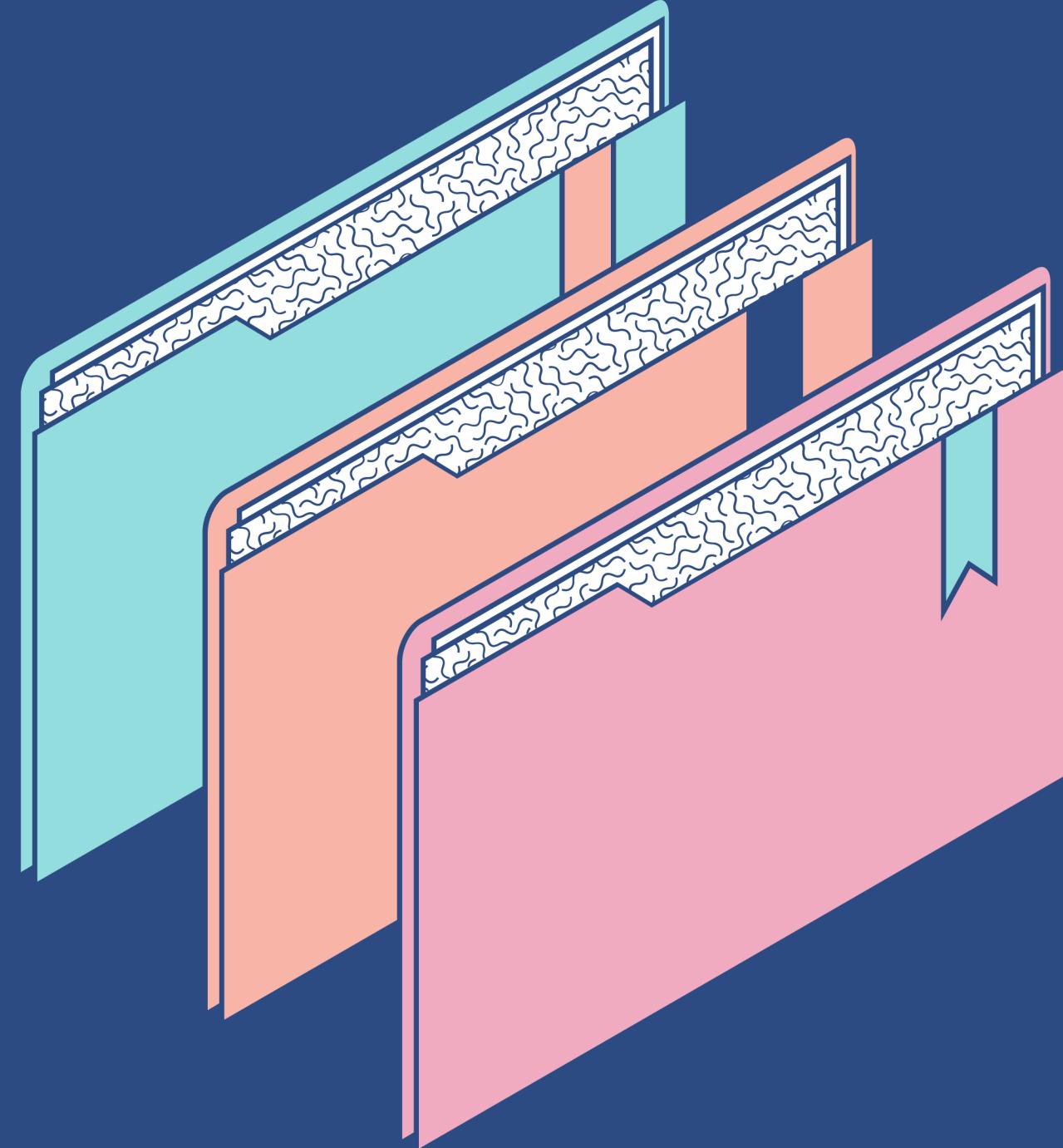


Giới thiệu chung các khái niệm của deep learning.





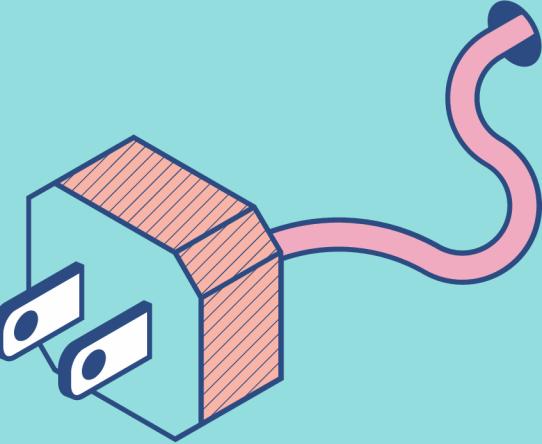
Mục Lục

- Giới thiệu về tích chập.
- Normalized.
- Pooling.
- Block.
- Giới thiệu kiến trúc cơ bản của deep learning.

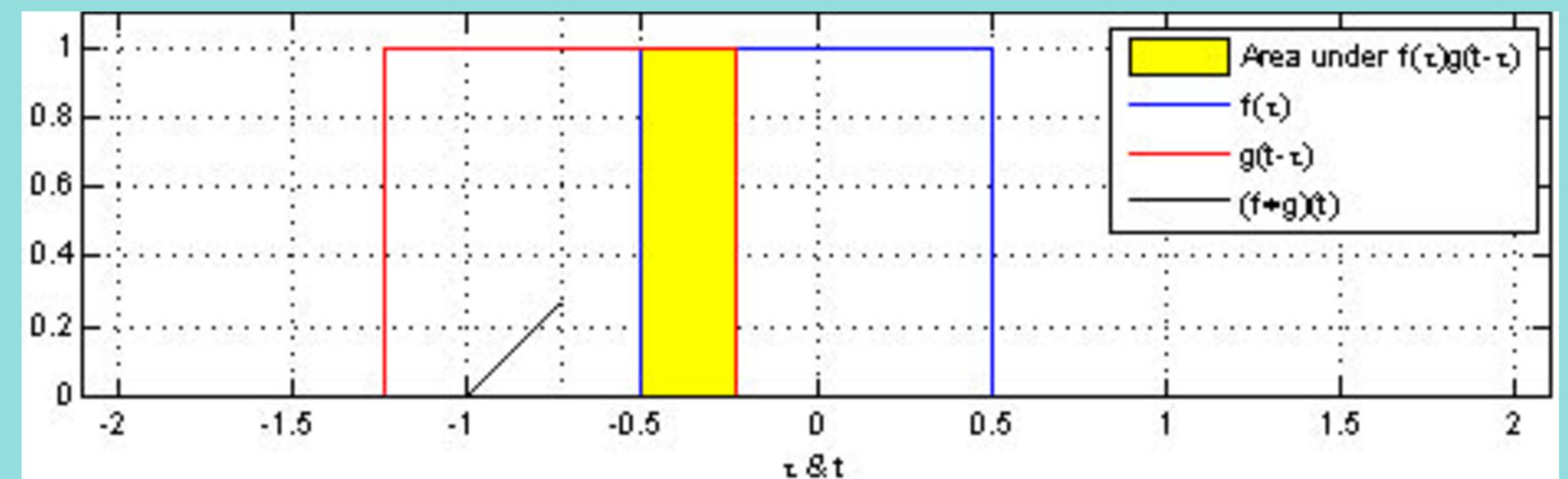
Tip: Use links to go to a different page inside your presentation.

How: Highlight text, click on the link symbol on the toolbar, and select the page in your presentation you want to connect.

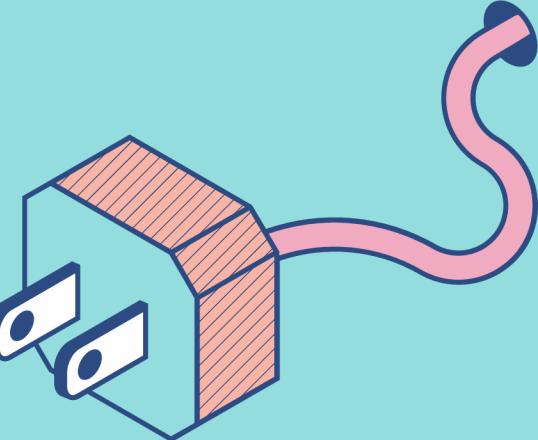
Chương I: Giới thiệu tích chập



Tích chập là 1 phép toán thực hiện đối với 2 hàm số f và g , kết quả cho ra 1 hàm số thứ 3. Phép tích chập khác với tương quan chéo ở chỗ nó cần lật kernel theo chiều ngang và đọc trước khi tính tổng của tích.

