



How our brains learn

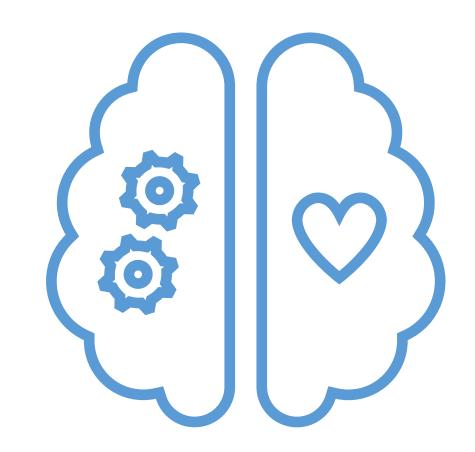
Tips for Teaching

Danielle Dobbe, MSc.

Dutch Expert Centre for Screening (LRCB)

d.dobbe@lrcb.nl

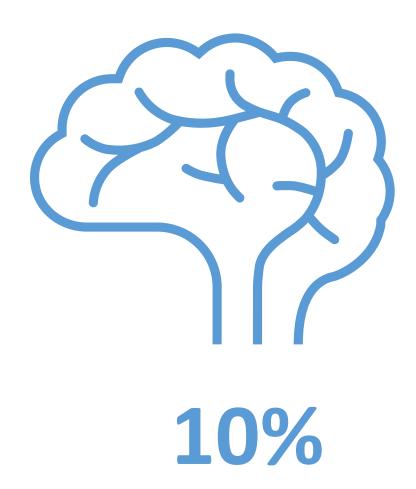
@danielledok >

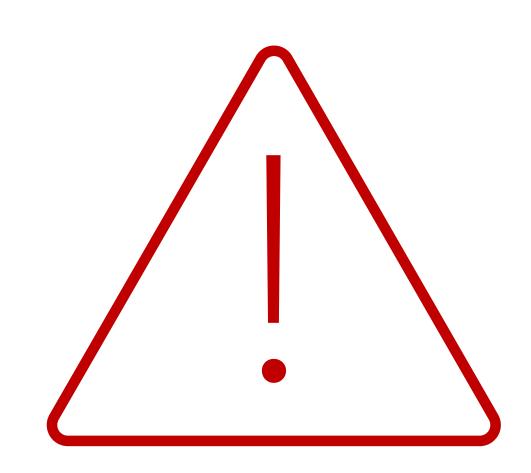
















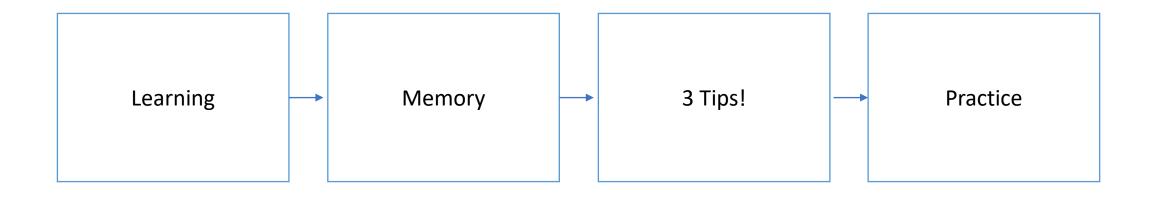




Learning objective

To give you ideas, based on how the brain learns, that you can use to help your participants to really learn from your courses!

Overview











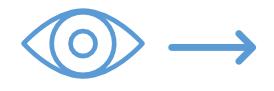


"Learning is an enduring change in behavior, or in the capacity to behave in a given fashion, which results from practice or other forms of experience." "Learning is an **enduring change** in behavior, or in the capacity to behave in a given fashion, which results from **practice** or other forms of **experience**."







