

STATISTIC IN ILLUSTRATION ART

Statistics Dissemination for Young People

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Statistics Indonesia (BPS)

**Expert Meeting on Dissemination and Communication
of Statistics (11-14 October 2021)**



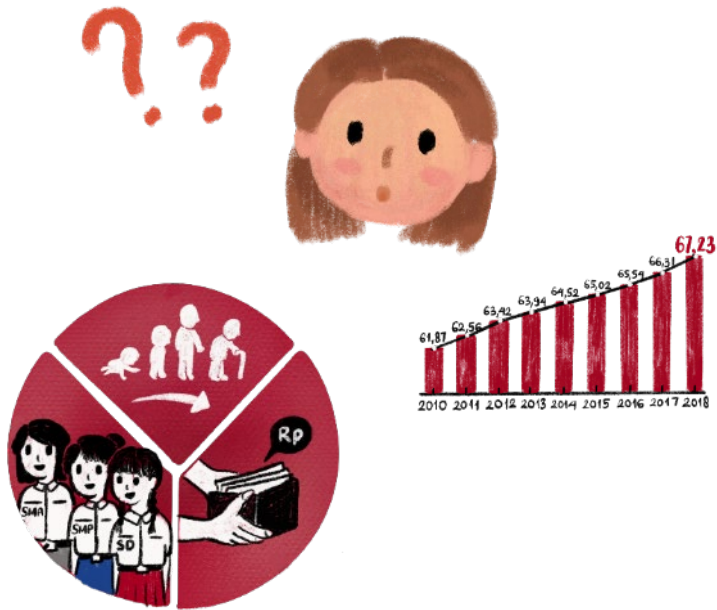
Introduction

Building statistical literacy

Statistical anxiety

**How to build statistical literacy in children and adolescents,
especially during the Covid-19 pandemic?**

Methodology



Making
Statistics FUN

Before the Pandemic



School Visit

After the Pandemic

The use of illustrations in communicating science:

- “The Cartoon Guide to Statistics”
Gonick & Smith (1993)
- "The Manga Guide to Statistics"
Takahashi (2008)
- “Seasonal Adjustment Comics”
Yuniarti & Faris (2018)

