



Survive and Thrive: Social Isolation and Global Awareness

Information for students

The current crisis has isolated us and kept people apart. Despite this, it has also made many of us more aware of what is happening globally. Maybe you watch the news more, or surf the internet differently, and have acquired a new understanding of issues such as the environment, world events, politics, etc. Globally, young people like you have had to make many changes to the way they stay informed, socialize, study, and even exercise during this time of social distancing. You are growing up with the ability to thrive and becoming even more aware of the bigger picture than before.

1. Think about how your way of life has changed since the beginning of the period of social isolation. What do you miss most? What do you not miss at all?
2. Click on the link and watch the PBS Newshour report entitled “You’re not alone: How teenagers are dealing with social distancing”: <https://safeyoutube.net/w/bvvH>

As you watch the video, think about the following questions:

- what is the message the video is trying to deliver?
 - how do different teens present their ideas?
 - do you agree with the ideas presented? Which ones and why?
3. Next, think about the strategies that you have developed to:
 - interact with friends and family
 - pursue hobbies and activities
 - grow as an individual
 - keep up with school assignments
 - stay informed
 4. What has the situation taught you about ways to interact within a global context? Explore the issues that affect other people, cultures, and countries
 5. Choose one or more aspects of the ideas and issues you identified and create a message where you share your views and tips for surviving and thriving and becoming more globally engaged in this era. What advice can you give to other teens who find themselves in the same situation as you? Teens in different contexts? Craft your message as a spoken, written or media text and share it with others. It could take the form of an article, a social media post, a podcast, a video, or other mode of communication

Materials required

- Paper, pen, phone
- Device with Internet access



Information for parents

About the activity

Children will:

- learn about how other teens are coping with social distancing and isolation
- create a text for a specific and familiar audience

Parents can:

- engage their teen in conversation about the topic
- ask their teen to share their ideas and their final text with them

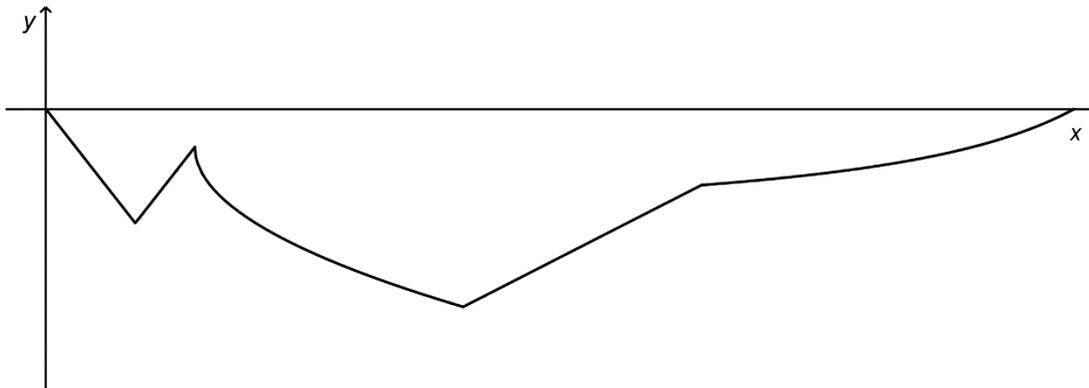


The Mole Hole

Information for students

The Mole Hole

- A mole has dug an underground tunnel, as shown in the graph below
- The tunnel has two possible entrances at ground level



The function rule below describes the trajectory of the tunnel.

$$f(x) = \begin{cases} a_1|x-3| - 3.75 & 0 \leq x \leq 5 \\ a_2\sqrt{x-5} + k & 5 \leq x \leq 14 \\ 0.5x + b & 14 \leq x \leq 22 \\ \frac{a_3}{x-42} - 4 & 22 \leq x \leq t \end{cases} \quad \text{if}$$

In addition:

- $f(0) = 0$
- $f(9) = -4.75$

What is the horizontal distance between the two entrances of the tunnel?