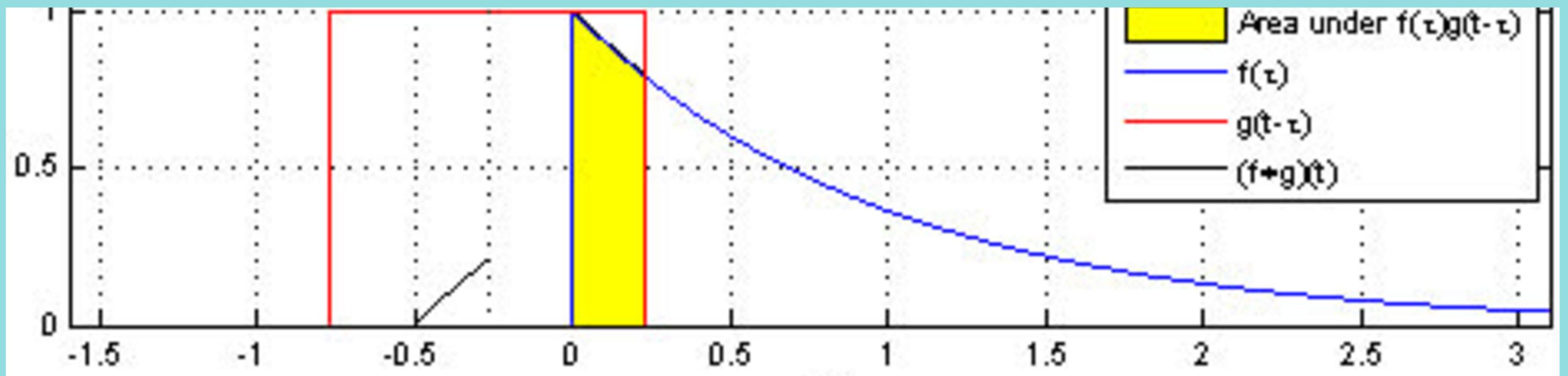


Chương I: Giới thiệu tích chập

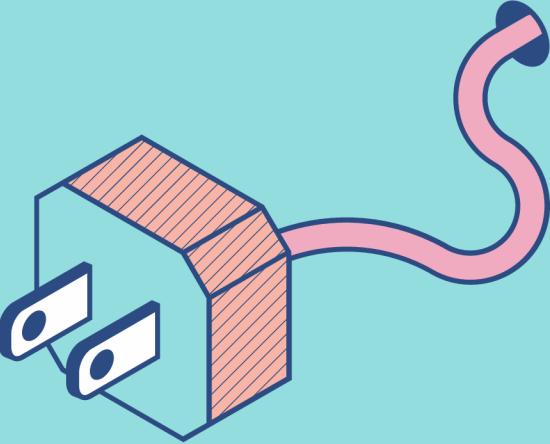


$$(f * g)(x) = \int_{\mathbf{R}^d} f(y)g(x - y) dy = \int_{\mathbf{R}^d} f(x - y)g(y) dy.$$

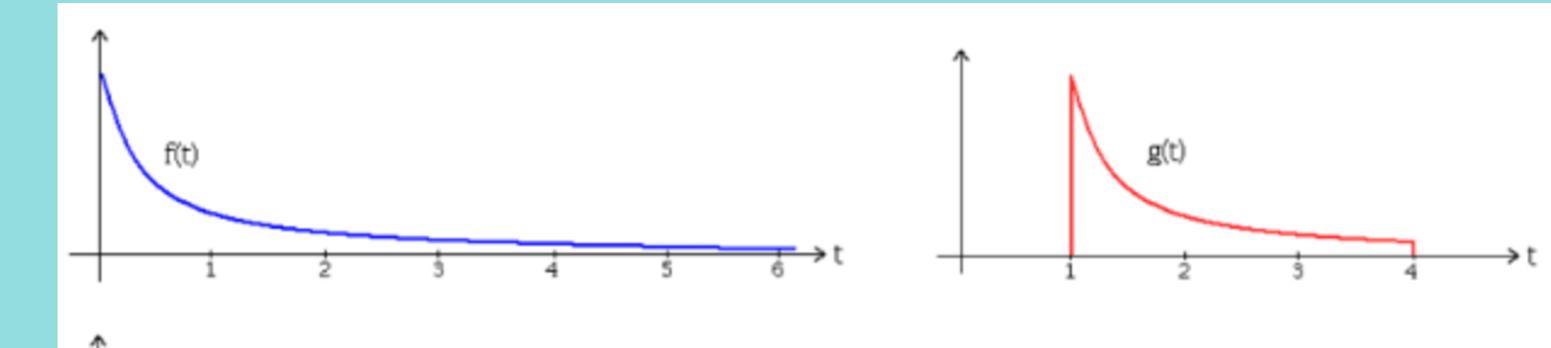
Một cách tổng quát, nếu f và g là hàm số phức trong không gian \mathbf{R}^d , thì tích chập của chúng được định nghĩa như sau:



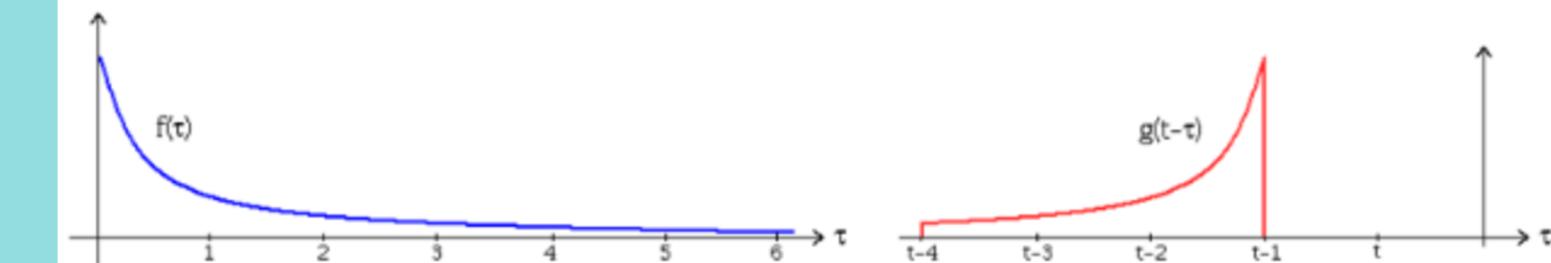
Chương I: Giới thiệu tích chập



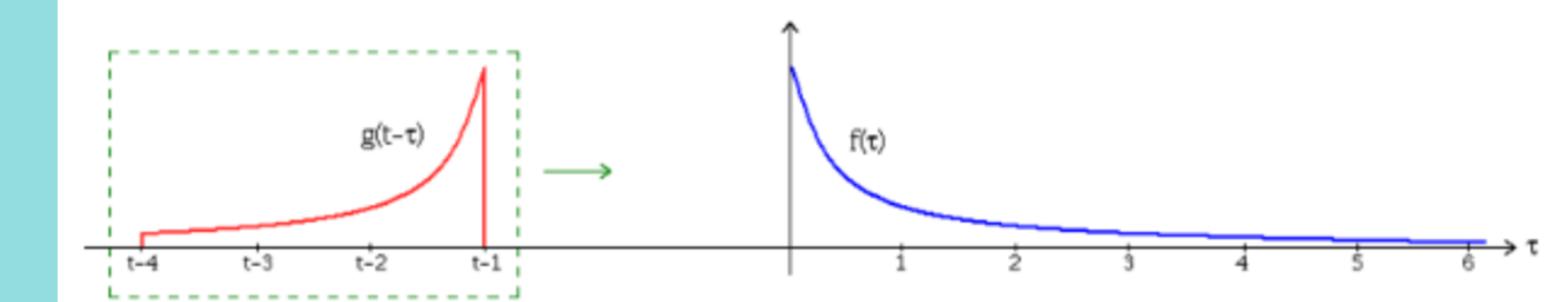
Bước 1: Thể hiện mô hình.



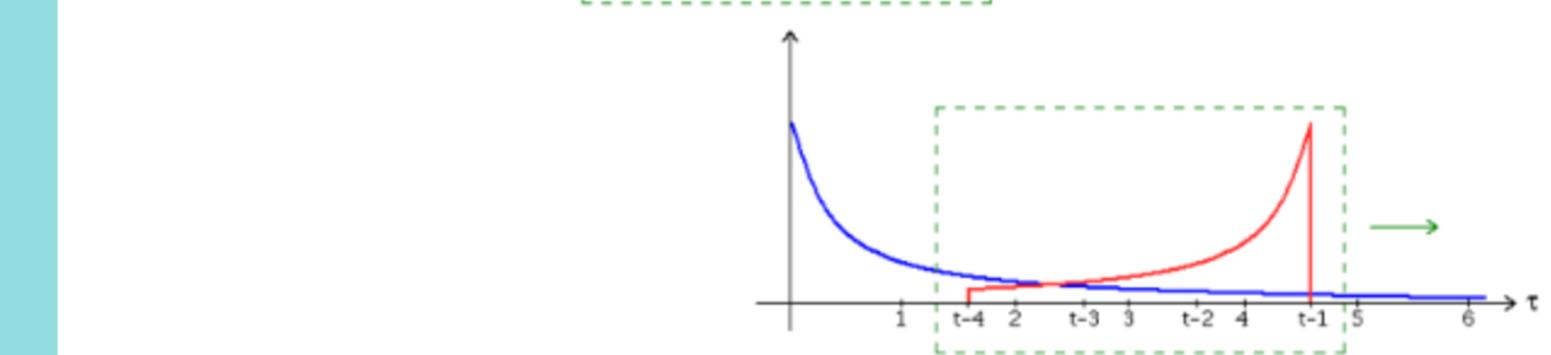
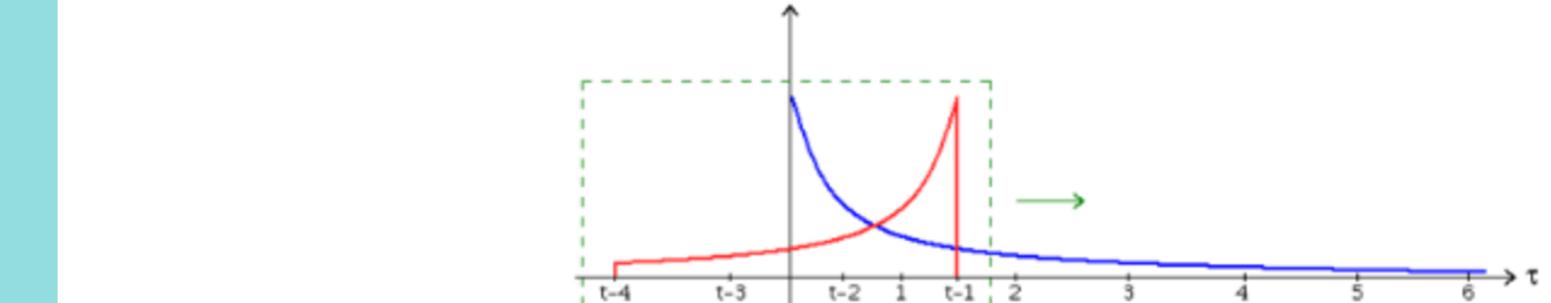
Bước 2: flip mô hình.



