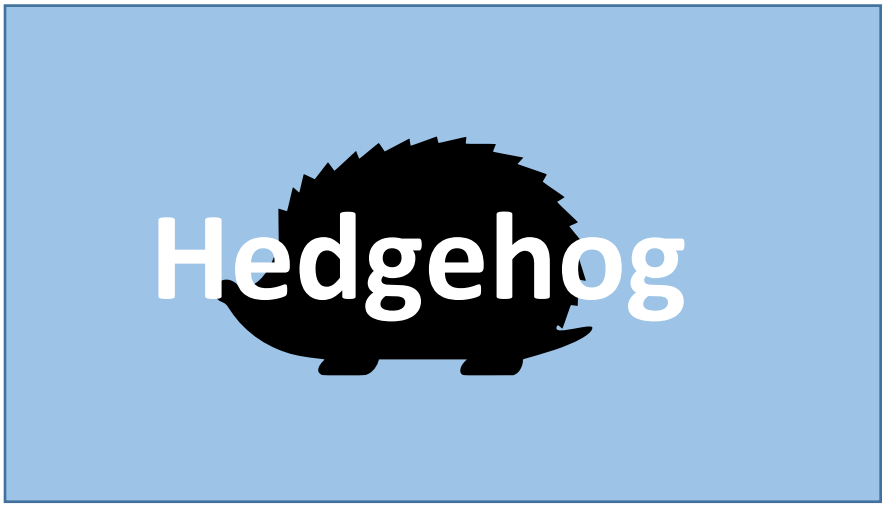
Eagle

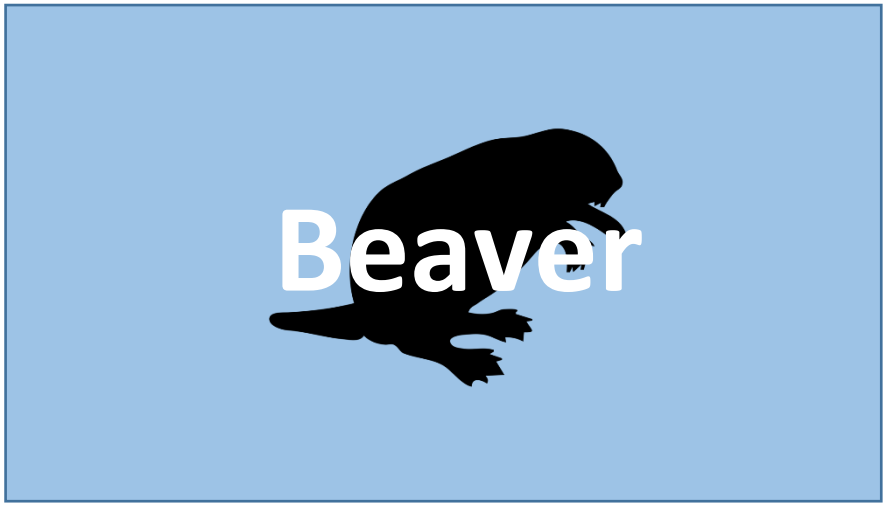


Okapi

Goose




Hedgehog


Beaver

ProjectForesight

Thinking exercises for students

TOOLKIT FUTURES THINKING

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Table of content

Introduction

This toolkit was developed by a multidisciplinary group of **six students** from the VIVES University College in Kortrijk. The study areas we represent are Orthopedagogy, Social Safety and Applied Psychology. The eSociety selection process brought us together to deliver a bachelor's thesis on this concept. Our central research question is:

"How can we facilitate the exercise of futures thinking in these uncertain times?"

From our research, which can be found at www.projectforesight.be, we have obtained a lot of relevant information. For example, we have had interesting conversations with various experts in futures thinking. We also carried out research among teachers and pupils in secondary education.

This toolkit consists of several methods that contain a theoretical explanation, a general explanation and the application. Each exercise explains what is expected. From different perspectives, we start working with the necessary templates and bring the assignment to a successful conclusion.

Your spirit animal

General explanation

The main question is, "How do you see the world and the future? Do you see the future from different perspectives or from a single perspective? It is important that you, as a student, can draw up and view the future from different perspectives, scenarios, events, causes, consequences, impacts,... for the future. That is why perspective cards have been added to every thought exercise. You draw one card per person (except for 'Quadrant in your hand').

Theoretical explanation

In the thinking exercises (except 'Quadrant in your hand'), you should be able to obtain future outcomes that contain different perspectives. These perspectives are represented by animals. The animals all look at the world from a different perspective. It is not the intention that one person takes on different roles, one person takes on one role per thinking exercise. Below you see the explanation of the six different animals;

- The **Hedgehog**: The hedgehog is always neutral, not negative and not positive. He always substantiates his arguments with figures and facts. He finds honesty and objectivity very important.

- The **Okapi**: The okapi can react very impulsively. He is very subjective and lets his emotions run free. He always reacts from his gut feeling. He often clashes with the hedgehog, because their properties are opposite to each other.

- The **Beaver**: Our beaver is a suspicious and careful animal. He also points out the weaknesses of a scenario and idea. He draws everyone's attention to the fact that not everything is positive and that ideas / thoughts / scenarios have more disadvantages than advantages. He is bitter and pessimistic.

- The **Goose**: The goose waddles happily through life from place to place. He's always cheerful. He sees a positive aspect in everything, is open to renewal. The goose and the beaver are not good friends.
-

- The **Eagle**: The all-seeing eagle keeps the overview in the exercise and provides structure. He has a helicopter perspective on the exercise. He concentrates on the organization of the thought process and the use of the perspective maps. He is sober and stays with his feet on the ground.
-

- The **Guinea Pig**: The guinea pig is a creative jack-of-all-trades and has a creative solution for everything. Everyone is amazed by his new insights. He can seem chaotic. The eagle ensures that the chaos of the guinea ig gets structure.

Branches of the future

(Appendix 1)

General explanation

The method that is briefly explained here is **the branch analysis**. Branch analysis is the creation of future scenarios by taking into account the most important questions and the impacts of different events (School of International Futures, 2019).

Theoretical explanation

Scenarios are **not predictions**. They offer interesting insights and challenging visualizations of the future. They are used to explore alternative ways in which the future can develop. It is important to consider **more than one scenario** and by having a set of scenarios you can test how different interventions can work under different circumstances.

Branch analysis is especially useful **for thinking about uncertainties** and relating them to possible future events such as elections. It is also important to ask the 'What if?' question. In doing so, you try not to predict, but to think about it and thus possibly **anticipate** it.

On the template there is room for a **limited number of consecutive events**. It's not that there are only a few events, only the template can't continue indefinitely. Don't let your thinking be limited by this.

Application

You get to work with the given template and the scheme where you find the central question. These two tools will help you visualize it. The intention is that each time you will describe the **possible events** by means of the following questions: 'What?', 'Why?', 'How?' and 'When?'. These are events that, in themselves, provoke another event, every action has a reaction. Eventually you will come up with a final scenario that you can then discuss with the other groups afterwards. In a branch analysis you have an infinite number of branches, for this exercise you work two out.

Quadrant in your hand

(Appendix 2)

General explanation

In this thinking exercise you will be able to create a 'quadrant' of your own choosing. We use **two axes** that cross at right angles, creating **four planes**. One such plane is also called a quadrant, hence the name (Steen D., 2015).

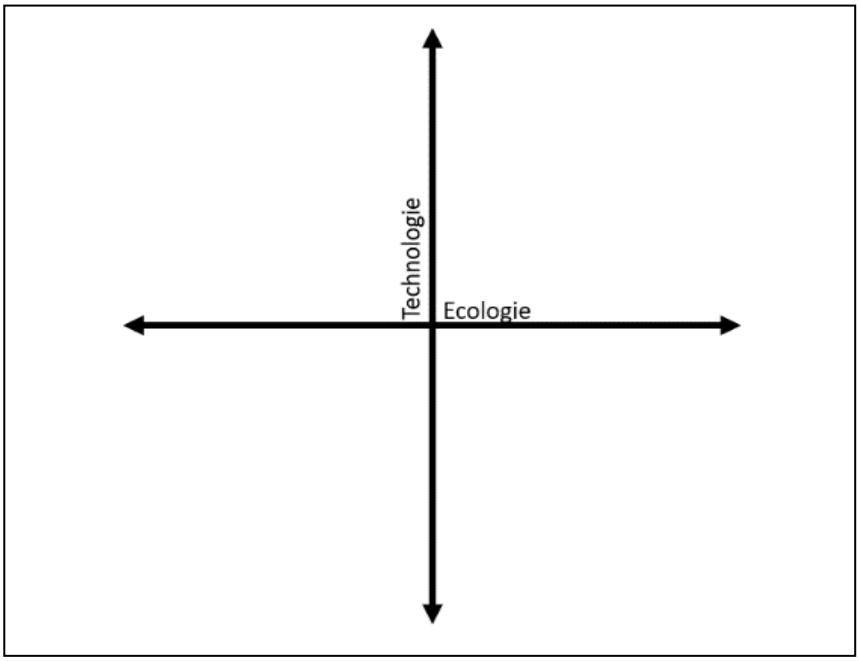
Application

Each student works out one quadrant. In a group of four, you must be able to cover all four quadrants. After each student has made his quadrant, you will discuss this in group. Then you briefly explain all four scenarios in the classroom.

Below you find the explanation per **kind of cards** (King, K., West, J. R., & Damashek, S., z.d.):

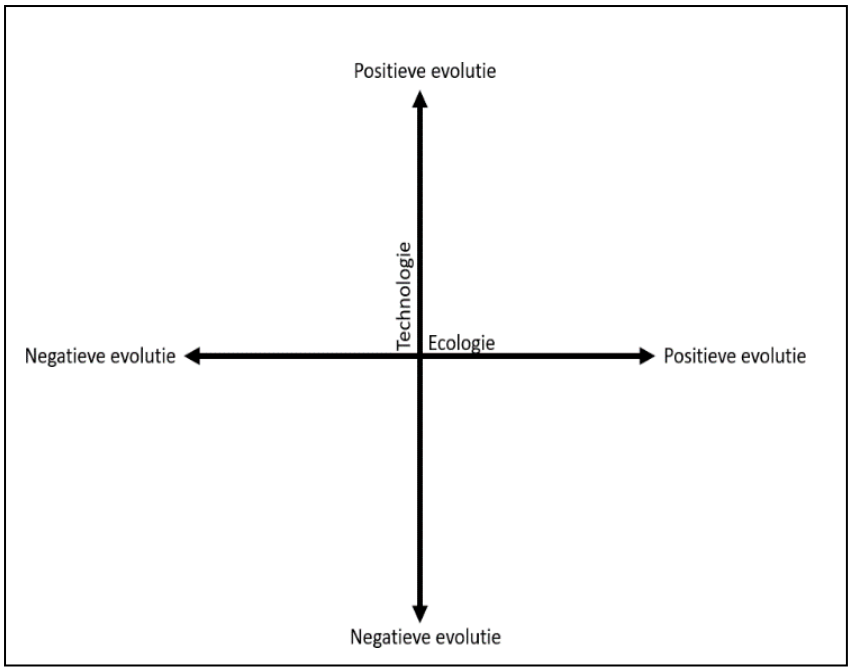
- **The first** deck of cards are year cards. These give an indication of the year in which the scenarios occur. Possible date cards are: 'in 5 years', 'in 30 years', 'in 100 years', 'in 200 years' and 'in 1000 years'. From this stack you take one card, this one applies to all four quadrants.
- **The second** stack of cards are factor cards. These indicate an additional factor that must be taken into account when drawing up your scenario. From this stack you take one card, which also applies to all four quadrants. There is also a joker card where you can make up your own factor.
- **The third** stack of cards are quadrant cards, these decide which quadrant to fill in. You take four of these, one card per student.
- **The fourth** are the DESTEP cards, which contain a macro factor. Here the group takes two cards. DESTEP is an acronym for:
    - **Demography**: The size and structure of a population
    - **Economy**: type of economy, GDP of a country, ...
    - **Socio-cultural**: the characteristics of a culture or living habits
    - **Technology**: advances in technology (e.g. medical devices in healthcare)
    - **Ecology**: the physical environment
    - **Politics**: including government decisions

These will form the axes. This could look like this:

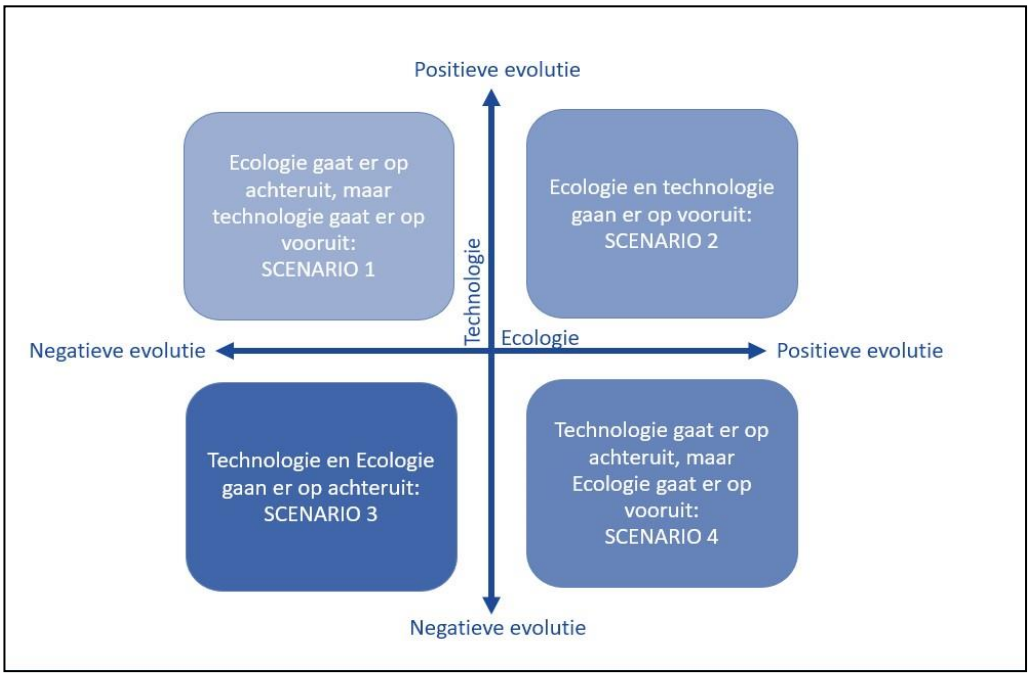


The horizontal arrow shows the evolution of **'Ecology'**, left: negative evolution and right: positive evolution.

The vertical arrow shows the evolution of **'Technology'**, above: positive evolution and below: negative evolution. Visually it looks like this:



By doing this, four quadrants are created. Now it is up to you to make a story or drawing for your quadrant. This as creatively as possible. Anything is possible because the future is not fixed. Eventually four scenarios will be created:



Now it's up to you to **briefly explain your scenario** and elaborate how you came to your findings. Important questions here are: "What?", "Why?" and "How?".

A letter to the future

(Appendix 3)

General explanation

By writing a **letter to yourself in the future**, you think about how you see the future. Nobody knows what the future will look like, but anyone can think about it. Will the world look rosy in 20 years' time, or is it more of a dark atmosphere? Let your imagination work (Revue, 2020).

Application

Drafting a letter to yourself in 20 years isn't easy. That's why a template has been added with **some questions**. You can fill in your answers in **key words** on the template. The intention is that you start working with your key words and write a nice letter on another page. You can possibly finish your letter with **a drawing** (e.g.: draw the village/town you live in, draw the house you live in, ...). The choice is yours if you want to **discuss it in class** or not.

1. Name
2. Age
3. Profession
4. Year
5. How does a normal day look to you?
6. What's on your mind, what do you often think about?
7. Which events of the past 5 years stick with you the most?
8. Where do you see yourself in 10 years?
9. What message would you like to give your young person about the future?

Futures wheel

(Appendix 4)

General explanation

The futures wheel is a visual representation of the (in)direct impact and consequences of a (possible future) scenario. This method is one of the most widely used methods of futurists and now it is up to you. Through this creative way you are encouraged to think about the future. Keep in mind that it is about organizing a trend and thinking about the thoughts of a future development (School of International Futures, 2019).

Theoretical exlanation

In each wheel a central question/centre theme is discussed, which is in the middle of the paper. Then you go in search of events, consequences, ... that could possibly result from the central topic. First there are the direct consequences around the first level, followed by indirect consequences. You can equate the arrows with connecting lines. These lines are a visual representation of the connections that visualise the interrelationships between the causes and the changes that flow from them.

Application

You look very carefully at the chosen scenario (for example: "What if everyone became a vegetarian?").

1. You fill in the wheel (= circle), impact per impact. First the direct impact and then the indirect impact. When filling in the following circles, they only continue on the scenario of the previous circle, not the one of the central one.

2. Filling in the third circle can be difficult. The questions below may help:
   - What are the most important or most provocative implications you have identified?
   - Who are the key stakeholders who can best address these implications?
   - What needs to be done in the short term?
   - What needs to be done in the longer term?

3. In the end, you share all the wheels. Attention is paid to the consequences.

4. It is about the possible consequences of a change and the art of considering them when thinking about the future. Anticipating the future is the key, not being able to predict it.

Somebody else's shoes

(Appendix 5)

General explanation

For this thinking exercise it is best to make groups of **four to six students**. There is a list of 10 persons, of which various characteristics such as: age, sex, nationality, profession, family composition, ... are described. Each group is assigned **two persona.** There is also a stack of cards prescribing different dates: 'in 10 years', 'in 30 years', 'in 50 years' and 'in 70 years'.

Now the intention is **to live in the assigned persona as the group**. With the prescribed date in mind. The next question you will have to ask as a group: 'What will the life of person A look like in an X number of years? It is important that you base yourself on those individual and diverse characteristics specific to each persona.

The future is **not fixed**, everything is possible (within the realistic). So let your creativity run free, but as a group you have to be able to motivate your findings. Eventually you will use **storytelling** to describe a specific situation of your choice; entering into a dialogue with your fellow students about this is important.

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Attachments

Attachment 1: Interview Martine Delannoy

Introduction

Martine Delannoy is a Belgian woman with Canadian roots who has been working for Digipolis for 13 to 14 years. She works within the ICT sector and is responsible for the cities of Ghent and Hasselt, where she is foresight officer. She advises the city on how to make a good digital and technological decision that takes possible futures into account. For the most part she has taken on strategic functions over the years, system thinking being no stranger to her. Martine is also familiar with smart cities and government policy. Mrs Delannoy allows the conversation to be recorded and does not need to be published anonymously. She would have liked to have a look at the work before it is published.

Middle

Curriculum and futures thinking

Martine studied long-term thinking for a long time and used it as an extra perspective for futures thinking. By mapping out different perspectives, it became a familiar subject for her over the years. It all started with the subject of participation. She indicated that she learned about this subject in the process. The first book she read on this subject was 'Future Makers' by Bruno Tindemans and Derrick Gosselin. They talked about how cities should think more ahead in the interest of every human being. An idea that seems easier to realize than it is.

According to her, futures thinking is something of all times. Futures thinking is not only thinking about the future, but also doing something with that knowledge. It comes and goes, because of this crisis Martine hopes that more attention will be given to futures thinking. There are always experts, people who think evolutionarily and think about the future. The choice to see these people as leading persons depends on period of time. They don't always get the same amount of attention.

Creativity is very important in learning about futures thinking, but also linking different sub-areas that could have something to do with futures thinking. There are various sources that provide courses in 'futures thinking'. Martine herself is currently attending a training course in Stockholm on this subject. In Brussels there is an Erasmus school with which she has worked for. Occasionally she follows a course about futures thinking in Flanders, but they are not numerous. In Scandinavian countries such as Sweden and Germany this topic is dealt with more often (in France you will also find some).

According to Martine, getting education interested in a subject such as time studies is a wonderful idea. There is a great need for this. She advises to offer futures thinking in a part of the lessons. In this way you can gradually get the education interested in the whole area. The focus is mainly on primary education when it comes to this subject. Martine is not in favor of replacing the subject of history. She thinks it is difficult to replace a certain subject such as history. She does think it is feasible as an addition. The two subjects complement each other. A course such as history can possibly be divided into: insight, hindsight and foresight, thus offering the future.

Futures literacy

According to Martine, futures literacy is learning to think in the future. She finds it important to anticipate on the future, but not to predict the future. There are people who call themselves a futurist and are certain about the future, but certainty is never there and we are in a good time to realize that.

Martine uses the TAIDA methodology. This involves tracking (trends) analysis (linking different things), imaging (we identify possibilities and generate visions on what is desired (which strategies), deciding (which strategies) and acting (action). In the past Martine practiced jobs in which scenario thinking was central. That is a very nice method, but within a context such as government, this becomes difficult. It is often not serious enough. For methods that help in translating to strategies, the 'Institute for future' is very interesting, they offer several nice tools.

Things that started very small can have major consequences, COVID-19 is the best example of this. The future is always uncertain. Now people are much more aware that it is so uncertain. Maybe people are more aware that the future cannot be predicted. This is not special, times are always uncertain. What Martine also notices is that technology is developing very fast.

COVID-19

Much is written on the subject of COVID-19, information enough. She looks at it positively, she sees a big tilt happening. We appreciate more and we appreciate what someone else is doing. She suspects that people are becoming generally aware that they not only have to play with small actions, but can also have an influence on choices that are made. It is therefore certainly useful to apply futures thinking during this COVID-19 crisis, but the crisis has created fluctuation and urgency at a rapid pace. Martine thinks that most matters can be dealt with again very quickly and that they will be processed very quickly. The summer will be a moment of rest, they want to prepare the possible second wave. As Martine pointed out at the end of the previous section, technology is developing faster. There is a serious rise in video chatting, all touchless ICT devices are also developing faster. These are the two biggest changes according to her. In this way, there is a creative way of promoting and maintaining social contacts and skills.

According to Martine, COVID-19 is (partly) a black swan. Martine wonders if health experts really hadn't seen it coming. She is not sufficiently familiar with health research. There is indeed a link between futures thinking and a black swan. Mrs Delannoy sees two possible influences, on the one hand this can create a much greater awareness that they take others into account much more. Or it is possible that they see this as a once in a lifetime event. On the other hand, it's such a low influence that they don't feel like anticipating it and return to business as usual without much effect. The Corona crisis only partly influenced her future, because she already had it in her sights. Now she is more urgent about how she can encourage others to apply futures thinking. She also sees it as a moment of rest, there has been a lot more attention for this subject. One person looks at it in a positive way and the other does not.

In the article that Mrs Delannoy had forwarded, there are several graphs showing how the future may evolve. She thinks that society will evolve according to the transformation phase. She sees this transformation in both society and politicians. The article also mentions the post-corona movement. We hope that with this post-corona movement in particular we will be able to discuss the subject in an easily accessible way and think about how they are the future. What the letter is supposed to convey is how people feel about the crisis and the future.