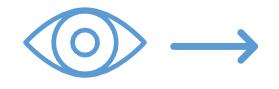


Sensory memory





Attention



Sensory memory

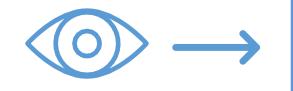


Working memory





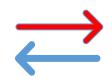
Attention



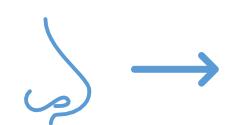
Sensory memory



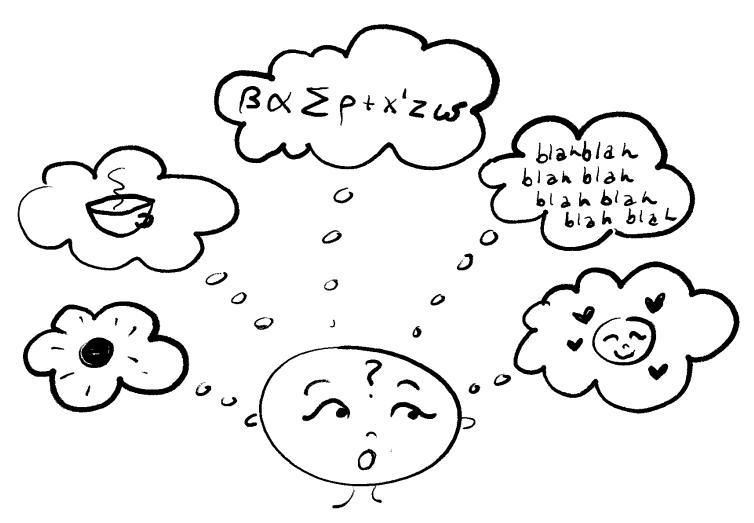
Working memory

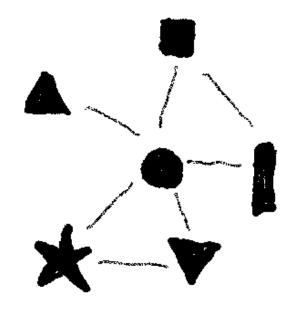


Long term memory

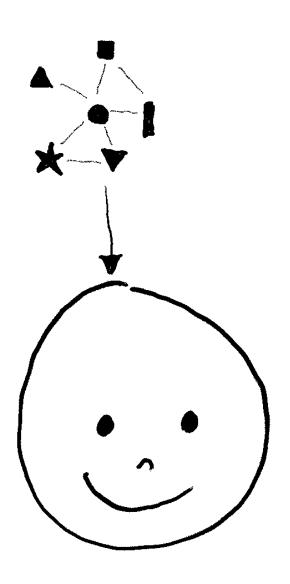


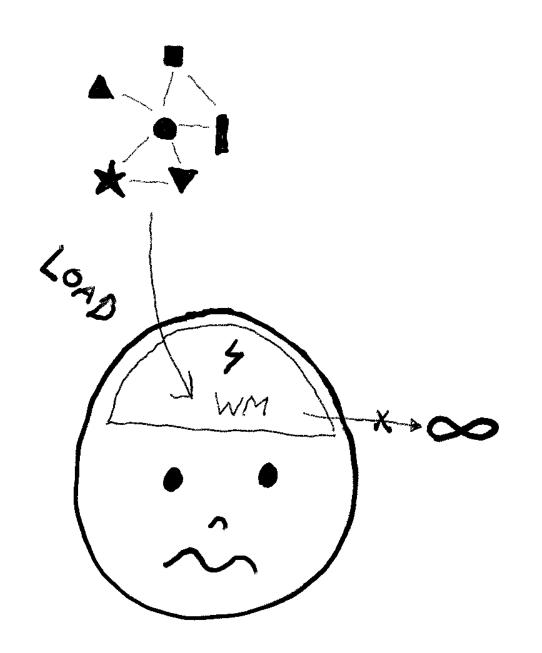
Cognitive Load

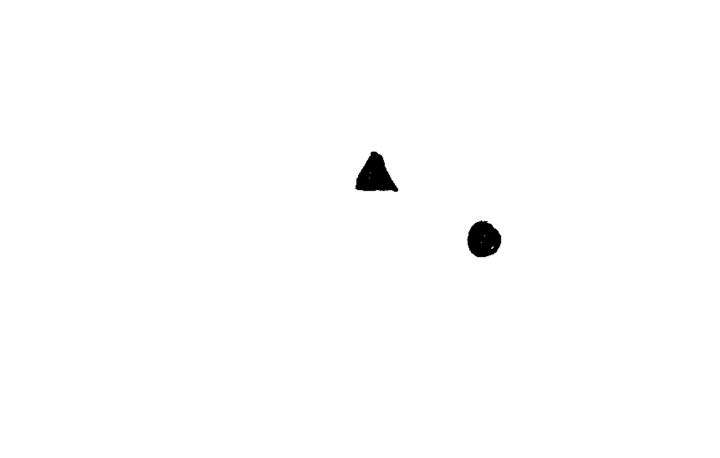


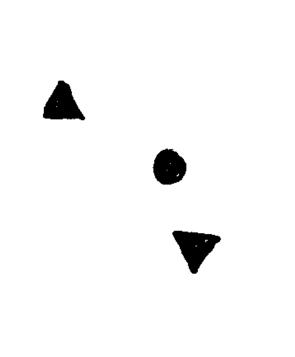


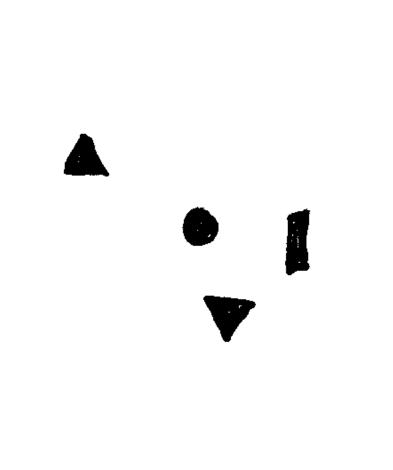
Schema

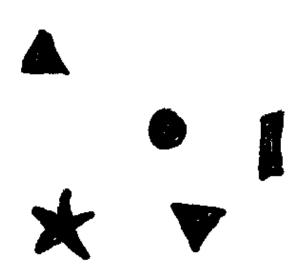


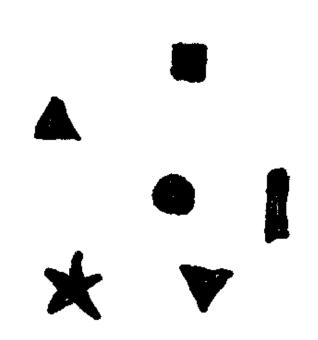


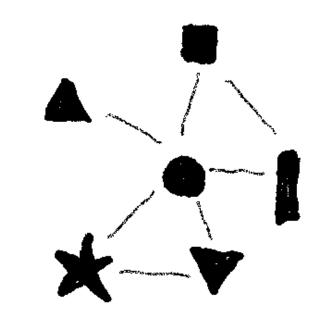


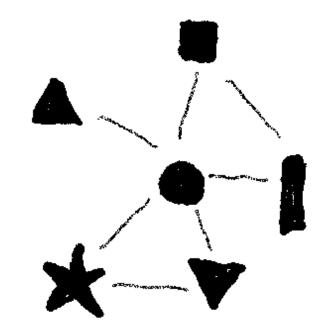




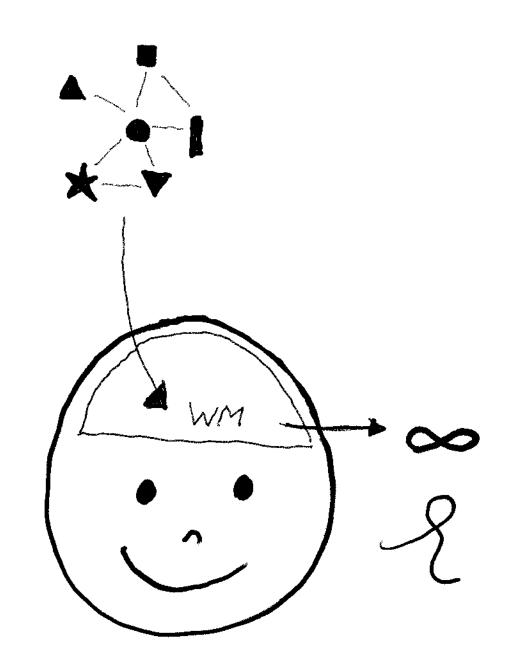