Social Media



**Infographic
Illustrations**

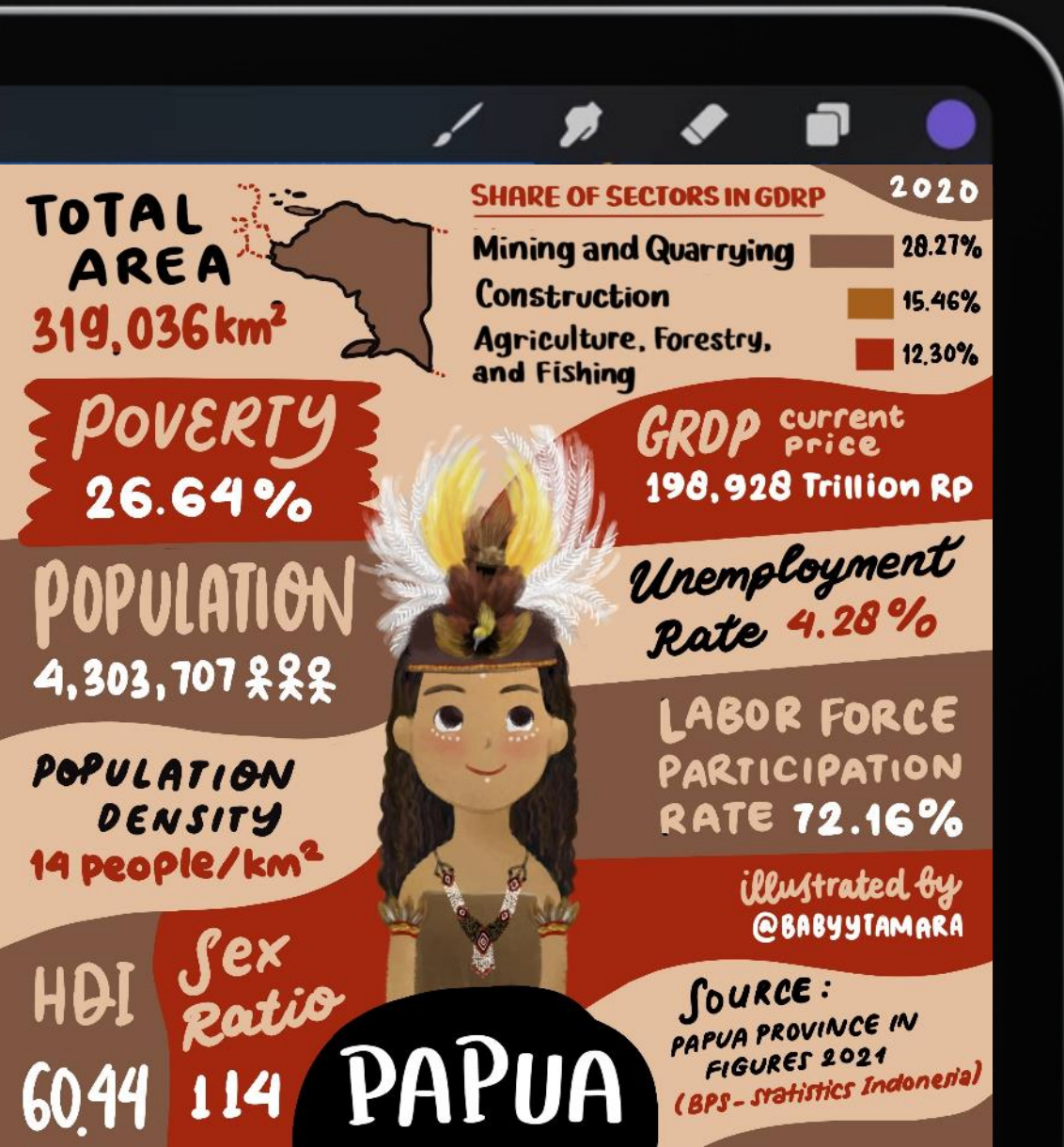
Comics

Illustration Assets



Men and Women Character Illustration with Indonesian Traditional Cloth

Tools



Step by Step Illustration Infographic

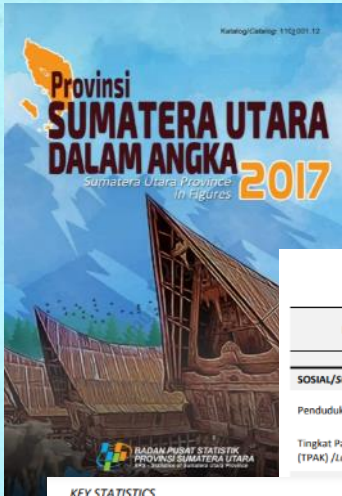
Steps

1. Make the theme, story or message clear
2. Infographic sketch and final result
3. Consider your audience
4. Make it visually appealing
5. Consider the size
6. Consider simplicity
7. Use your data effectively
8. Consider the impact

1.

Make the theme, story or message clear

Step by Step
Illustration Infographic



Statistik Kunci, 2012-2016
Key Statistics, 2012-2016

Rincian/ Description	Satuan / Unit	2012	2013	2014	2015	2016
(1)	(2)	(3)	(4)	(5)	(6)	(7)
SOSIAL/SOCIAL						
Penduduk/Population ¹⁾	000 orang	13 215,4	13 326,3	13 766,9	13 937,8	14 102,9
Tingkat Partisipasi Angkatan Kerja ²⁾ (TPAK)/Labor Force Participation Rate	%	69,41	70,67	67,07	67,28	65,99
		6,20	6,53	6,23	6,71	5,84
		100,4	1 416,4	1 360,6	1 508,1	1 452,6
		10,41	10,39	9,85	10,79	10,27
		57,74	68,36	68,87	69,51	70,00