Bước 3: dịch chuyển
mô hình lần lượt qua
bên phải 1 đơn vị.

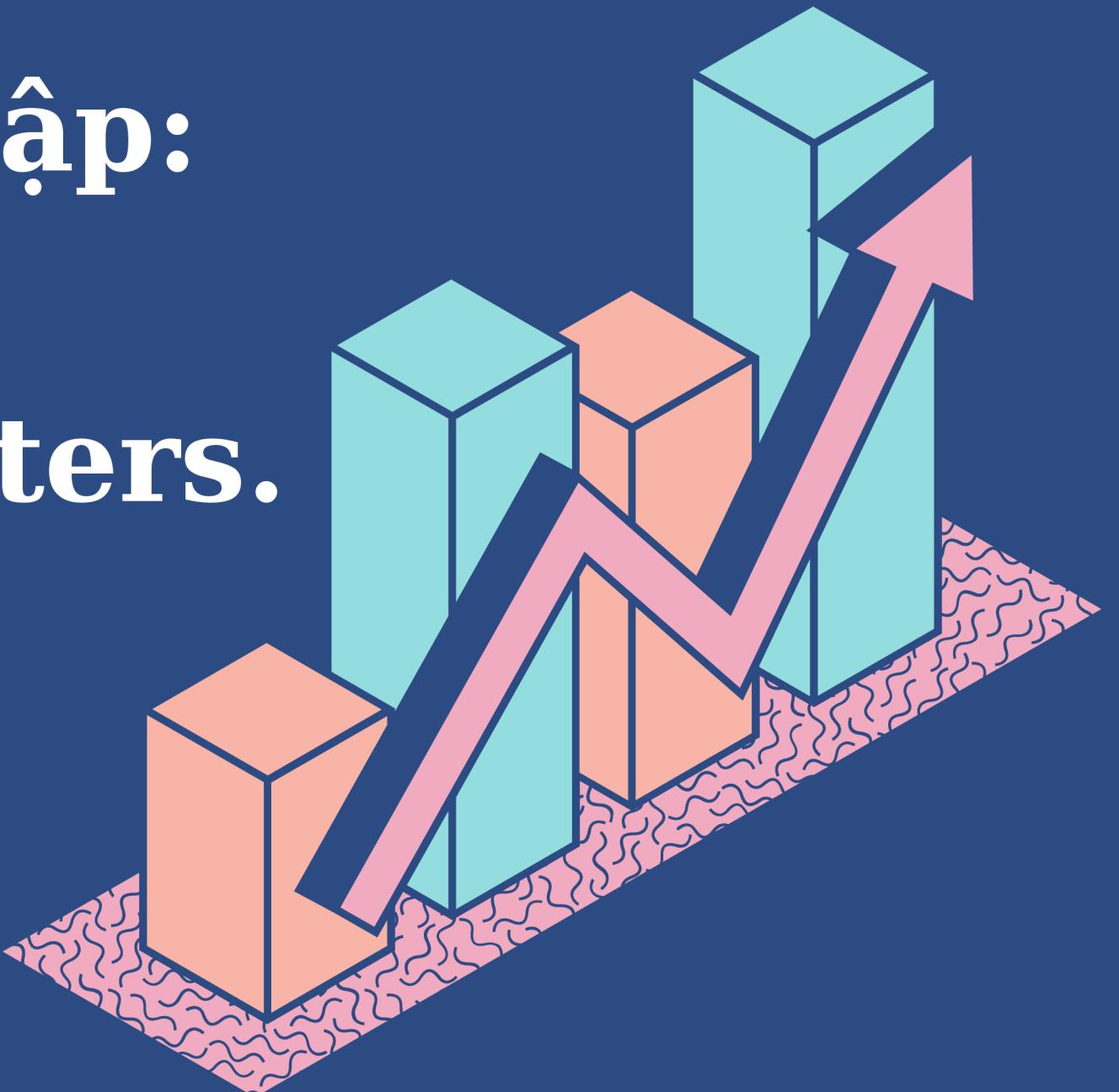


Bước 2: Dịch từ âm vô
cùng đến dương vô cùng.



Mục đích chính của tích chập:

- + Trích xuất đặc trưng.
- + Lấy thông tin trên nhiều filters.





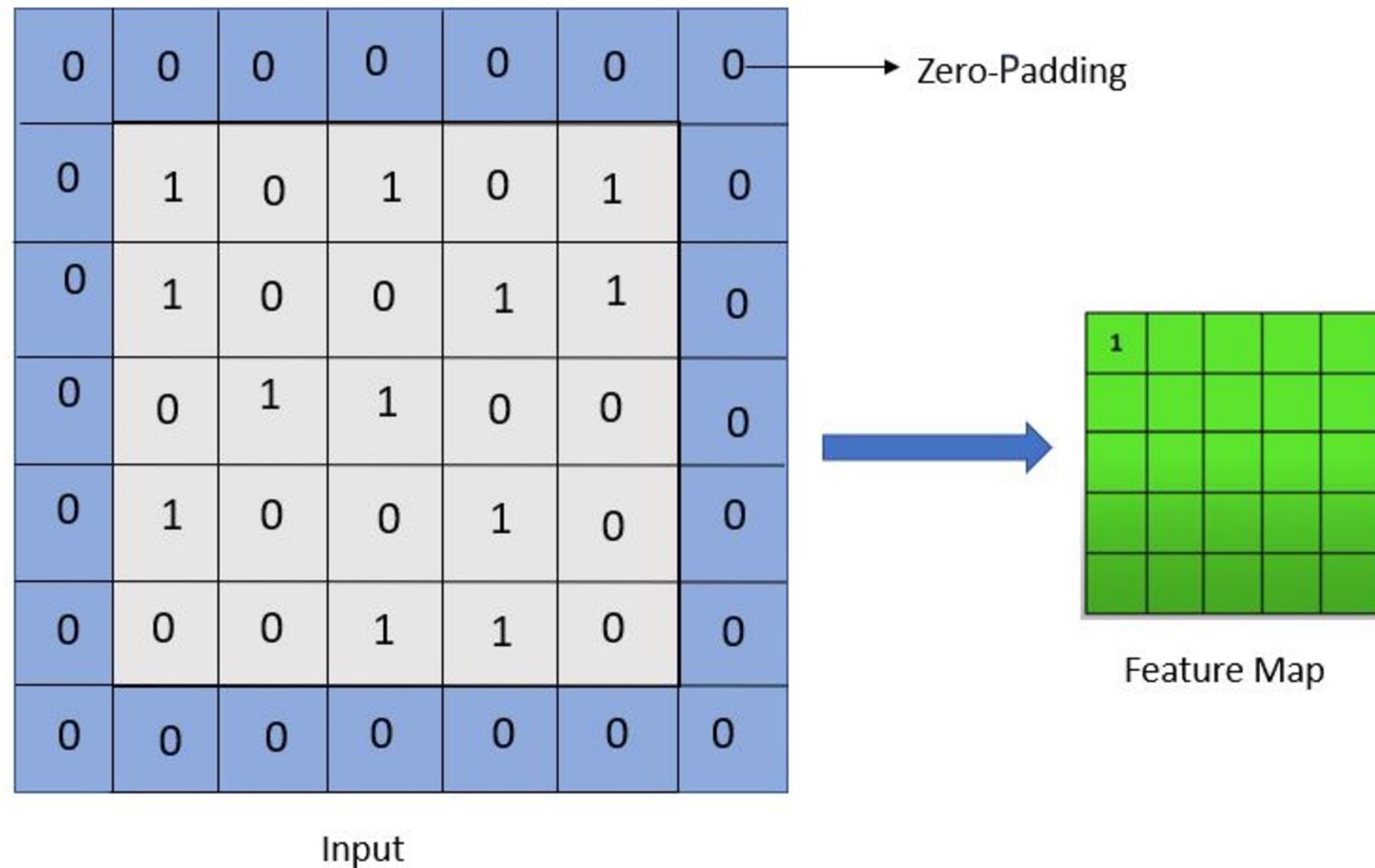
Stride and Zero Padding

Zero Padding:

-Zero padding là kỹ thuật chèn các giá trị 0 vào xung quanh ma trận đầu vào trước khi thực hiện phép toán convolution. Việc này giúp kiểm soát kích thước đầu ra của ma trận sau convolution và tránh mất thông tin ở các cạnh của ảnh.

- **Same padding:** Giữ kích thước đầu ra bằng kích thước đầu vào.
- **Valid padding:** Giảm kích thước đầu ra so với kích thước đầu vào.