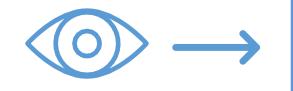


Schema = 1





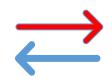
Attention



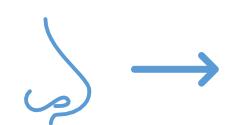
Sensory memory

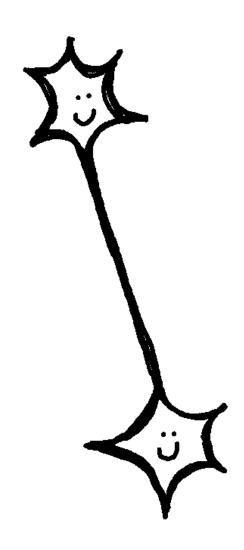


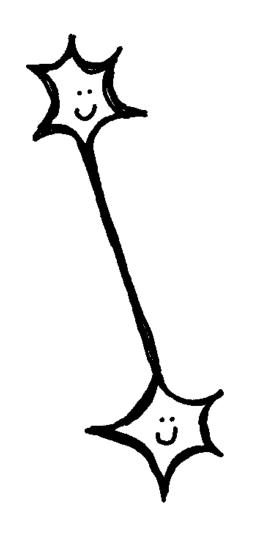
Working memory



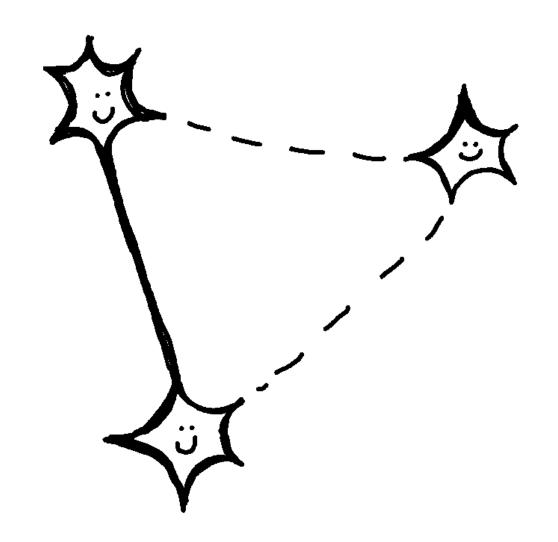
Long term memory

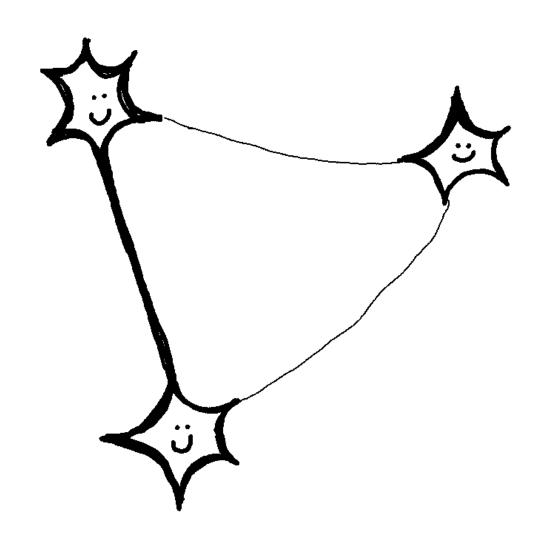


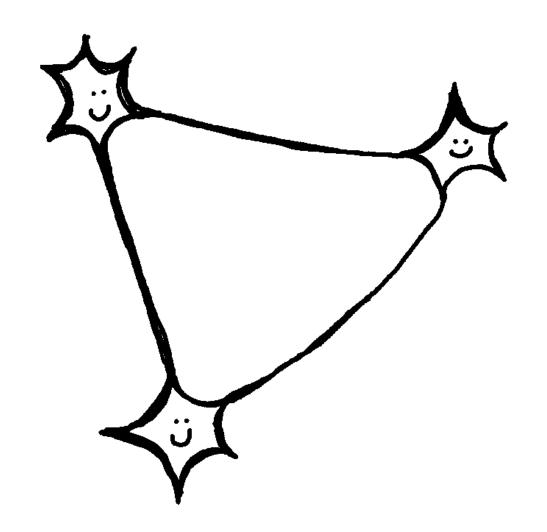


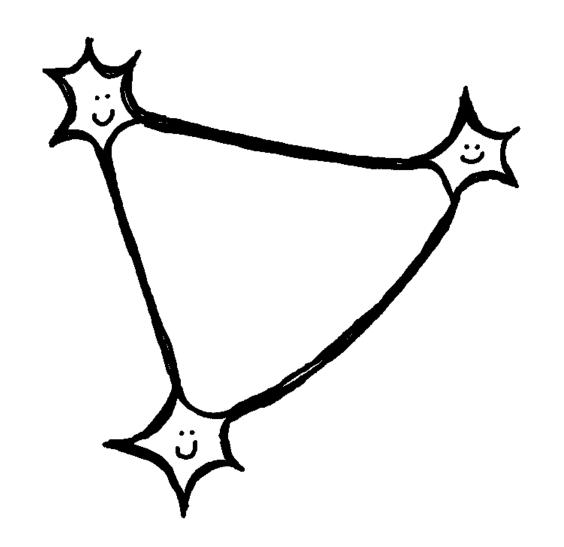
















Tip 1

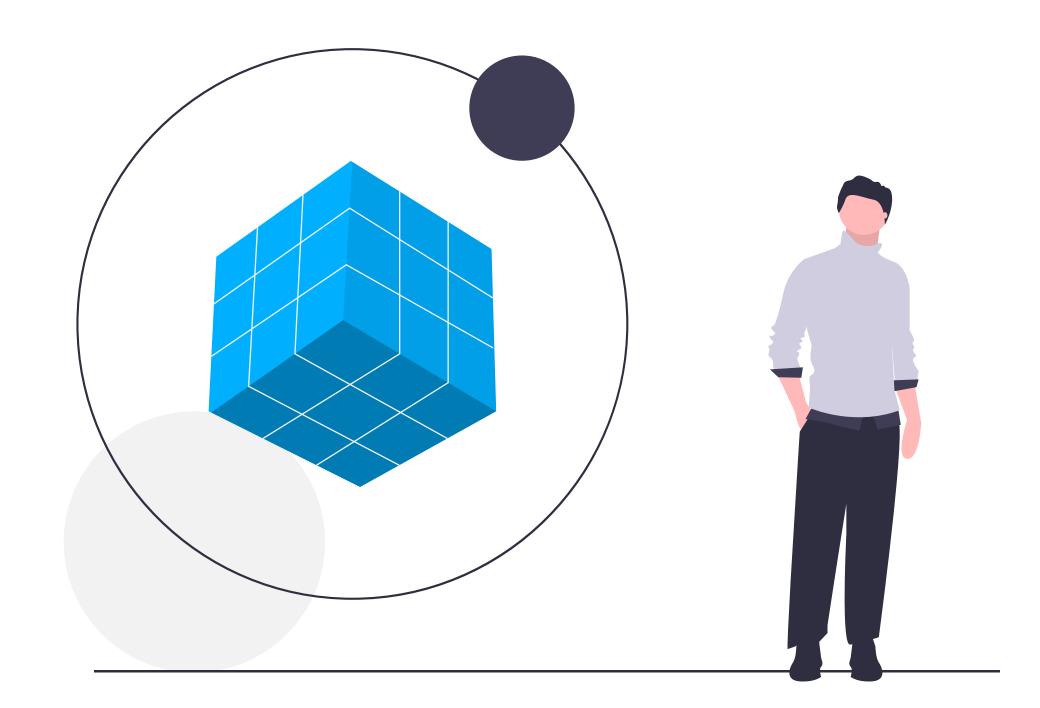
PREVIOUSLY ON

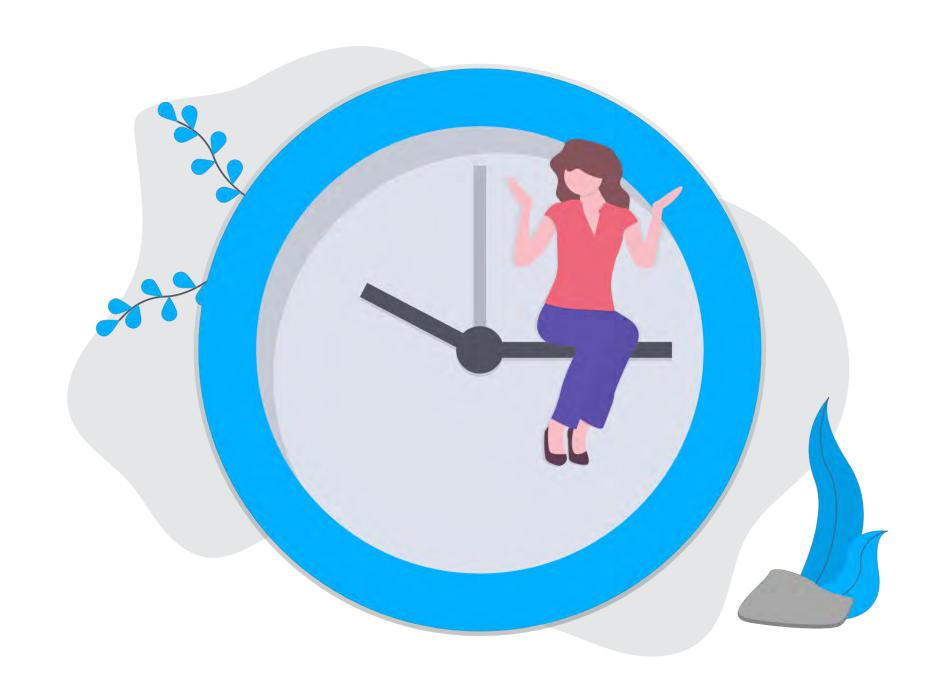
GAMEOFIHRONES

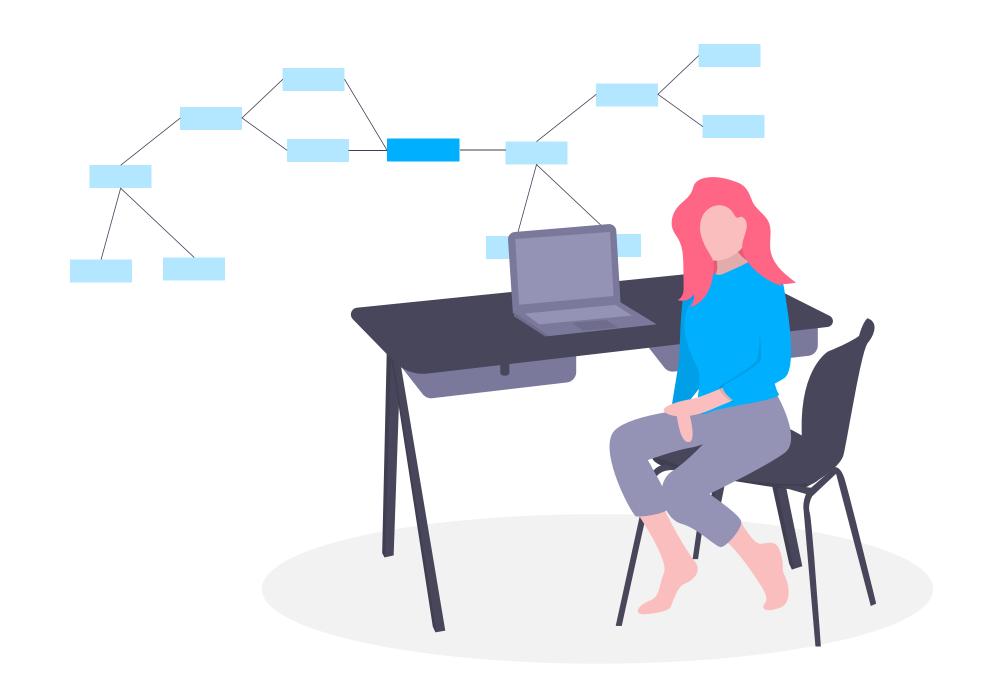


Tip 1 Activate prior knowledge





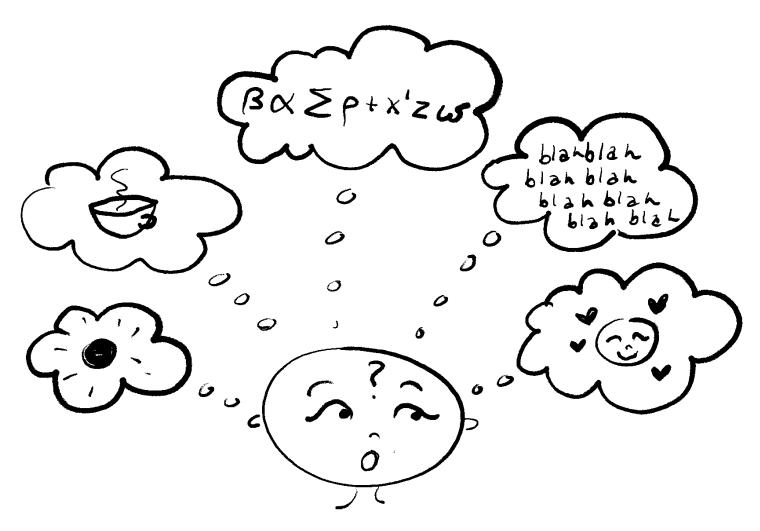






Tip 2 Offer a structured step-by-step approach

Cognitive Load





Learning objectives



"THOU SHALT INFORM LEARNERS OF THE LEARNING OBJECTIVES"

Learning objectives

