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How – and what – are we doing with climate change education? Lakehead University and Learning for a Sustainable Future (LSF) surveyed over 1,000 teachers to understand current climate change education teaching practice in Canada.

Climate change is the most complex and wide-reaching challenge facing humankind today. Reducing the impacts of climate change and moving Canada toward resilience and adaptability for climate impacts will require substantial changes at all levels of Canadian society. It is critical that Canadians understand climate change causes, impacts and risks. An educated public, including youth, is essential to driving the required transformation.

Lakehead University and Learning for a Sustainable Future (LSF) completed a comprehensive survey of 3,196 Canadians to establish Canada-wide baseline data reflecting Canadians' knowledge and understanding of climate change, perspectives on risks, and views on the role of schools and climate change education. The survey also provides a nationally unprecedented report of climate change education teaching practice.

The survey collected responses from 1,231 teachers (from across K-12 grades), 571 parents, 486 students in Grades 7-12, and the general public (908).¹ The final report, *Canada, Climate Change and Education: Opportunities for public and formal education*, is publicly available.

KEY FINDINGS

PERSPECTIVES OF CANADIANS

The majority of Canadians are certain that climate change is happening (85%), are concerned about the impacts of climate change (79%), and believe there are risks to people in Canada (78%).

While there is a high level of concern, only 51% of Canadians feel well-informed about climate change, and 86% indicated that they need more information about it. Further, a basic knowledge test on general climate science, causes, and impacts in Canada, revealed a gap between Canadians' understanding of climate change and their perceptions of their knowledge. Many did poorly on the test questions, but thought they did well. Close to half (43%) of Canadians failed this basic knowledge test, and only 14% correctly answered at least eight of its ten questions.

This gap between Canadians' high level of concern about climate change and their level of knowledge signifies a critical learning moment for both public and formal education.

THE ROLE OF SCHOOLS

The majority (68%) of all respondents agreed that it is the role of schools to educate students about climate change. Two-thirds of Canadians and three-quarters of teachers believe schools should be doing more to educate students about climate change.



Opinions on the priority that climate change education should have in schools differ across the country. Quebec (69%) and British Columbia (66%) had the highest percentage of respondents who saw climate change as a high priority

for schooling, while in Saskatchewan only about one-third of respondents agree that it is a high priority.

When respondents were asked what the school system should do more of, the most common answers were to increase focus on climate change impacts and to explore more ways to take collective action.