Stride and Zero Padding



Khi thêm số zero padding bằng $n-1/2$ của số cấp filter, ta có kết quả tích chập bằng cấp với ma trận ban đầu
(Không tính zero padding)



Stride and Zero Padding

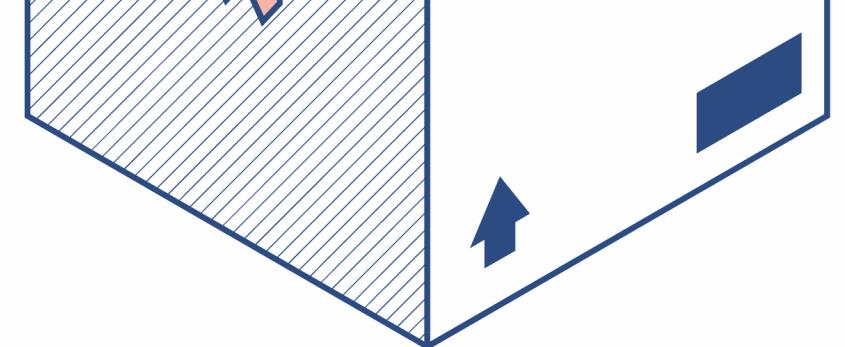
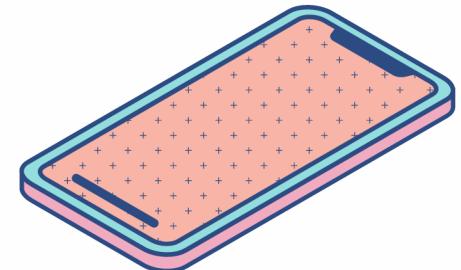
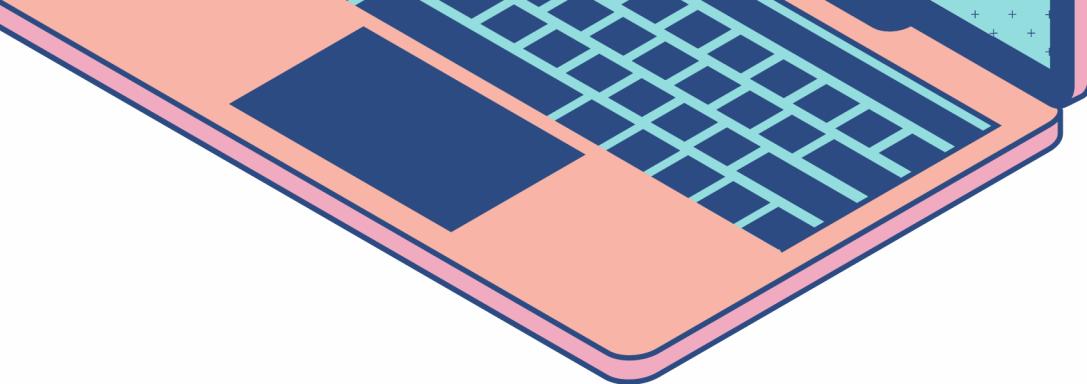
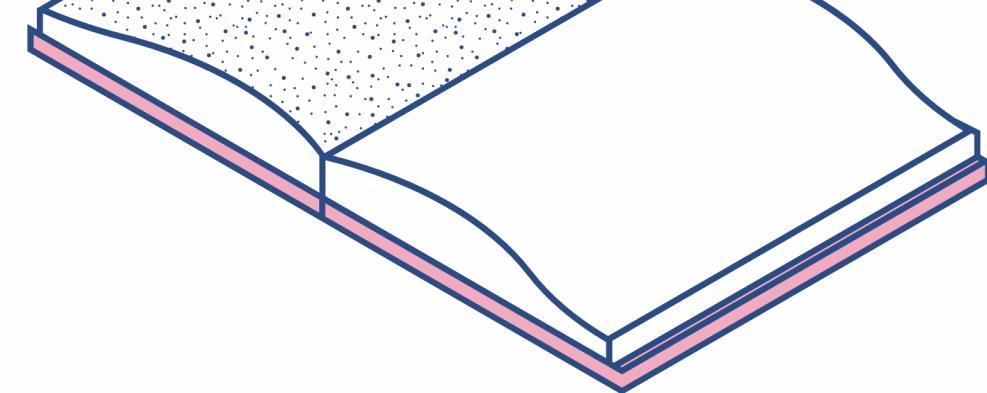
Stride là khoảng cách giữa hai vị trí lân cận của kernel khi thực hiện phép toán convolution. Stride lớn hơn sẽ làm giảm kích thước đầu ra và tăng độ nhạy của mạng nơ-ron với các đặc trưng có kích thước lớn.

Pooling

Pooling (hoặc subsampling) là một phép biến đổi thường được sử dụng trong mạng neural convolutional (CNN) để giảm kích thước của đặc trưng (feature maps) trong quá trình xử lý ảnh.

Có 2 loại pooling cơ bản: Max Pool và Average Pool





Lấy giá trị lớn nhất
trong ma trận 2×2 .

Max Pooling

29	15	28	184
0	100	70	38
12	12	7	2
12	12	45	6

2×2
pool size

100	184
12	45

Average Pooling

31	15	28	184
0	100	70	38
12	12	7	2
12	12	45	6

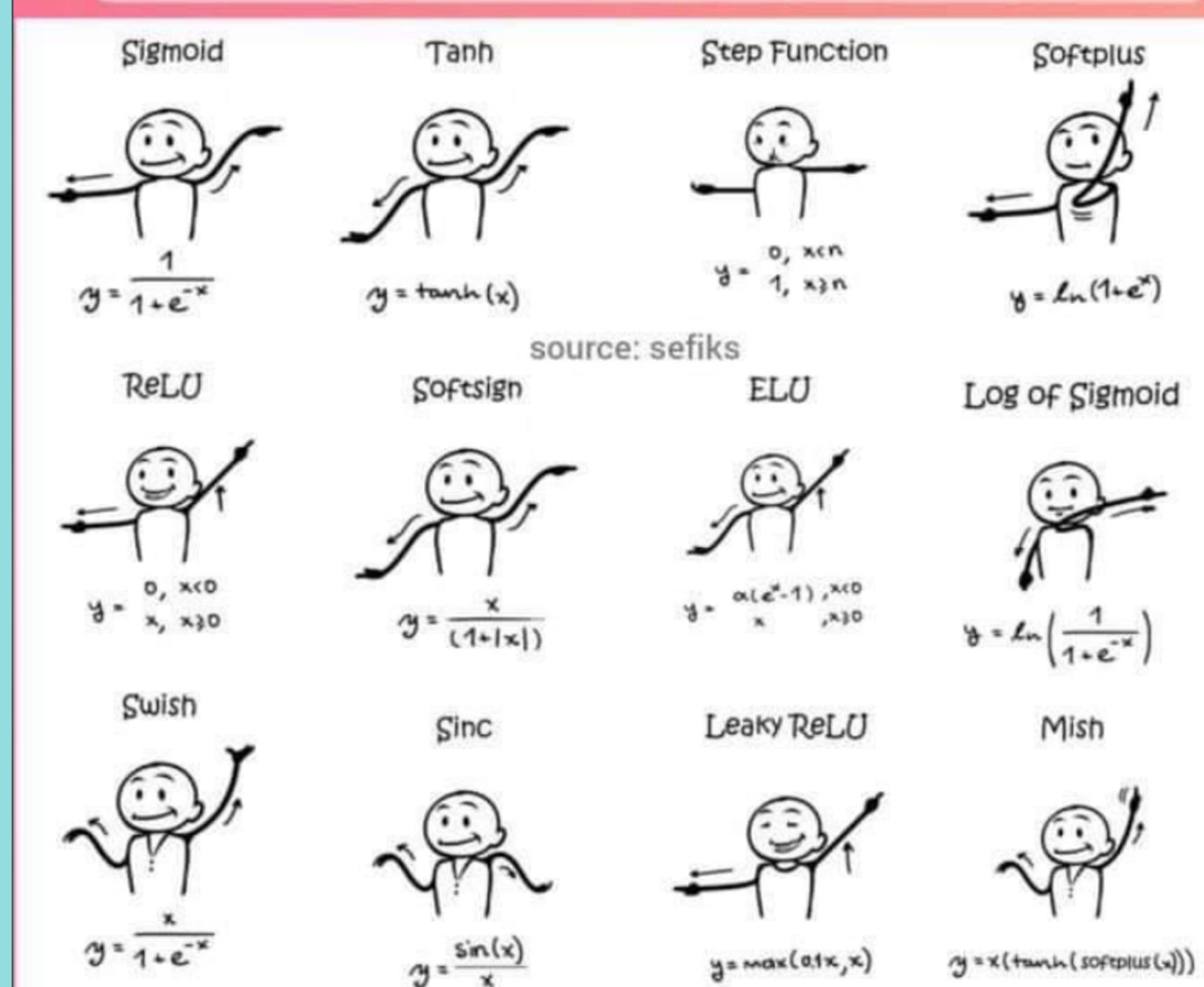
2×2
pool size

36	80
12	15

Lấy giá trị trung bình
trong ma trận 2×2 .