Conclusion

Martine thought it was a very good interview and would like us to give her a presentation. She doesn't want to add anything extra to the interview. Erica Bol is a very interesting person for us and STT as a body is also very interesting. If we want to know more about the link between future literacy/thinking and education, we should definitely contact Maya Van Leemput. She would find it interesting if we forward our bachelor's thesis, she would possibly have it introduced internally. She will send us some more names/agencies by mail.

Attachment 2: Interview Stijn Janssen

Introduction

Stijn wants to have a look at the thesis of the interview before he gives permission to mention his name in the thesis. We will forward this by mail. We received permission to record the interview.

Stijn works as coordinator at AUHL (Association University Colleges Limburg). Innovation and forward-looking thinking are central there. He is also a member of a working group on innovation in education.

Middle

Curriculum and future thinking

Stijn himself did not follow a course or training on future thinking. He is regularly working on this in function of his job. He believes that this is something everyone should be working on. He certainly sees the added value of a course about future thinking.

To what extent people want to learn about this also has to do with their personality. Some people experience more pleasure in change and want to look it up.

Stijn is also convinced that future thinking succeeds best in the field in which you are an expert. The multidisciplinary approach is also really important here. For example, it is advantageous to involve other experts and brainstorm together.

Future thinking can also be promoted by consulting different media. In this way you get to know different points of view and get away from your fixed pattern.

This can also be done through meditation. This is something that helped Stijn to let go of things for a while. It is important to be able to let go of the ballast for once in order to be able to continue thinking after it.

Future ideas can also help set things in motion. This works both ways. However, we have to be careful with these future ideas and look at our sources critically. When the internet arrived and was used at school, Stijn already felt that it would have a big impact.

Stijn believes that future thinking is certainly a 21st-century skill. Here he mentions the economy as an example of this. When people used to work out a business plan for their company, your concept didn't have to be revised for a few years. Today this is no longer the case, you have to revise and renew your business concept very regularly. Future thinking has become necessary here. However, these 21st century skills are not so easy to learn. Future thinking is not a package of learning that you can learn by heart. Rather, it is a skill that you can stimulate by engaging in conversation. Teachers then have more of a guiding role here.

When you want to apply future thinking, the past always plays a role here. In this way you can look at figures and facts about the past and the present in order to anticipate the future. That is why Stijn believes that a subject such as time study would certainly offer added value.

Futures literacy

Stijn himself doesn't know what future literacy is. Stijn finds the term 'uncertain times' very subjective. Its definition depends very much on person to person. Stijn would rather describe the current situation as 'exciting times'. Other people would call it 'uncertain times'.

However, the future is always uncertain. Nobody knows what it will bring. Uncertainty can also be something positive according to Stijn. It forces you to leave your fixed pattern. In that sense, the current situation is a gift for future thinking.

COVID-19

Stijn is convinced that COVID-19 will have both a direct impact and a long-term impact, especially structural. A kind of purification will also take place here. People who can no longer take part will unfortunately lose weight. Stijn explains this by making the comparison with a spiral that goes up. The current situation makes us take a step backwards (layoffs, poverty, loneliness) but in the long term this will help us forward. There may also be overcompensation here. For example, people will travel en masse or have parties when this is allowed again.

Future thinking is certainly useful in a context like COVID-19 because this is precisely the moment when people start looking for answers. People want to get a grip on life and be able to plan ahead instead of waiting anxiously.

For COVID-19 a lot of development or technology has already taken place. Stijn tells us that because of the current situation this is accelerating. For example, teleworking and distance learning will occur more often. People are now also becoming more familiar with technology. This will have a lasting value in the future.

When looking at predictions about the post COVID-19 society, Stijn advises us to be critical of our source. Some predictions can be somewhat subjective.

Stijn thinks that COVID-19 is a 'black swan event'. For example on an economic level, but it also goes beyond that. It provides a leap in evolution.

Stijn believes that after this crisis there will be more blended forms of education. Technology will take a more prominent place in this and the exams will take place differently. People are now also much more aware of things, he believes. We have all experienced a process of awareness that forces us to look differently. Because of this there will also be some changes. Because of COVID-19, time has stood still for a while and we get the chance to reflect on what we really find important in life.

Stijn is also convinced that this will have an effect on the political level. People ask themselves questions about what they see. What measures are being taken? Why do people choose this?

We are going to take an even more critical look at politics. New political leaders or business leaders will come forward. This will set new processes in motion again. Interest groups are holding back a lot of evolution. By shaking them a bit loose, change will take place more quickly.

Conclusion

Stijn was satisfied with the interview. He indicates that he finds the questions concerning the definition of concepts less interesting or relevant. Questions like: "how do people do future thinking? Where does this go? How can we tackle this?" he finds more interesting. We can build up these questions a bit more.

Stijn is looking forward to discovering our final product. We've agreed to send him our bachelor's trial.

Attachment 3: Interview Maya Van Leemput

Introduction

Maya gave us permission to record the interview. Her name or a quote from the interview may be mentioned, but it will be forwarded for approval first. She is certainly interested in our thesis and our product, we will share our results with her.

Maya is Senior Researcher of the knowledge center 'Open time' at the Erasmushogeschool in Brussels. She also has a creative practice with her partner, which she started after her research. She also has a consulting practice where she mainly works in a non-profit, governmental or international context.

Middle

Curriculum and futures thinking

Maya explains to us that she didn't learn 'future thinking' but 'futures thinking'. The plural 'futures' is very important to her. You don't have one future but different possible futures. Maya studied Communication Sciences and made a thesis with the research question: "How does certain content get represented on TV?". She decided to focus on TV programs about the future. In the context of this thesis, she started thinking about the future in a formal way for the first time. After this she started her postdoctoral research. For this she made a trip around the world. In 28 different countries she started talking to people. In these conversations she tried to find out how these people think about the future. Through this research she also came into contact with some experts in future thinking. Looking at 21st century skills, Maya believes that futures thinking encompasses all these skills. You need a combination of these skills to think about the future. For her, futures thinking is a combination of these skills.

Maya finds it very important that young people acquire the 21st century skills. However, she doesn't know if they are skills you can teach someone. You should actually teach them to yourself. As a teacher you make sure that you can stimulate and motivate the student to think about it. Teaching them is not possible. Everybody has to do this in their own way, because everybody fills in these skills in a different way. They are not only individual skills; they are also skills for which you have to allow each other to practice them. (e.g. critical thinking).

According to Maya, the difference between futures thinking and futures literacy lies in whether or not one is aware of it. Futures thinking does not suggest that you do this consciously. Everyone thinks about the future. There is no way of standing in life where you don't make decisions based on your future visions. When you act, you do so on the basis of the effect you think this acting will have. Everyone does this kind of thinking on their own. Futures literacy means that you are aware of your own capacity to think about the future. This means futures awareness. You will also see the future thinking of others more consciously. You may also discover that you yourself have certain presuppositions from which you anticipate. If you become aware of your anticipatory presuppositions, you are already quite futures literate. Then you are also able to try other presuppositions because you are aware of them.

Maya explains to us that there are different levels of futures thinking. The anticipatory systems and the multitude of perspectives bring you to futures fluency. After that you also have futures mastery. So you get better and better at futures thinking.

Maya is a fan of our idea to develop a subject such as time sciences. She believes that if you want to change how people look at the future, you also have to look at how they learn history. Many people learn history as one straight path, where everything seems to be fixed very logically. From this frame of mind these people also look to the future. Maya sees it more as a range of options, not one fixed path. This is also why she is a supporter of our project.

When developing our tool, Maya advises us to look for the organization 'teach the future'. The goal of this organization is to offer futures thinking in primary and secondary schools. On their website we can find different kinds of pedagogical material. Their futures playbook is one of them. This is for children at the end of primary school but can also be used in secondary school or even with adults. We also have to ask ourselves the question "Do we want to collect tools or invent them ourselves? There are already some tools. We should certainly not see this as demotivating. Such tools are so desperately needed that there have to be different versions. We briefly introduced the concepts we already have to Maya. She is definitely a fan of what we have already developed.

She also advises us to think carefully about the order in which we introduce certain methods. For example, it will be useful to first discuss the futures wheel because you can use this knowledge during the persona game. She also advises us to take a look at the futures triangle of Sohail Inayatullah. This triangle consists of the push from the present that pushes you forward, but you also have the pull of the future. The third aspect is the weight of the past (structural and mental barriers).

Maya is happy that we incorporated the black swan, black elephant and black jellyfish in this. She advises us not to see them just as a disruptor/chance giver. According to Maya this is also a lens to look at certain phenomena and ask the question "is this an elephant, swan or jellyfish?". For example, some people may look at a phenomenon and be convinced that it is a black swan. Others may experience it as a black jellyfish.

Futures literacy

According to Maya, there is certainly a definition of uncertainty. Uncertainty is the unpredictability of what's happening. Uncertainty is present both in the future and in the present. When it comes to the future, that uncertainty is actually always there, Maya says. That uncertainty has increased because we used to have less change in the environment. There were more certainties, the course of the year had a fixed structure... Our environment has become complexly chaotic and contradictory. It always has been, but we see much more of an accumulation of multiple phenomena taking place simultaneously.

There is a great acceleration of change, these are also taking place on a large scale. It also relates to both economics and health, it is active in different domains. Phenomena also occur simultaneously and interact with each other. There are also different kinds of uncertainties. These range from superficial uncertainties to deep uncertainties. Uncertainty also goes hand in hand with ignorance. There is a lack of knowledge but this is different from the fact that it is uncertain. Uncertainty can also be something positive according to Maya, they offer opportunities.

Anticipating the future is certainly important for Maya. According to her, anticipating means: looking where things come from, looking at what exists in the present that we can take with us to the future and also looking carefully at how you think the future will change. All means you can use to think about futures are good according to Maya. The most important thing about the technique is that it combines systematics and imagination. Thinking about the future together is also important to her. Which technique you use also depends on the subject you want to anticipate about.

COVID-19

According to Maya, people are more aware of uncertainty due to the current COVID-19 crisis. She doesn't think uncertainty has increased but it has become more visible. People now also experience more strongly that they want things to be different and that they don't want to go back to normal. It has had a huge impact on the daily lives of many people all over the world. Economically, of course, there is also an enormous impact. Maya fears that we will try to go back to the 'normal' (the continued growth), so it will not have had such an impact besides the many sufferings.

Some of the technological solutions that were already coming have started to grow exponentially, they have received a push. Whether it will make a fundamental difference, Maya does not know. For example, the teacher-student relationship hasn't changed by organizing classes online. This change will not come from technology. This is a way to continue as we are doing. Our assumptions remain the same, like the way we teach.

According to Maya, there is certainly a possibility of a second wave that will have an even greater impact. Ultimately, the impact towards change will not be great enough. Maya would prefer that, in addition to making predictions, people also think about what we can do differently. Expanding the range of possibilities matters more than 'what path we will take'.

For some people COVID-19 will be a black swan, some really didn't see it coming. Others on the other hand saw it all coming. It's also a jellyfish because it's had explosive growth due to the large number of infections. This is open to interpretation.

The current situation has certainly affected Maya's way of thinking. She used to dislike when people said, "There's so much in the present that I can't think about the future." Now she has a better understanding of their position and can relate to it.

A lot of people are already predicting a post COVID-19 society but these are not always correct, Maya thinks. They sometimes try to make literal predictions "that's how it will be". But this is not a certainty. Sometimes they lack the idea of what could also be possible next to this one picture of the future.

Slot

Maya would like to say that we must not forget that there are many differences globally. We should not assume that what we experience is how it is generally experienced by others. There are also other things happening in the world which we cannot relate to as much. Certain things also interact with each other, you never know what will happen next. We can mention this in our project: "We are aware that we are taking this particular perspective." We have to be careful not to proclaim general truths.

Maya is very impressed with our project. It was exciting for her to meet us. Our time estimate wasn't very correct, that's a practical adjustment we could make. She's very curious about our product. She is very happy with the interview.

Maya advises us to contact Erica Bol. She works for Teach the Future. The people of Panopticon are also highly recommended. Christophe Kempkens is certainly also a good contact, he has other ideas than Maya and will therefore be a good addition. Leah Zaidi is an interesting international contact. We can contact her about our product. We can certainly contact Maya for further questions and she really wants to stay informed about our results. We can always ask her for feedback.

Attachment 4: Interview Stefaan Vandist

Introduction

Stefaan knows the history of future thinking, it's been a while since he had theoretical explanations in mind. He mentioned that after the Second World War, forward-thinking was mainly done with a military strategic objective. Stefaan gave us permission to quote him. He found it interesting that we use the same questionnaire with every person we interview. Stefaan wondered if the work was available to him. We've confirmed this and will forward the work to him as well. Stefaan allows us to use quotes from the interview and place them on the website. Stefaan also likes our project and our website.

Stefaan works as an independent freelancer on just about everything that has to do with future thinking and innovation strategy. First of all, he gives lectures about that field of work. On the one hand he shows trends, on the other hand he shows the public how to broaden its view, and on the other hand he shows the exploration of the future as an instrument. He always tries to sharpen and deepen his knowledge. Secondly, he also works for a city or municipality, for example. These clients usually engage him because they want to make better decisions for the future. In uncertain times they want an instrument to navigate. Finally, Stefaan is involved in moderating design sprints. Design sprint is a process that is 'ridiculously' short, in which they deal with an organization's problem. In this strategic challenge they work under overwhelming time pressure until they have a prototype of a possible solution that is tested by the audience. The process is designed to move forward with a group and no time is 'wasted' on discussion or consultation. Brainstorming is replaced by a sequence of exercises that evolves into a solution.
He finds the design sprints more interesting and wants to focus on them in the coming years. Being independent has risks. A design sprint is an instrument that is very employable. He thinks it is more interesting for companies to use a design sprint for 4 days, than to use an instrument that costs a lot for 6 months and has less results.

Middle

Curriculum and futures thinking

Stefaan has graduated in Marketing for 22 years. Marketing of that time was not to be seen in the slightest. There he only learned theoretical frameworks. Stefaan worked in the advertising sector as a strategic planner for ten years. In those ten years, the toolbox he gained has been very useful in the world of product development and innovation. Stefaan finds it interesting to take a closer look at how the product will operate, how we package it, how it will be perceived in relation to other people... In two years' time, he has become more involved in the innovation sector. In the advertising sector there is trend watching. This is a shorter step towards thinking about the future. Stefaan did not learn future thinking at school, but by working on it himself, mastering things, he taught himself. The same with sprints: working on it a lot, translating it into a process for yourself and then teaching it to clients.

“ With foresight or trends, if you make that choice now to do this as a profession, you have signed up to remain a student for the rest of your life. This is known in advance and it should remain an attractive idea. If, for example, you are given an assignment to explore the future of the automotive sector, you have to 'eat' a lot of content about it. This content is the content and the methods. “

Futures thinking is not a 21st-century skill. There is an American and a European school with different roots and development. The American school has its roots in military strategy, where they did scenario planning for the first time. The European school is more political, socioeconomic. From 1950 futures thinking has become something. Stefaan believes that open mindedness can be placed with 21st century skills. That typifies future thinking, it requires a broad mindset. Futures thinking is a much fairer and more objective process if you consider all possible future outcomes possible. Focusing not only on the attractive picture of the future but also on the unattractive, even dystopian scenarios of the future. It is difficult to separate yourself from your own emotions, prejudices and desires. It also depends on what you mean by being open minded, is it rather very progressive or progressive? Or is it being aware of the different possibilities. Stefaan thinks it is rather the second meaning. Futures thinking can play a very important role in drawing up strategies for well-being.

According to Stefaan, futures thinking is a very good idea for teaching future thinking. In most curriculums there is only the subject history and then you only look back. Looking ahead is not taught to us. Young people should be taught these skills. Today's youngsters will find themselves in a very turbulent period over the next 10 years. Stefaan describes this period as the long difficult: an accumulation of uncertainties coming our way. To be successful here, maneuverability and resilience are needed. You have to be able to navigate and adapt here. Stefaan maps the difference between his own generation and that of his parents. The training curriculum of the past is hugely focused on being obedient and doing a routine job for an entire career or to climb a hierarchical ladder afterwards. In the generation of Stephan's parents, these people worked for a lifetime in one company. Which is not at all the case now. Job rotation in these times happens every 2 years. From this point of view, it is a very interesting profession for our personal lives, but also when we come to lead an organization. We do not yet know what they will look like. We will have to navigate them through uncertainties. Then it is useful that we have these skills with us, that we have a frame of mind. There's a lot to say about a lot of things.

In our education we don't learn to do business, don't handle money, don't finance, etc. Stefaan points out that these come in a competition with other skills that are also important.

Futures literacy

Stefaan's interpretation of these two concepts: futures literacy is: you have a background around it, a study background. Futures thinking is rather a practice, with fixed agreements on a methodology that we roll out as adequately as possible. Futures literacy increases the more experience you have with futures thinking.

Stefaan maps out various sources: there are many websites that do trend watching and gather observations. Two good tips that Stefaan mentions: the booklet 'exploring the future of the ultimate thinking in organization' published by thesis.nl. It is a very accessible booklet in Dutch. The table of

contents alone shows that it is the best introduction possible. Some titles of the table of contents are: what does it yield, history, thinking about change, hindrance is our thinking, systems thinking, toolbox of the futurologist.
What makes the book unique? It is well written and in Dutch. There is a scarcity of such good books. There is, however, a lot of Anglo-Saxon literature on thinking about the future. Stefaan mentions that there is a fantastic book by Martin Raymond. Martin is the founder of a futures laboratory in London and a trend forecasting handbook. Very nice overview in the book about future thinking, trend watching, methods, etc. Stefaan is currently writing a book. He says it is very difficult to find a balance between inspiring content and methodical content.

Mathematics is a very good idea for the reasons mentioned above. As an individual, these skills are very useful. It's an important skill like driving a car. Also at the organizational level it is important to have people on board who can do that. Stefaan's opinion on this is that we should avoid it being non-committal. Far too many training courses in which trend watching is well established in the market and they model it into a postgraduate course. Having a list of experts give lessons for a whole year. They leave out a lot of things, especially the coherence of that training, and they lose it. A lot of experts who don't know who came for them and what was said. Thinking about the future is a profession that has yet to fight for its credibility. Better methodically substantiated and structured from the very first time. Boxing is a very important component.

Anticipating the future is a paradox. The future cannot be predicted, but it can be documented. That is the anticipation of the future that we can do. In the book: Me, myself and I, there is a very good quote according to Stefaan: "I cannot predict the future but..." (quote to be completed). The irony is that the more technology we use, the more unpredictable the future becomes. AI, machine learning, big data... we could predict the future much better, but the irony is that the path we take is a path we can take in all directions. Many of the uncertainties this creates. We need to document the future in a systematic way, document the different possible futures. That is anticipation. The process is: you are an organization, step 1: formulating a challenge, step 2: everything that comes your way, (DESTEP) developments that come your way, analyze, long list and most critical uncertainties become the building blocks of the scenario exercise. Delivers future scenarios A, B, C and D. We document these future scenarios and try to delve into them. The more you document, the more insight you gain into them. It is a management tool for the organization. That is anticipating the future.

Stefaan cannot formulate a precise definition of uncertain times. Somewhere there is someone who uses the term VUCA, which stands for Volatility, Uncertainty, Complexity and Ambiguity and to which two letters have recently been added, a very nice attempt to define or interpret what uncertainty means. If there is a definition of uncertain times, Stefaan spontaneously reminds us of this concept. Stefaan was curious how we would answer this.

Stefaan does not think that there are always uncertain times. In human history there are always famines, war, pandemics. Many things remained unchanged. "Born a peasant, whole life a peasant." Times in which we live now are very different. We stand in life with a need for security. Primal motivations of which we are aware. Stefaan said that we must empathize with the following situation: 1996, we have yet to be born. A CD store opens in his village. Very nice, everyone went there with a big plant to celebrate that opening. Wishing you good luck. Three years later, 2 fools discovered things like Apple music, Spotify... where the whole music collection can be left open day

and night for 10 euros a month. When you said that this was going to be the new normal, people started looking at you weirdly. Music is an evolution that has gone very fast. This process may also occur with driving, living and other aspects of life. Very quickly becoming democratized and monetized. They used to beat each other up but a thousand years later they hit each other with the same weapons. There is no system evolution while there are system evolutions now. Speed of change as we see it today is unseen and incomparable with other periods in history. We must look at it with great relativity. Stefaan mentions the example of Hans Rosling who has thrown himself entirely into statistics. Which technology has had the greatest impact on human life? Systematically used and concluded on a washing machine. A lot of time is freed up which has an impact on the family's income. The washing machine has made the most difference on an entire civilization. Relevance of it is incredibly great even though it seems very banal.

Three methods with which you get the most grip on your own future, personal: foresight, design thinking (design sprint is a derivative), storytelling: is always forgotten but is part of the top three. How we bring something to the outside world largely determines the success of something. Alongside many classic examples: how Kodak dealt with storytelling, photography, visual culture... compared to Instagram. Different technology, different narrative. Question: does design sprint more for problem solving in the present? Stefaan: to get a grip on a future. Innovation process in an organization is very long, very subject to hierarchy. Long duration is the biggest enemy of this process. Design thinking allows you to determine the direction of your own product and organization. Design thinking is a large store of exercises, design sprint is a recipe to make a vegetable soup. Innovative about design sprint is that it works with an automatic rifle of innovations. Wasting little time on brainstorming and staying more in do-mode. Much more is learned based on results. Typical Silicon Valley: the winner is no longer the strongest but the fastest. We also provide methods that allow us to come to a different rhythm. We do remain vigilant about the quality of the delivered product. Testing something every 3-4 days at a manufacturer.

COVID-19

OVID-19 is now evolving so fast that instead of a month, it takes a day to produce opinions around it. A positive point is that in business we see that things decide one day instead of one month. Previously ten meetings for one decision and now in one meeting. Many trends that were already underway have now gained momentum. Evolutions such as remote meetings. For a lot of organization it was an afterthought and suddenly it is the only option, for 10 weeks. For many organizations new behavior evolved around it. When the COVID-19 crisis is over, people only have to go to the office for 2 days and work from home for the rest of the week. A lot of these technologies we already had for a long time but the behavior hasn't evolved and now it has. Now we have come across our own vulnerability. A little creature that has brought the world to a standstill. We've come across our relationship to nature and biosphere. Hope we now take the chance to start a sputtering economy, not the old one. Promising innovation paths that have been around for a long time are stimulating old players. We don't know what the impact of COVID-19 will be because it depends a lot on political decisions. Looking back, the Overton window, an interesting tool... A framework or framework and within the framework are all the ideas that are politically acceptable, and outside the framework are all the ideas that are politically unacceptable. They can be ideas with potential but which are too early for the world. Politics happens within this window, everything outside is extreme. Politics must consist of the fact that this window can be shifted. COVID-19 has ensured that banal

ideas are now taken seriously. COVID-19 has given a jolt to that window, a positive evolution. A crisis is 'good' because it provides innovation and new opportunities.