After this presentation you will be able to:

- Understand what learning is
- Understand how memory works
- Understand what cognitive load is
- Explain why it's important to activate prior knowledge
- Explain why a structured step-by-step approach helps learners learn
- Explain why it's important to make learners think
- Use the 3 tips in your own teaching

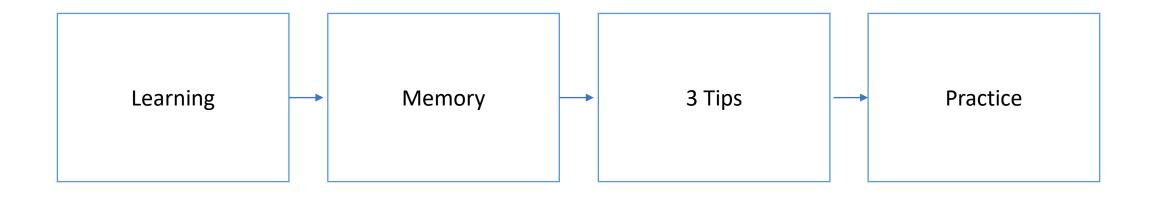




Learning objective

To give you ideas, based on how the brain learns, that you can use to help your participants to really learn from your courses!

Overview









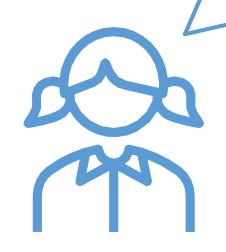


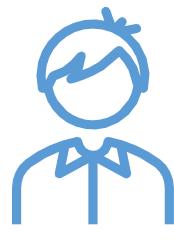


The "curse of knowledge"

Can we do a PvP, like spleef? But don't be a griefer, even though I have everything in obby. I also want to do a mod on my skin! I have a huge stack!







Check!