Materials required

- Calculator, graph paper, writing and drawing materials



Information for parents

About the activity

Children could:

- explain the problems-solving steps

Parents should:

- read the instructions to their child, if necessary
- discuss the task with their child, outlining what steps need to be carried out
- go over the task with their child once it is completed by using the answer key provided in Appendix A



Appendix A – The Mole Hole

Solution

➤ RULE OF THE ABSOLUTE VALUE PIECE OF THE PIECEWISE FUNCTION f

Using $(0, 0)$; $0 = a_1|0 - 3| - 3.75$

$$3.75 = a_1|3| \rightarrow 3.75 = a_1(3) \quad \rightarrow \quad 1.25 = a_1$$

The rule of the absolute value piece of function f is $f(x) = 1.25|x - 3| - 3.75$

➤ RULE OF THE SQUARE ROOT PIECE OF THE PIECEWISE FUNCTION f

Solving for $x = 5$, the end point of first piece and the vertex of the second piece:

$$f(5) = 1.25|5 - 3| - 3.75 \rightarrow f(5) = 1.25|2| - 3.75$$

$$f(5) = 1.25(2) - 3.75 = 2.50 - 3.75 \rightarrow f(5) = -1.25. \quad \text{So } k = -1.25$$

$f(x) = a_2\sqrt{x - 5} - 1.25$ and using the point $(9, -4.75)$:

$$-4.75 = a_2\sqrt{9 - 5} - 1.25 \quad \rightarrow \quad -4.75 = a_2\sqrt{4} - 1.25$$

$$-3.50 = a_2(2) \quad \rightarrow \quad -1.75 = a_2$$

The rule of the square root piece of function f is $f(x) = -1.75\sqrt{x - 5} - 1.25$.

➤ RULE OF THE LINEAR PIECE OF THE PIECEWISE FUNCTION f

Solving for $x = 14$, the end point of second piece and the starting point of the third piece:

$$f(14) = -1.75\sqrt{14 - 5} - 1.25 \quad \rightarrow \quad f(14) = -1.75\sqrt{9} - 1.25$$

$$f(14) = -1.75(3) - 1.25 \quad \rightarrow \quad f(14) = -6.50$$

$f(x) = 0.5x + b$ and using $(14, -6.5)$:

$$-6.5 = 0.5(14) + b \quad \rightarrow \quad -6.5 = 7 + b$$

$$-13.5 = b \quad \text{The rule of the linear piece of function } f \text{ is } f(x) = 0.5x - 13.5.$$

➤ RULE OF THE RATIONAL PIECE OF THE PIECEWISE FUNCTION f

Solving for $x = 22$, the end point of third piece and the starting point of the fourth piece:

$$f(22) = 0.5(22) - 12.5 \quad \rightarrow \quad f(22) = 11 - 12.5 = -1.5$$

$f(x) = \frac{a_3}{x - 42} - 4$ and using the point $(22, -1.5)$:

$$-1.5 = \frac{a_3}{22 - 42} - 4 \quad \rightarrow \quad 1.5 = \frac{a_3}{-20} \quad \rightarrow \quad -30 = a_3$$

The rule of the rational piece of function f is $f(x) = \frac{-30}{x - 42} - 4$.



➤ **HORIZONTAL DISTANCE BETWEEN THE TWO ENTRANCES OF THE TUNNEL**

Solving for t when $f(t) = 0$, we have: $0 = \frac{-30}{x - 42} - 4$.

$$4 = \frac{-30}{x - 42} \quad \rightarrow 4(x - 42) = -30 \quad \rightarrow x - 42 = \frac{-30}{4}$$

$$x = 42 - 7.5 = 34.5$$

$$\text{Horizontal distance: } 34.5 - 0 = 34.5$$

CONCLUSION

The horizontal distance between the two entrances of the tunnel is 34.5 u.



The Conference

Information for students

Conference attendees were given a choice of topics for next year's meeting in London.

The topics are Artificial Intelligence, World Economy and Social Media.

All 940 attendees responded to the survey.

The results are indicated in the table below.

	40% of the conference attendees	329 conference attendees	$\frac{1}{4}$ of the conference attendees
1st Choice	World Economy	Social Media	Artificial Intelligence
2nd Choice	Artificial Intelligence	Artificial Intelligence	Social Media
3rd Choice	Social Media	World Economy	World Economy

The conference manager analyzed the data collected from the conference attendees, using plurality voting, the Borda count, the elimination method and the Condorcet method.

The manager will choose the topic that wins the most.

Which topic was chosen for next year's meeting?