In Stefaan Vandist's article on the grey rhinoceros there is an explanation at the very bottom about different ways in which the world can evolve. These are the four windows of how we look at COVID-19 today. First world: zombie apocalypse, ultimate dystopia. Second world: big break, once a vaccine, life just goes on again. Third World: Big awakening, ultimate historical chance to finish with everything that doesn't work. Fourth World: long difficult, people are going to be plagued by an economic depression for the next ten years. Scenario exercise applied to COVID-19. Four dots on the horizon but in the end it will be five six or seven. All the bits of the previous worlds are combined.

E-commerce has evolved tremendously since the crisis. Is technology a permanent added value? Shopping has its social and cultural dimension, but the technology that makes it efficient is at the expense of these dimensions. Stefaan thinks this is a difficult question, it might be an added value and maybe a decrease. Stefaan is sometimes jealous of Asian countries. Big brother China and other Asian countries have used the technology to reduce the impact of COVID-19. As Europe, we are not ahead of technology. However, we can lead the way in linking all these novelties at the social level and putting all these technologies at the service of society.

The risk analysis that precedes the possibility of the second wave is so mathematical that Stefaan feels too small to make a sensible statement about it. Many people throw themselves up as business guru. We are going to do this, that, new normal... Referring to recent history that the impact of a technology is sometimes underestimated. On the other hand, we've overestimated the impact of technology, we've overestimated ten of them. For example, the self-propelled car. Underestimating the complexity of such a car and its system. Switching the whole world takes a little longer than the occasional optimism.

COVID-19 is a good example. Sudden events determine the direction of the future much more than sliding evolutions. One thing that is an interesting discussion: is COVID-19 a black swan event? Yes, sudden event, no: we saw it coming, the question was only when. At a time when the speed of change is changing, black swans are more and more occurring and determine the future more than the sliding evolutions.

What is an instance? You have several bodies, e.g. open the newspaper. Are they institutions and do they do this in a structured way? Organizations in the big echelon will do this. But things that get into the media are more an opinion. This statement is according to your own interpretation and views. Everyone is going to make an explanation according to their own ideology.

The evolution after COVID-19 can go two ways, Stefaan here refers to the four windows exercise. This evolution can go in those four directions or a combination of them. A lot will have to do with the political decisions that have to be taken in the future.

Conclusion

Personally, Stefaan hopes that this is a historic opportunity for us to agree on a new green deal. Good in three areas: a green economy that offers new opportunities for innovation. Society we now know is very unequal, that inequality has to go away. Third level of wishful thinking: placing evolutions in a more ethical perspective. How do we use the technology and how do we mix this with privacy?

Three major challenges: to continue to master ecology, justice and technology. Overall, technology continues to grow, but taking more ethical aspects into account will create uncertainty. It remains a process to weigh up the two. An example is the GDPR: knocking on our own chests, we are doing well for our citizens. If we take on leadership as Europe, we will evolve well. Is GDP still our only measure? New Zealand has new criterium to measure. Only after a while we can see if it is efficient.

Attachment 5: Interview Sven Mastbooms

Introduction

Sven Mastbooms works as a trusted advisor. In other words, he gives confidential advice about the things people are doing. He is also a futurist, thinking about the possible scenarios, opportunities and other things we will encounter on our path. Sven also has a background in marketing and has had his own communications agency for 30 years for various brands, television, newspapers, etc. He worked with Netflix to launch the service in Belgium. He says he has seen many sectors change from music to media to banking using technology.
For the last 5 years Sven has been active in the field of safety and general anxiety. The fear of innovation, of accepting new things and why people are afraid of them. But also fear in this era because it has already been used as a tool.
He regularly participates in workshops that deal with what possible disruptions, conflicts can occur and then think about how these can be prevented. Who is needed for this? How to limit damage? This is specifically about cyberwar, pandemics and all kinds of things that can go wrong.

Mid

Futures thinking & Futures literacy

When asked how and where people could follow a training course on future thinking, Sven says that he learned this skill. He tells about various courses that teach this both in Brussels and Hawaii and online classes. He also talks about a woman in the Netherlands who is developing a new way of thinking and teaching, this starts from kindergarten. He learned this himself through reading futuristic books, his own curiosity and often questioning things. He mentions the latter because he was often the 'rookie' in various sectors, which gave him a fresh perspective on the sectors he was in. But he emphasizes that his immense curiosity was the reason he learned so much on his own. His interest is mainly focused on how it used to work, how it works now, how people think, etc.
In summary, his tip is to read a lot, be very curious, follow things up, where does it come from, where does it go, etc.
Sven thinks future thinking is a skill of all times, from the moment people could think, anyone can do it. An everyday example is looking at today's weather forecast. This is a rather pragmatic approach to future thinking. It is important to know where we are going. We live in a time where everything is accelerating, evolution itself is accelerating as well. We now have much more access to certain things. Everything can now be found online, the ability to take lessons online, to conduct interviews online. Future thinking is now more applicable and more accessible than ever, but nowadays everyone seems to be a futurist as well. While they tend to be more of a trend watcher. Above all, they can indicate practical things

He believes that these skills should be taught more frequently to young people. The speed of evolution we are going through increases. Everyone should be attentive when making decisions. If we don't do this, we're going in the wrong direction. A well-informed citizen should no longer allow himself or herself to be led, but should learn more reflexes in order to deal more easily with these critical thoughts and to be prepared for challenges. Here he gave the example of the thought exercise he did with 12-year-old students: "what if there is nothing left of electricity in some cities this summer?" The first

thoughts they have is that there will be crimes and burglaries. After 2 hours they had already put together different business plans of what and to whom they could sell some things and therefore future thinking is important. They don't always or completely have a grip on the future but if you can think ahead you can give it a twist. For Sven this is essential.
Sven finds the difference between future thinking and future literacy difficult, but describes it as such:
Future Literacy: About learning grammar, being aware of the methodologies. For example: Financial or language literacy means not being able to start a business immediately.
Future thinking: applying, studying, etc.

He is enthusiastic about our future product. He has given us the advice to see history as a constant line that has evolved continuously. The goal is to transform a course like history into a course like time studies where the different connections are looked at and to see where we are now and what is going to happen. He told an anecdote about his son who asked who invented time. This could be an interesting approach for our product.
There are always uncertain times,' says Sven Mastbooms. No one has ever been able to know for 100% what the future would bring. This pandemic was no surprise, but the timing was something that could not be calculated as well. Different opinions also emerge more in these times, some people find mouth masks unnecessary while others find them indispensable.
All times are uncertain but for those who think more about it this is no surprise. For example: 'walking through a dark forest is frightening but if you have a flashlight this forest looks completely different. With a flashlight the possibility exists to see much larger monsters. In other words: people who are naturally already frightened will increase their fear if they look into the current situation. Their fear is the flashlight through which they will see even more monsters.
It would be better to worry about things that we have an impact on and things that have an impact on us than things that we don't have an impact on.
Sven considers it crucial to anticipate the future. Ordinary citizens need to be much more prepared. In Finland some people have a country house where there is no electricity, running water or other 'normal' things and this is not a problem for them. While for us this would cause panic after four hours without electricity. This is part of anticipating how well you can handle certain things. E.g. If you want to start your own business there will be things you need to anticipate in order to see if you don't mind possible future scenarios like "Can you live with not being in good financial shape for 3 years?
Every citizen is now working on future thinking but there are also algorithms and programs in which future scenarios can be made. This helps to prepare for all scenarios. The question we have to ask is 'then what? Because choices have to be made for what, who and how things are needed.
The difference between trend watching and 'future thinking' is like a potato. In trend watching you see how the potato is cooked in future thinking you ask yourself how you could use this potato and why you would use it for the next time. A trend is a methodology. This used to be used more often in the fashion sector.

COVID-19

When asked what impact COVID-19 has on society, he says that there will be an absolute increase in inequality. There will be disadvantaged young people and families, companies that can no longer cope, people who have lost their jobs, or will be under pressure after this. These specific groups of people will suffer or feel the impact. Others will not feel the impact. For Jeff Bezos (CEO of Amazon) these are golden times. He is already 2 billion euros richer since the quarantine began. People who are struggling will be under permanent stress. According to him, however, this will make little difference because the economy is only running. As a society we will have to pay more attention to the people and companies that have been hit by COVID-19. Most prepared people will be those who are more social or resilient.

The impact on learning will be enormous, home-learning will become the norm because vulnerable people will stay home. He also thinks there will be compulsory training for sick people. For example, call centres, sex phones, etc.

There will be new forms of certification, new quality labels, etc. . He hopes that a number of things will prove to be not so valuable after all, e.g. Instagram photos.
Future scenarios are important to know what might happen. He would like people to be prepared for different things, not just for the arrival of aliens. Society needs to move forward. In Finland, a leaflet was given so that every Finn knew what to do in case of a war or pandemic. Among other things, they were encouraged to stock up on enough board games, drinking water, batteries, flashlights, etc.
Future scenarios are forbidden in many cases. when it turns out that politicians knew about future scenarios, they will be blamed for the fact that these have come true because politicians may be held liable for what measures have or have not been taken. He also says that the citizens had a great influence. Schools were not closed by the government but because of parents that didn't want to send their child to school anymore.

Technology will be accelerated but analog security plans will also become more popular as Plan A (analog). This must first be worked out before a plan B can be made. If technology fails, we will still know where we are. A little bit like: "where a boat is on the sea".

Schools that are fully digital, such as iPad schools, don't show promising results, according to research. Some employers who can digitally see everything their employee does and how their health is going will be more prevalent. In the U.S., some citizens are paid $5,000 to give DNA and wear fit trackers. Sven is not sure that the second wave will come, but it is very likely. It may be milder, but it may also not only be dangerous for older people anymore. People will know how to deal with it. This second wave will be much more detremental to the economy. We'll have much less doubt as to who and what should be quarantined. Harder decisions will be made. This can, of course, end positively or negatively.

According to Sven, the COVID-19 crisis is not a black swan but a black elephant. Everyone sees it in the room but nobody talks about it. Another phenomenon is a black jellyfish. This is the combination of a black elephant and black swan. This means that we didn't see it coming but also that everyone is aware of it but ignores it. Climate change is also an example of a black elephant. He himself had cancelled his events in February because he saw that the situation was not going to improve.
After this pandemic, Sven's image changed from a colourful image of mankind to a partly grey/black image. He was surprised by the negativity of people. His vision on leadership has been confirmed. On the other hand, he is also positively surprised. Mouth masks were made from day one, people were ready to help the community. In the Netherlands, some villagers took up the work of the only food shop in their village when the owners fell ill. A feel-good story among all the other negative events.
Finally, he tells us that we live in the most amazing times ever. There has never been so much access to like-minded people.

Conclusion

In general, Sven thought we handled this interview well. He thought our questions were good but also mentioned that he often saw similar questions in our forwarded interview scheme. We solved this very well during the interview itself, however. He is interested in our thesis and would like to read it when it is done. He indicates that Stefaan VanDist is an interesting antithesis of him. Because he easily follows the best case scenario of future thinking, this can be an interesting addition to the knowledge we have gained in this interview.

Attachment 6: Interview Loes Damhof

introduction

This is the interview of Loes Damhof. Loes agrees to being recorded and we can process the data with her name attached to it. Loes is a chairholder at UNESCO and works at the Hanzehogeschool in Groningen where she teaches about 21st-century skills, and creates learning environments to train them.

Future thinking & future literacy

Loes has been working on future literacy for about four and a half years. She was a high school teacher at the time and taught 21st century skills to prepare students for the future. She did this within the programs Multimedia Design and Game Design. Within the curriculum of the 21st century skills she missed a bit of the critical view on the future. At a symposium in the Netherlands, she came into contact with Riel Miller who was a speaker on the concept of future literacy. From that moment of contact, Loes decided to explore the concept as well. When she was crowned the winner of the 'teacher of the year' election in 2016, she received a grant of 50,000 euros that she could spend on improvements within education. She used this budget to set up a pilot for future literacy in college education. She made sure that it got a place within those 21st century skills, of which it wasn't originally a part.

For Loes, learning these 21st-century skills is certainly an added value for students. Not to be able to make predictions, but to teach students skills that they will be able to use throughout their lives. Education is entirely based on preparing young people for the future. The young people are trained to work within a certain field of work, with technologies that will be important. They think it is important to think about the now. What if the future is going to be different than expected and the world is going to be different from what the young people were prepared for? That is why it is important to teach young people cognitive flexibility by thinking about the future. They can then use this skill to look critically at all kinds of facets of 'the future'. This skill is not defined and can always be trained. So it is never too early to teach this skill to people.

There is a clear demarcation between future literacy and future thinking according to Loes. For her, future thinking refers to all ways of thinking about the future. Future studies, on the other hand, is a large interdisciplinary umbrella within which -from all kinds of sciences- predictions are made about future scenarios of society. Loes is less concerned with these early forms and focuses mainly on futures literacy. According to her, futures literacy is more about anticipatory assumptions. People automatically make a lot of assumptions and many of these assumptions set us free because it takes away worries. An example of this could be: "We shouldn't worry if the sun will be back tomorrow. We assume that it will be". This is an assumption everyone makes. Unfortunately, there are also assumptions that limit our freedom. For example, the assumption that technology will solve climate change. If you strongly believe in this, then you automatically make assumptions about technology and about climate change. If you adhere to these assumptions, you are already creating scenarios, as it were, and your image will be narrowed. The greater your awareness of your own assumptions, the more flexible you can be towards possible scenarios. The essence of future literacy is therefore: **future literacy is a skill that helps you to expose your own assumptions in the present and to critically examine them.** In other words, you use the present to form a critical view of the future.

Loes also says that there is a small group of people who are colonizing a large part of our future perspectives. By this she means that influential people can make a lot of assumptions with their

statements. An example of this is Elon Musk and his vision for the future which revolves around interplanetary societies.

In order to learn the skill, Loes offers future literacy laboratories. These are hands-on workshops in which participants are asked to think further in the future about probable and desirable futures. After they have worked out these visions, a reframe scenario is introduced. Reframes are unpredictable events that sweep both probable and desirable futures off the map. Such a reframe is also the element that exposes many assumptions of the participants. When this awareness arises, one shifts upwards on the future literacy curve. Loes teaches her college students how to apply and facilitate these methods in their own context.

Loes thinks that a subject such as time studies is a good idea, but only if it is accompanied by critical thinking. Just like the future, the past is based on assumptions. The past is written out on the basis of artefacts but is also colonized. Just think of the quote: "History is written by the victor." For her, being critical must be the central focus.

'Uncertain times' are an illusion, according to Loes. We are always in uncertainty because we simply cannot predict the future. Nor is this a time of great change, because everything is always changing and it is not more complex now than it was a century ago. The illusion that the nature of change is very different now is formed because now we just have a lot more data that can quantify and describe it. She also adds: "The stupidest thing we can do now is make decisions that try to eliminate this 'uncertainty'. For this quote, she goes back to the assumptions that may underlie such decisions. "We have to accept that the only reason this feels so uncertain is the assumption that we could just get on with our lives." So the current crisis can be seen as a reframe, because it has exposed a lot of assumptions.

COVID-19

The impact of COVID-19 is experienced as great because we as a society were not ready for this shock. In other words, the impact is not to be found in the pandemic itself, but in the way we deal with it as a community. A number of things have indeed changed for many people, but in the end a lot of things just remain the same. According to Loes, many scenarios are also depicted too black and white. At the moment, for example, people have the perception that a choice has to be made between a good economy or good health and that they are partly mutually exclusive. These assumptions will in turn cause impact to be perceived as greater.

Future literacy is now a very useful skill because resilience and mental stability are very useful during this period. This crisis is also a good opportunity to gain a lot of knowledge about the assumptions made because it is a reframe. She also says that COVID-19 is a black swan because it exposes problems in existing models and theories. It forces us to think about the current mental models we made about the future.

Loes sees the value of predictions made about COVID-19 and a post-corona society but she prefers the now. We need to look at the current values. None of the scenarios that are predicted will come true 100%. These scenarios are useful to expose assumptions and then use them to make decisions in the present. She also says that such predictions have an impact on how people react. The anticipation of the future has a lot of influence on the present and will therefore shape the future.

Attachment 7: Interview Mark Schipper

Introduction

Mark Schipper is the interviewee, he agrees that the data obtained in this interview may be made public. Mark owns 'Freshmark', a research agency that helps companies anticipate on tomorrow. He not only helps to bring trends, but also helps apply those trends (for the city of Amsterdam, for example). But now also for Dutch education for the MBO schools. Mark also teaches at Tilburg University of Applied Sciences in a minor program in trend watching.

Mid

Futures thinking

Mark started in financial services in investment (pension funds). There he already wondered: "What are the trends?". He was looking for soft and hard trends and how society deals with them. Later, he set up his own agency through market research and trend research. Mark says he is very happy to be able to teach young people. The younger you are, the more future you have. It is also interesting to hear their input.

Futurology would be an interesting subject in secondary education, most students already have social studies (commentary to the concept of eyesight) and history (commentary to the concept of hindsight). But there are no lessons about the future yet. It would be interesting to cram the concepts of social studies and history into a subject together with futurology in order to create a dynamic subject. Mathematics or futurology would also be the extension of history, on top of that it would promote self-esteem according to Mark. People would also be stimulated by such a subject to look at the world differently.

When you graduated in the past, you were able to keep up with society for 10 to 15 years. What we see nowadays is that sometimes after a year it is no longer relevant (out of date). A profession that tests competencies such as agility would be useful.

Futures literacy

DESTEP is the basis, it's no use thinking about the future if you don't know what society is like. You need to know and understand the characteristics of an industry to know why one industry is growing better or faster than another. So you need general knowledge and that can be done through DESTEP. This analysis gives you a nice base.

There are three ways to 'make' the future. The first is serendipity. This is actually the idea of being created by chance (e.g.: the first escalator was a fairground attraction). This way you have a lot of things from history that have been discovered or invented. So by coincidence an invention came into being and that makes it big. A second one is crisis. In a crisis people get scared but they also become sharp, out of necessity. And out of need you also start to do new things. A third is synchronic time, when many different people want the same thing. If, for example, we all want the same political party tomorrow, then we vote for it and that party wins. These three ways bring change in society.

In the schools where Mark Schipper is active they use three methods and the one closest in those days is cross cultural analysis. This comes from anthropology. It collects a number of signals from a subject of which you want to know the future. Then you go both online and offline to see what changes there are. These can be small signals. If you have different signals on the same subject, you can cluster them into similar signals. This is a technique: cross-cultural analysis through that similarity can give the clusters a name. For example, there was also a trend where young people want to be offline and there were companies that adapted their business model to this.

Yet another technique is scenario planning, which is freely accessible. With scenario planning you look a little further into the future, five to fifteen years. It is then a challenge to see for yourself what the biggest uncertainties are. The ones that exclude each other the most are taken out and then you take two uncertainties (two axes) and you can use them to make stories (4 quadrants). A kind of storytelling with persona, which is great fun for students!

A third method is backcasting, which is actually the furthest into the future. Mark himself calls it wishful thinking. He makes a reference to the film 'Ready Player One'. We fantasize, but mainly wishful fantasizing. These three methods can be used as instruments for students.

COVID-19

Our lives are increasingly taking advantage of the digital world. Things like COVID-19 are catalysts that put pressure on society and give the changes a boost. A clear example of this is the transformation to teleworking in these difficult times.

Another phenomenon that comes to the fore is polarization, which is a bit of a double story. On the one hand, in the field of politics, you see that mud is being thrown in the air, but on our level we see that we have a greater sense of community.

We see in these times that people are more likely to accept that something 'strange' comes on the market like the robot dog. Which has the function of keeping people apart. If it wasn't for COVID-19 we wouldn't accept this, now we accept this.

A trend has a sunny and a shady side. When describing something sunny, we should certainly not forget the shady side. Creating balance. For the 'Big Five' in Silicon Valley, for example, it is currently a 'Walhalla' (paradise). But of course there will be a downside.

There is also the topic of sustainability. Sustainability can persist or people become so economically poor that they say: "Not at the moment.". Then the climate problem is shifted to a longer time period and it gets even worse.

First we saw that the focus was on health, then it's on the economy and soon (in some countries it's already happening) it's the turn of politics. That's the most important thing, who we're going to choose as the new rulers.

The chance that COVID-19 would break out was very small, but its impact - as we see today - was immense. That must change the way we look at things. Above all, we are no longer going to talk about the chance, but more about the consequences.

We are also going to have more of a buffer economy (economy that creates a financial reserve), which will also be a more expensive economy. We will have to pay more for products. It will also be more localized like healthcare.

Conclusion

If there were no uncertain times, thinking about the future would be of no use at all. In the English language they have a beautiful word for it: 'resilient'. Resilient for tomorrow. Uncertainty in itself is therefore a prerequisite for futures thinking.

People can also forget things very quickly, which also has the positive side that we are short of history. Mark believes that this will cause damage for a number of years to come.

People who self-confidently predict the future are usually the ones who go down gigantic.

Mark Schipper recommends the books 'Research Trends' (also trendwatching.com) and '21 lessons for 21th century'.

Attachment 8: Interview Leah Zaidi

Introduction

We have been allowed by Leah to record the interview and use her name in quotes.

In short, Leah is a futurist. The longer explanation is that she got her Masters degree in this professional area and went on to become a practitioner. She works with organizations, she publishes research, does work that is directed directly at the public…
Yet she did learn her before at university. She got her Masters degree in design and innovation.

Leah thinks, futures thinking is a 21st century skill. She said that we are in this current situation because we, the general population, ignored what futurists said. Humankind ignored scenarios that could happen because of this pandemic. If humans don't focus on long term thinking we will continue to make mistakes in the future.

Leah said that young children and adults should learn these twenty-first century skills. We need to start thinking about a way that it becomes related to everyday life.

What does that mean for a child in high school?
A lot, the students have to choose if they are going to university, starting work, finishing their education. The moment a teenager starts turning into an adult is a crucial moment. It's important for these young adults to know where the world is going.

Futures thinking has to be embedded in different ways, not necessarily in a course. It should be a skill, like financial skills and other skills that get taught in many classes. Futures thinking should make its way into different courses. As example into science where topics such as climate change and the impacts and emerging issues are being discussed. We have to think about other courses where we can use most of these future oriented thinking manners.

Middle

Leah is interested in several things that we've done. She says it overlaps with a few things she sent. The different thinking hats are a good idea. She has a paper that talks about how we don't think about the emotional focus that can change the scenario.

The method, branches of the future, would overall be better if we had an example is her suggestion. We need to make it more tangible. We can make a fun example and put it on the website for students to understand. It's also important to show the process and the end result.

What is the incentive at the end for the students, what benefits will they gain from partaking in this lesson? It asks for a good chunk of time, looking for about approximately an hour and twenty minutes, probably more.