Tip 2: Offer a structured step by

step approach

How to implement this?

* Remember:

Less is more!!

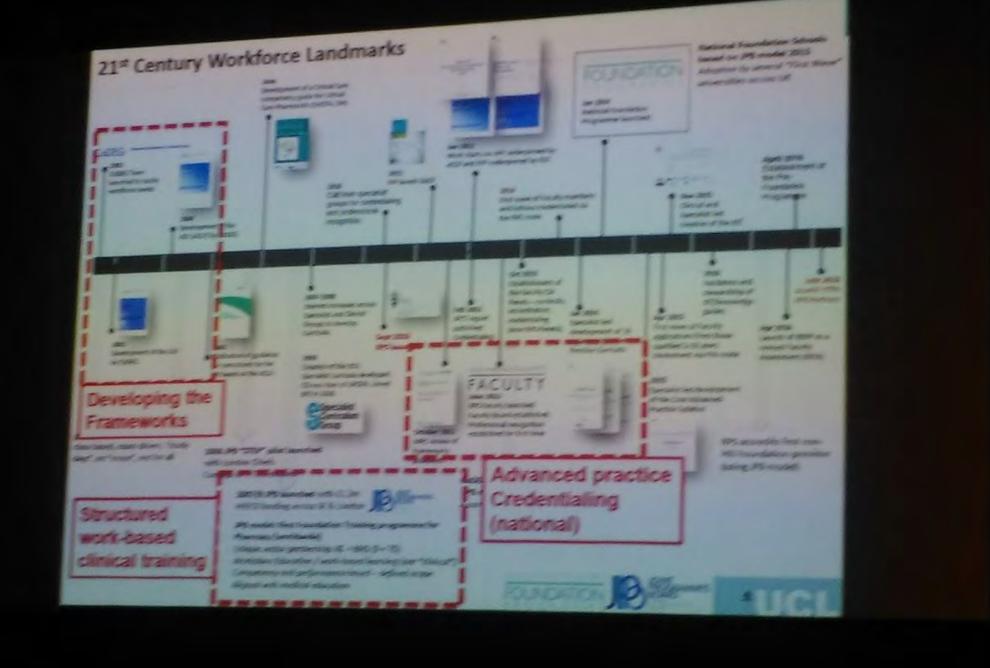






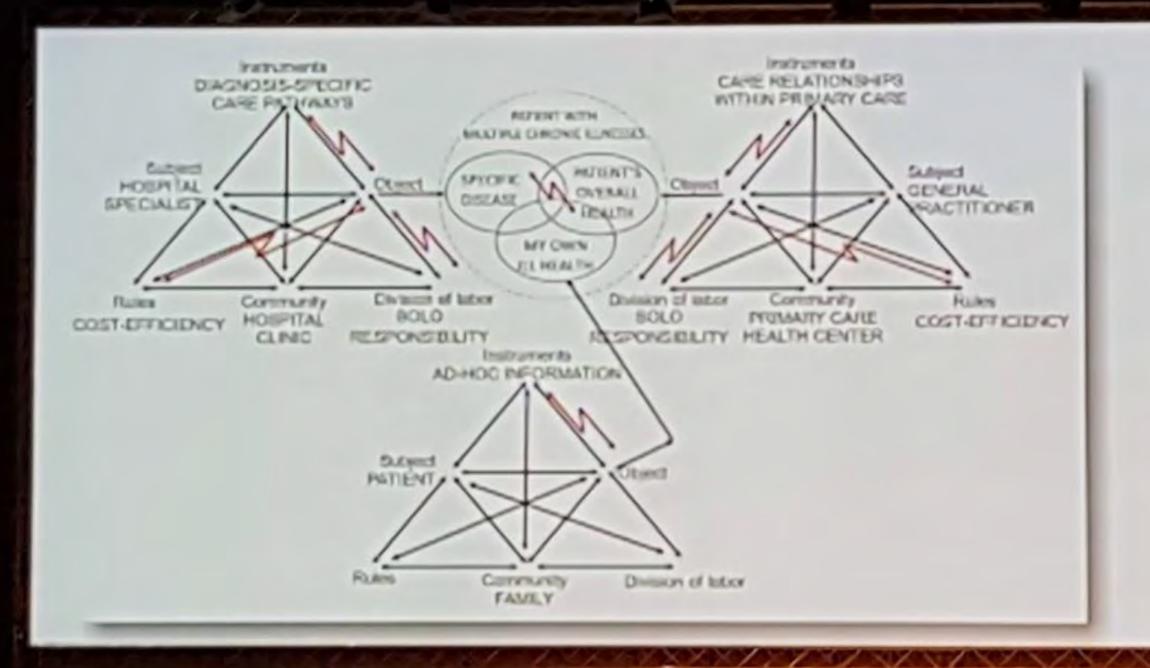
One concept per slide

- Step by step
- Check
- Less is more
- One concept per slide



		10000	-	150	Marie Marie Andrews And	Confession CE among	the same of the sa					
-	THE PERSON NAMED IN		1000	***	A COLUMN TO A COLU	4 100	710		The second second			
	STATE A STATE OF	100000000000000000000000000000000000000	100	1.	674 1666	140 1000	RESIDER	- 175-100-m	- Sterion			
	RAM LOWER	1000	28	12	2 3 KB X KB KB KB	SHARP WATER	ACC - 1 (ACC)	COM LANGE	REST CATALO			
	KK01 3.64013		233	17	THE STATE OF	112 1220	122111111	NAME AND ADDRESS.	E494 A 645 L			
-	APRIL STORE		283	1,000	FAMILY D. 6.47	1 × 10 × 6,000	THE STATE	NAME AND ADDRESS OF	2011 2 2 2 2 2			
	STATE A SCHOOL		152000		\$400 A 100 M	A THE A COLD	SARY A DWITE	Did by a School	HARL AND REAL PROPERTY.			
	NO 45 a State of		200		1247 4 5 5 5	STATE A STATE OF	EFF1 - 40010	UKDS 2-04-03	RAID AND CO.			
	A low a mark		48.0	- 19	A TOTAL MARKET	100	1790 2040	THE COURSE	5553865			
	main a many		100	(140)	190 4000	E mil p d e se	Silver a move.	1000 2000	5 F S 4 F S S S S S S S S S S S S S S S S			
	SAME WHAT		500	4	THE SHEET	0.001.4.0020	Diminums.	April a provide	Adding the L			
	1.500 garden		850	2.5	1 100 100 000	100 4661	1 1 1 1 4 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1	米州川 東州北京	200 A 100 L			
	1.000 4 5 6 6 6		59	7.6	3.301 a.0101	100.100	Line a print	TANK A SHIPS	STATE ALTERNATION AND ADDRESS OF THE PERSON NAMED IN COLUMN 2 IN C			
	Salar a divide		27	17m	3,385,3,49403	5,000 g (5,000)	SAME A SAME	1 man + 100 pts	1000 40000			
	SWILL WALLE		100		5-MIC X-9-SHITE	SPM 2 SEED	9 may 2 m 10	A DOM A A WAY	NAME AND ADDRESS OF			
	ANT WHITE		25	10	Care Library	3.000 3.00030	SAME A SAME	TARREST A BOARD	AFTER ANDRES			
	ATA SHIP		200	574	Law Lines	3.000 a 0.000 3.000 a 0.000	1570 : 15212	120 1222	5 2 49 X SHOOM			
	PAR STATE !		22	166	William In Albertain	2790 s.c.s.m	CONTRACTOR	F-147 - 5 14 NO	180 2 5000 C			
	STATE A SCHOOL		23		100 1000	55 544 A MINES	I FRATER	41 - 445 6	THE RESERVE OF THE PERSON NAMED IN			
	271 a 2400		2.0	2.0	S STATE A STATE OF	SAME A MICHIGAN	STATE ASSESSED.	First a Donne	COM A SOLE			
	THE STREET		M31		STATE A NAME OF	CONTRACTOR.	2717 (200)	A. M. J. A. (1) (1)	TATE ADMIN			
	AND IN A ROOM		43	7540	Cont Amount	Street a State of	NAME OF STREET	33.00 A 84000	1000 4000			
	WHEN A PARTY		41		JOHN L SING	ATTER & MARKET	NAME A POST		Time William			
	STORY A SHARE		2		State of State of	(0.100 July 24)	1990) 4 (464)	200 × 2000	CODE A COLUMN			
	or tipe a world.		46		ALTO A LOSSO	STANDARDS	222.0200	William Programme	CONTRACTOR AND ADDRESS OF			
	DOM: LINE TO		10	1/90	45.000 p. 6000ac	X 902 J. 65-50	NI STATE	THE PARTY.	BOOK A ROLL			
	TAME A ROLL		100		SIAL LONG	41114 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	ALIE FEED	The second second	- ALEXANDER			
	3 000 × 3 0.000		MOD.		30394 x33394	0.171 ± 0.004	26 T. 24 S. 20 Sep.	ATTWICE THE	Colonia de Colonia de			
	1111;122		ALC: U		330 1100	3.111 2.112-40	WITH LOADS.	\$100 PROOF	STORY LOCALIS			
	THE THEFT		10	100	0.000 1.0000	2 100 1100	0121112	212 1200	VLD 15 a Swelledo M			
	30000 A U.S. (1)		400		POST ARREST	100 pm 4			ATTA Linear			
	WORLD MADE		HE.	3.6	38 398 a 81000	10-744 A WOLDS	DISTANCE.	2 145 a 1000	CONT. 4 (1991)			
	ALE SAME		100	77.	SCHOOL PRINCING	15 Per 2 (1941)	0.130.4 00.01	WHEN A MARKE	STATE PURE			
			600		Carry Lance	E Date A Science	T-17 W-175	THE PERSON NAMED IN	State of State of			
	5000 (000)		40			THE PERSON NAMED IN	2000	TO THE ACTION	PART A CHARM			
	T114 - Date:		and the same of	- The same of	5051100	2021202	2121-222	075-300	PRINT A THEFT			
	21211200		64. 		31,996 S 31,004	attack that the same	ACT LAKE	WARRANCE.	Andrew or Section			
	ATH LIGHT -		22	12	STORY AND STORY	A-110 A 100 Mil.	BALL OF THE ST	4310 2 6600	William Colonia			
			Printer land		26 200 g #30096	MARK STREET	- B. Lat - B. Lin	WATER WRIDES	A PUT A ROWS			

											400	Se	Sp	AUC
Patel 2 Surgical 4	Ε	columns,	Contract Ent 20	t is a montoring	Pi -	65	per lesson	Human	_	13	MPI		17	
Patel 2	*		Computer at 20	A County of Contract of Contra		4	The second second	Human A		16	Patholog		83	
Patel 2	-		Computer at 20		9	-		Human B		14	Patholog.	100		