Materials required

- Calculator, writing and drawing materials

Information for parents

About the activity

Children could:

- explain the problems solving steps

Parents should:

- read the instructions to their child, if necessary
- discuss the task with their child, outlining what steps need to be carried out
- go over the task with their child once it is completed by using the answer key provided in Appendix B



Appendix B – The Conference

Solution

➤ NUMBER OF VOTERS IN EACH RESULT COLUMN

Column 1: 40% of 940 = $0.40 \times 940 = 376$ attendees

Column 3: $\frac{1}{4}$ of 940 = $\frac{1}{4} \times 940 = 235$ attendees

or $940 - (329 + 376) = 235$ attendees

➤ RESULTS OF THE VOTE USING PLURALITY VOTING

Number of votes for the 1st choice.

TOPIC	NUMBER OF VOTES FOR THE 1ST CHOICE
WORLD ECONOMY (WE)	376
SOCIAL MEDIA (SM)	329
ARTIFICIAL INTELLIGENCE (AI)	235

← Highest value

World Economy wins using plurality voting.

➤ RESULTS OF THE VOTE USING THE BORDA COUNT

TOPIC	NUMBER OF POINTS
WORLD ECONOMY (WE)	$(376 \times 3) + (329 \times 1) + (235 \times 1) = 1692$ points
ARTIFICIAL INTELLIGENCE (AI)	$(376 \times 2) + (329 \times 2) + (235 \times 3) = 2115$ points
SOCIAL MEDIA (SM)	$(376 \times 1) + (329 \times 3) + (235 \times 2) = 1833$ points

Artificial Intelligence wins using the Borda count.

➤ RESULTS OF THE VOTE USING THE ELIMINATION METHOD

ROUND \ TOPIC	1ST ROUND	2ND ROUND
WORLD ECONOMY (WE)	376	376
SOCIAL MEDIA (SM)	329	$329 + 235 = 564$
ARTIFICIAL INTELLIGENCE (AI)	235	---

↓
AI is eliminated. Its votes are given to

Social Media wins using the elimination method.



Mathematics Cultural, Social and Technical Option

➤ RESULTS OF THE VOTE USING THE CONDORCET METHOD

WE vs AI	WE vs SM	AI vs SM
WE: 376	WE: 376	AI: $376 + 235 = 611$
AI: $329 + 235 = 564$	SM: $329 + 235 = 564$	SM: 329
Artificial Intelligence wins	Social Media wins	Artificial Intelligence wins

Artificial Intelligence wins using the Condorcet method with 2 wins.

Conclusion

The topic chosen for next year's meeting was Artificial Intelligence (2 wins).



Oh Snap, Elastic Potential Energy

Information for students

Have you ever stood on a trampoline? What does a person have to do to create enough energy to start jumping? What has to happen to increase the height of a jump? This is an example of elastic potential energy (EPE). There is stored energy, or potential energy, in the stretched springs supporting the trampoline.

To explore EPE, you are going to need a ruler, an elastic and something to mark the spot where the elastic lands (e.g. chalk, tape, token). If possible, recruit a helper. Make sure no one is in front of the launch site when you perform the procedure in Appendix B.

Elastic bands have stored energy when they are stretched. What do you predict will happen when you pull an elastic band back and release? Describe the change between Elastic Potential Energy (EPE) and Kinetic Energy (KE) as the elastic is released.

Materials required

- 30 cm ruler or meter stick
- Measuring tape
- Elastic band (you can sometimes find an elastic band around the green onions or celery in your refrigerator)
- A helper, if possible

Information for parents

About the activity

- Students might need a helper to measure the launch distance



Appendix A – Spring Experiment

Prediction

What do you think the relationship is between the distance the elastic is pulled back before it is released and the launch distance?

Procedure

1. Place the ruler on the ground with an object, for example a book, underneath the front edge of the ruler to create an upward angle. Prepare the elastic by placing it on the front end of the ruler and bringing it back, but without stretching it (at rest)
2. Stretch the elastic band 5 cm from rest. Each launch must be lined up in the same direction and at the same angle
3. Launch the elastic and mark where the elastic lands (first touch); this is your launch distance
4. Repeat 4 times
5. Take the average distance as your result for this trial

Repeat the procedure, stretching the elastic back 10 cm, 15 cm, 20 cm and, if possible, 25 cm.

Distance elastic band is stretched from rest	Launch distance (cm) Average of 5 attempts
5 cm	
10 cm	
15 cm	
20 cm	

Results

Graph your results and describe the relationship.

Was your prediction correct?

What would happen if you used an elastic band that is more “stretchy” or an elastic band that is less “stretchy”?