Leah said that 'quadrant in your hand' needs more explanation, a visual explanation could be useful. She wasn't sure if the quadrant is referring to the 2x2 chimney track. It could be part of it, but she

doesn't see it. The context could be very easy to set up with more explanation or visuals.

Leah suggests that the letter might benefit from a couple of prompting questions. These questions might help them to write something better.

She would like to see our product in action. Her mind immediately started jumping into testing the product. Leah said that we put some good stuff in the lesson package. The main question is how we make people engage in it. It has to be interesting and fun. Students easily get bored and start thinking about a dark place when they think about the world and themselves. Students see the world as a dystopian place, but they think they will be a little bit better off. Their future seems brighter than the world. Many people always think that the world is gonna fall apart and that it has no hope. How do we ensure that we don't go into that place?

Laurens explained backcasting and asked if she meant something like this.

Leah answered the question by telling that there is a design thinking oriented version designed by Stanford. It is useful in terms of personal future, not to think that there is only one good future and one good outcome. But that there are many outcomes and that they are all equally good outcomes. Leah said it's helpful to think about it in that way. Some students might think that this is the future they want, while others aren't good. It makes them think about good alternatives instead of clamping onto one possible future.

Leah thought this was a good exercise for students to go through, especially when they're hitting critical points. When students are just joining or just leaving high school they come into a critical point in their lives. There are lots of changes ahead. Going through this might be important for these students to think more about the future. Then again the teachers have to be reeducated on this matter and be encouraged to teach it to their students.

Leah noted that we had a lot of gameplay elements in our package. One of the things we could do if we want them to keep working on the product is either create a video, an example, an experience or a visual aid for teachers and students. Along the way we could identify what interesting things and challenges could happen.

Laurens stated that we already had some visualizations for the quadrant method.

Quadrant is clear, but the mechanics with the cards need to be more clear. When the cards are laid out it should virtually show you what it should look like. Her primary concern was: "what are all the pieces and how would they lay out?" With the time cards, factor cards, etc. the setup is important. It should be instantly clear about what is expected, when they draw a card, etc. It's on the students to follow the guideline step by step, the teacher can't always focus on one group and help only them. Leah suggested that we could make something similar as a manual for a board game. Visual cues can be very useful. Our team could implement colours or numbers for every section. Something that they might already be familiar with. It could make the challenge of engaging a little bit easier.

Leah stated that the methods are quite exhaustive. Our team used a lot of methods. She said that if we have the opportunity to simplify them, we should do it. We could get the same results but not every step has to be concluded, in essence, an easier version. Leah stated that as facilitators we tend to assume people will get anything. In reality people take longer, get distracted, get stuck, etc. It's always possible to ask more efforts of the students but it needs to be very clear.
Leah wondered if the groups would feel time pressure, would there be any mechanic to time the methods? Do we allow them to go through it at their own pace?

120 minutes is about 2 hours. Does the classroom have that time available? How would it translate to a lesson? If a teacher would need to shorten it, what would they be able to remove to make it shorter? Why choose one game over the other? What are the various combinations? We should explain what the pieces are and how they fit together, what outcome they lead to if you put them together this way than another. Categorizing in possible futures scenarios might be a good step.

Leah said we should think about what needs to be in our thesis in order to pass.
"Add anything you want afterwards if you aren't restricted by academia or grades anymore." Leah said that we could always publish it in other journals for other futurists.

Laurens asked a question about the "thinking hats" by Bono we were going to include. Specifically if she knew they were intellectual property.

Leah stated clearly that we can't use them if they're intellectual property. What we're doing shouldn't overlap in any way. She said we could opt to make characters, personas, animals… and borrow more mechanics from game features. But she assured us that we are unlikely to get sued because we're students. We should change some of the descriptives. It could lead to some fun elements. A lot of movies, games… we can borrow stuff from and flesh out our characters.

If we're short on time we could add "Next steps in our thesis", that way we don't have to include any changes in the thesis. We can scope out what we're submitting and make another scope of what we aren't submitting but is " Ground for further research".
We have also been allowed to use Leah her name when we are quoting her on our website.

Conclusion

Leah found the interview shorter than she expected. She likes that we are creating a method and a tool to promote futures thinking. We believe that her enthusiasm is a reason why Maya Van Leemput put us in touch with her. She finds it a good idea to get feedback from practitioners on the field. It's always a little bit different than what we think it is going to be. It requires a bit of a process to define problems, methods. She found it fun to give feedback on a product that is still ongoing.

Leah gave a tip that before publishing anything, it is still important to socialize your work. It has to be shared with people and needs to be critiqued. Other people will catch things you overlooked.

Leah also directed us to Directing us to: https://journals.sagepub.com/page/wfr/collections/special-issue-cfp-symposia

She stated that we should contribute in this. It's being targeted to university graduating students. We could convert the project into a journal paper for public consumption and make it possible to get a paraview of the project. More people will get to know about it. The deadline for this submission isn't until next year but the process can take a long time.

Attachment 9: Accompanying letter

Katholieke hogeschool VIVES

Studiegebied Sociaal-Agogisch Werk

Doorniksesteenweg 145

8500 Kortrijk

Onderzoek naar 'futures thinking' met als case: COVID-19

Beste lezer

Wij zijn zes studenten uit het studiegebied sociaal-agogisch werk in VIVES Kortrijk en naar aanleiding van onze bachelorproef doen wij onderzoek naar het concept 'futures thinking' binnen het onderwijs met als case COVID-19.

Future thinking ofwel toekomstdenken is het anticiperen op morgen met signalen die we halen uit het heden en verleden. Toekomstdenken is meer dan alleen fantaseren over later, het is een proces om tot een onderbouwd toekomstscenario te bekomen.

Dit onderzoek doen we in het kader van het keuzetraject 'eSociety', wat wil zeggen dat dit een onderwijskundige opdracht is. Daarbij is gastdocent Thomas D'hooge onze begeleider. Voor vragen mag u altijd bij ons of onze docent terecht via 'info@projectforesight.be'.

Via dit onderzoek wensen we een duidelijker beeld te krijgen omtrent dit concept en daarom zouden we u vriendelijk willen vragen om hieraan deel te nemen. Dit kan u doen door het invullen van de enquête.

Alvast bedankt voor uw medewerking.

Met vriendelijke groet

Een groep enthousiaste studenten.

Attachment 10: Survey teachers

Deel 1: Persoonlijke gegevens

We starten onze bevraging met een aantal persoonlijke vragen om meer inzicht te verwerven in onze resultaten en eventuele verbanden te kunnen leggen.

Gelieve één optie aan te vinken tenzij anders wordt vermeld.

1. Wat is uw geslacht ? (vink aan)

- Man
- Vrouw
- X

2. Wat is uw leeftijd ? (vul in)

…… jaar

3. Bent u leerkracht of student bachelor secundair onderwijs?

- Docent
- Student

Deel 2: Concepten

4. Bent u bekend met het concept 'futures thinking' (= toekomst denken)?

- Ja
- Nee

6. Bent u bekend met het concept '21th century skills' (ofwel 21e-eeuwse vaardigheden)?

- Ja
- Nee

7. Waar heeft u de 21e-eeuwse vaardigheden aangeleerd? (bv. kritisch denken, problemen oplossen, mediawijsheid…)

- Voornamelijk op school, aanvullend via zelfonderzoek
- Voornamelijk via zelfonderzoek, aanvullend op school
- Uitsluitend op school
- Uitsluitend via zelfonderzoek
- Kan ik mij niet meer herinneren
- Andere:……

9. Is het aanleren van deze vaardigheden een meerwaarde in het secundair onderwijs in België?

Niet echt	1	2	3	4	5	Zeker en vast

11. LIKERTSCHAAL: stellingen ivm met 21e-eeuwse vaardigheden.

Stellingen	*Helemaal niet akkoord*	*Niet akkoord*	*Neutraal*	*akkoord*	*Helemaal akkoord*
1. Ik leer mijn leerlingen kritisch om te gaan met informatie.	*1*	*2*	*3*	*4*	*5*
2. Ik leer mijn leerlingen problemen gestructureerd aan te pakken.					
3. Ik leer mijn leerlingen op een efficiënte manier nuttige informatie vinden, selecteren en bestuderen.					
4. Ik leer mijn leerlingen ICT vaardigheden aan.					
5. Ik leer mijn leerlingen bewust, kritisch en actief om te gaan met de informatie van de media.					
6. Ik leer mijn leerlingen geen sociale en culturele vaardigheden aan.					
7. Ik leer mijn leerlingen probleemoplossend na te denken.					

8. Ik leer mijn leerlingen zich creatief te uiten.					
9. Ik leer mijn leerlingen in team werken.					
10. Ik leer mijn leerlingen geen communicatieve vaardigheden aan.					
11. Ik leer mijn leerlingen verantwoordelijkheid te nemen voor hun eigen handelen.					

Deel 3: Marktonderzoek

12. Kent u externe bronnen die informatie of oefeningen aanbieden in kader van 'futures thinking'?

- Ja
- Nee

Indien ja, welke producten/diensten bieden zij aan?

- Informatie
- Workshops
- Tools (al spelend leren)
- Andere: ……..

Wat is hun doelgroep (meerdere antwoorden zijn mogelijk)?

- -12 jaar
- 12-18
- 18-65
- 65+

Tegen welke prijs bieden zij dit aan?

- Gratis
- Andere:.....

14. Komen 21e-eeuwse vaardigheden genoeg aan bod binnen het secundair onderwijs volgens u?

- Ja
- Nee

15. Op welke manier worden 21e-eeuwse vaardigheden aangeleerd binnen het secundair onderwijs?

- Theoretisch
- Workshops
- Tools (al spelend leren)
- Externen (bv: gastspreker)
- Andere:.....

16. Zou er volgens u meer nadruk mogen gelegd worden op het aanleren van 21e-eeuwse vaardigheden binnen het secundair onderwijs?

- Ja
- Nee

17. Hoe zou u het aanleren van 21e-eeuwse vaardigheden optimaal willen voorzien binnen secundair onderwijs?

……

……

……

18. Gelooft u in een vak dat toekomstgeletterdheid benadrukt, zodat jongeren meer onderbouwd aannames maken over de toekomst?

- Ja
- Nee
- Misschien

Als u meer info wilt omtrent onze scriptie en ons onderzoek mag u altijd surfen naar www.projectforesight.be

18. Bedankt voor het invullen van de enquête. Mocht u interesse hebben in de resultaten van dit onderzoek, kan u uw mail hieronder achterlaten.

……

19. Heeft u nog opmerkingen of feedback?

Attachment 11: Survey pupils

Deel 1: Persoonlijke gegevens

We starten onze bevraging met een aantal persoonlijke vragen om meer inzicht te verwerven in onze resultaten en eventuele verbanden te kunnen leggen.

Gelieve één optie aan te vinken tenzij anders wordt vermeld.

1. Wat is je geslacht ? (vink aan)

- Man
- Vrouw
- X

2. Wat is je leeftijd ? (vul in)

…… jaar

3. Welke onderwijsvorm volg je?

- ASO
- TSO
- BSO
- KSO

4. In welke graad zit je?

- 1e graad
- 2de graad
- 3de graad
- 7de jaar (se-n-se)

Deel 2: 'De toekomst'

5. Denk je na over de toekomst?

Nooit	1	2	3	4	5	Altijd

6. Vind je het gemakkelijk om over de toekomst na te denken?

……

……

7. Hoe zouden we je kunnen helpen om over de toekomst na te denken?

……

……

8. Denk je dat we evenveel kunnen leren van naar de toekomst te kijken als het verleden te bestuderen?

- Ja
- Nee
- Geen idee

Deel 3: '21e -eeuwse vaardigheden'

Stellingen	Helemaal niet akkoord	Niet akkoord	Neutraal	akkoord	Helemaal akkoord
1. Mijn school leert mij kritisch omgaan met informatie die me aangereikt wordt.	1	2	3	4	5
2. Mijn school leert mij problemen gestructureerd aan te pakken.					
3. Mijn school leert mij op een efficiënte manier nuttige informatie vinden, selecteren en bestuderen.					
4. Mijn school leert mij de basis ICT vaardigheden aan.					
5. Mijn school leert mij bewust, kritisch en actief om te gaan met informatie van verschillende media.					
6. Mijn school leert mij geen sociale en culturele vaardigheden aan.					
7. Mijn school leert mij probleemoplossend te denken.					
8. Mijn school leert mij creatief denken.					

9. Mijn school leert mij om goed in team te werken.					
10. Mijn school leert mij geen communicatieve vaardigheden aan.					
11. Mijn school leert mij verantwoordelijkheid te nemen voor mijn eigen handelen.					

Bedankt!

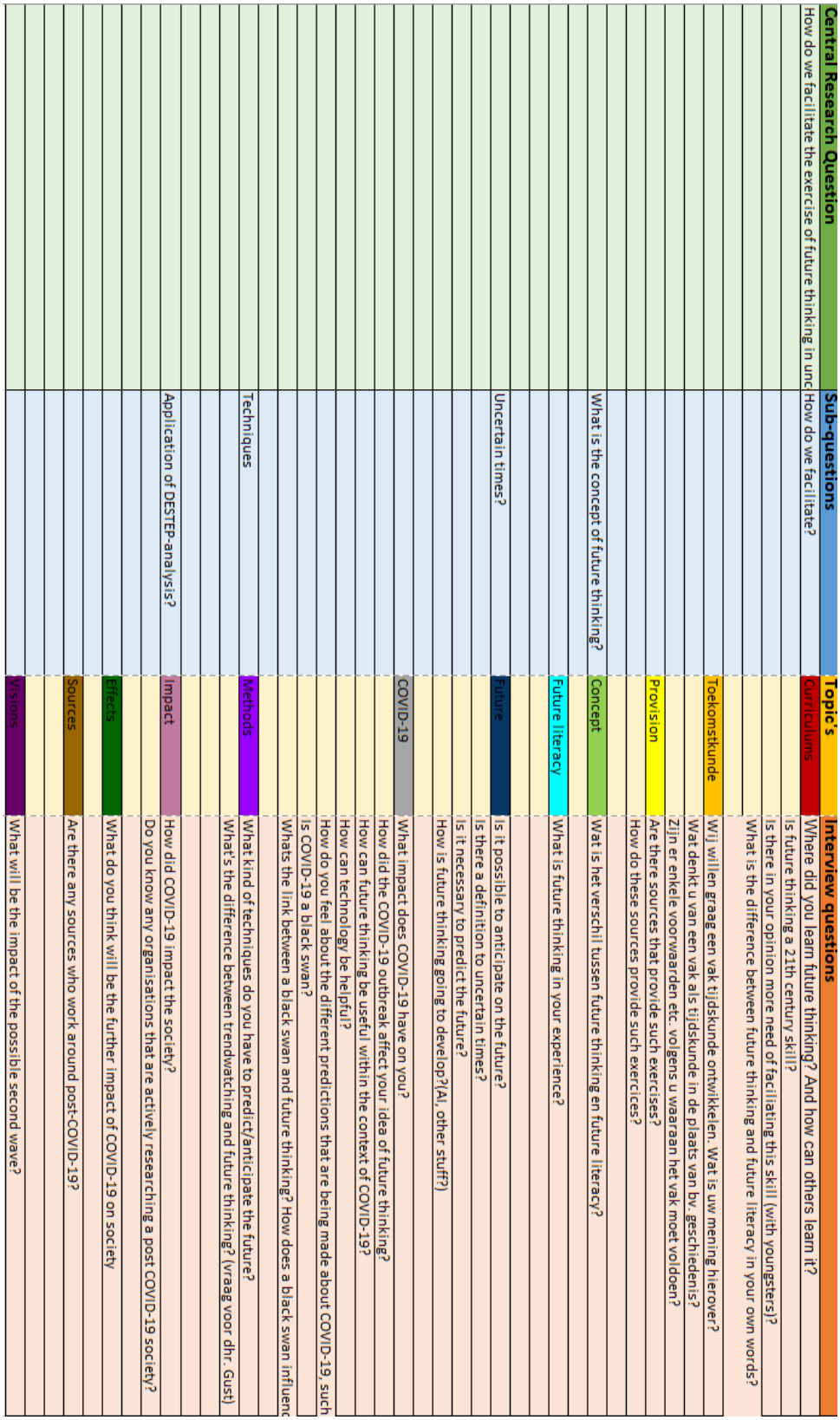
Als u meer info wilt omtrent onze scriptie en ons onderzoek mag je altijd surfen naar www.projectforesight.be

18. Bedankt voor het invullen van de enquête! Wenst u op de hoogte te blijven van de resultaten van deze enquête? Zo ja, gelieve uw emailadres hieronder in te vullen.

……

19. Heeft u nog opmerkingen of feedback?

Attachment 12 Topic list



Central Research Question	Sub-questions	Topic's	Interview questions
How do we facilitate the exercise of future thinking in unc	How do we facilitate?	Curriculums	Where did you learn future thinking? And how can others learn it?
			is future thinking a 21th century skill?
			is there in your opinion more need of facilitating this skill (with youngsters)?
			What is the difference between future thinking and future literacy in your own words?
		Toekomstkunde	Wij willen graag een vak tijdskunde ontwikkelen. Wat is uw mening hierover?
			Wat denkt u van een vak als tijdskunde in de plaats van bv. geschiedenis?
		Provision	Zijn er enkele voorwaarden etc. volgens u waaraan het vak moet voldoen?
			Are there sources that provide such exercises?
			How do these sources provide such exercices?
	What is the concept of future thinking?	Concept	Wat is het verschil tussen future thinking en future literacy?
		Future literacy	What is future thinking in your experience?
	Uncertain times?	Future	Is it possible to anticipate on the future?
			is there a definition to uncertain times?
			is it necessary to predict the future?
			How is future thinking going to develop?(AI, other stuff?)
		COVID-19	What impact does COVID-19 have on you?
			How did the COVID-19 outbreak affect your idea of future thinking?
			How can future thinking be useful within the context of COVID-19?
			How can technology be helpful?
			How do you feel about the different predictions that are being made about COVID-19, such
			is COVID-19 a black swan?
			Whats the link between a black swan and future thinking? How does a black swan influenc
	Techniques	Methods	What kind of techniques do you have to predict/anticipate the future?
			What's the difference between trendwatching and future thinking? (vraag voor dhr. Gust)
	Application of DESTEP-analysis?	Impact	How did COVID-19 impact the society?
			Do you know any organisations that are actively researching a post COVID-19 society?
		Effects	What do you think will be the further impact of COVID-19 on society
		Sources	Are there any sources who work around post-COVID-19?
		Visions	What will be the impact of the possible second wave?

Attachment 13 Plan of Action

What will we do?	When will we do it?
Initiation Phase	
Brainstorm on topics	Week 1: 27-28/04/2020
Search information sources	Week 1: 27-28/04/2020
Read information sources	Week 1: 29/04/2020
Select relevant information sources	Week 1: 30/04/2020
Demarcate Topic	Week 1: 01/05/2020
Define Issue (probleemstelling)	Week 2: 04/05/2020
Demarcate target group	Week 2: 05/05/2020
Definition Phase	
Brainstorm on topics literature study	Week 2: 07-08/05/2020
Literature study	Week 2-3: 07-13/05/2020
Search for experts on the topic	Week 3: 11-13/05/2020
Planning Phase	
Plan of action	Week 2: 14-15/05/2020
Brainstorming Interviewees	Week 2: 14-15/05/2020
Preparation Phase	
Qualitative research	
Draw up mail	Week 2: 08/05/2020
Send emails to experts	Week 2: 08/05/2020
Divide central research question	Week 2-3: 08-11/05/2020
Specify each divided question	Week 2-3: 08-11/05/2020
Draw up interview schedule	Week 3: 11/05/2020
Conduct interviews	Week 3-6
Process interviews	Week 3-6
Quantitative research	
Divide central research question	Week 3: 12/05/2020
Specify each divided question	Week 3: 12/05/2020
Draw up survey	Week 3: 13-15/05/2020
Conduct survey	Week 4-7
Process survey	Week 7-8

Attachment 14 Analysis of the surveys via SPSS

Reliability Statistics

Cronbach's Alpha	N of Items
,833	8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Mijn school leert mij kritisch omgaan met informatie die me aangereikt wordt.	27,08	18,257	,555	,814
Mijn school leert mij problemen gestructureerd aan te pakken.	26,92	17,441	,702	,793
Mijn school leert mij op een efficiënte manier nuttige informatie vinden, selecteren en bestuderen.	26,92	19,283	,525	,817
Mijn school leert mij bewust, kritisch en actief om te gaan met informatie van verschillende media.	26,79	19,956	,432	,828
Mijn school leert mij probleemoplossend te denken.	26,74	19,458	,599	,811
Mijn school leert mij creatief denken.	27,22	17,753	,583	,810
Mijn school leert mij om goed in team te werken.	26,69	18,902	,499	,821
Mijn school leert mij verantwoordelijkheid te nemen voor mijn eigen handelen.	26,64	18,287	,600	,808

Statistics

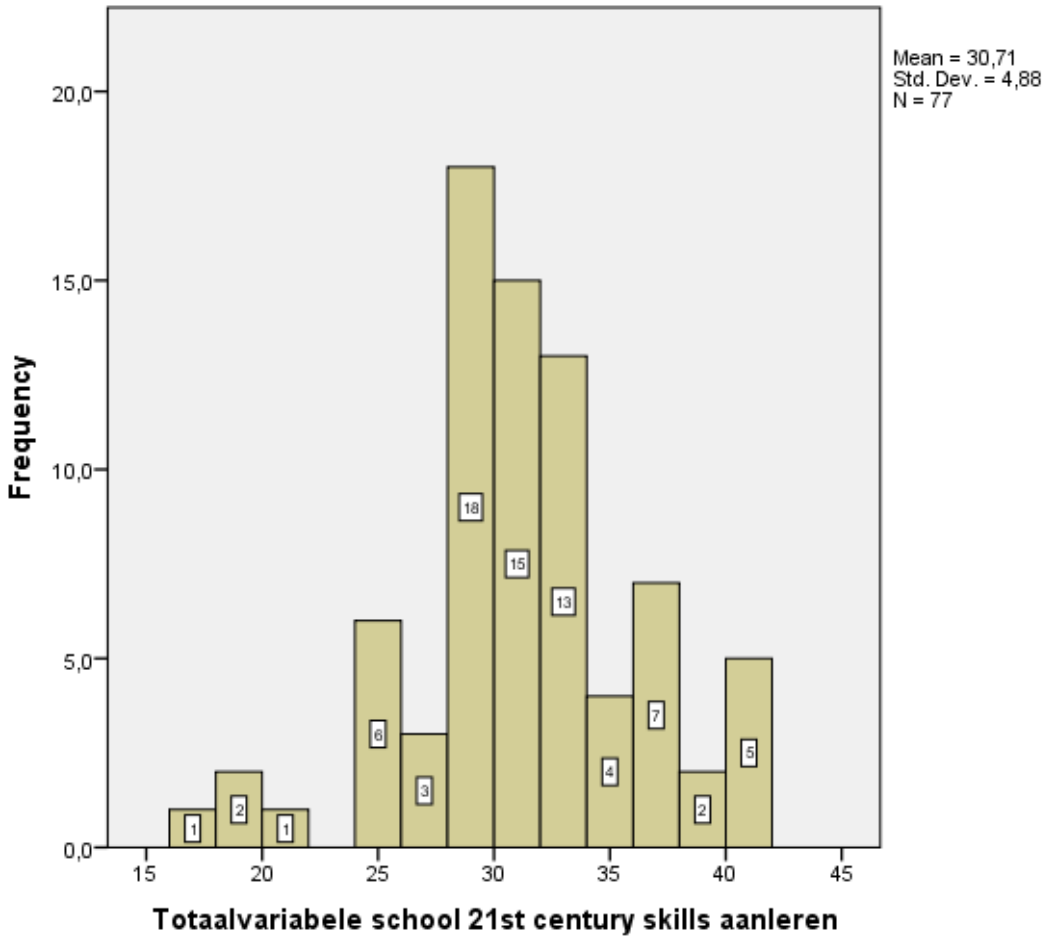
Totaalvariabele school 21st century skills aanleren