Patel Zloomal of 2	2	n n	Computer-ai 20	B Postoperativ	e E biseggmuni (50	per-legion.	Compute	-	170	Patholog	48		
Hetal Zumai ci I 2	3	Profit	Staging of by 20	Plaging 1	formance of CE	94	per-lesion	Hamen	25	7	Patholog			- 2
Lee-FeRadolog T		R	Newly Diagno 20	7 Staging	978 in detecting	52	per-le-pion	Himan	9	>30	Pathologi	94		4
Saragal Radiolog		39 group, m	Indeterminate 20	7 and coarses at oc-	my of indeterminat	34	per-lesion	Human		,	Puhology	- 11		
Mori Deatt Can 2	4	Pmono	Diagnostic a- 20	7 Screening rec.	alto of CESM ve FF	72	per-breast	Human	1-20	7	Patholog.	26	14	
Fallenbean Radi &	1	Probi	Contrast and 20	2 Screening	ICI and MPI as a	155	per-lesion	Human	15.5	. 1	Patholog.	200		
Richtesi Radiolo 2	3	R	Contract and 20	7 ping Screening	rei in patients of h	110	per-lesion	Human		7	Patholog			100
lotti 20Canow Pe 6	1	P mone	Contrast-ent 20	7 H & monitoring	INCESM OF MENT	54	per-p-ameni	t Human	>5	,	Patholog	100		-
Li 2017 d interven 2	2	R	Contrast-ent 20	7 Staging	New of CESIM W	48	per lepton	Haman	18	>24	Parholog	100	100	-
Joekel Journal of 3	2	Pmono	Comparison N	7 Screening	to CESM of a f	307	per breast	Haman	7)-24	y and I year			3 3
SoganFladolog 7	G	R	Comparison 20	? I grehanskie di	a Bresmont in CES	276	per-patient	(Human		7	MPL	- 20	- 14	4 4
Patel 2mial mag 1	4	n.	Olimical uniting 20	7 Supported 641	PECESM in addiso	45	per-lesion	Human	.25	7	Parholog	87		1.5
Helal 2 Radiolog		Prouts	Acouses of Little	7 pd cases at eq	my US in the evalue	30	per-lesion	Haman	7		Patholog		64	
ChrumPLOS On 3		A	Dual-energy (20	E Screening	Imment in women	87	per-lesion	Human	1	7	Patholog	- 73		
wezwil Scumor 2	16	Principa	Degree of en 20	6 yening recalls.	Prohancement to	193	per lesion	Human	7	- 7	Patholog		1000	
Lalji Zibean Rad. 1	1	R	Contrast-ent 70	Screening rec-	altrance of FFDM	199	per-lession	Henn	0.5-25	F 124	Parholog			
Karinapumal of F.2	3	P mono	Contrast enh 20	d ed cares w co	ny al value of CEE	44	per-lesion	Human	7	7	Purholog			4
Cheumpean Rad 4	1	n	Clinical utility 20	E igrehensive di	stati cancer size me	cxi 254	per lestion	Human	,	7	Patholog	-	- (8	100
Telegirounal of E.2	3	P mono	Adding the pr. 20	6 jing.Screening	rec'S score to impr	216	per-lesion	Human	24	34	Patholog	199	- 13	- 5
TardireCream Jo 2	3	A	Addrest Value 20	N jing.Screening	recal value of CES	195	per lesion	Human		34	Patholog	196	_	
werehamal of F.1		Pmono	Correlation b 20	5 Igrehensive di	to book the late	174	per-breas	t Human	7	2	Patholog			
Kamal Journal of 3	7	A	Contrast ent 20	5 pro Screening	teon the differential	108	per-letion	Human	7	,	Patholog	100		t
Elsaid Radioloj -	п	P mono	Contract enh 20	5 Screening	of lesions in ed	34	per-lession	Human	,	- 7	Patholog			47 18
Luczyk) Science (2		P mono	Comparison 20	5 Screening	I in the detection	102	per-leptor	Human	7.	7	Patholog			4
Choe Elournal of 3	2	Pmono	Directionshi 20	Screening res	alls an alternative fr	105	per-lepion	Human .	>2	7	Patholog		1000	4
Cheungean Rad I	1	A	Diagnostic p. 20	The second second			per-lesion	Haman .	>2	7	Patholog	93	E5	AL -
Fallent Perearch 1	2	Pmiti	Contrast-ent 20	The second secon	ty of MG couple	118	per le sion	Human	>5	7	Patholog	15	100	191 1
were's Journal Ft. 3.	1	P mono	Contrast-ent 20		e Tand MG in pres	152	per-lesion	n Human	20	7	Patholog	100	1	
allentrean Radi 6	-	P multi	Contrast end 20		Priesection of BC		per legion	n Human	> 13		Patholog	100	100	4 4
obbepen Radi I	Ŷ	A	Contrast-ent 20		allsmance vs MO in		per-lesion	n Human	7	7	Patholog	100		
dok.ht / Radiolog -	Û	Pmono	Can contract 20	Art Commonwell - Labor	sey10 and US in del		per-lesion	n Human	7	7	Patholog	107		
Droma Cancer Fil 6	-	ono (muhire	Dual-energy (20	The State of the S	als CESM in adde		per-lesion	n Human	7		Patholog	-	144	
Diet.m.Journal of 7	0	Pimono	Evaluation of 20	and the latest the same	Prist a tool to impr		S. W. School and St. Land St.	n Human	10	7	Patholog	- 0	65	(a)
the same of the sa	-	Pmono	Dual-energy (20	A STATE OF THE PERSON NAMED IN COLUMN 2 IN	alistormance of CE		CONTRACTOR OF THE PARTY OF THE	n Human	9	15	Patholog		63	
Droma yean Radi 4	V				alts eport of CESM		Carried Carried	n Human	7		Patholog	100		
Diekmigetive Ra-E	1	P mono	Calle a manuf 20	- Contract Inc.	and the same of	2936	1	A STATE OF THE PARTY OF			1 "	62	31	
												100	92	2