Appendix B – Extension

Conservation of Energy

When the elastic band is released, the elastic potential energy is converted to kinetic energy.

$$\text{EPE (prior to release)} = \text{KE (immediately after release)}$$

$$\text{EPE} = \frac{1}{2}kx^2$$

k = spring constant, or how stretchy/stiff the elastic band is
(every elastic will have its own spring constant) (N/m)

x = the distance that the elastic band is stretched from rest (m)

$$\text{KE} = \frac{1}{2}mv^2$$

m = mass of the elastic band (kg)

v = velocity of the elastic band (m/s)

$$\frac{1}{2}kx^2 = \frac{1}{2}mv^2$$

Can you think of a way to calculate?

- The velocity of the elastic band when it is released?
- The spring constant “ k ” of the elastic?

Explore masses and springs @ <https://phet.colorado.edu/en/simulation/mass-spring-lab>



Appendix C – Solutions

Results for the Spring Experiment:

The relationship of the graph should be linear.

Possible Solutions for the Extension:

- Can you think of a way to calculate the velocity of the elastic band when it is released?

Horizontal projectile motion:

Vertical motion

Launch the elastic band at 0o, horizontally, from a table, for example.

The initial velocity (vertical) = 0 m/s

$$\Delta d = v_1 t + \frac{1}{2} \left(9.8 \frac{m}{s^2} \right) t^2 \quad v_1 = 0 \text{ m/s} \quad \Delta d = \text{height of table}$$

Solve for t

Horizontal motion

The initial velocity is completely horizontal. Solve for v.

$$v = \frac{d(\text{launch distance})}{t(\text{solved above})}$$

- Can you think of a way to calculate the spring constant “k” of your elastic?

Solve for k

k = spring constant, or how stretchy/stiff the elastic is.
(every elastic will have its own spring constant) (N/m)

x = the distance that the elastic band is stretched from rest (m)

$$\frac{1}{2} kx^2 = \frac{1}{2} mv^2$$

m = mass of the elastic band (kg)

v = velocity of the elastic band (m/s) (from above)



The Importance of Mindfulness

Information for students

Activity 1: Practicing mindfulness

- Watch the following video to learn about the importance of Mindfulness:
 - video: [Why Mindfulness is the New Superpower – Featuring Dan Harris](#)
- Read through the following infographic for daily mindfulness practices:
 - infographic: [Making Mindfulness a Way of Life and Work](#)
- What did you learn from the video? Why is it important to practice mindfulness? Do you think you could find one thing to be mindful about during your day? What would that be?
- Discuss what you learned about mindfulness with a member of your family

Activity 2: Yoga for mindfulness

- Try the exercises in the following video:
 - video: [10 Minute Morning Yoga for All Levels](#)
 - If necessary, adapt the movements to your abilities

Materials required

- Device with Internet access

Information for parents

About the activity

Children should:

- learn about the importance of mindfulness
- practice mindfulness
- try the yoga workout

Parents could:

- support their children by asking them what they have learned about mindfulness
- support their children by practicing mindfulness with them
- support their children by doing the workout with them or encourage them be more autonomous during the activity



Appreciation Activity on Peace

Information for students

This arts appreciation activity features three works of art from the Montreal Museum of Fine Art's EducArt platform. The theme of the activity is peace. You will observe three works then answer a few questions. Following each work, you will be given a short challenge to create or perform.

Follow the instructions below.

Work 1: *Man Size* by Richard Mosse (Theme: Child soldiers)

1. Click on the link below. Observe the work of art quietly for one minute
2. Read the description (if you want, watch the video featuring Monique Mujawamariya)
3. Learning how to look: Do an artwork analysis
 - Observe: look at colours, textures, use of space
 - Situate: get behind the camera, get behind the scene
 - Acquire: how does it make you feel? What does it remind you of?
4. Complete the Guiding Questions section. It would be a good idea for you to perform the recommended task since completing activities helps knowledge sink in

Man size link: <https://educart.ca/en/theme/peace/#/man-size/cartel>

Work 2: *Cactus Man No. 1* by Julio González (Theme: Resist)

1. Click on the link below. Observe the work of art quietly for one minute
2. Read the description (if you haven't already watched Monique Mujawamariya's video, feel free to do so.)
3. Learning how to look: Do an artwork analysis
 - Observe: look at forms, textures, balance, use of space
 - Situate: get behind the artist's eyes, what was he thinking? Feeling?
 - Acquire: how does it make you feel? What does it remind you of?
4. Complete the Guiding Questions section. It would be a good idea for you to perform the recommended task of a musical composition. Go crazy!