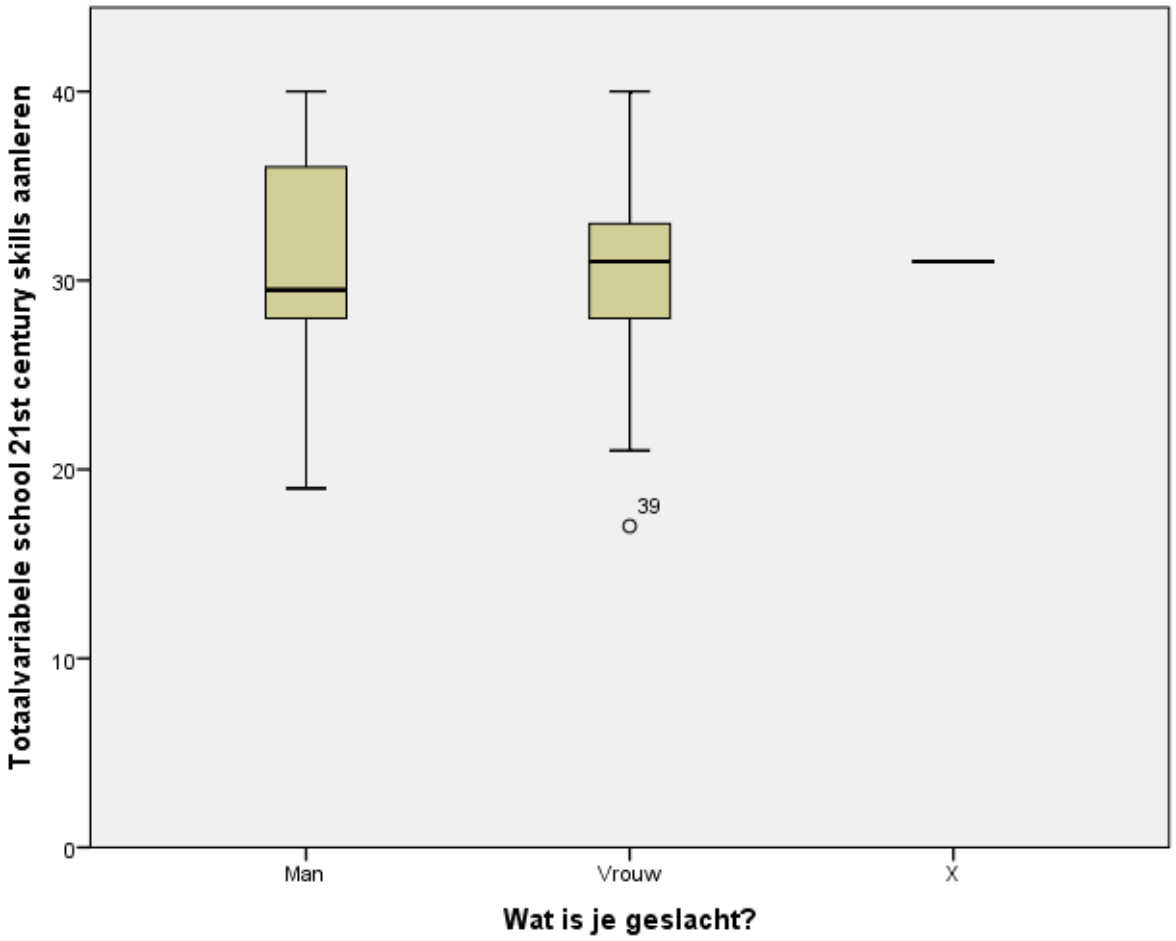
N	Valid	77
	Missing	1
Mean		30,71
Median		31,00
Mode		28
Std. Deviation		4,880
Variance		23,812
Range		23
Minimum		17
Maximum		40
Sum		2365
Percentiles	25	28,00
	50	31,00
	75	33,00

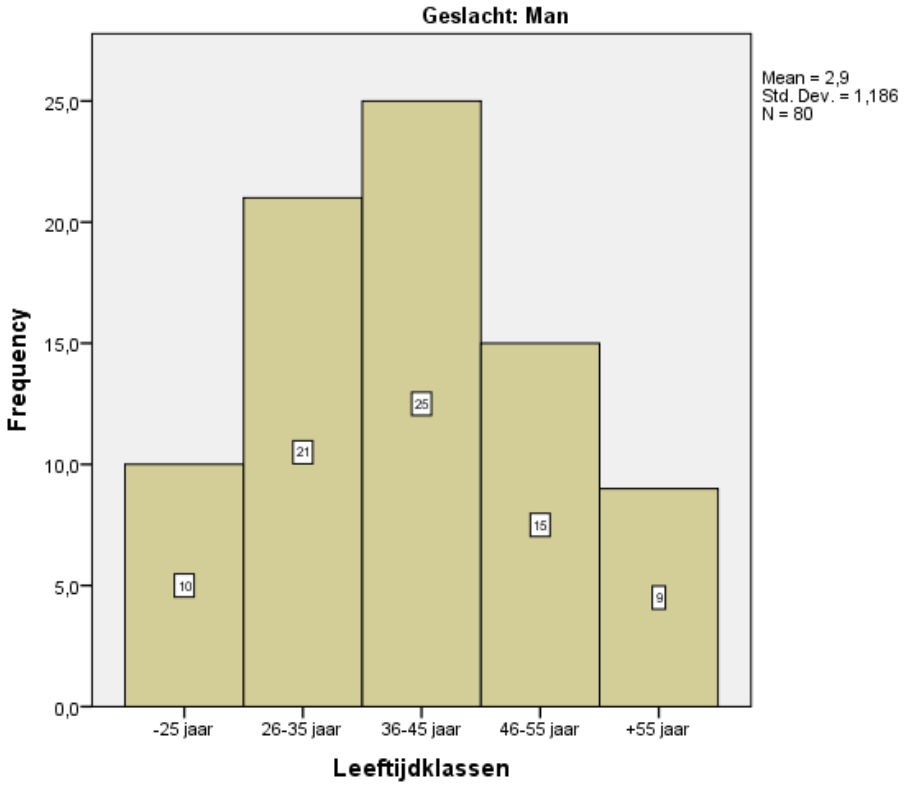
Totaalvariabele school 21st century skills aanleren

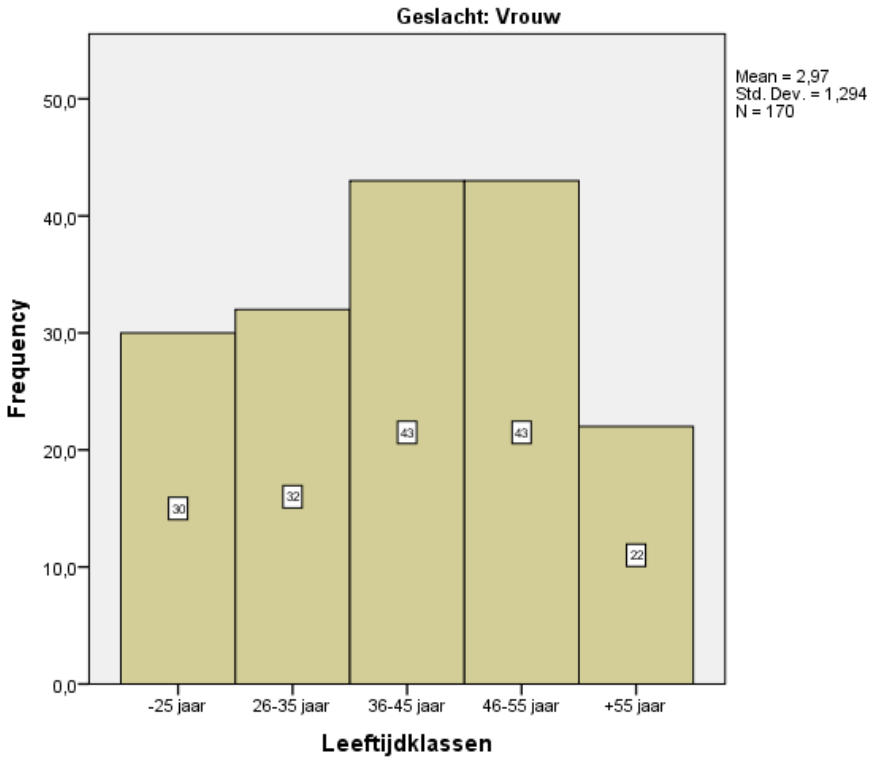
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	17	1	1,3	1,3	1,3
	19	2	2,6	2,6	3,9
	21	1	1,3	1,3	5,2
	24	2	2,6	2,6	7,8
	25	4	5,1	5,2	13,0
	26	2	2,6	2,6	15,6
	27	1	1,3	1,3	16,9
	28	11	14,1	14,3	31,2
	29	7	9,0	9,1	40,3
	30	5	6,4	6,5	46,8
	31	10	12,8	13,0	59,7
	32	7	9,0	9,1	68,8
	33	6	7,7	7,8	76,6
	34	2	2,6	2,6	79,2
	35	2	2,6	2,6	81,8
	36	4	5,1	5,2	87,0
	37	3	3,8	3,9	90,9
	38	2	2,6	2,6	93,5
	40	5	6,4	6,5	100,0
	Total	77	98,7	100,0	
Missing	System	1	1,3		
Total		78	100,0		

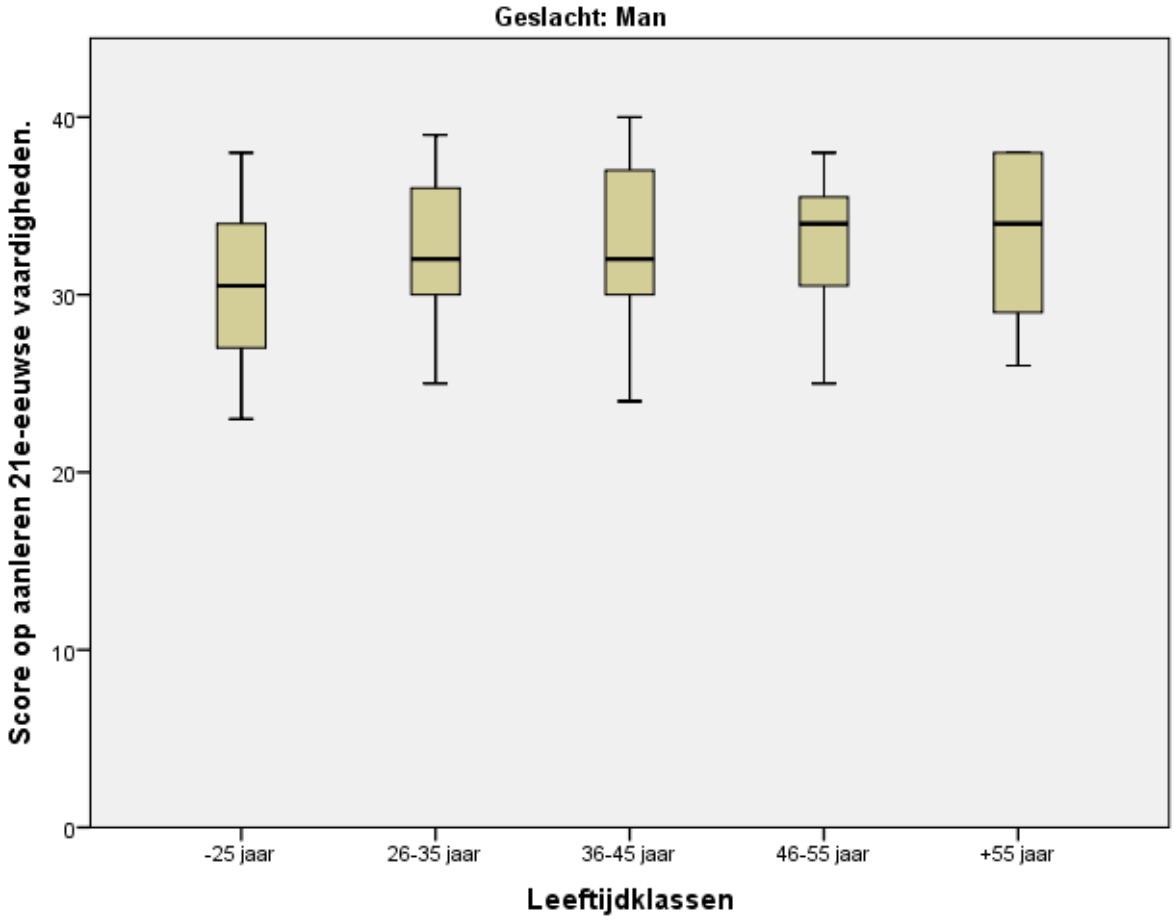
Weinig focus 8-16 **0**
Matige focus 17-24 **6**
Bewuste focus 25-32 **43**
Sterk gerichte focus33-40 **24**

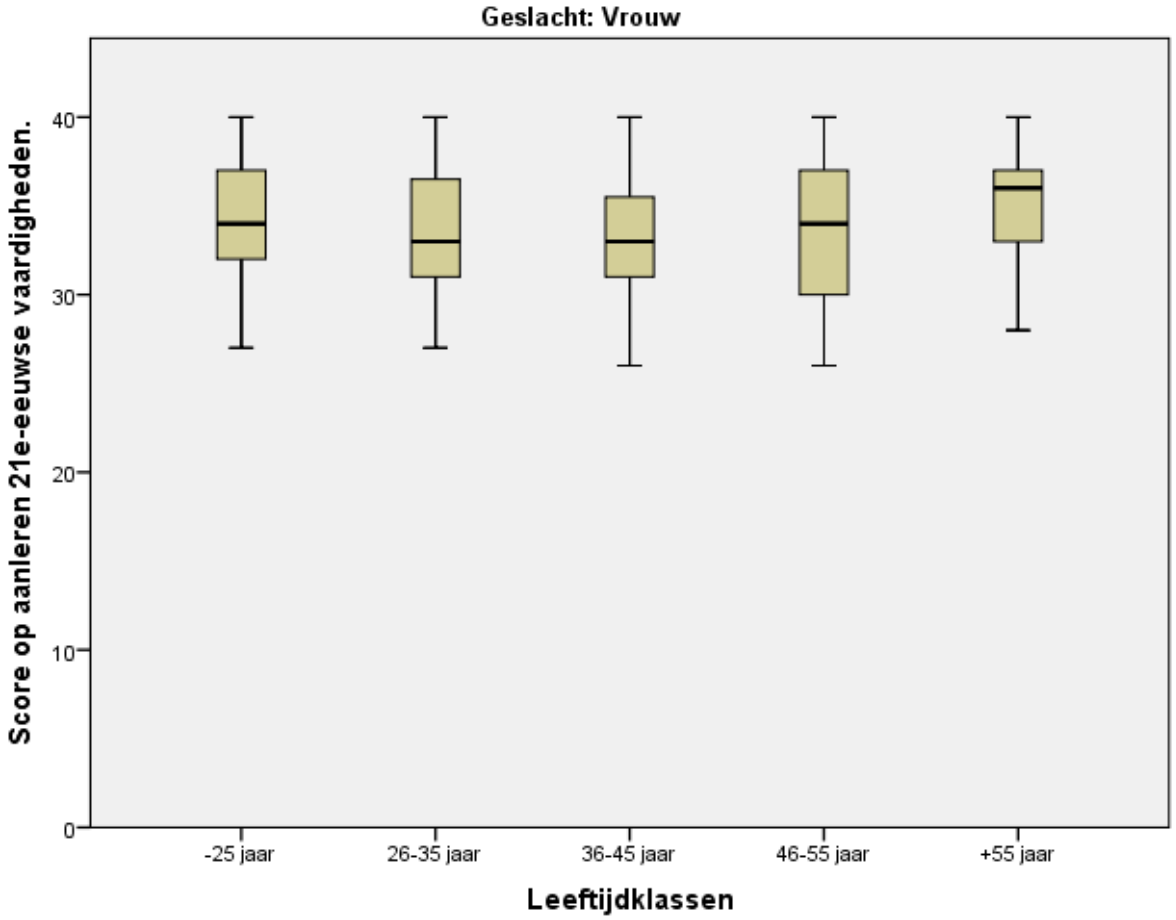

Mean = 30,71
Std. Dev. = 4,88
N = 77
Frequency
20,0
15,0
10,0
5,0
0,0
1
2
1
6
3
18
15
13
4
7
2
5
15
20
25
30
35
40
45
Totaalvariabele school 21st century skills aanleren

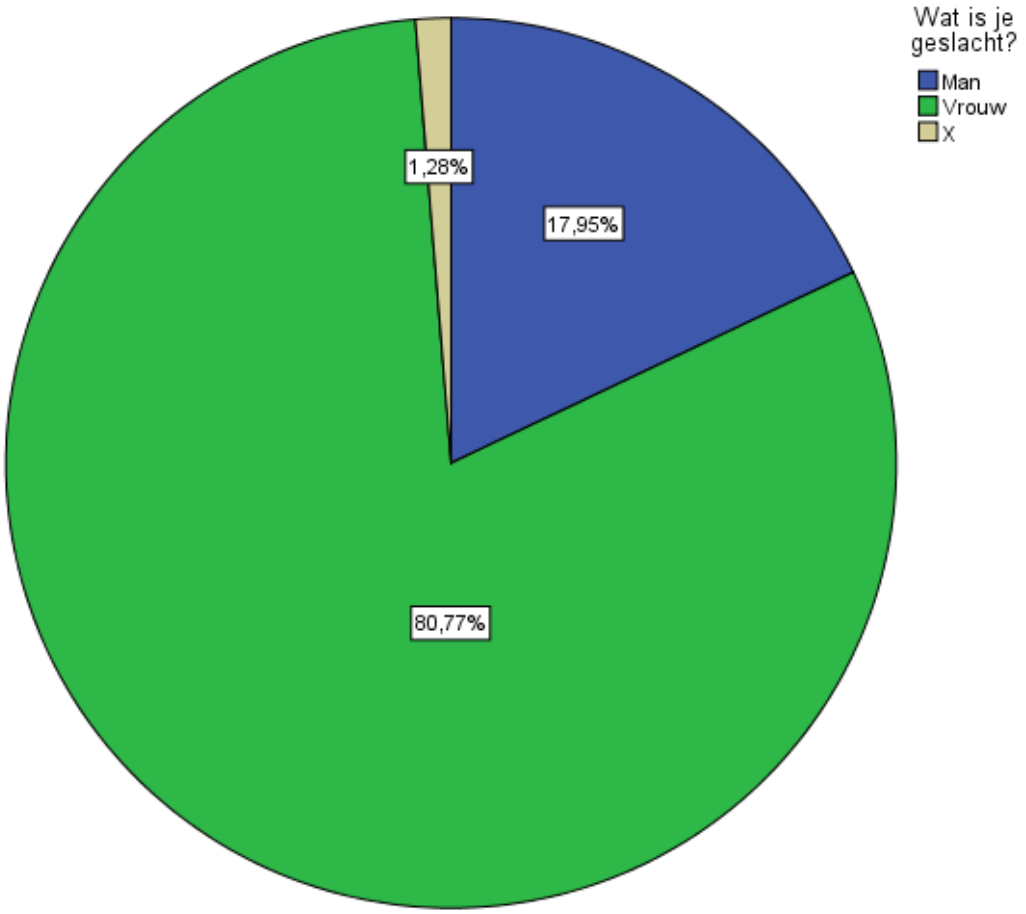

Totaalvariabele school 21st century skills aanleren
40
30
20
10
0
39
Man
Vrouw
X
Wat is je geslacht?