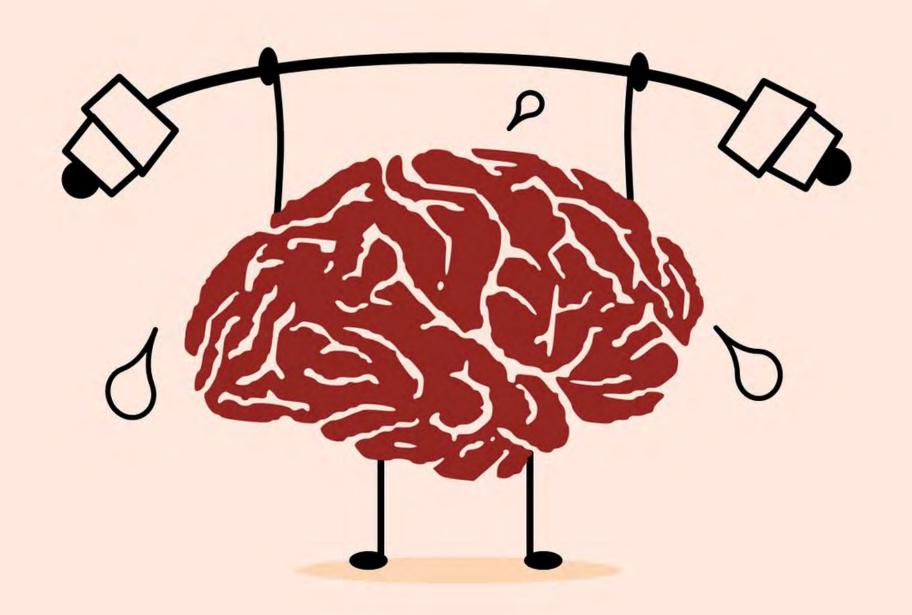
Tip 3 Make them think

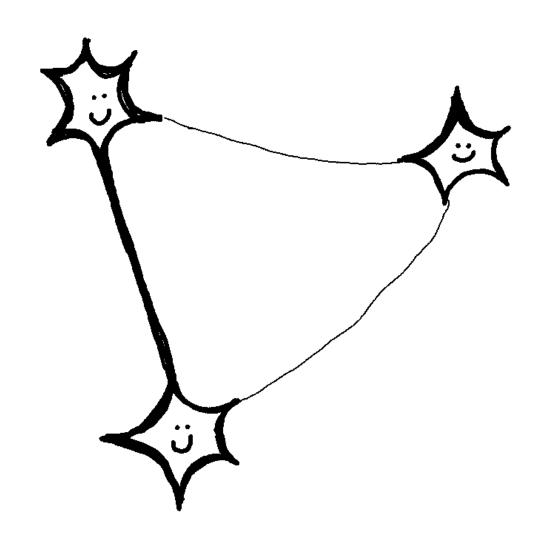


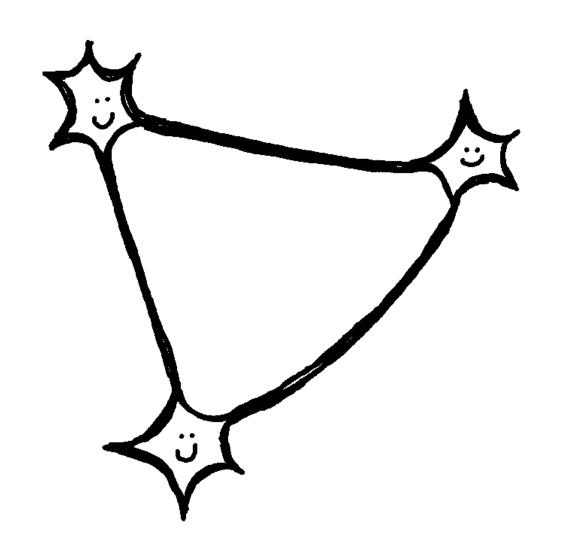






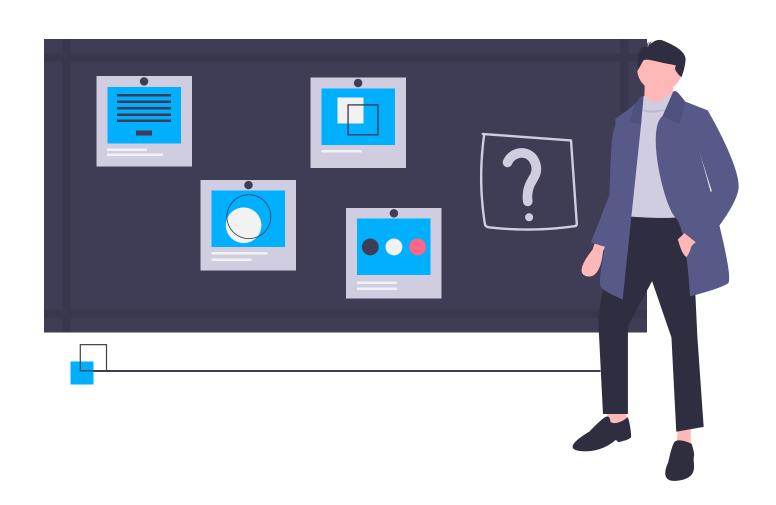




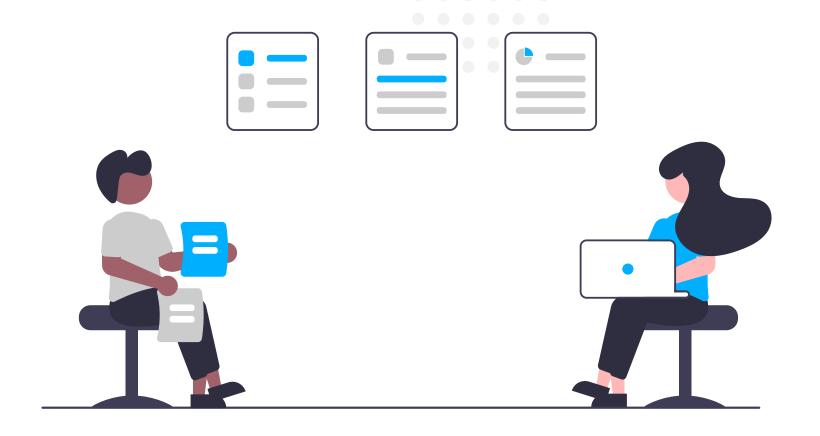




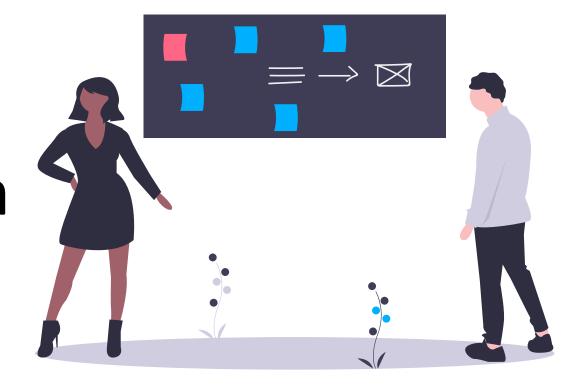
Quiz



Discussion

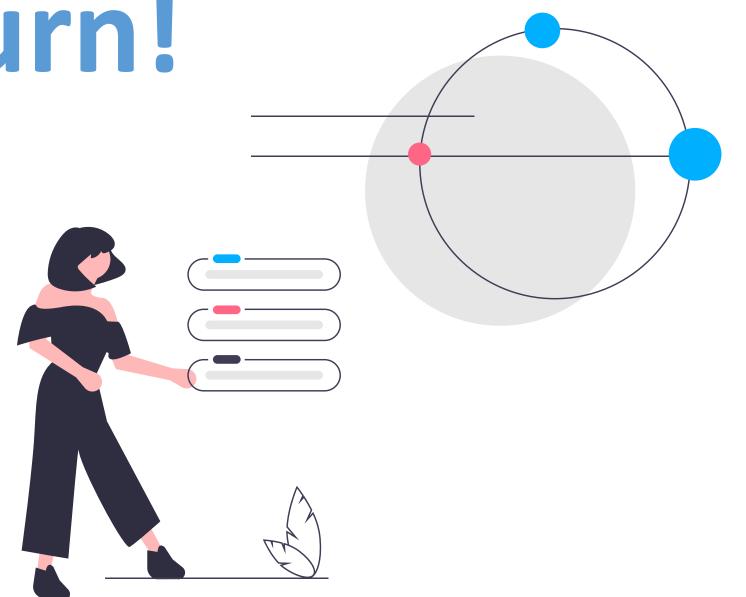