Cactus Man No. 1 link: <https://educart.ca/en/theme/peace/#/cactus-man-no-1/cartel>

**Work 3: *Peace and Justice* by Pompeo Batoni (Theme: Peace and justice)**

1. Click on the link below. Observe the work of art quietly for one minute
2. Read the description
3. Learning how to look: Do an artwork analysis
 - o Observe: look at the characters. Their gaze, positions, levels, shadows, light, etc.
 - o Situate: determine when in time and space?
 - o Acquire: how does it make you feel? What does it remind you of?
4. Complete the Guiding Questions section. It would be a good idea for you to write that allegory

If you still haven't watched the video featuring Monique Mujawamariya, now would be the time!

Peace and Justice link: <https://educart.ca/en/theme/peace/#/peace-and-justice/cartel>

WORK 4: *Your turn to create!*

After watching <https://educart.ca/en/theme/peace/#/video-capsule-monique-mujawamariya/cartel>, answer the following questions:

What did you learn about issues surrounding peace?

Under each issue, consider the following questions and draw up a plan of how you would represent the theme.

Child soldiers

- If you want to show the viewer (or listener) the negativity and seriousness of child soldiers, how would you represent this theme in a work of art?
- Would you use photography? Painting? Poetry? Music? Dance?

Resist

- What do you think about Julio Gonzalez's statue? If it were alive, how do you think it would move or sound?
- Consider creating a story around this defensive main character.
- What about media? Would you write a dramatic scene or monologue? Create a dance? Cinema? Something else?

Peace and justice

- Monique Mujawamariya says without justice there can't be peace. Do you share this belief?
- Are there other ideas you can think about where one depends on the other like peace and justice? What about media? How would you personify Peace and Justice?
- Like Batoni, would you use painting to represent the theme? How would you communicate your message?

Materials required

- Access to EducArt's online platform
- Any artistic medium you wish to use for expression



Information for parents

About the activity

Student can take as much time as necessary to explore the theme.

Parents could engage in conversation on the theme with the student. If the student is interested in a conversation, allow them to lead the discussion.



Advertisement Awareness

Information for students

Advertisements are intended to influence consumers to buy products or take action. The four main goals of advertising are to **inform**, to **develop awareness**, to **modify behaviour** and to **create needs**. The goal of this activity is to gain awareness of the techniques used by companies to influence our actions.

Instructions

- **Read** the description of the goals of advertising in the Appendix.
- As you watch television, browse your social media or look at magazines, **find an example of each of the four goals of advertising**.
- Think **about these questions** as you watch or read the advertisement:
 - How did you feel when you watched the commercial or ad?
 - How did the producers convince or influence you? Did they appeal to your emotions or your logic? Did they use humour or facts and statistics?
 - Have you ever been influenced by an ad or a commercial in the past? Did you buy the product or take action?

Materials required

Useful resources, depending on personal preferences and availability:

- digital device with an Internet connection
- writing materials (paper, pencil, etc.)
- magazines

Information for parents

About the activity

Children could:

- discuss different ads with their classmates and friends by video call. Vote on the best and the worst ads

Parents should:

- help their child develop awareness of the influence that media and advertising have on the decisions and choices we make as consumers. Watch a commercial or ad with your child and discuss how companies try to influence consumers

Appendix – Advertisement Awareness

Information for students

Goals in advertising:

TO INFORM

An advertisement is first and foremost a message. It is typically an image accompanied by a short text, sometimes with information added to increase its credibility (results of studies, endorsement by an organization, etc.).

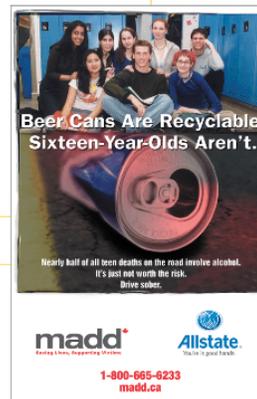
The goal may be to announce the existence of a product or service, or someone's candidacy for an election, without necessarily having any commercial aim, at least in the short term. For example, travel, real estate and insurance are products that are often the subject of informative advertising, since buying them requires thought beforehand. But in every instance, the creators of advertisements are not objective: they choose information that will showcase the product or service and withhold information that could make it less desirable.



TO DEVELOP AWARENESS

Developing awareness means appealing to people's consciences to trigger a reaction to certain phenomena or social concerns. Governments use advertising to make public service announcements on subjects such as free vaccinations, school bullying, and so on.