KEY STATISTICS

Sambungan Statistik Kunci/ Continuation of Key Statistics

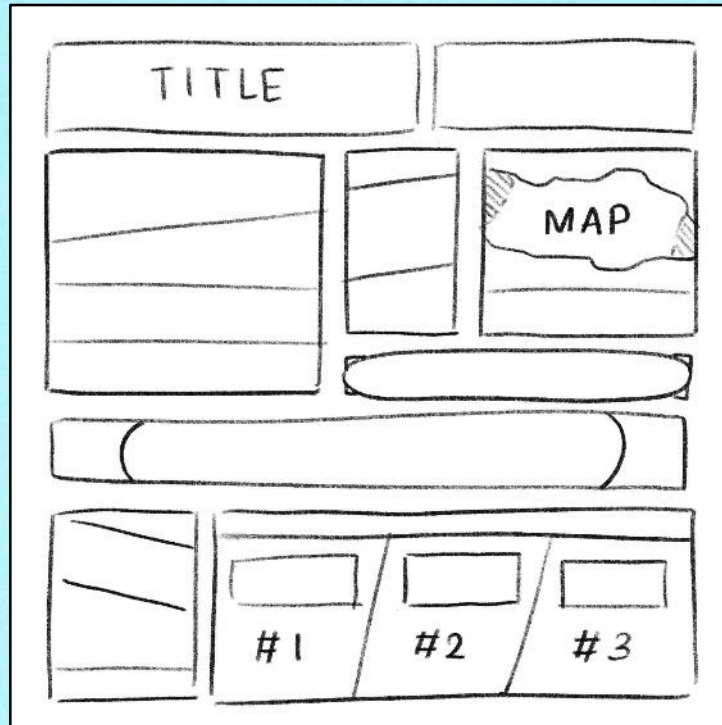
Rincian/ Description	Satuan / Unit	2012	2013	2014	2015	2016
(1)	(2)	(3)	(4)	(5)	(6)	(7)
ECONOMI/ECONOMIC						
PDRB Harga Berlakul/ GRDP at Current Price	triliun rupiah trillion rupiahs	417,12	469,46	521,95	571,72	628,39
PDRB Harga Konstan/ GRDP at Constant Price	triliun rupiah trillion rupiahs	375,92	398,72	419,57	440,96	463,77
Laju Pertumbuhan Ekonomi/ Economic Growth	%	6,45	6,07	5,23	5,10	5,18
PDRB Per Kapita Harga Berlakul / Per Capita of GRDP at Current Price	Juta rupiah million rupiahs	31,11	34,54	37,91	41,02	44,56
Inflasi/Inflation (yoy)	%	3,86	10,18	8,17	3,24	6,34
Ekspor / Export	miliar/billion US\$	10,39	9,60	9,36	7,75	7,77
Impor/ Import	miliar/billion US\$	5,16	5,11	5,05	3,99	3,91
Wisatawan Asing/ Foreign Tourist	kunjungan visits	241 833	259 299	270 837	229 288	233 643
Realisasi PMDN/ Realization of Domestic Investment	miliar rupiah/ billion rupiahs	2 970,2	5 068,9	5 231,9	4 287,4	4 954,8
Realisasi PMA/ Realization of Foreign Investment	juta/million US\$	645,3	887,5	550,8	1 246,1	1 057,9
Gini Ratio/ Gini Ratio	-	0,332	0,354	0,321	0,336	0,319