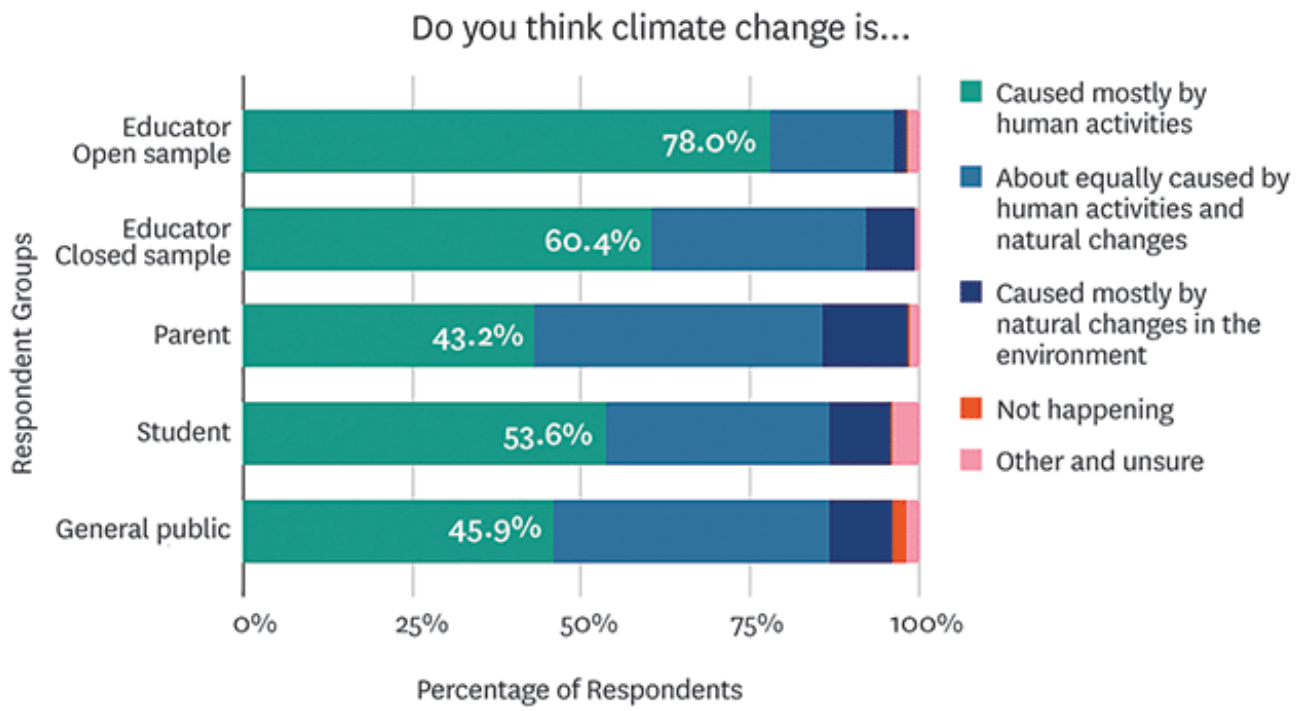
TEACHERS' PERSPECTIVES

Within the survey, teachers were asked a series of questions to develop a baseline of climate change education practices in Canada.

Little time for climate change: Between 35% and 59%² of teachers reported teaching climate change in the classroom. For teachers who do include climate change content, most teach 1–10 hours per year or semester.

Support for integrated climate change education: When it is taught, climate change content is predominantly taught in Science followed by Social Studies, but over 75% of teachers believe that climate change education is the role of all teachers.

Best practice for teaching climate change: The majority of teachers believe that climate change education provides opportunities to discuss social justice and world issues with students (87%), that it should encourage students to think about their own beliefs and values (82%), and that it should focus on developing students' capacity to be critical thinkers and problem-solvers (83%). Most teachers also showed support for climate change education to focus on behavioural change (76%). These findings suggest that the majority of Canadian teachers' professional views on climate change education support best practice, focused on critical thinking and action-oriented learning.