Geslacht: Man
Mean = 2,9
Std. Dev. = 1,186
N = 80
Frequency
25,0
20,0
15,0
10,0
5,0
0,0
10
21
25
15
9
-25 jaar
26-35 jaar
36-45 jaar
46-55 jaar
+55 jaar
Leeftijdklassen


Geslacht: Vrouw
Mean = 2,97
Std. Dev. = 1,294
N = 170
Frequency
50,0
40,0
30,0
20,0
10,0
0,0
30
32
43
43
22
-25 jaar
26-35 jaar
36-45 jaar
46-55 jaar
+55 jaar
Leeftijdklassen


Geslacht: Man
Score op aanleren 21e-eeuwse vaardigheden.
40
30
20
10
0
-25 jaar
26-35 jaar
36-45 jaar
46-55 jaar
+55 jaar
Leeftijdklassen


Geslacht: Vrouw
Score op aanleren 21e-eeuwse vaardigheden.
40
30
20
10
0
-25 jaar
26-35 jaar
36-45 jaar
46-55 jaar
+55 jaar
Leeftijdklassen



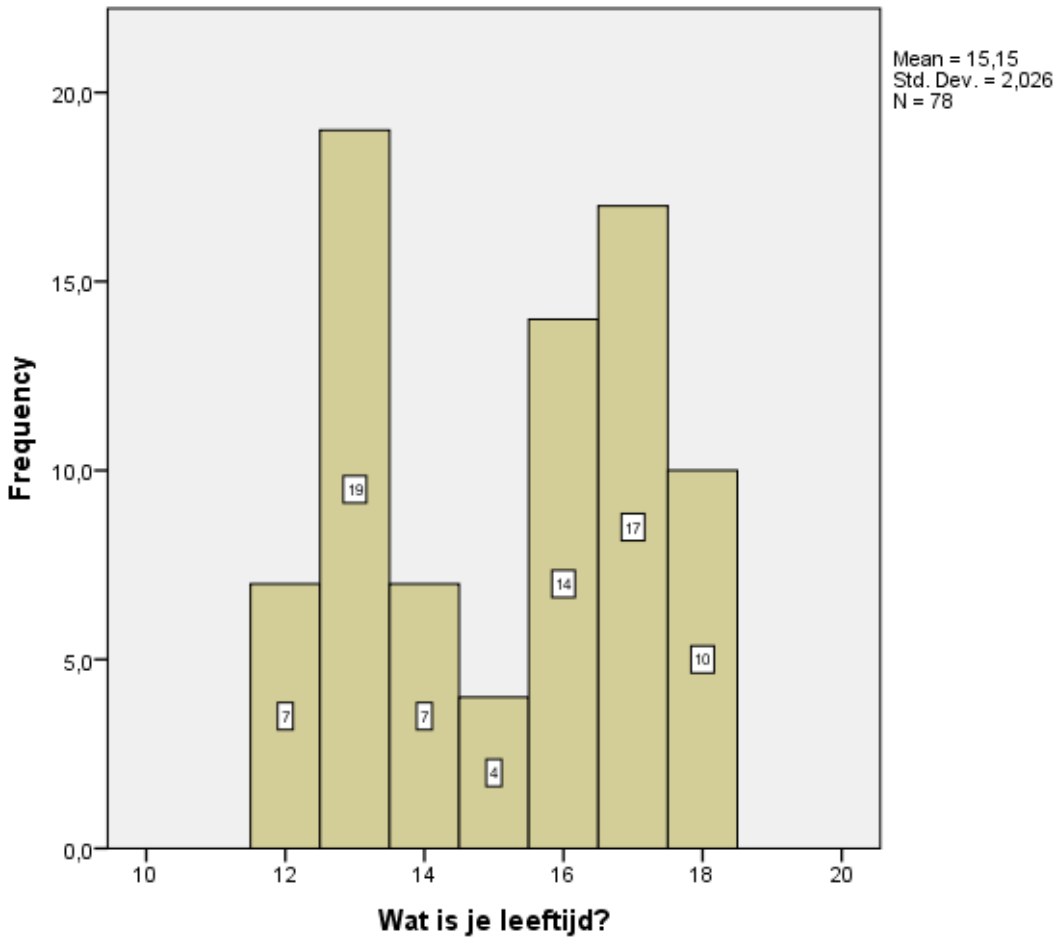
Wat is je geslacht?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Man	14	17,9	17,9	17,9
	Vrouw	63	80,8	80,8	98,7
	X	1	1,3	1,3	100,0
	Total	78	100,0	100,0	

Statistics

Wat is je geslacht?

N	Valid	78
	Missing	0
Mean		1,83
Median		2,00
Mode		2
Std. Deviation		,408
Variance		,167
Range		2
Minimum		1
Maximum		3
Sum		143
Percentiles	25	2,00
	50	2,00
	75	2,00



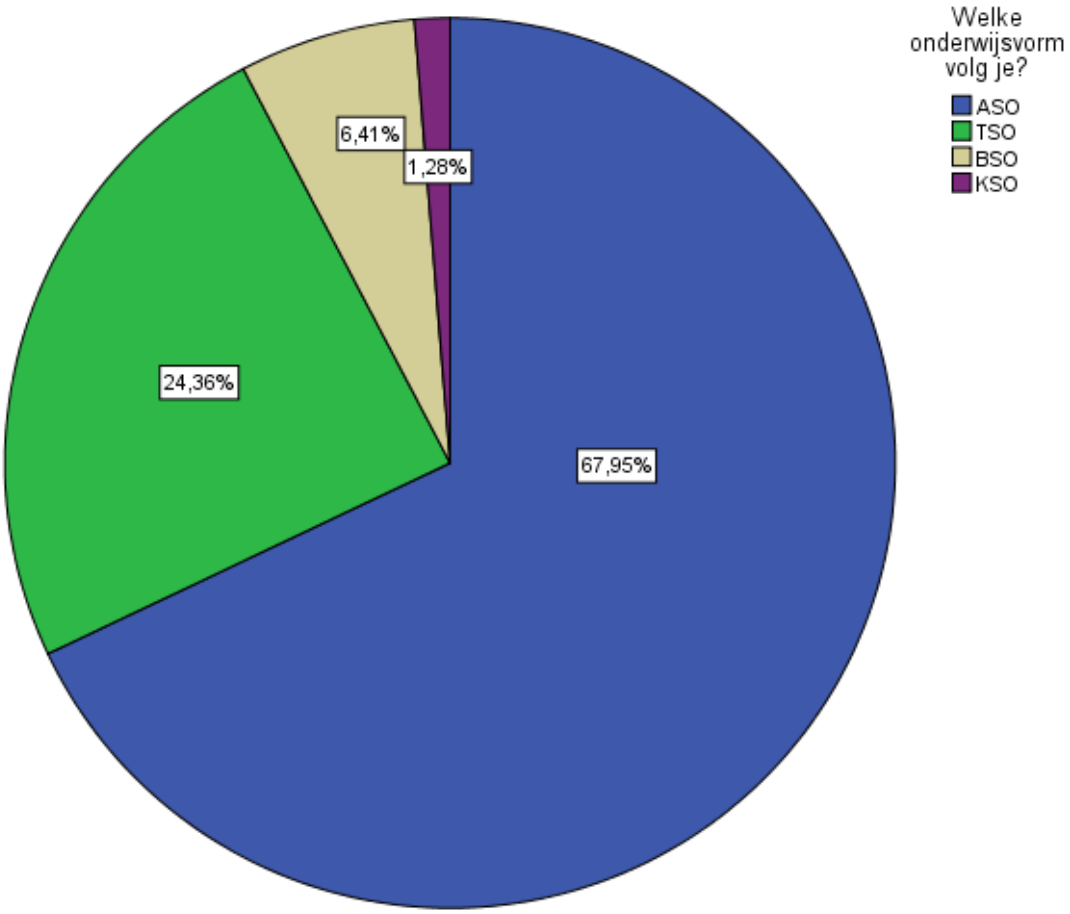
Wat is je leeftijd?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	12	7	9,0	9,0	9,0
	13	19	24,4	24,4	33,3
	14	7	9,0	9,0	42,3
	15	4	5,1	5,1	47,4
	16	14	17,9	17,9	65,4
	17	17	21,8	21,8	87,2
	18	10	12,8	12,8	100,0
	Total	78	100,0	100,0	

Statistics

Wat is je leeftijd?

N	Valid	78
	Missing	0
Mean		15,15
Median		16,00
Mode		13
Std. Deviation		2,026
Variance		4,106
Range		6
Minimum		12
Maximum		18
Sum		1182
Percentiles	25	13,00
	50	16,00
	75	17,00



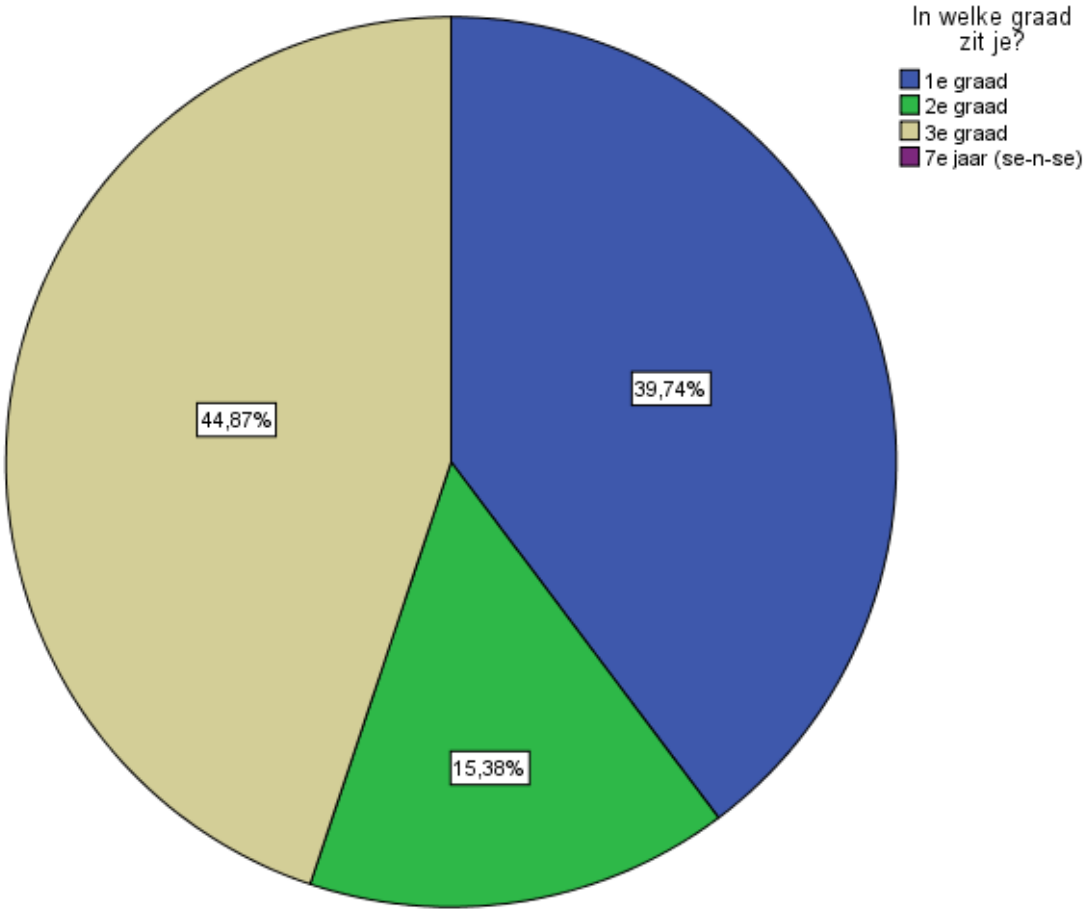
Welke onderwijsvorm volg je?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	ASO	53	67,9	67,9	67,9
	TSO	19	24,4	24,4	92,3
	BSO	5	6,4	6,4	98,7
	KSO	1	1,3	1,3	100,0
	Total	78	100,0	100,0	

Statistics

Welke onderwijsvorm volg je?

N	Valid	78
	Missing	0
Mean		1,41
Median		1,00
Mode		1
Std. Deviation		,673
Variance		,453
Range		3
Minimum		1
Maximum		4
Sum		110
Percentiles	25	1,00
	50	1,00
	75	2,00



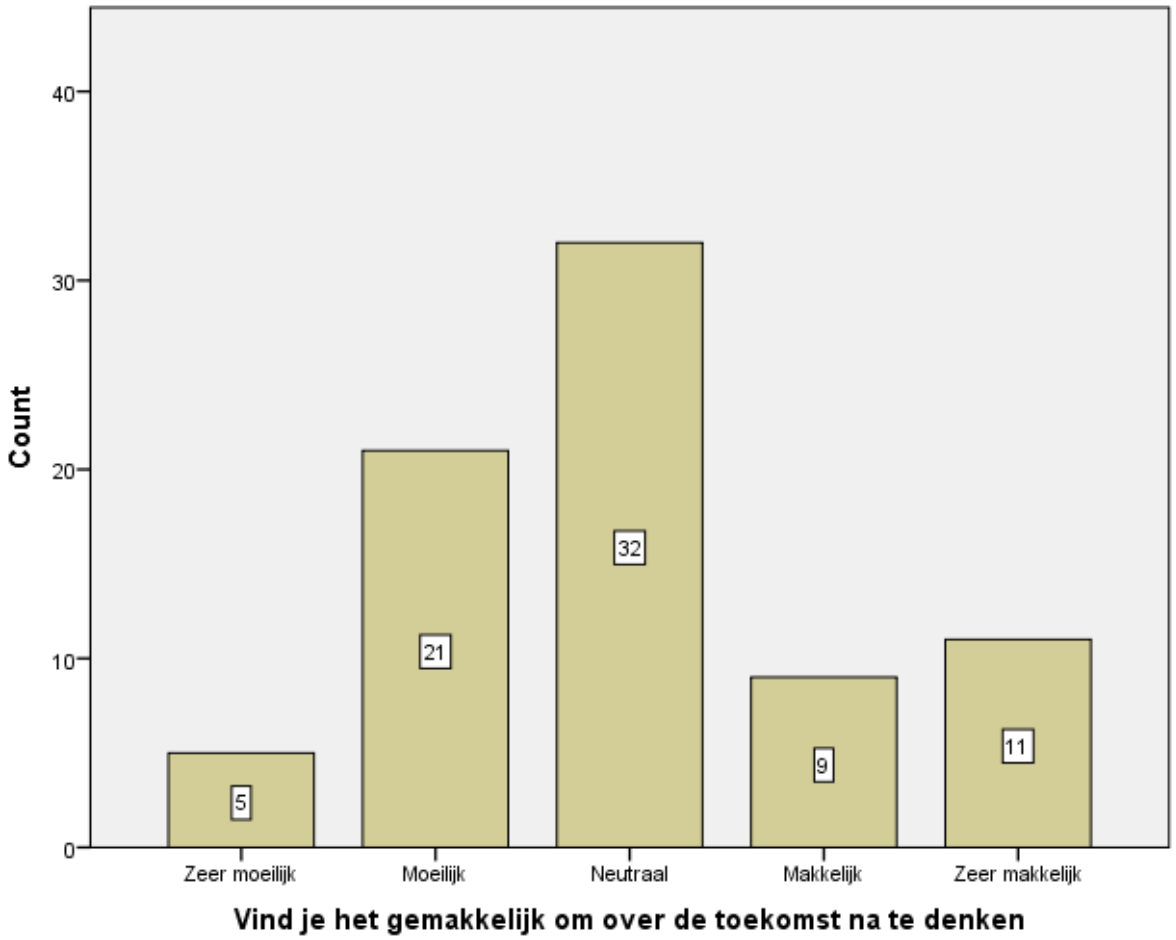
In welke graad zit je?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1e graad	31	39,7	39,7	39,7
	2e graad	12	15,4	15,4	55,1
	3e graad	35	44,9	44,9	100,0
	Total	78	100,0	100,0	

Statistics

In welke graad zit je?

N	Valid	78
	Missing	0
Mean		2,05
Median		2,00
Mode		3
Std. Deviation		,924
Variance		,854
Range		2
Minimum		1
Maximum		3
Sum		160
Percentiles	25	1,00
	50	2,00
	75	3,00


Count
40
30
20
10
0
5
21
32
9
11
Zeer moeilijk
Moeilijk
Neutraal
Makkelijk
Zeer makkelijk
Vind je het gemakkelijk om over de toekomst na te denken

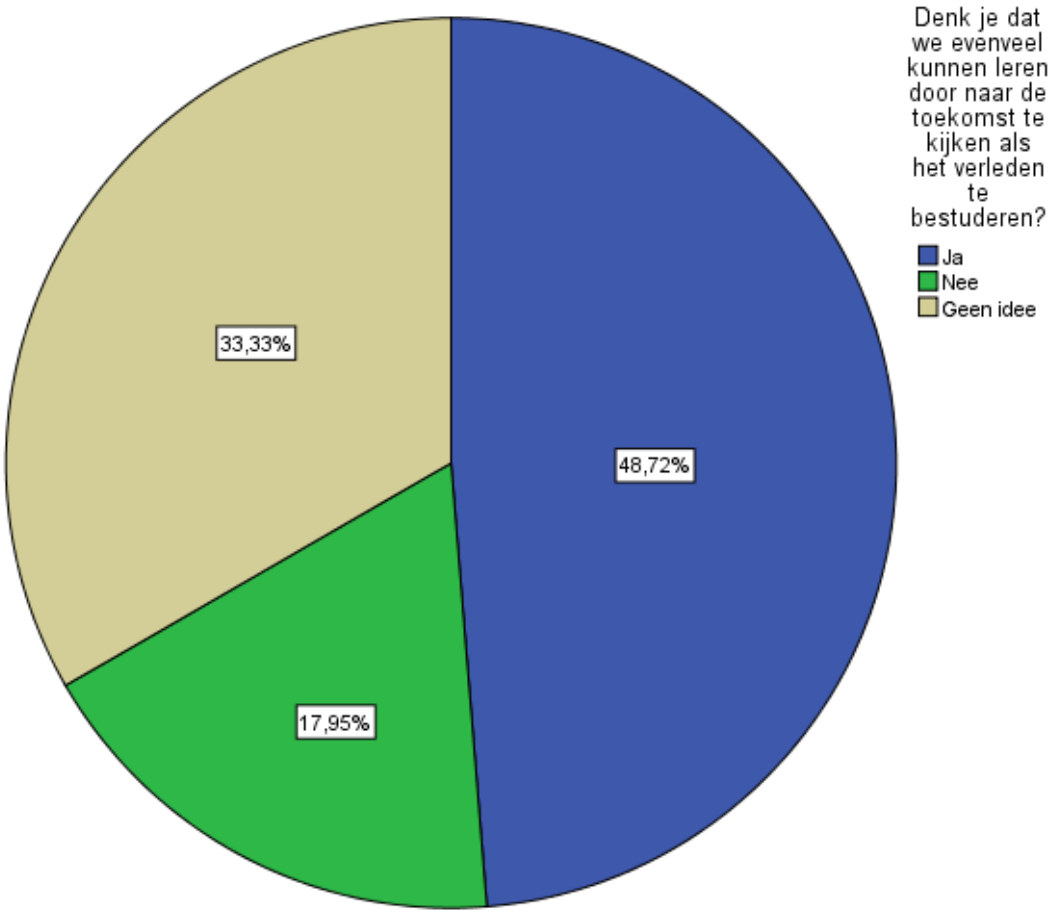
Vind je het gemakkelijk om over de toekomst na te denken

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Zeer moeilijk	5	6,4	6,4	6,4
	Moeilijk	21	26,9	26,9	33,3
	Neutraal	32	41,0	41,0	74,4
	Makkelijk	9	11,5	11,5	85,9
	Zeer makkelijk	11	14,1	14,1	100,0
	Total	78	100,0	100,0	

Statistics

Vind je het gemakkelijk om over de toekomst na te denken

N	Valid	78
	Missing	0
Mean		3,00
Median		3,00
Mode		3
Std. Deviation		1,105
Variance		1,221
Range		4
Minimum		1
Maximum		5
Sum		234
Percentiles	25	2,00
	50	3,00
	75	4,00



Do you think that we can learn as much from looking at the future as studying the past?

Yes 48,72%
No 17,95%
I don't know 33,33%

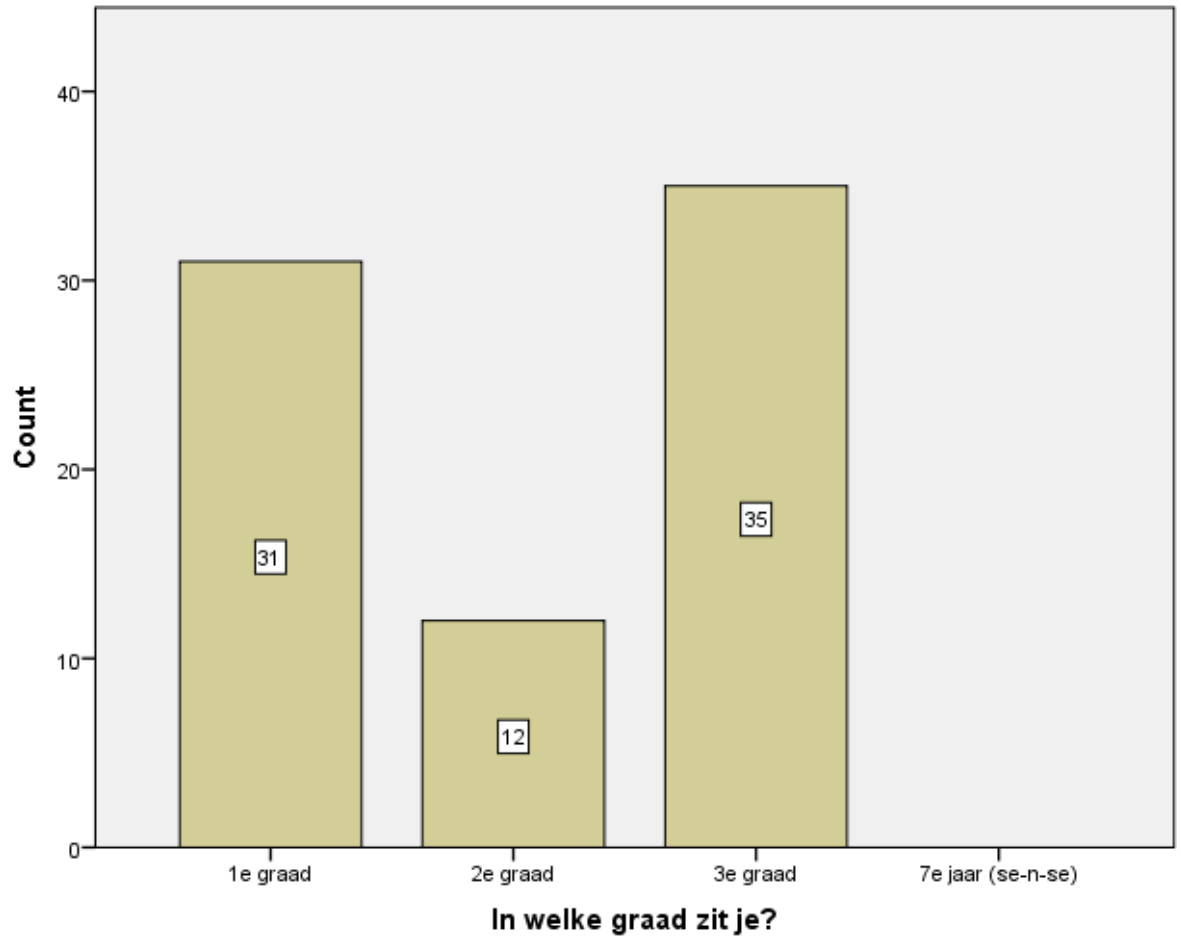
Denk je dat we evenveel kunnen leren door naar de toekomst te kijken als het verleden te bestuderen?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ja	38	48,7	48,7	48,7
	Nee	14	17,9	17,9	66,7
	Geen idee	26	33,3	33,3	100,0
	Total	78	100,0	100,0	

Statistics

Denk je dat we evenveel kunnen leren door naar de toekomst te kijken als het verleden te bestuderen?