Companies can also tug at our heartstrings for commercial purposes. For example, Nike's advertising campaign with the slogan "Equality has no boundaries" aims to raise public awareness about discrimination based on gender, sexual orientation, ethnicity and religion, hinting that you can support these causes by buying cool footwear.



TO MODIFY BEHAVIOUR

Advertising tries to make us buy products we do not normally consume or to make us consume more. It seeks to change the opinion we may have of a product and to influence our consumer choices. By creating brands with strong identities, advertising attempts to seduce us and inspire our loyalty. We may even end up promoting the brands ourselves!

While advertising often aims to change consumer habits from a commercial point of view, it can also have a social dimension. This occurs when advertising seeks to develop awareness in order to bring about a change in the behaviour of individuals in society. An example of this is MADD's advertisements on the dangers of drinking and driving.

TO CREATE NEEDS

If humans were concerned only with satisfying their basic needs, they would buy only what they needed to survive. Advertising must make people think they need more, that they have a void that must be filled. By presenting an idyllic vision of a world filled with luxury, seduction or a sense of belonging, advertising encourages people to consume products that will grant them access to this perfect world.



Advertising confuses need with desire. The need for nourishment and the desire for a hamburger from a fast-food restaurant get mixed up, as do the need to communicate and the desire for the latest model of telephone, or the need for clothing and the desire to wear the latest expensive fashion. Advertising does not create needs, since needs already exist, but rather stimulates desire and manipulates emotions that go beyond those needs.

Source: Nadia Choquette-Bernier et al., *Making Sense of Finance*, Secondary V (Montréal: Chenelière Éducation, 2018), student textbook, 31.



Rêver... et convaincre

Consignes à l'élève

- Pour un instant, imagine que tu as la possibilité de changer le monde dans lequel tu vis. Quel serait ton plus grand rêve? Une société plus juste? plus solidaire? plus ouverte? plus écologique? plus humaine? plus artistique? plus libre? plus inclusive?
- Pour amorcer ta réflexion, lis ces quelques questions et note toutes tes idées :
 - Qu'est-ce qui t'interpelle ou te dérange le plus dans la société actuelle?
 - Qu'est-ce que tu aimerais changer pour toi, ou pour une catégorie de personnes en particulier?
 - Quelles valeurs devraient guider les décisions que nous prenons en tant que société?
 - Crois-tu que les jeunes ont un pouvoir d'influence?
 - Quelle serait la caractéristique première du monde dans lequel tu as envie de te développer et de vivre?
- N'hésite pas à discuter avec les personnes près de toi et à partager tes idées avec eux.
- Pour t'inspirer ou t'aider à préciser ton rêve, tu peux consulter la page du projet [Rêver pour créer](#) et prendre connaissance d'une multitude de rêves exprimés par des jeunes et des adultes de partout au Québec.
- Rédige un paragraphe dans lequel tu présentes ton rêve ainsi que les arguments qui permettront aux gens qui te liront d'en comprendre l'importance. Tu peux consulter [cette page d'Alloprof](#).
- Relis-toi à voix haute pour t'assurer que ton texte est cohérent. Vérifie l'orthographe, la syntaxe et la ponctuation.
- Si tu en as envie, tu peux soumettre ton rêve aux organisateurs du projet Rêver pour créer à l'adresse suivante : <https://reverbpourcreer.ca/envoyer-un-reve>.

Matériel requis

- Un appareil avec connexion Internet pour la consultation des pages Web suivantes :
 - <https://reverbpourcreer.ca/>;
 - <http://www.alloprof.qc.ca/bv/pages/f11111.aspx>;
 - <https://reverbpourcreer.ca/envoyer-un-reve>.

Un ordinateur ou du papier pour la rédaction du texte



Information aux parents

À propos de l'activité

Votre enfant s'exercera à :

- Prendre position sur un enjeu de société;
- Défendre sa position à l'aide d'arguments;
- Réviser la cohérence de son texte et améliorer son français.

Vous pourriez :

- Lire les questions proposées et en discuter avec lui;
- Prendre connaissance des rêves partagés sur la page Rêver pour créer et en discuter avec lui;
- L'encourager à soumettre son rêve sur la page <https://reverpourcreer.ca/envoyer-un-reve>.

Source : Activité proposée par la Commission scolaire de la Pointe-de-L'Île.