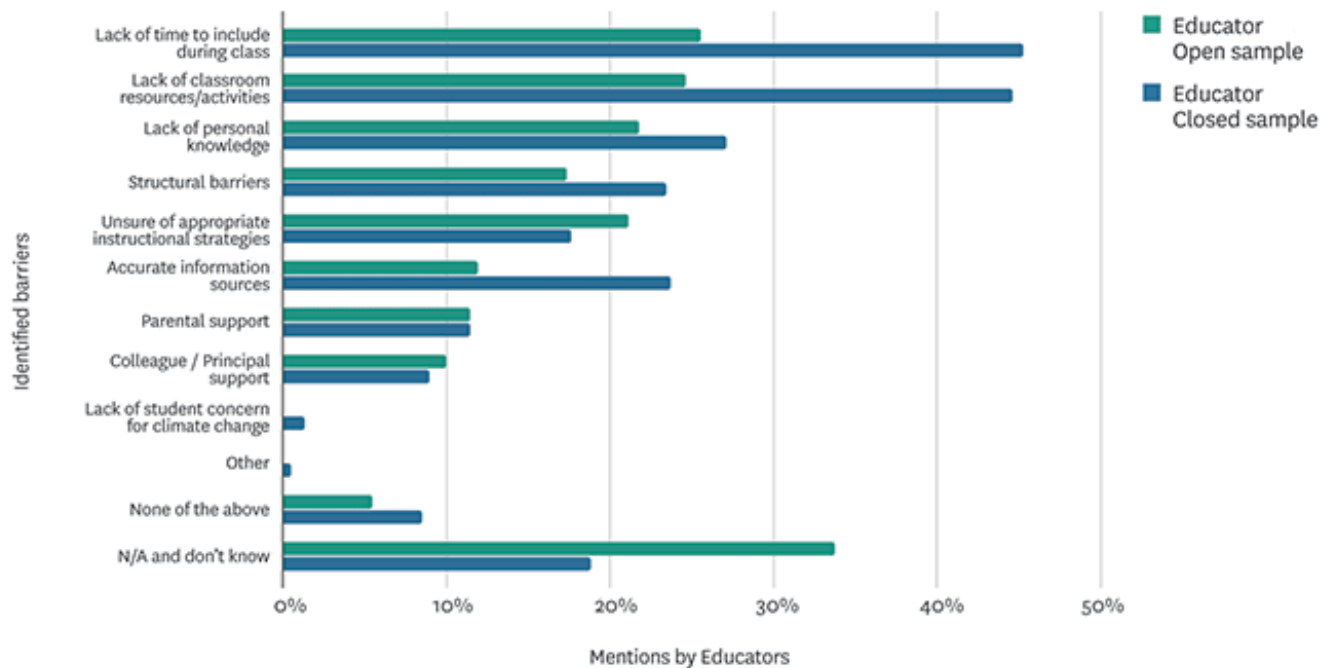


However, some teachers are out of step with best practices when it comes to debating the cause of climate change: About one-third (31–38%) of educators reported that they encourage, or would encourage, students to debate the likely causes of climate change or to come to their own conclusions. There is a strong scientific consensus that climate change is human-caused. This consensus should be taught.

Challenges: Only one-third to one-half (32–55%) of teachers indicated that they feel they have the knowledge and skills to teach about climate change. According to teachers, the top barriers for integrating climate change education into classrooms (see Figure 2) are:

- lack of time to include during class
- lack of classroom resources
- lack of professional knowledge.

What are some of the barriers you have experienced when attempting to include climate change education into your classroom?



Teachers said they need classroom resources, professional development, current information on climate science, enhanced curriculum policy, information on the economics and politics of climate change, and national/provincial climate data.

STUDENTS' PERSPECTIVES

Almost half of students (46%) understand that climate change is human caused, but don't believe that human actions in mitigation will be effective. This mindset is concerning when considering how it may affect youth in terms of how they frame their future quality of life, opportunities, or possibilities. It is critically important, therefore, to target this group with climate change education that is action- and solutions-oriented to combat eco-anxiety and hopelessness.

Children and youth under 18 will bear the impacts of climate disruption in the 21st century. The climate strike movement started by Greta Thunberg³ is a symbol of the concern that young people have for their futures and a clarion

call to adults to remember the moral obligation they have to children and youth. Youth need to be engaged in climate change education during schooling and need to see adults acting collectively to tackle the climate crisis.