N	Valid	78
	Missing	0
Mean		1,85
Median		2,00
Mode		1
Std. Deviation		,898
Variance		,807
Range		2
Minimum		1
Maximum		3
Sum		144
Percentiles	25	1,00
	50	2,00
	75	3,00



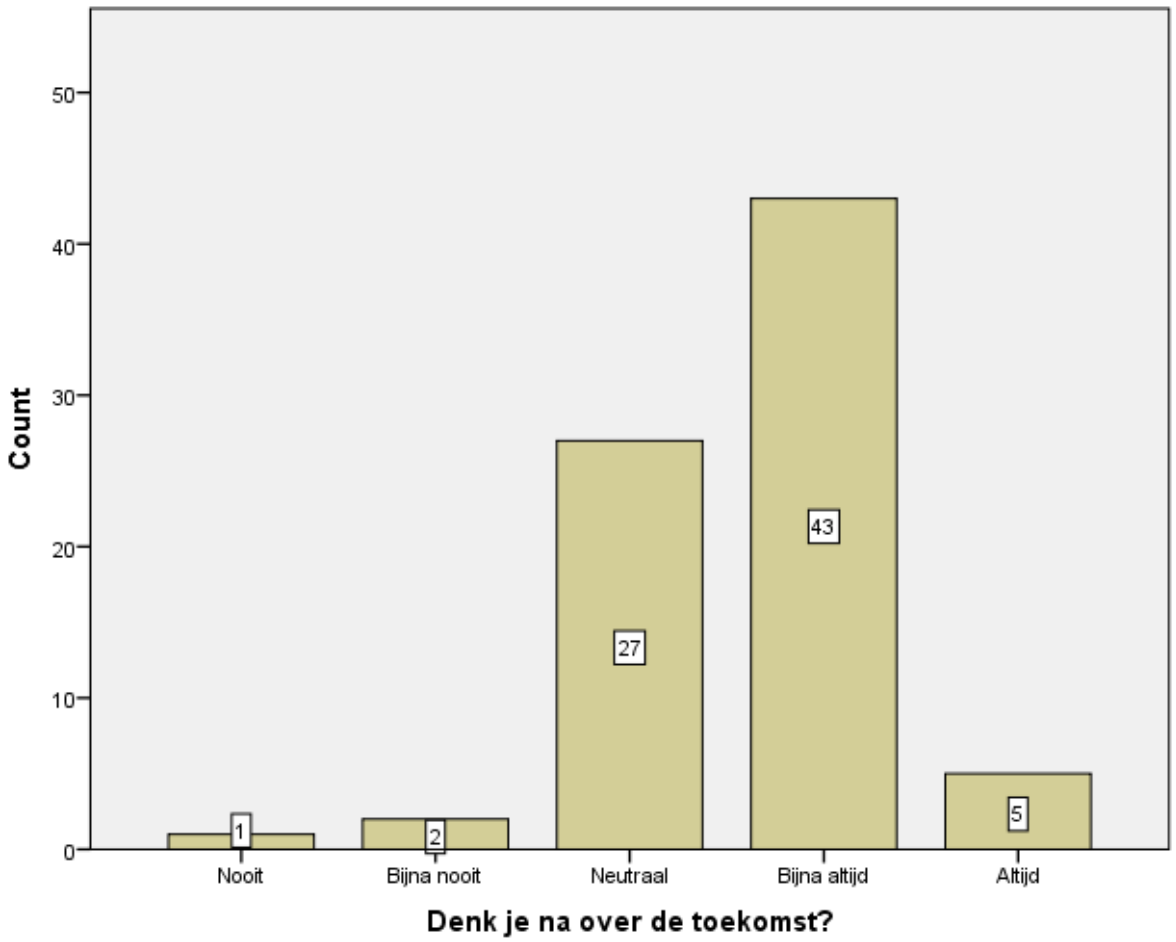
In what grade are the students

First grade 31
Second grade 12

Third grade 35
Seventh year (se-n-se) 0

In welke graad zit je?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1e graad	31	39,7	39,7	39,7
	2e graad	12	15,4	15,4	55,1
	3e graad	35	44,9	44,9	100,0
	Total	78	100,0	100,0	



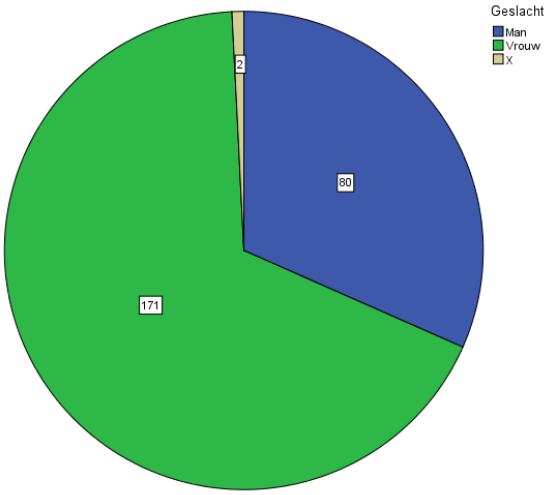
Denk je na over de toekomst?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Nooit	1	1,3	1,3	1,3
	Bijna nooit	2	2,6	2,6	3,8
	Neutraal	27	34,6	34,6	38,5
	Bijna altijd	43	55,1	55,1	93,6
	Altijd	5	6,4	6,4	100,0
	Total	78	100,0	100,0	

Statistics

Denk je na over de toekomst?

N	Valid	78
	Missing	0
Mean		3,63
Median		4,00
Mode		4
Std. Deviation		,705
Variance		,496
Range		4
Minimum		1
Maximum		5
Sum		283
Percentiles	25	3,00
	50	4,00
	75	4,00



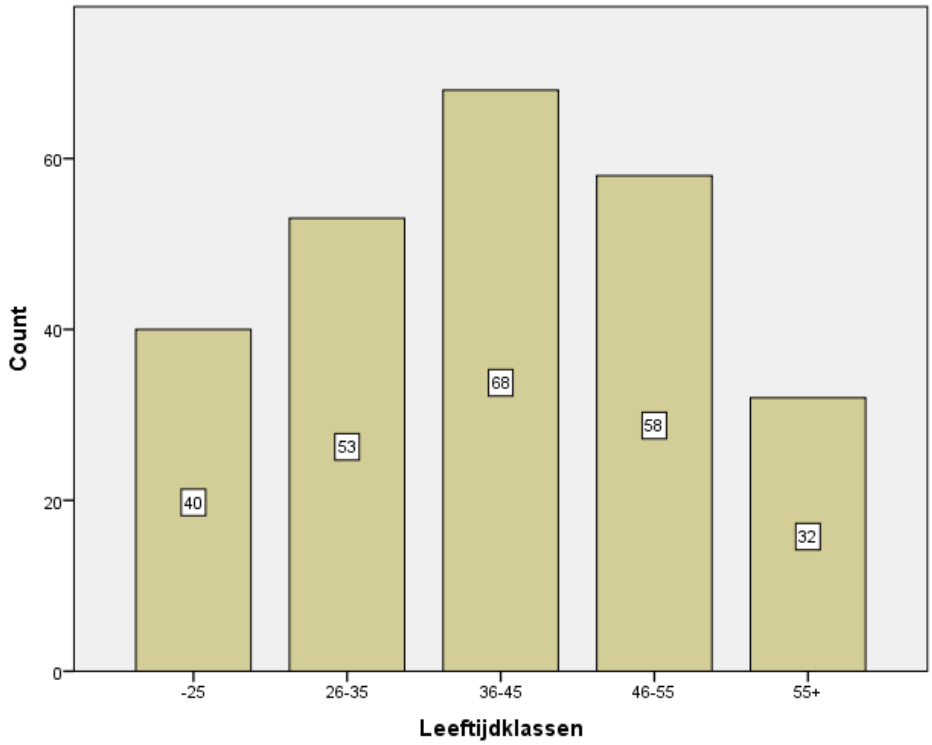
Geslacht

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Man	80	31,6	31,6	31,6
	Vrouw	171	67,6	67,6	99,2
	X	2	,8	,8	100,0
	Total	253	100,0	100,0	

Statistics

Geslacht

N	Valid	253
	Missing	0
Mean		1,69
Median		2,00
Std. Deviation		,480
Variance		,230
Range		2
Minimum		1
Maximum		3
Percentiles	25	1,00
	50	2,00
	75	2,00



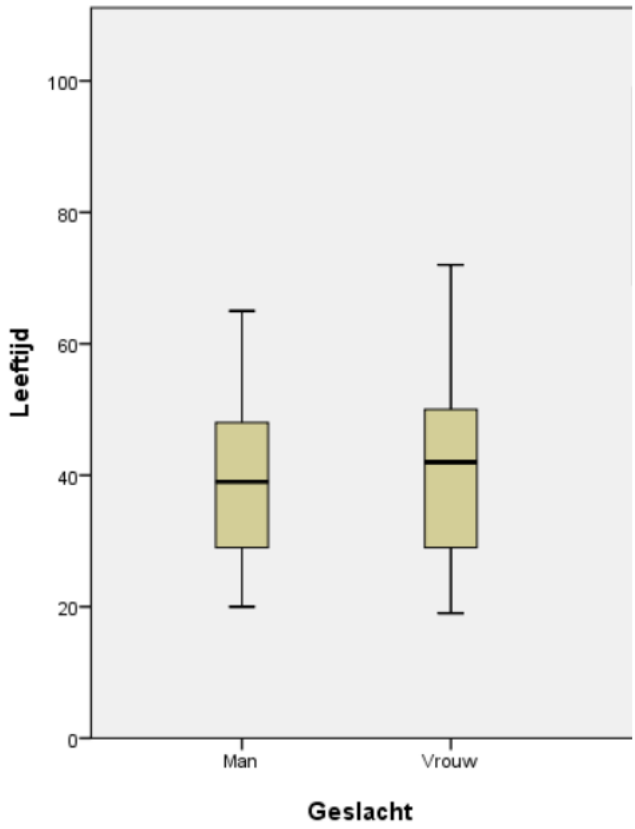
Statistics

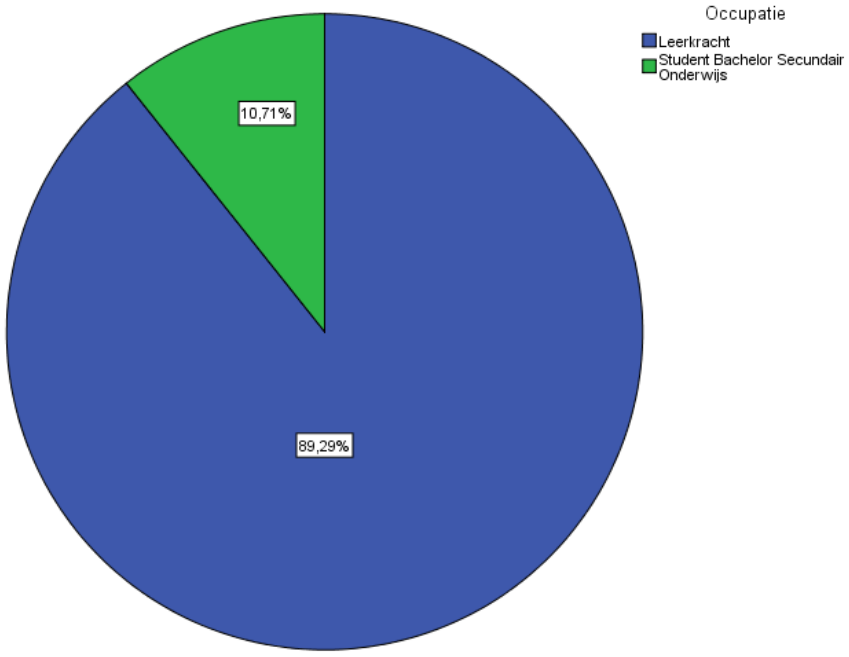
Leeftijd

N	Valid	251
	Missing	2
Mean		39,90
Median		40,00
Std. Deviation		12,260
Variance		150,309
Range		53
Minimum		19
Maximum		72
Percentiles	25	29,00
	50	40,00
	75	49,00

Leeftijdklassen

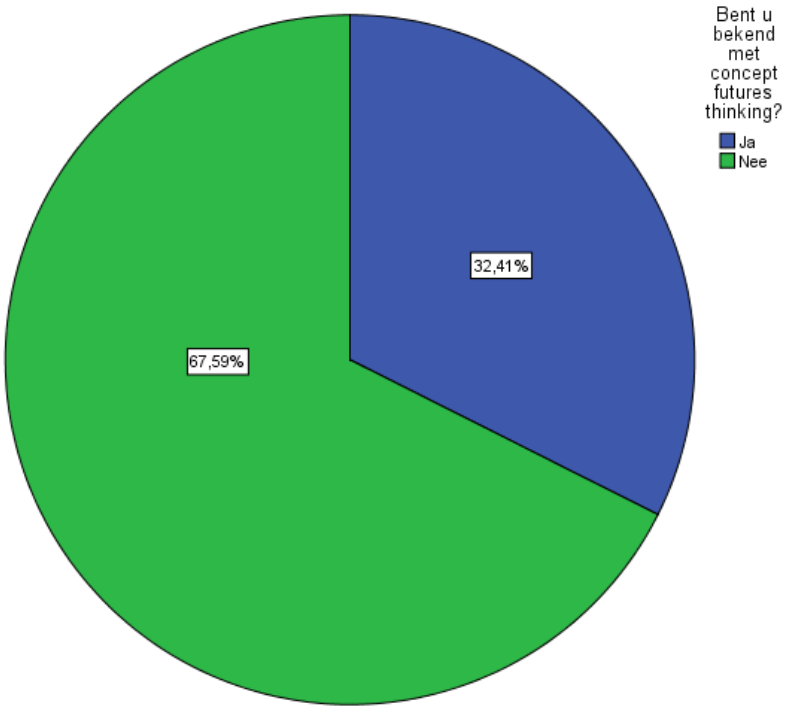
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-25 jaar	40	15,8	15,9	15,9
	26-35 jaar	53	20,9	21,1	37,1
	36-45 jaar	68	26,9	27,1	64,1
	46-55 jaar	58	22,9	23,1	87,3
	+55 jaar	32	12,6	12,7	100,0
	Total	251	99,2	100,0	
Missing	System	2	,8		
Total		253	100,0		


100
80
60
40
20
0
Leeftijd
Man
Vrouw
Geslacht


Occupatie
Leerkracht
Student Bachelor Secundair Onderwijs
10,71%
89,29%

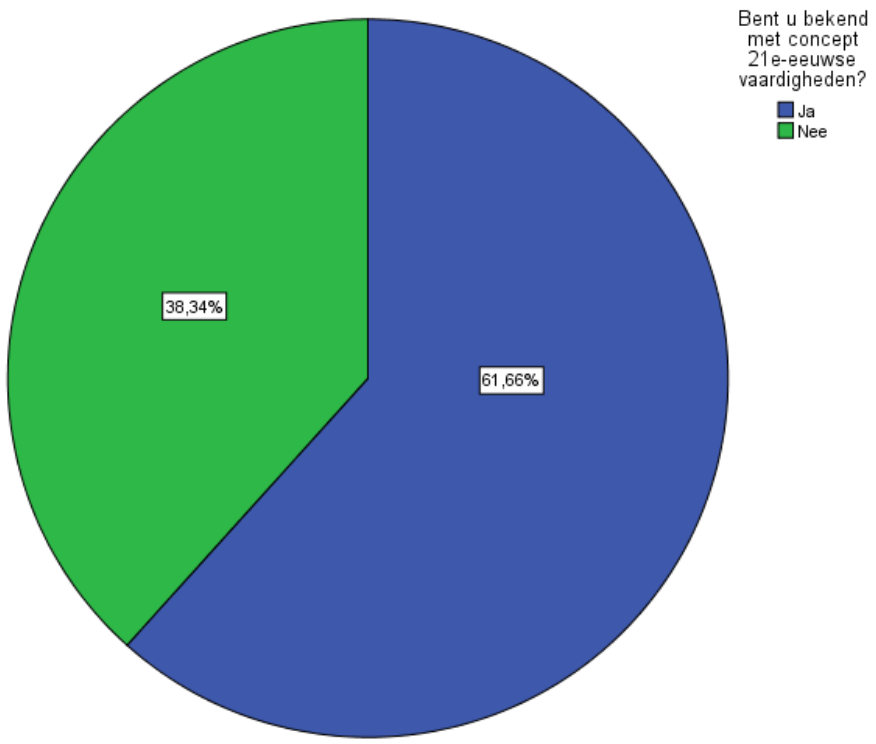
Occupatie

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Leerkracht	225	88,9	89,3	89,3
	Student Bachelor Secundair Onderwijs	27	10,7	10,7	100,0
	Total	252	99,6	100,0	
Missing	System	1	,4		
Total		253	100,0		



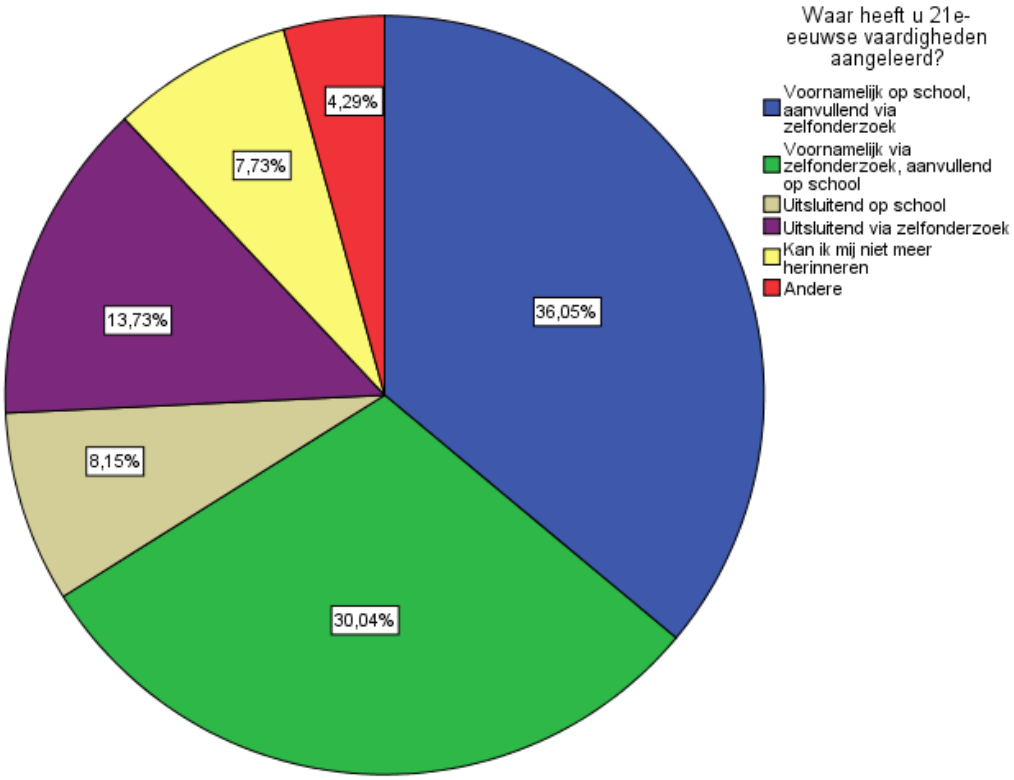
Bent u bekend met concept futures thinking?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ja	82	32,4	32,4	32,4
	Nee	171	67,6	67,6	100,0
	Total	253	100,0	100,0	



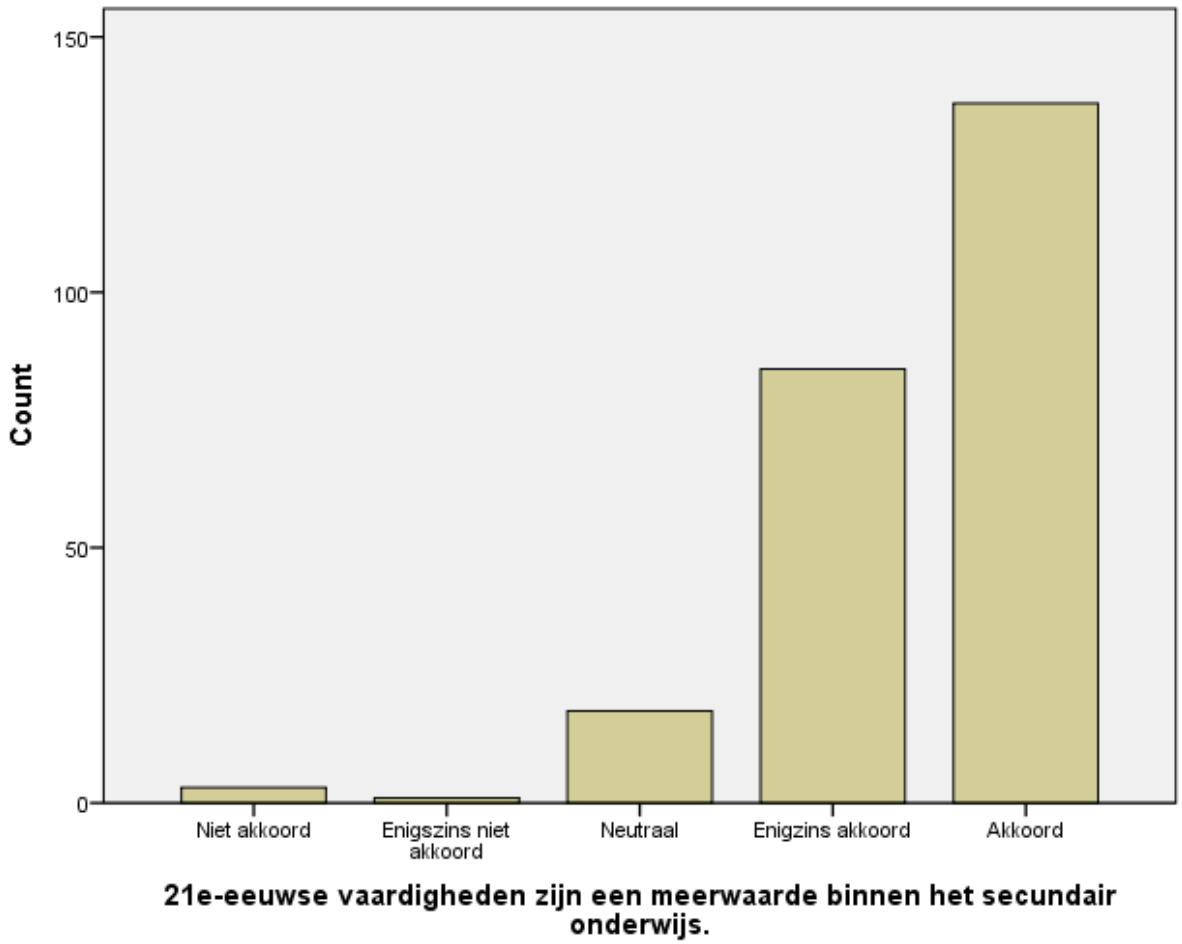
Bent u bekend met concept 21e-eeuwse vaardigheden?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ja	156	61,7	61,7	61,7
	Nee	97	38,3	38,3	100,0
	Total	253	100,0	100,0	