Activation Function

Dance Moves of Deep Learning Activation Functions



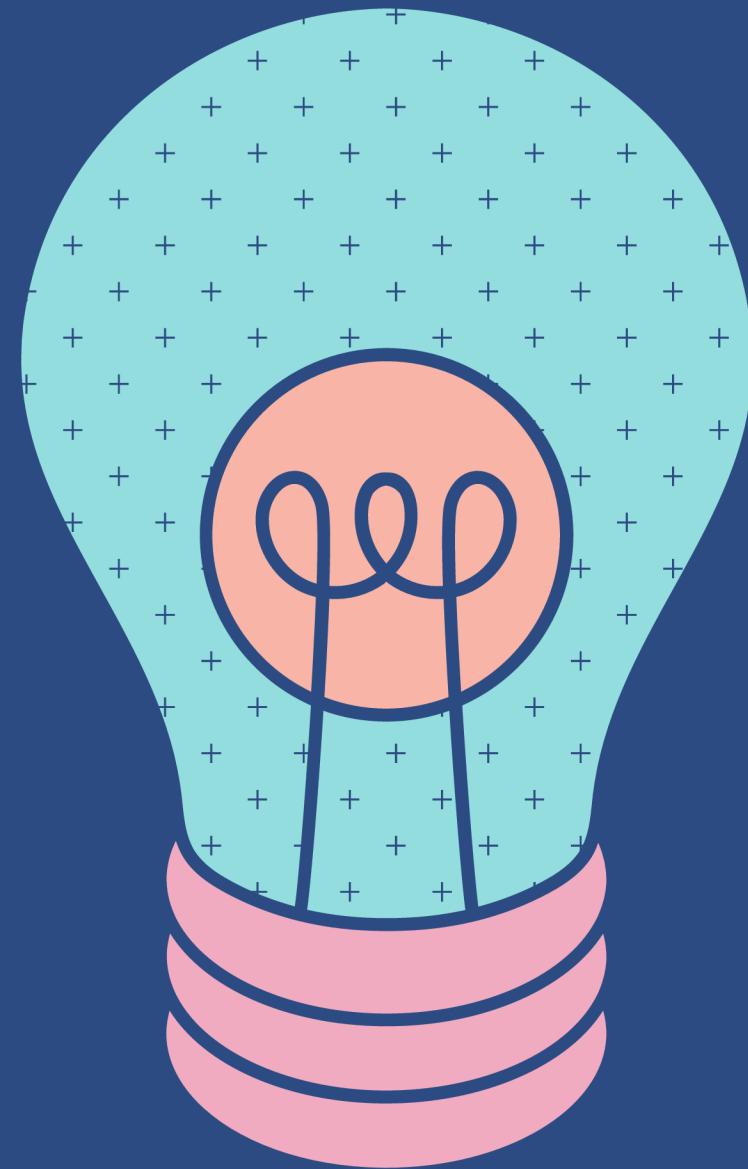
Hàm kích hoạt giúp giới hạn phạm vi giá trị và tạo sự đa dạng cho mạng. Lựa chọn hàm kích hoạt phù hợp là một yếu tố quan trọng để tối ưu hóa hiệu suất mạng nơ-ron cho các nhiệm vụ học tập máy khác nhau.

Điều kiện để 1 hàm là activation function??

Block

-Trong Machine Learning, block (hay còn gọi là khối) là một đơn vị cấu trúc cơ bản trong việc xây dựng các mô hình học máy. Mỗi block thực hiện một chức năng cụ thể trong quá trình xử lý dữ liệu và góp phần tạo nên kết quả dự đoán cuối cùng.

-Có thể ví dụ block như những viên gạch lego được ghép lại với nhau để tạo thành một mô hình hoàn chỉnh. Mỗi viên gạch lego đại diện cho một chức năng riêng biệt, ví dụ như nhận dữ liệu đầu vào, lọc nhiễu, trích xuất đặc trưng, thực hiện phép toán, dự đoán kết quả, v.v.



Do you have any questions?

Send it to us! We hope you
learned something new.



How to set up a virtual classroom

1 ————— 2 ————— 3 ————— 4 ————— 5

STEP

Pick a learning management system.

Study the system so you can maximize its use.

STEP

Review all online learning materials.

Stay prepared and know how to use the materials.

STEP

Invest in a calendar and comms app.

Use the necessary tools to manage your time well.

STEP

Select a secure live streaming platform.

Choose a robust platform that can help with your objectives.

STEP

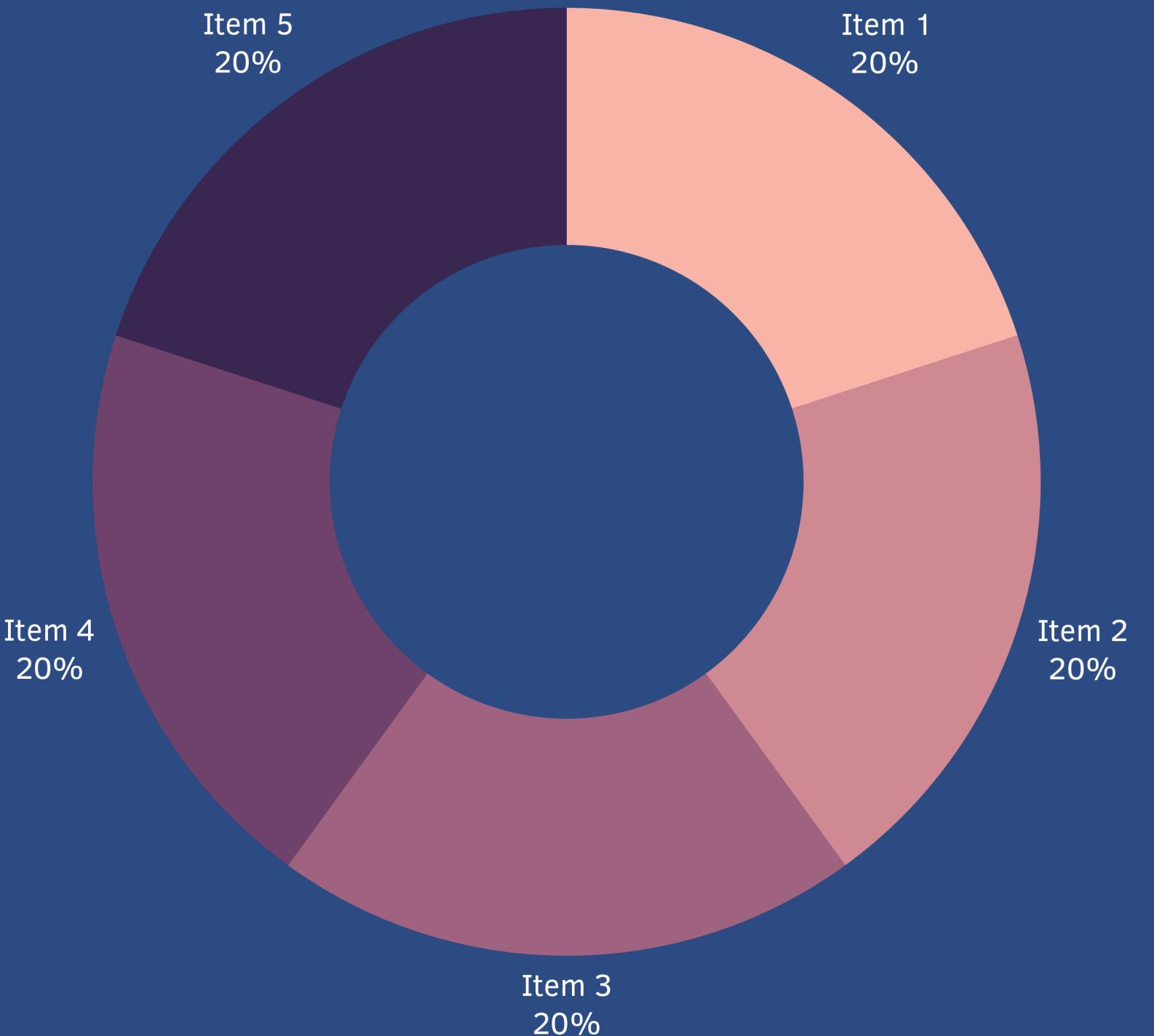
Choose apps that foster collaboration.

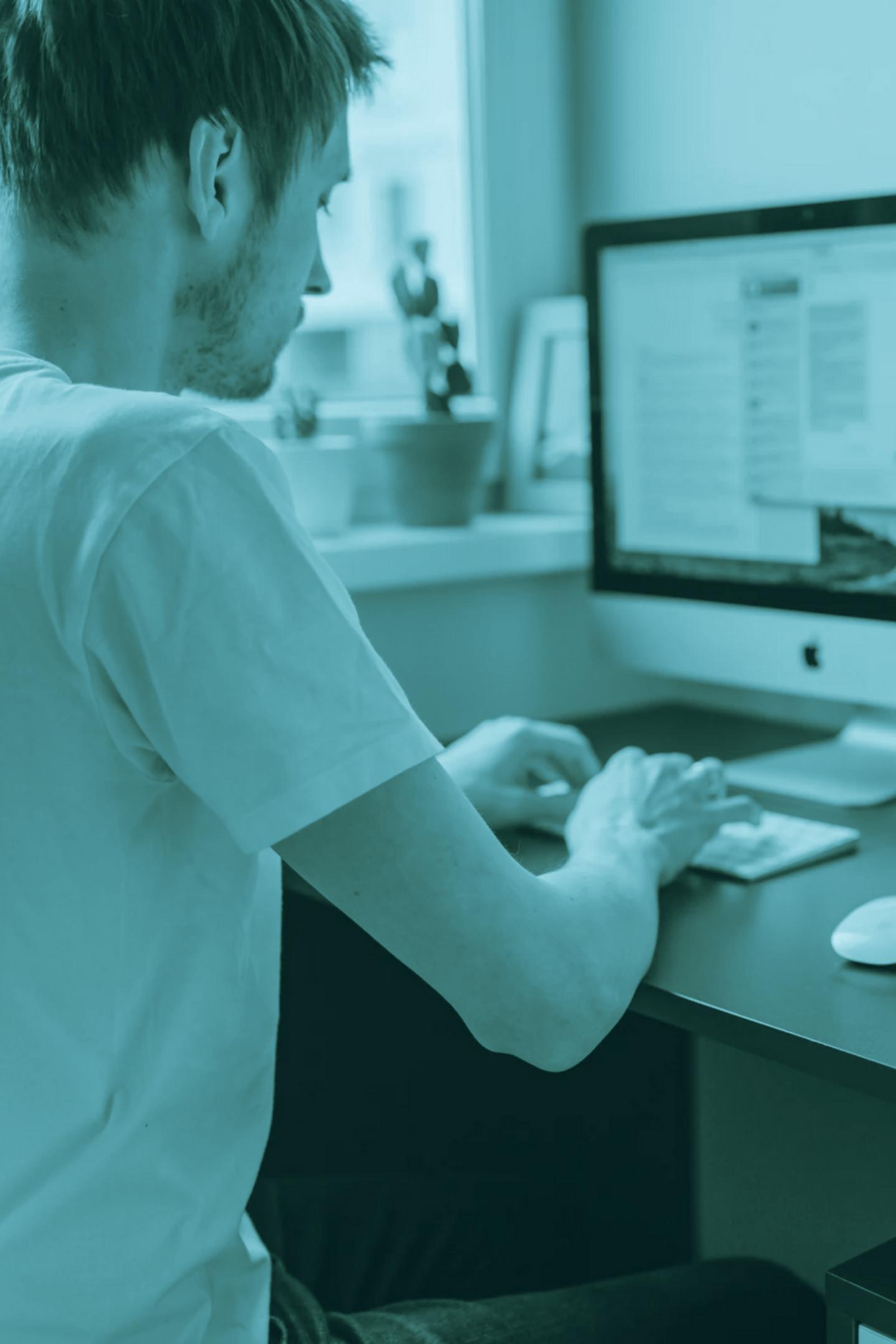
Create a learning environment that encourages teamwork.