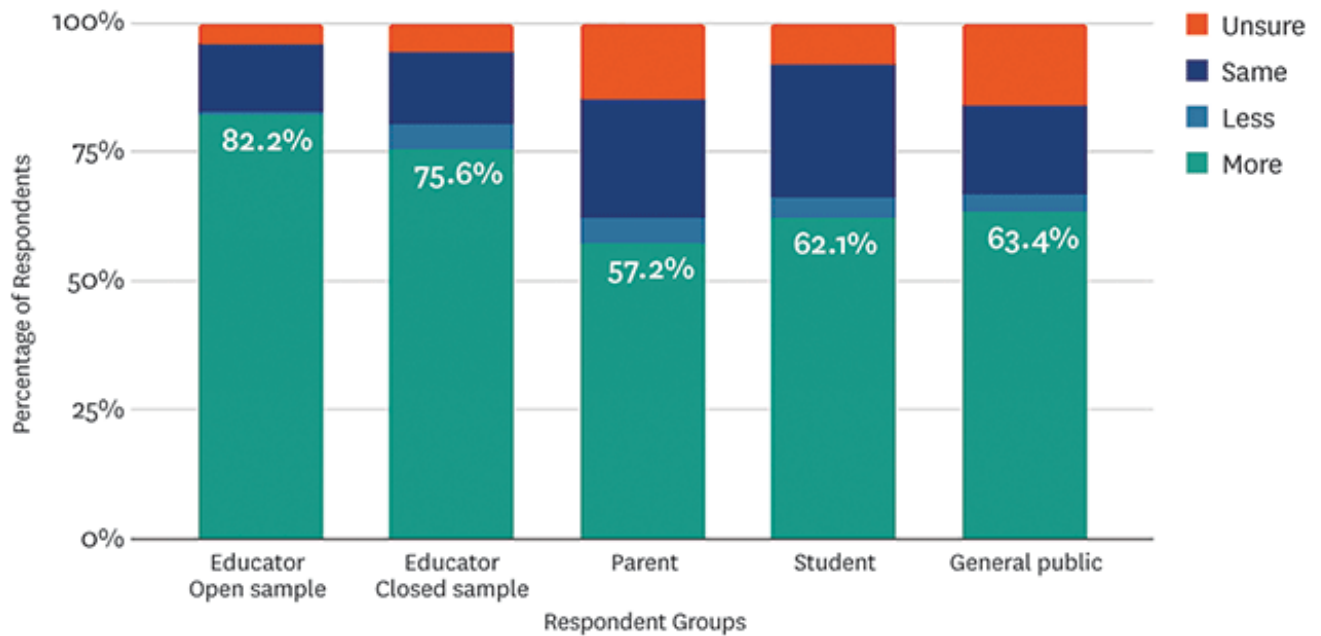
RECOMMENDATIONS

Canada's commitment as a signatory to the Paris Climate Change Agreement includes a call "to enhance climate change education."⁴

All Canadians need more information about climate change from trusted sources, including scientists and academics. The focus should be on correcting misconceptions about climate change and improving public understanding of its primary causes, as well as enabling citizens to understand the need for, and the need to advocate for, mitigation strategies such as greenhouse gas reduction policies. Lastly, public education should provide Canadians with information on high-impact personal climate actions that they can integrate into their daily lives.

While some of this needs to come from informal education, **the formal education system has a major role to play**, and there is evidence that education has a pass-through-effect to parents when students are educated about climate change.⁵

Do you think the education system (Grades 7-12) should be doing more, less, or about the same as now to educate young people about climate change?



Provincial policy: Without clear policies at the provincial level, climate change education is left to the competence, dedication and enthusiasm of individual teachers. A more comprehensive approach is needed. Ministries of Education should embed core climate change expectations across subjects and release policy statements guiding climate change education for each regional jurisdiction.

Professional development: School boards should provide opportunities for teachers to enhance their knowledge, tools, and strategies for teaching about climate change, and provide teachers with current provincial/national data and resources. Faculties of Education should also include climate change education across subjects in initial teacher education to help prepare teachers entering the field.

Teachers can start now: Teachers don't have to wait for ministries or school boards to enact these changes to start integrating climate change education into their classrooms.

“Youth need to be engaged in climate change education during schooling and need to see adults acting collectively to tackle the climate crisis.”

The climate emergency is a critical learning opportunity. The nature of this complex problem requires deep learning that not only expands people’s knowledge and understanding about climate change, but also touches their values, sense of place and feelings of responsibility. Information alone may have limited impact; 40 years of climate science and public education has not resulted in the required societal changes.