Theme:
Key Statistics
Socio-economic indicators
in Indonesia provinces

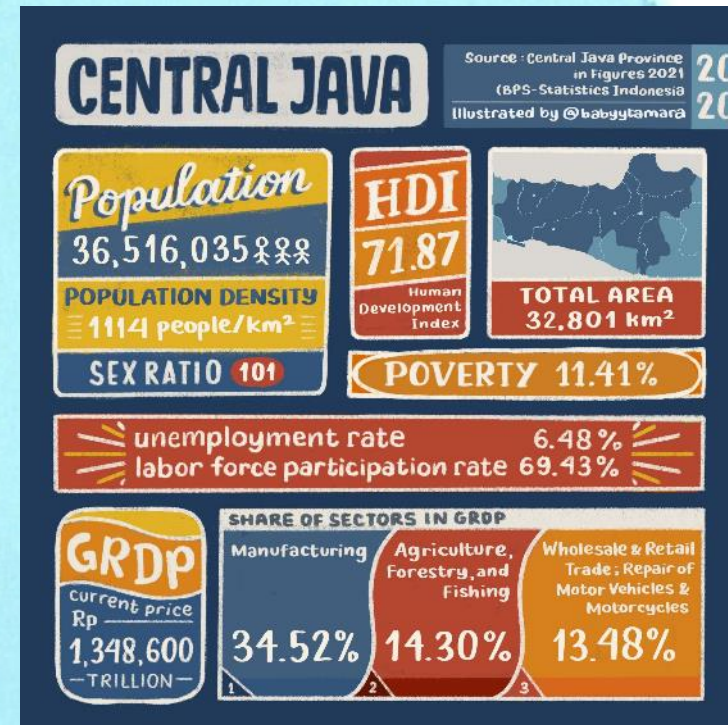
2.

Infographic sketch and final result

Step by Step Illustration Infographic



Infographic Sketch



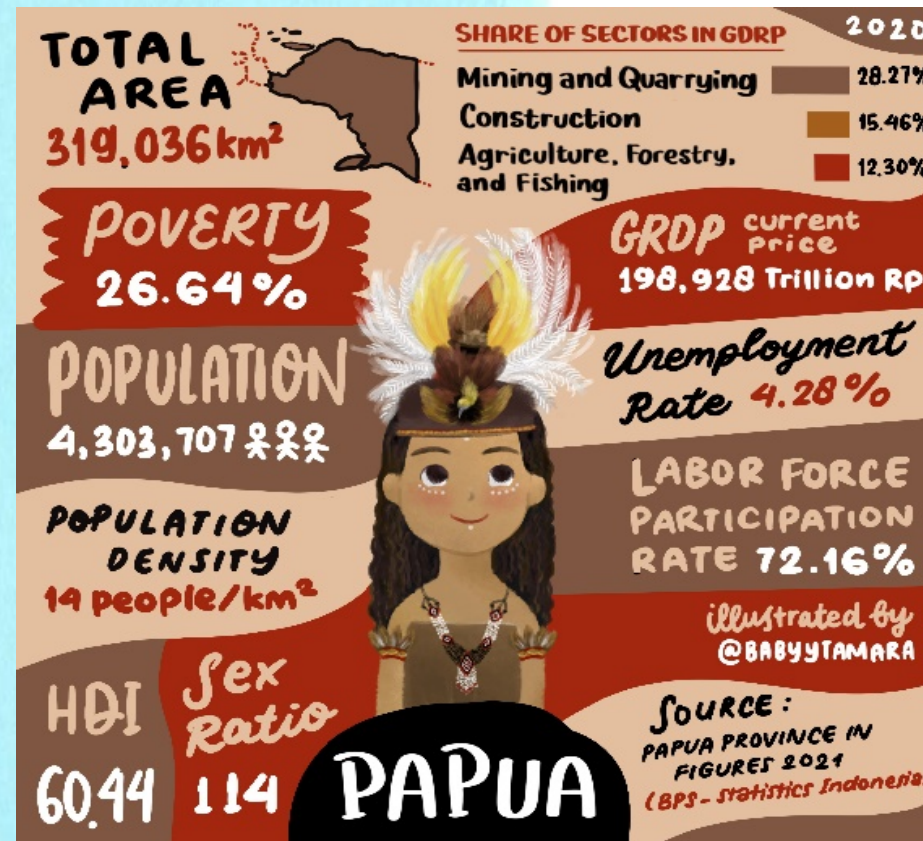
Final Result

3.