Case & presentation





Your turn!



Summary

Tip 1 A

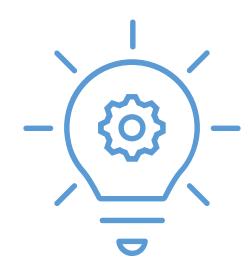
Tip 2

Tip 3

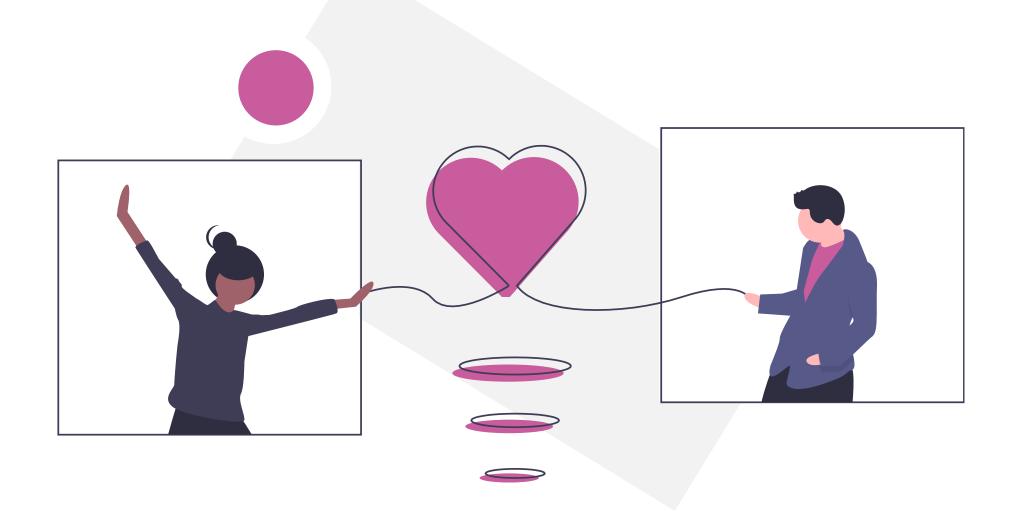
Activate prior knowledge

Offer step by step structure

Make them think



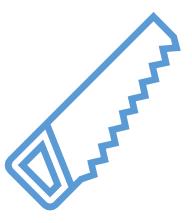
Thanks to: unDraw



Thanks to: PowerPoint Icons







Thanks to: Unsplash

Thank Moul