Climate change education demands a multi-pronged approach that directly addresses predominant misconceptions and also facilitates critical questioning of societal norms and cultural drivers, such as: the definition of progress; the idea of perpetual growth on a finite planet; the roles of science and technology; the viability of capitalism, consumerism, and the exploitation of nature; and values such as “freedom,” “independence,” “success,” and “comfort.” Climate change, therefore, requires an integrated and transdisciplinary approach that includes systems perspectives, spans from local to global, cultivates respectful ways of approaching contested positions (such as deliberative dialogue), and develops capacity and collective action – all approaches that are transferable to supporting students’ development in other areas.

The emotional dimension of climate change and student well-being must be directly addressed, given the dire nature of current and predicted consequences of inaction. Discussion of climate change can lead to feelings of

fear and anxiety and cause students and adults to distance themselves from the problem or disengage from, doubt or dismiss it. Climate change learning in the classroom needs to attend, and respond, to the psychological fallout that occurs as one learns about the severity and urgency of the issue.

A first step in mitigating fear responses is to create a culture of trust in the classroom where emotions are honoured and students are supported through knowledge-building processes. An inquiry-learning framework honours students' past experiences and perspectives and puts students at the centre of their own learning. By framing students' learning processes as solutionary and action-oriented, students can feel empowered to work toward a goal rather than feeling overwhelmed or hopeless.

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For many teachers, “having hope” is a complicated discussion, a balance between remaining credible and honest with students and being transparent about the latest scientific reports and what our collective inaction in the face of these reports suggests. Understanding developmental readiness and a learning progression for climate change education is necessary for teachers to gauge student readiness. A powerful starting point at any age is active-hope,

where having hope is framed as an intention rather than tied to chances of an outcome.⁶ It is from a position of active-hope that ideas and projects are created that push forward the prospect of a hopeful future.

Schools Take Up the Challenge

GREEN ACTION PROJECTS THAT MAKE A DIFFERENCE

By Pamela Schwartzberg and Samantha Gawron, Learning for a Sustainable Future

Learning for a Sustainable Future (LSF) has had the privilege over the years of working alongside some outstanding educators as they tackled climate change issues with their students through action projects that provide invaluable learning opportunities while creating positive impacts. These are just some of their stories.

CHELMSFORD VALLEY DISTRICT COMPOSITE SCHOOLS – CHELMSFORD, ONT.

Students were asked to research the 100 solutions to climate change on the Drawdown website (www.drawdown.org), which identifies the most viable solutions to climate change, and then they chose one that they thought was viable at the family level that they could encourage others to adopt. They researched the cost required to implement, and then concluded if the solution was/was not viable for them and/or the average family. Students created a video, slideshow, infographic, or newspaper article outlining the actual costs and challenges of implementing the solution. They were quite excited to learn that there are things that can be done by individuals to create change.

CORNER BROOK INTERMEDIATE SCHOOL – CORNER BROOK, N.L.

After observing how their local forests, green spaces and wildlife are impacted by the waste generated by their community, student leaders at Corner Brook Intermediate School were inspired to implement their school's first recycling program. This allowed them to properly collect and sort items like paper and plastic from their school and divert them from landfill. To spread awareness of the new program and the reasons behind it, the students developed virtual reality (VR) lessons in both English and French. They applied for an EcoLeague grant from LSF to purchase a class set of VR headsets, and they delivered their lesson plans to over 600 students in Grades 7-9! The lessons guided students through learning more about climate change and waste and understanding how their actions can have a big impact.



ST. MARY'S ACADEMY – EDMUNDSTON, N.B.

The high school Eco-Committee at St. Mary's Academy is committed to educating their entire K-12 school about solar energy. They have a long-term goal of converting St. Mary's into a clean-energy school. This year, they began by educating their peers (and themselves) about solar energy and the function of solar panels. They visited other schools that had already installed solar panels, interviewed their local power generation company, and toured local solar panel providers. They also partnered with "3% Project" to learn about cost-efficiency and cost-impact analysis to strengthen their case. To start

their project on a small scale, they purchased and installed solar panels in their school greenhouse and designed a self-watering system using a rain barrel and a timer. With their research, learning, educating and experimenting this year, they're now ready to take on their whole-school solar vision!