Virtual classroom adoption in the world

AS OF JANUARY 2021

Learning sessions are now conducted online in 95% of schools in the world.



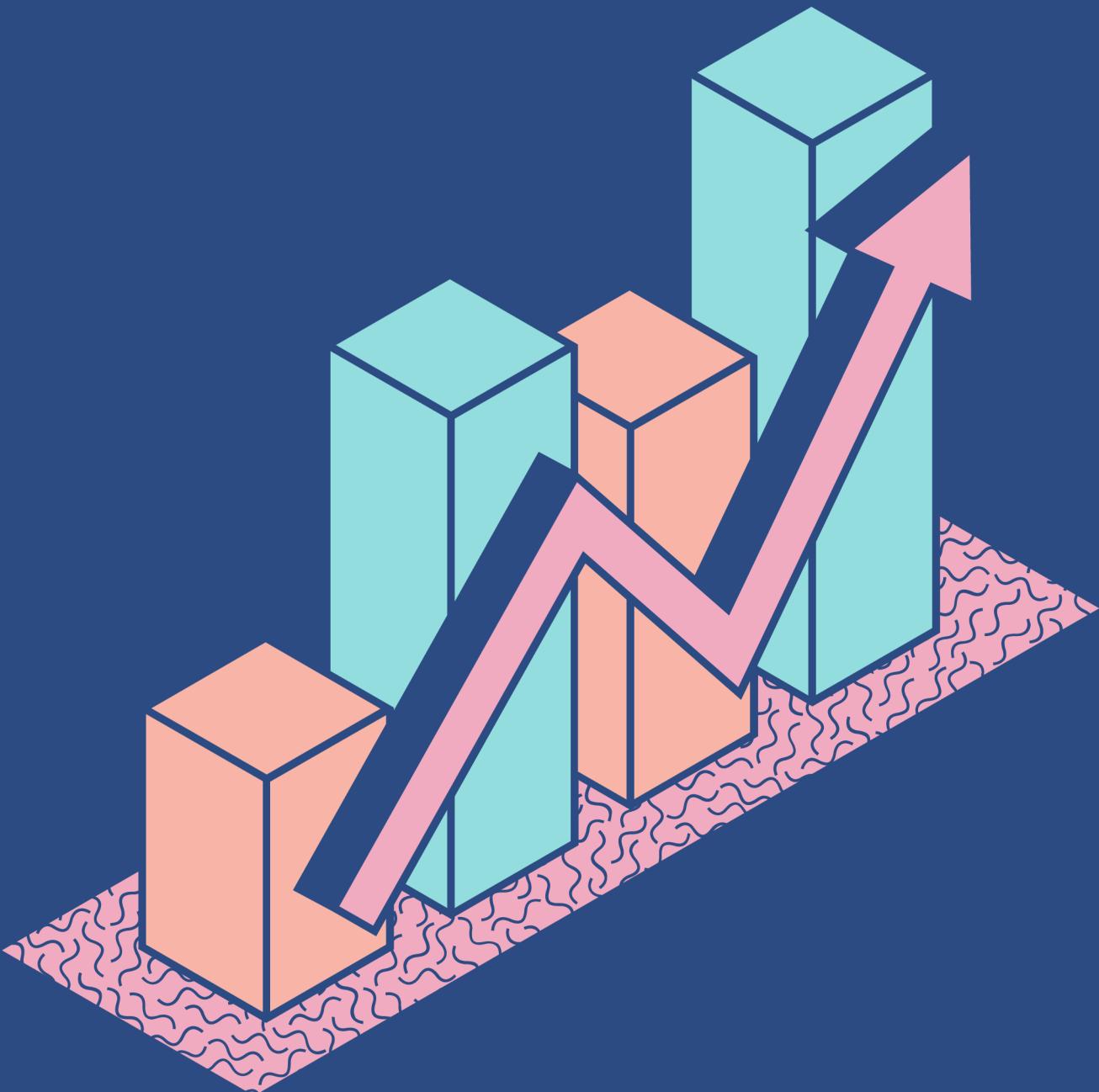


The Role of Interactive Technology in Learning

INTERACTIVE TECHNOLOGY OPENS UP
THE WAY WE TEACH AND LEARN

Interactive technology helps create opportunities for communication. It can encourage teachers and students to communicate more, share and discuss ideas, and collaborate with each other.

Benefits of Interactive Technology



Benefits to teachers

HOW TECHNOLOGY HELPS TEACHERS DO THEIR WORK



Allows teachers to be more flexible

Teachers can use different teaching methods and tools to suit their lessons or students.

Helps teachers connect more with students

Teachers are able to better communicate with their students and support them in their learning

Allows access to more resources

Teachers are able to find additional and updated learning resources that can help them with their work

Benefits to Students

HOW TECHNOLOGY HELPS STUDENTS LEARN

Allows for a more personalized learning experience

Students have more freedom to choose the methods and tools that help them learn best.

Improves students' communication skills

Students have access to different channels where they can communicate and collaborate with teachers and fellow students.

Helps students prepare for the future

Students become equipped to face a highly technological future and will be able to easily adapt.



Traditional Teaching and Learning

- Physical learning materials and equipment like paper, pens and chalkboard
- Limited access to education materials and information
- Teaching and learning typically occurs in an in-person classroom setting

Teaching and Learning with Technology

- Wider access to education materials and information
- More available channels and tools for communication as well as collaboration
- Enables a more personalized kind of learning for students



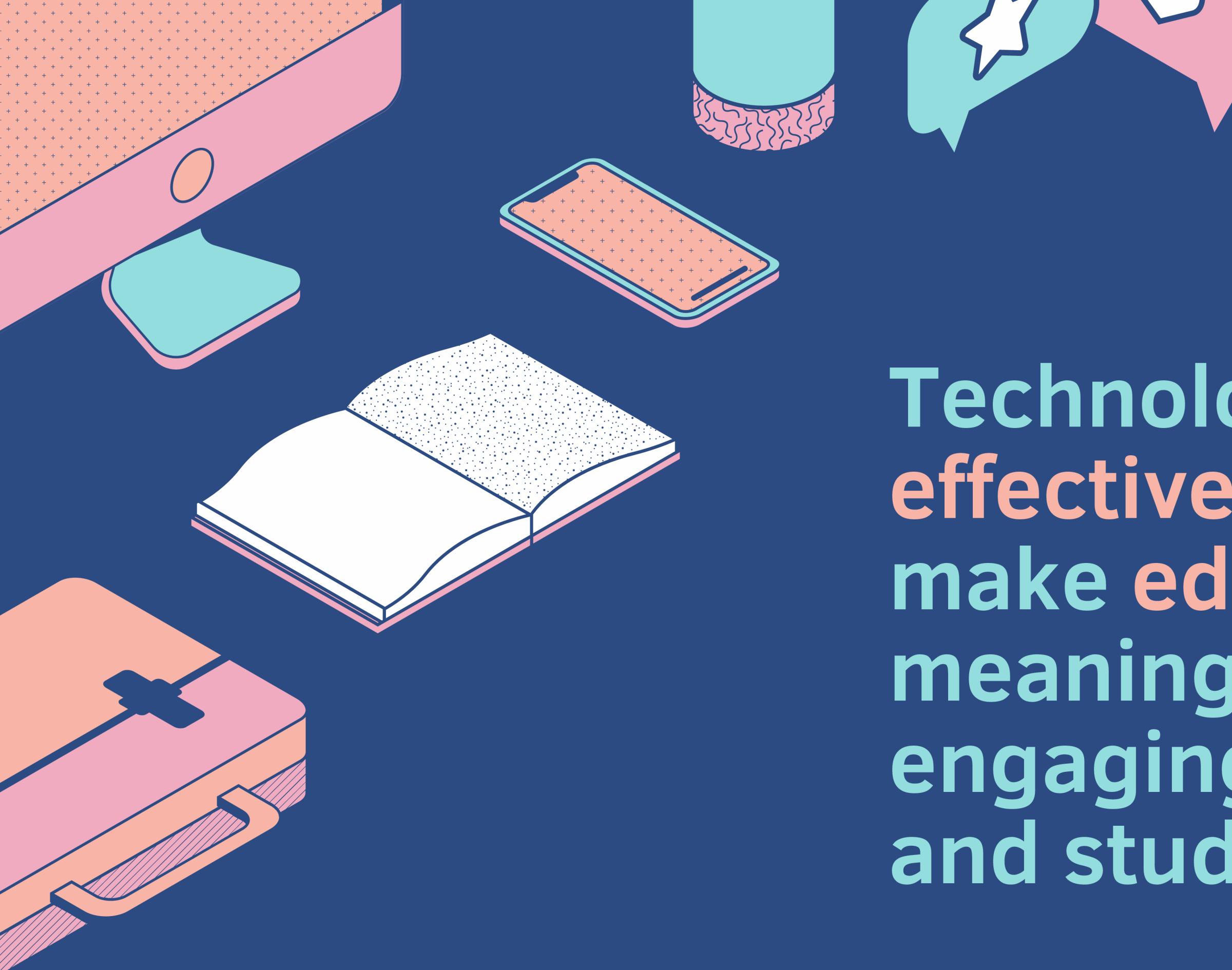
Technology is an effective tool that can make education more meaningful and engaging for teachers and students alike.