Waar heeft u 21e-eeuwse vaardigheden aangeleerd?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Voornamelijk op school, aanvullend via zelfonderzoek	84	33,2	36,1	36,1
	Voornamelijk via zelfonderzoek, aanvullend op school	70	27,7	30,0	66,1
	Uitsluitend op school	19	7,5	8,2	74,2
	Uitsluitend via zelfonderzoek	32	12,6	13,7	88,0
	Kan ik mij niet meer herinneren	18	7,1	7,7	95,7
	Andere	10	4,0	4,3	100,0
	Total	233	92,1	100,0	
Missing	Missing Value	19	7,5		
	System	1	,4		
	Total	20	7,9		
Total		253	100,0		



21e-eeuwse vaardigheden zijn een meerwaarde binnen het secundair onderwijs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Niet akkoord	3	1,2	1,2	1,2
	Enigszins niet akkoord	1	,4	,4	1,6
	Neutraal	18	7,1	7,4	9,0
	Enigszins akkoord	85	33,6	34,8	43,9
	Akkoord	137	54,2	56,1	100,0
	Total	244	96,4	100,0	
Missing	Missing Value	9	3,6		
Total		253	100,0		

Stellingen:

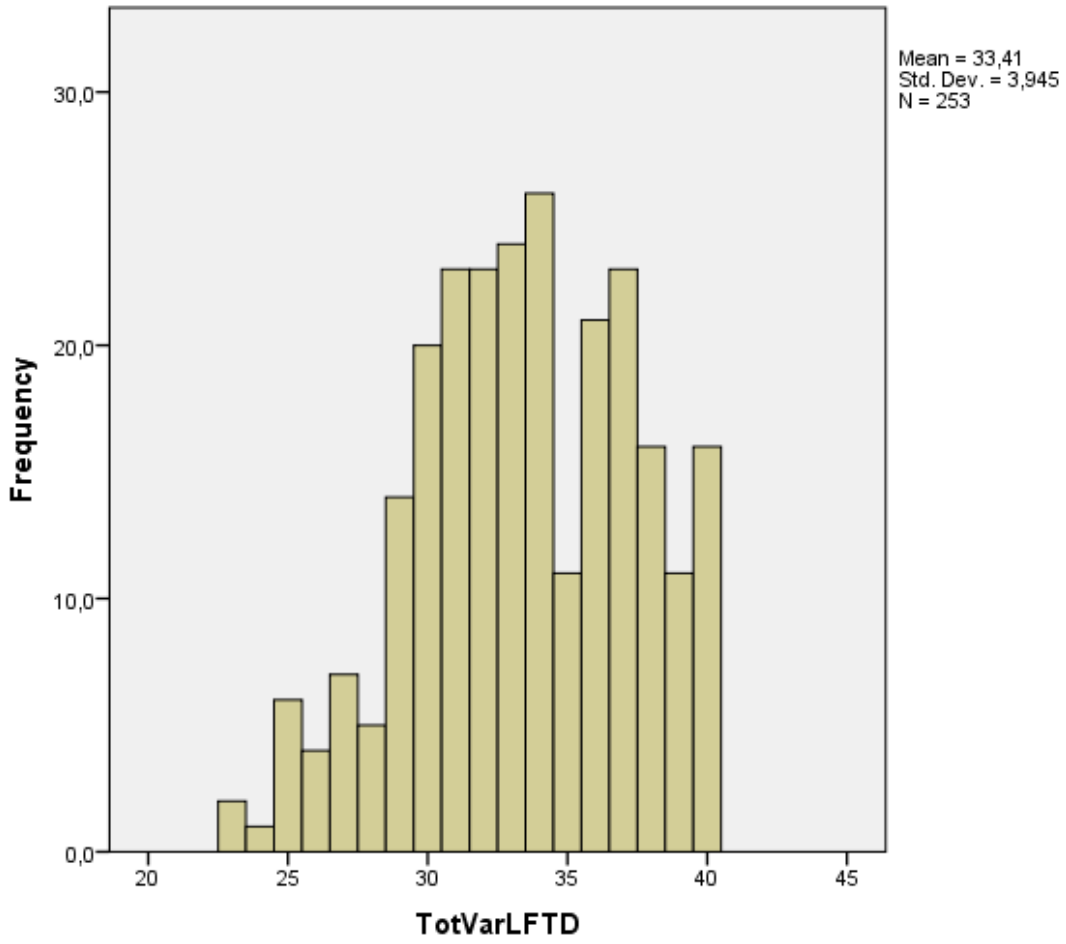
Reliability Statistics

Cronbach's Alpha	N of Items
,762	8

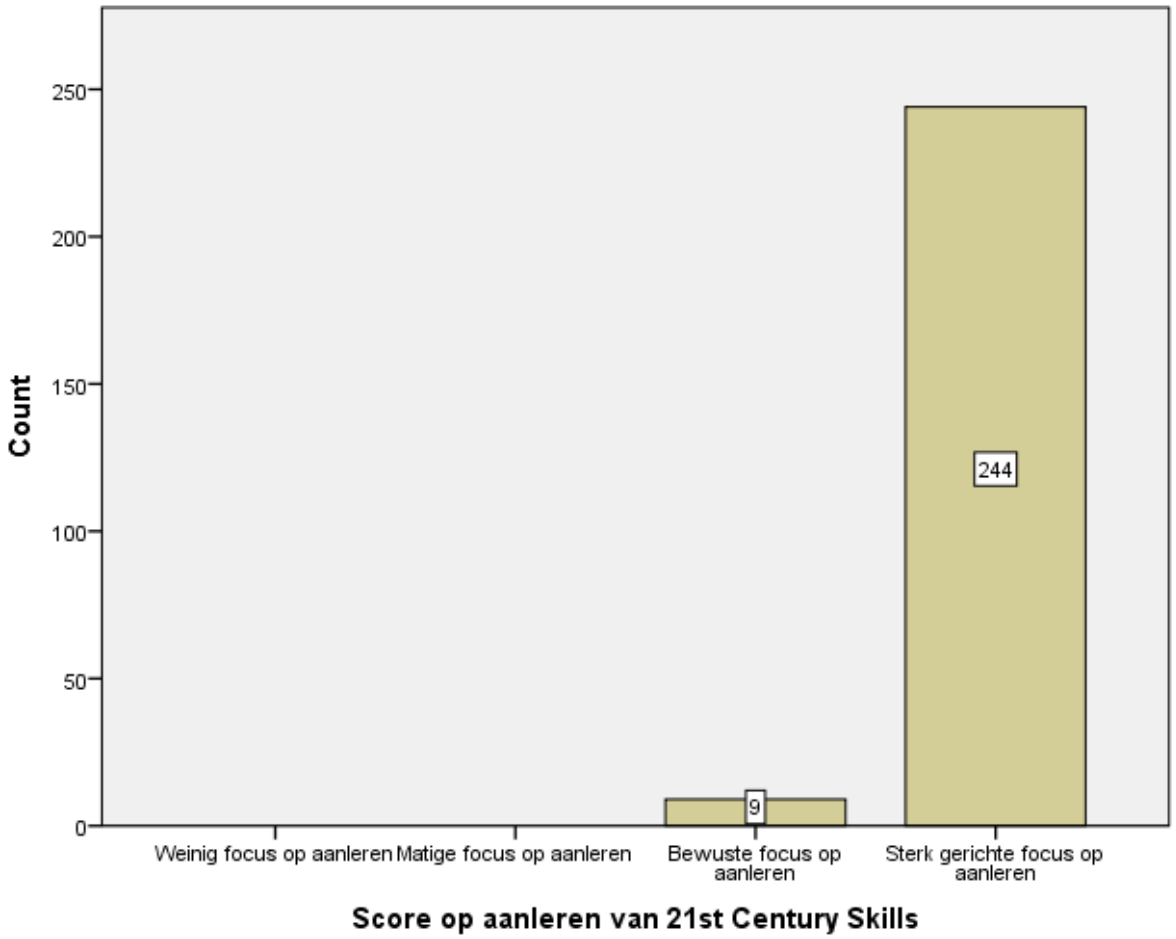
Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted

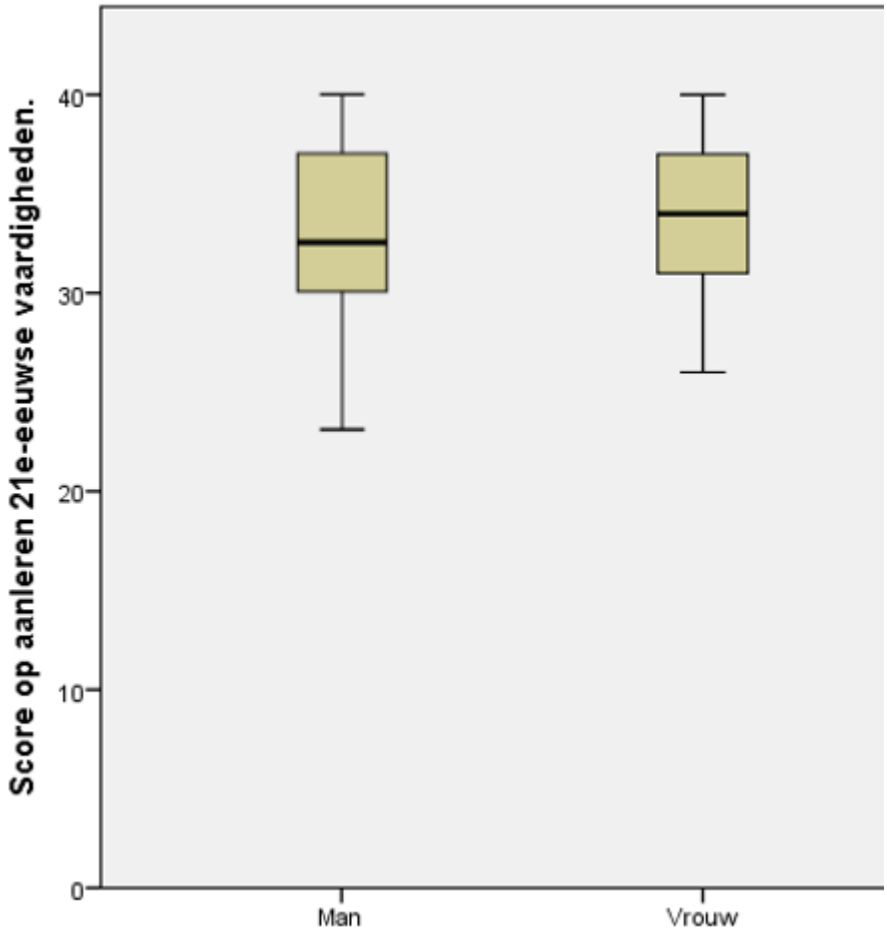
Stelling: Ik leer mijn leerlingen kritisch om te gaan met informatie.	29,04	12,335	,584	,719
Stelling: Ik leer mijn leerlingen problemen gestructureerd aan te pakken.	29,16	12,843	,455	,738
Stelling: Ik leer mijn leerlingen op een efficiënte manier nuttige informatie vinden, selecteren en bestuderen.	29,35	11,561	,560	,717
Stelling: Ik leer mijn leerlingen bewust, kritisch en actief om te gaan met de informatie van de media.	29,28	12,117	,480	,733
Stelling: Ik leer mijn leerlingen probleemoplossend na te denken.	29,08	12,594	,368	,754
Stelling: Ik leer mijn leerlingen zich creatief te uiten.	29,63	11,814	,430	,745
Stelling: Ik leer mijn leerlingen in team te werken.	29,32	12,275	,406	,748
Stelling: Ik leer mijn leerlingen verantwoordelijkheid te nemen voor hen eigen handelen.	29,01	13,012	,459	,739

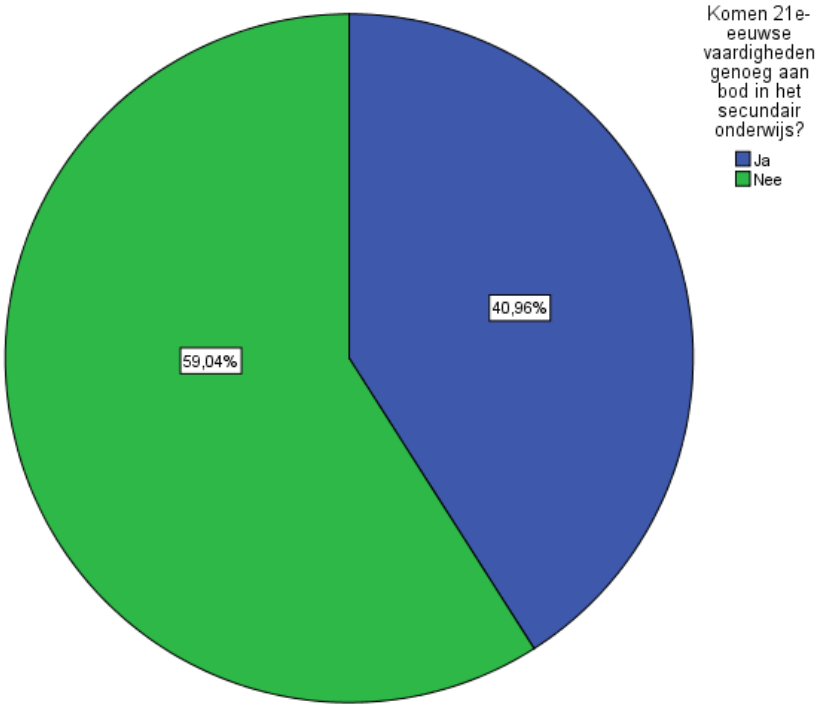


Score van 8 t.e.m. 40.



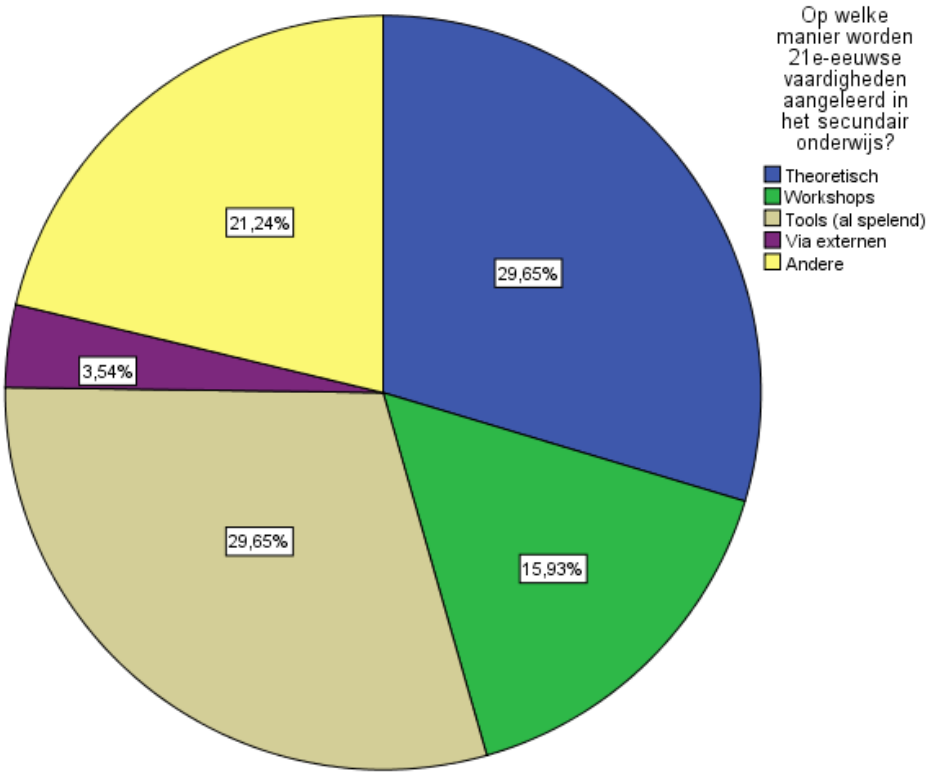
4 invullingen toegekend aan de score met een interval van 8-40. 8-16 = weinig focus, 17-24 = matige focus, 25-32 = bewuste focus op aanleren en 32 - 40 = sterk gerichte focus op aanleren.





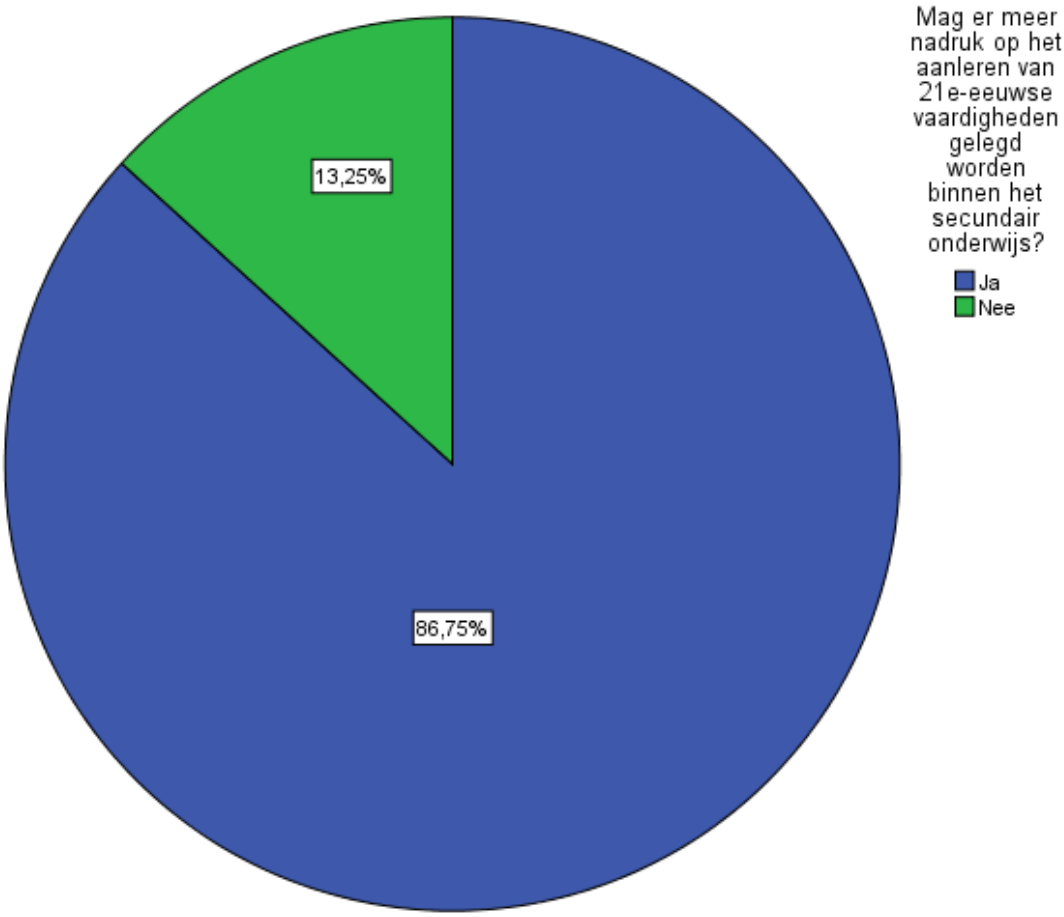
Komen 21e-eeuwse vaardigheden genoeg aan bod in het secundair onderwijs?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ja	102	40,2	41,0	41,0
	Nee	147	57,9	59,0	100,0
	Total	249	98,0	100,0	
Missing	Missing Value	5	2,0		
Total		254	100,0		



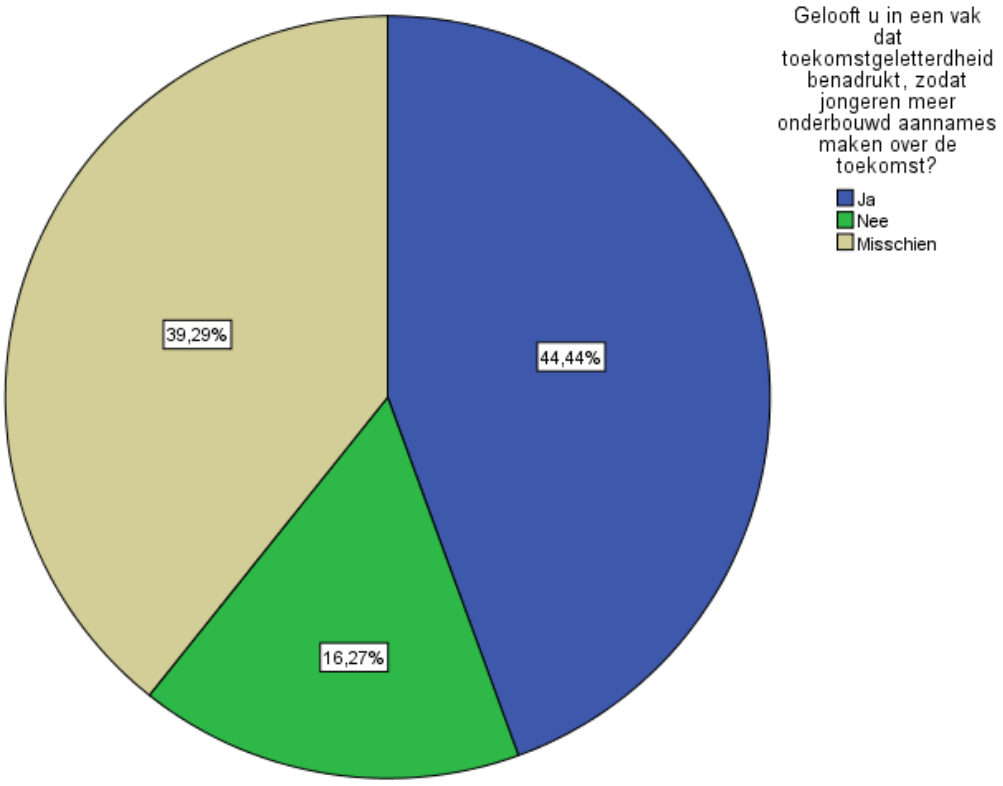
Op welke manier worden 21e-eeuwse vaardigheden aangeleerd in het secundair onderwijs?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Theoretisch	67	26,4	29,6	29,6
	Workshops	36	14,2	15,9	45,6
	Tools (al spelend)	67	26,4	29,6	75,2
	Via externen	8	3,1	3,5	78,8
	Andere	48	18,9	21,2	100,0
	Total	226	89,0	100,0	
Missing	Missing Value	28	11,0		
Total		254	100,0		



Mag er meer nadruk op het aanleren van 21e-eeuwse vaardigheden gelegd worden binnen het secundair onderwijs?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ja	216	85,0	86,7	86,7
	Nee	33	13,0	13,3	100,0
	Total	249	98,0	100,0	
Missing	Missing Value	5	2,0		
Total		254	100,0		



Gelooft u in een vak dat toekomstgeletterdheid benadrukt, zodat jongeren meer onderbouwd aannames maken over de toekomst?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ja	112	44,1	44,4	44,4
	Nee	41	16,1	16,3	60,7
	Misschien	99	39,0	39,3	100,0
	Total	252	99,2	100,0	
Missing	Missing Value	2	,8		
Total		254	100,0		