SEVEN OAKS MET SCHOOL – WINNIPEG, MAN.

Students at Seven Oaks Met School have engaged in many sustainability Action Projects over the years, including their hugely successful Strut for Shoal event that raised over \$7,000 for the Shoal Lake 40 First Nation community's water treatment fund. More recently, the students are spearheading a campaign to convince the Seven Oaks School Division to be the first in Manitoba to declare a climate emergency. In meetings with the Division, students brought up the issues that matter most to them, including

climate change and emissions reduction, Indigenous rights, school waste management, biodiversity preservation, and more. They say the Division must declare a climate emergency in order to effectively put these recommendations into action in schools. Seven Oaks Met School students have rallied peers from six other schools to their cause, urging their division to follow the lead of boards in north Vancouver, Victoria and Sudbury that have already made climate emergency declarations. After the school division makes their decision, students have plans to meet with the mayor of Winnipeg and the Premier of Manitoba to expand the declaration and awareness of the climate emergency.



E.L. CROSSLEY SECONDARY SCHOOL – PELHAM, ONT.

E.A.R.T.H. club members at E.L. Crossley hoped to inform their fellow students about the positive impacts a plant-based diet can have on the future of our planet. Students organized a week of veggie-friendly events organized and run entirely by youth, for youth, with the support of various local community partners. Their inaugural VegFest took place in the spring of 2016. The week's events included a vegan cooking class with a local chef, a screening of the documentary Cowspiracy, a smoothie day, vegan salad bar

extravaganza, cafeteria games, and a vendor day. VegFest received an overwhelmingly positive response and high levels of student participation each day. The students have run a successful VegFest every year since, and hope the project will continue in the future!

MORINVILLE PUBLIC SCHOOL – MORINVILLE, ALTA.

Grade 7-9 students began their garden initiative with three hydroponic gardens that allow them to garden all year long. In order to inspire other students to grow their own food and have access to healthy produce, the students designed and planted an outdoor garden accessible to the entire community. Students planted corn, tomatoes, peppers and cucumbers. They did taste tests to see the difference between locally grown produce and what is sold in the stores. They got their peers excited about local and healthy eating and working together as a community for a common purpose. In the fall the produce will be donated to the local food bank. They hope that their outdoor garden will inspire other families to grow their own gardens with their children in the future.

About LSF

Learning for a Sustainable Future, a national charity whose mission is to integrate sustainability education into the Canadian school system, has worked for over two decades to support teachers with professional development and high-quality resources. <http://lsf-lst.ca>

All Photos: courtesy Learning for a Sustainable Future

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1 Refer to report for full methodology: Ellen Field, Pamela Schwartzberg, and Paul Berger, Canada, Climate Change, and Education: Opportunities for public and formal education (2019). <http://lsf-1st.ca/en/cc-survey>

2 Reported ranges in this section are due to use of two sampling methods for teachers. Refer to full report (Fig. 73 and Fig. 75) for explanation and details.

3 Greta Thunberg’s “Fridays for Future” strike movement mobilized an estimated 1.4 million students in 112 countries in March 2019 and an estimated 7 million citizens between September 20th and 27th, 2019.

4 United Nations Framework Convention on Climate Change, Paris Climate Change Agreement, Article 12, pg. 10. Report of the Conference of the Parties on its Twenty-First Session (December 13th, 2015).

5 Lydia Denworth, “Children Change their Parents’ Minds about Climate Change,” *Scientific American* (May 6, 2019).

www.scientificamerican.com/article/children-change-their-parents-minds-about-climate-change

6 Joanna Macy and Chris Johnstone, *Active Hope: How to face the mess we’re in without going crazy* (Novato, California: New World Library, 2012).