Remote learning as the new normal

IT'S IMPORTANT RIGHT NOW
BUT IS IT THE FUTURE?

Remote learning technology has been crucial to education right now, and it will likely be as critical in the future as schools determine the best way they can move forward. Schools can adopt or offer a combination of remote and in-person learning.

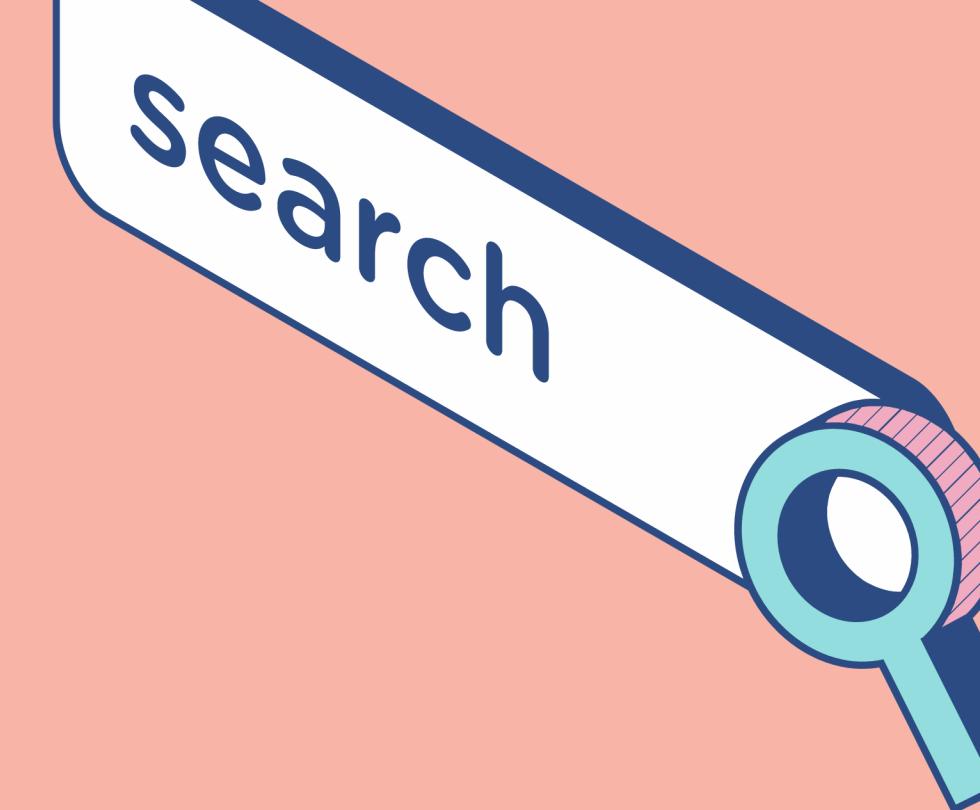


Technology is an effective tool that can make education more meaningful and engaging for teachers and students alike.



What's Next in Digital Learning

- Online classrooms mean digital learning for everyone.
- A global market for practical courses and credentials.
- Improvement in the quality of blended learning
- Rising demand for skills-based programs.
- Greater investment on interactive technology in solving the digital divide



search

Digital Learning Checklist

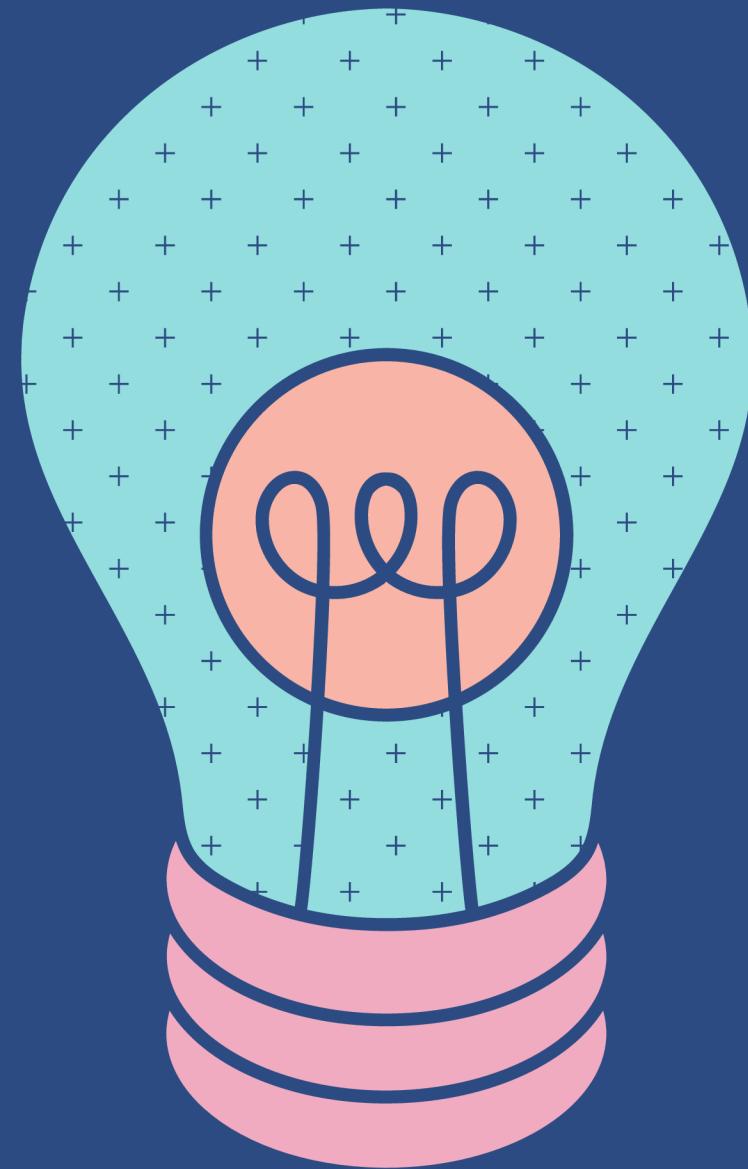
HOW CAN WE PREPARE FOR THE LONG-TERM DIGITAL LEARNING SET-UP?

| WRITE A COLUMN NAME |
|---------------------|---------------------|---------------------|---------------------|
| Add item here | Add item here | Add item here | Add item here |
| | | | |
| | | | |
| | | | |

Highlight two or more cells, right-click then choose
"Merge Cells" to organize your table according to your needs!

“We need technology in every classroom and in every student and teacher’s hand, because it is the pen and paper of our time, and it is the lens through which we experience much of our world.”

DAVID WARLICK



Whiteboard Page



Write a note here



Write a note here

Tip: Collaboration makes teamwork easier! Click "Share" and invite your teammates to fill this up. Use this page for bulletins, brainstorms, and other fun team ideas.

Right-click on the background of the slide, or on the thumbnail below, for the option to expand this page into a whiteboard for more space!