MEET THE EXPERT(S)



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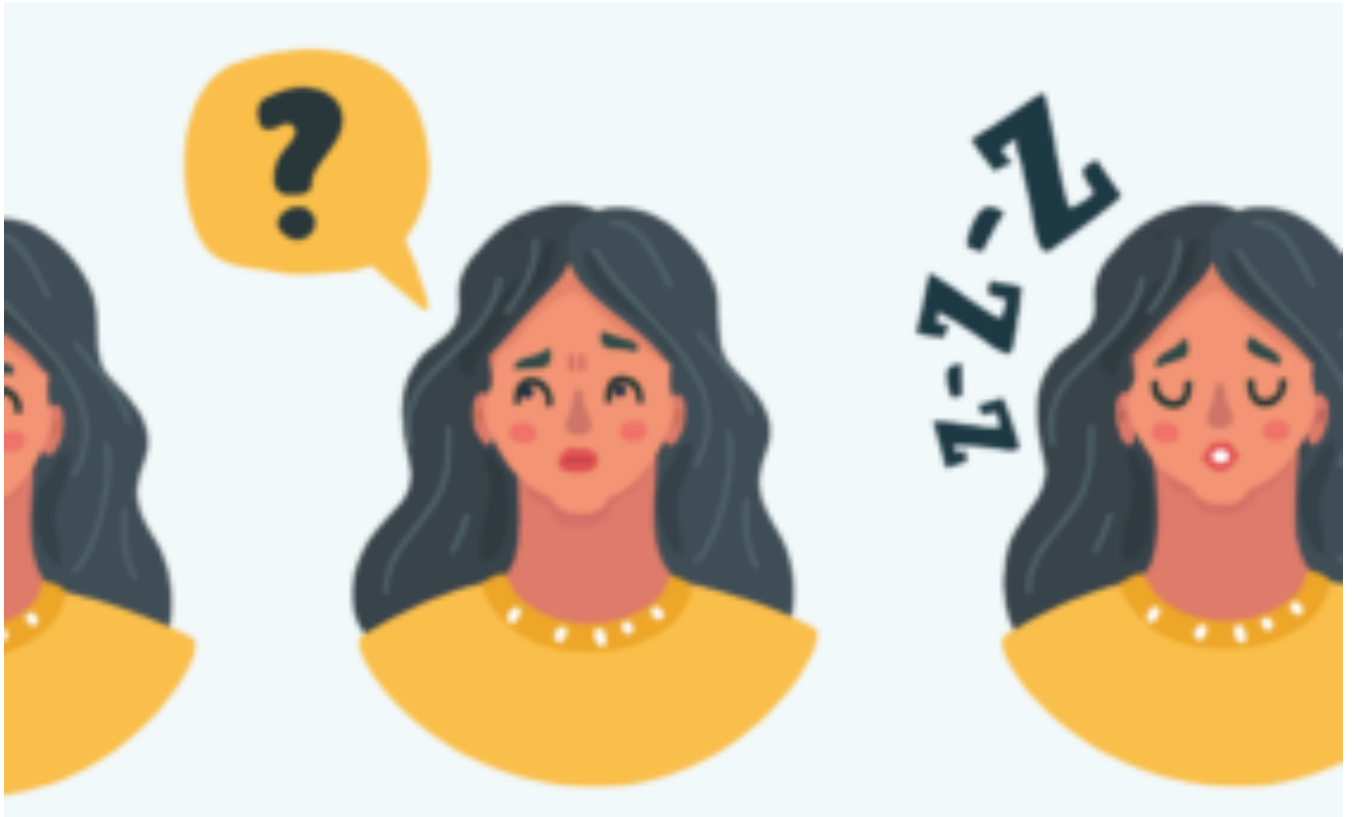
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