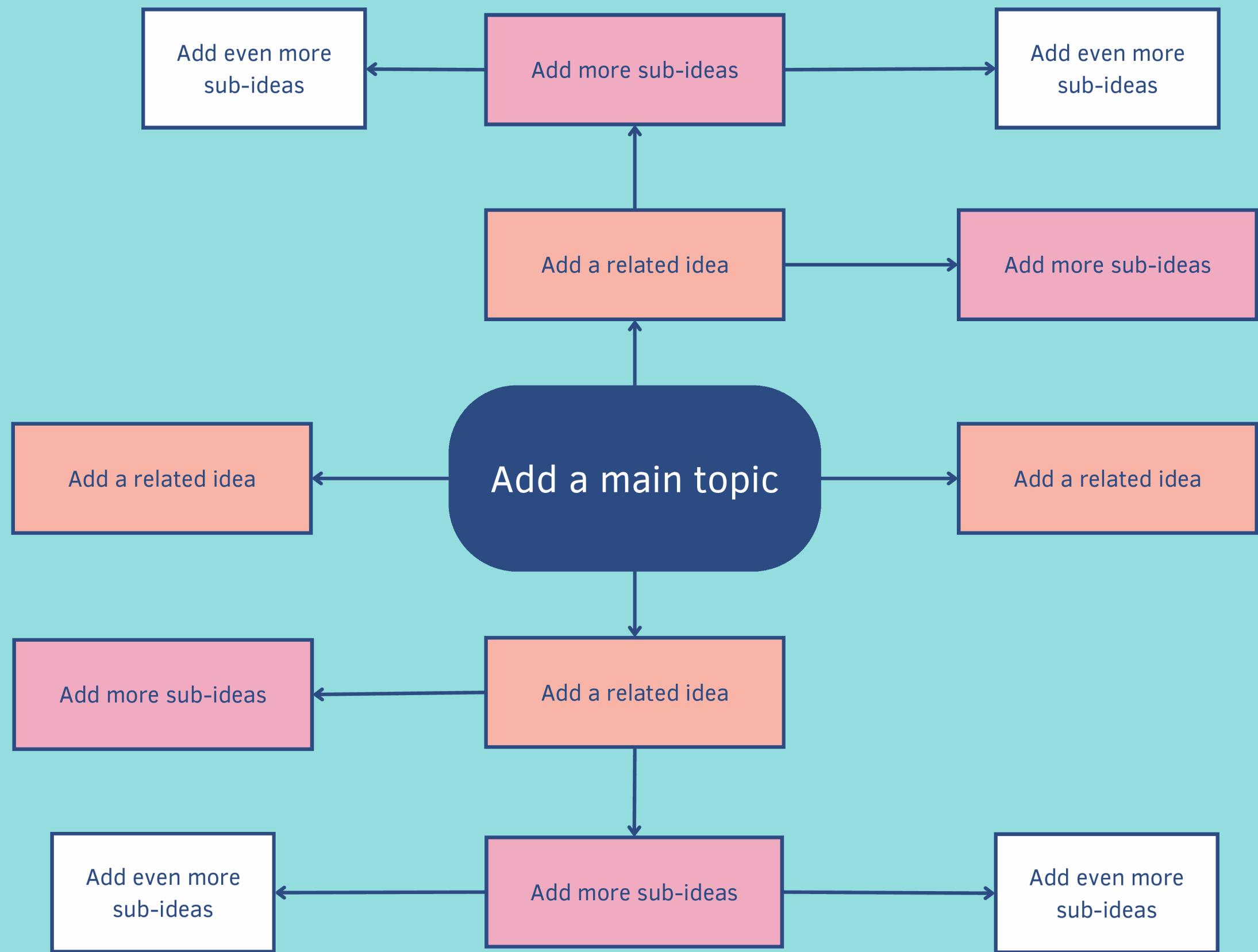
Copy a note,
drag to the
board, and write
your ideas.

Copy a note, drag
to the board, and write
your ideas.

Collaborate on a Whiteboard

Tip: Collaboration makes teamwork easier! Click "Share" and invite your teammates to fill this up. Use this page for bulletins, brainstorms, and other fun team ideas.

Right-click on the background of the slide, or on the thumbnail below, for the option to expand this page into a whiteboard for more space!

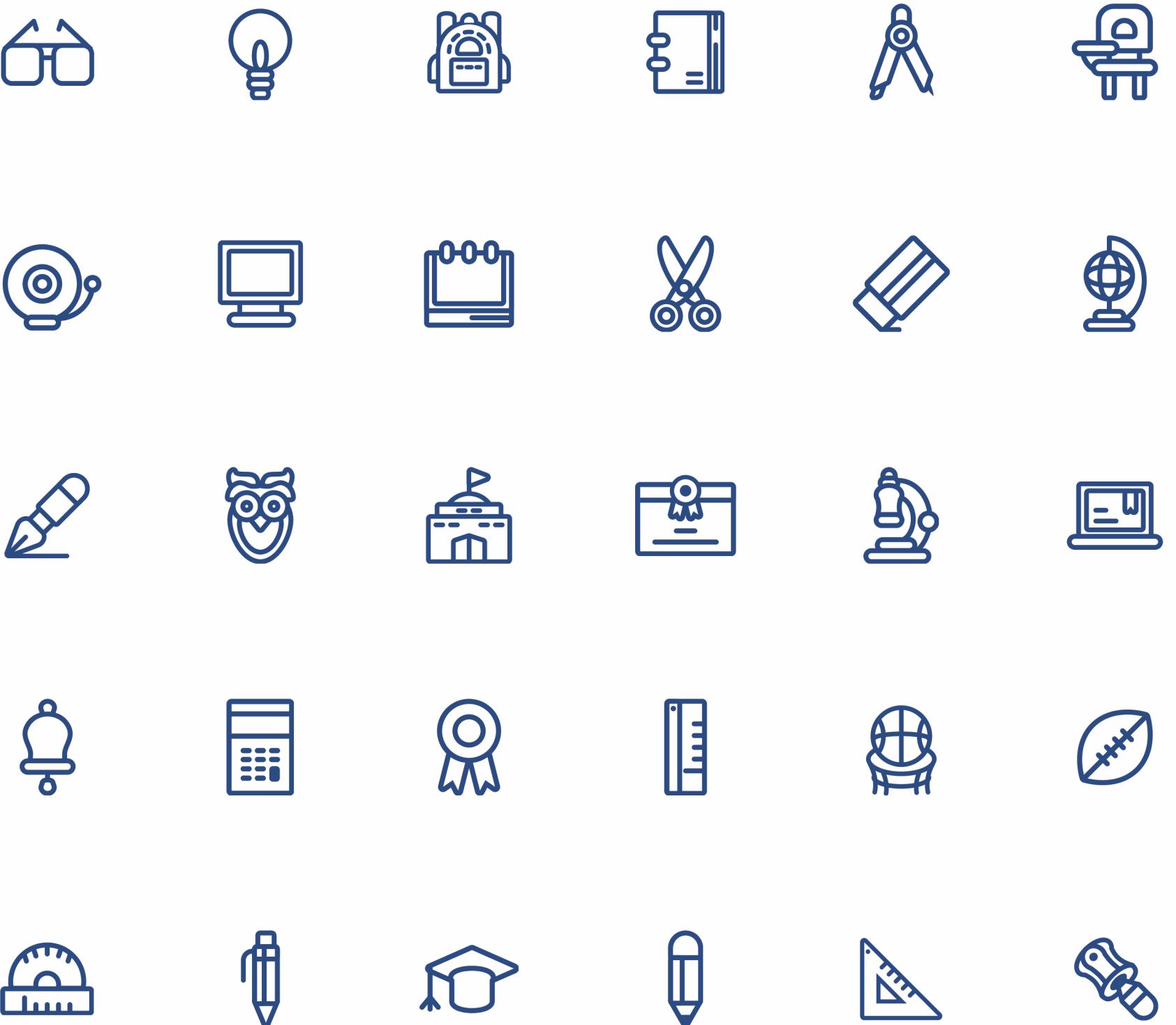


Resource Page

Use these design resources in your Canva Presentation.

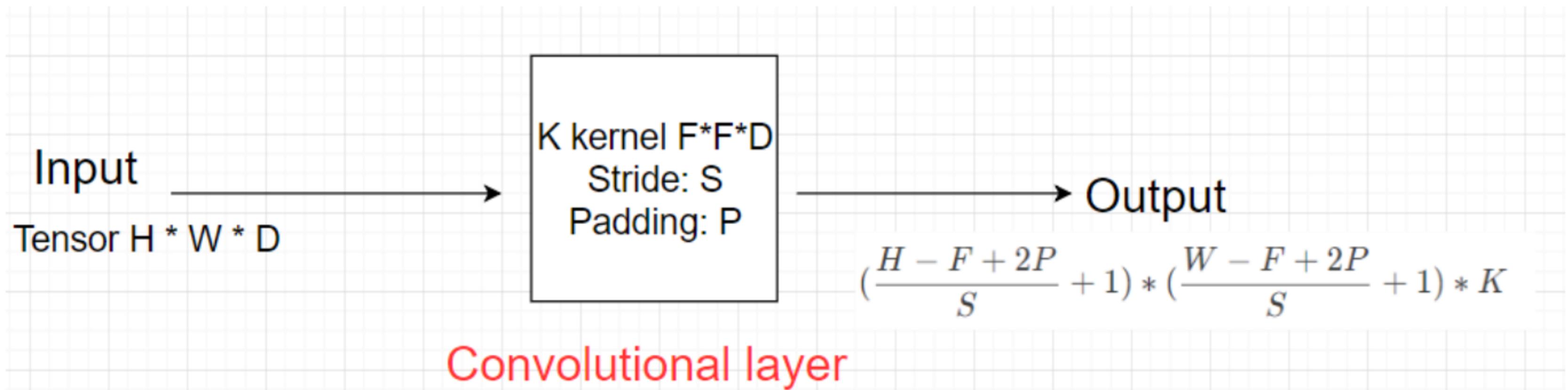
Happy designing!

Don't forget to delete or hide this page before presenting.



Convolutional layer áp dụng K kernel.

=> Output của layer là tensor 3 chiều có kích thước: $(\frac{H - F + 2P}{S} + 1) * (\frac{W - F + 2P}{S} + 1) * K$



Resource Page

Find the magic and fun in presenting with Canva Presentations. Press the following keys while on Present mode!

Delete or hide this page before presenting.

B for blur

C for confetti

D for a drumroll

M for mic drop

O for bubbles

Q for quiet

U for unveil

Any number from 0-9 for a timer

Resource Page

Presenting live not your thing?
No worries! Record your Canva
Presentation your audience can
watch at their own pace.

Don't forget to delete or hide
this page before presenting.

Click the Share button on the top right corner of your screen
and select '**Present and Record.**'

Click '**Go to recording studio,**' where you can choose the video
and audio source for your video presentation.

Feel free to choose the '**No camera**' option and record
your voice only.

Start recording, and press pause in between takes
if you have to.

Once you're done, **download your Canva Presentation**
in MP4 file format or get a link to your Talking Presentation
and share it with others.

You can also record a video inside the editor! Go to '**Uploads**'
and click on '**Record yourself**'.