Consider your audience

Step by Step Illustration Infographic

Target Audience:
Children/Young People



Infographic with Papuan
Traditional Cloth Illustration

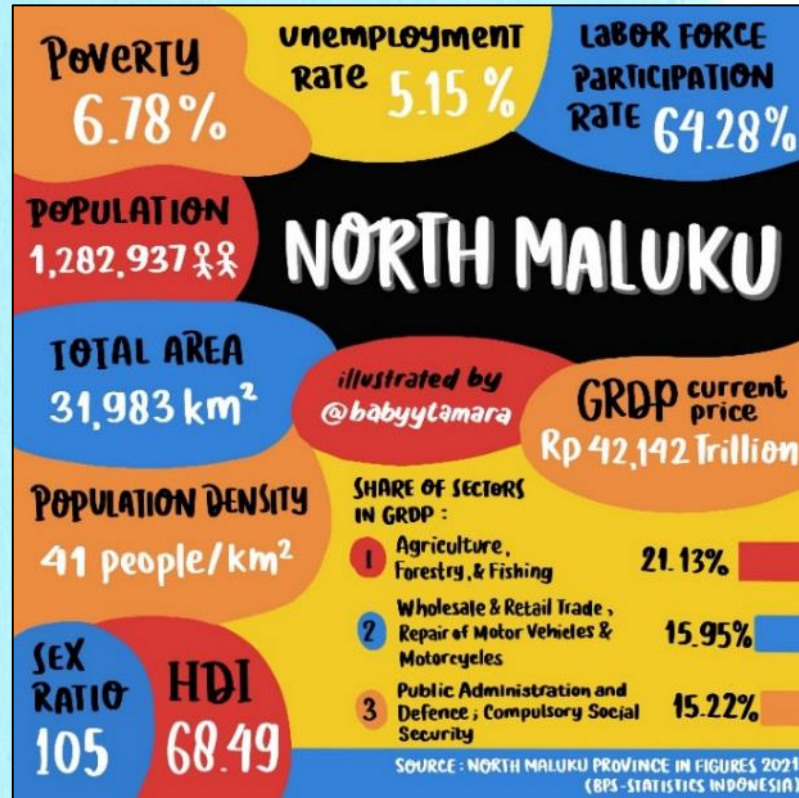
4.

Make it visually appealing

Step by Step Illustration Infographic

Color
Color Harmony

Color Palette



North Maluku Infographic with Color Palette

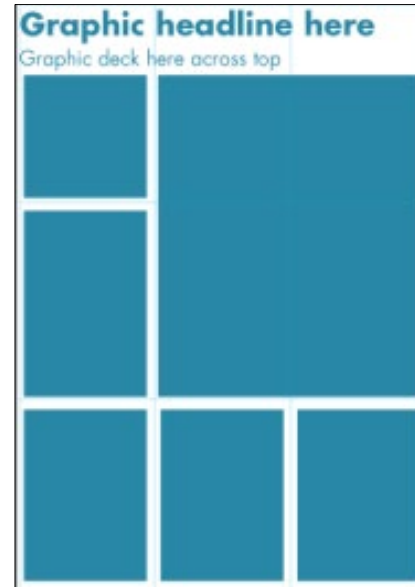
5.

Consider the size



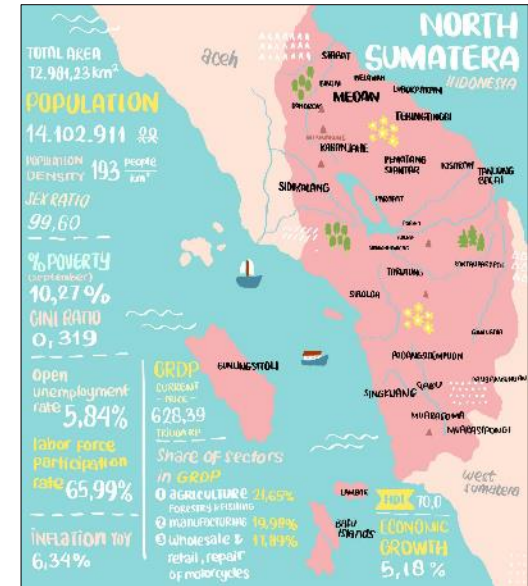
6.

Consider simplicity



Infographics for Dummies Beegel (2014)

Step by Step Illustration Infographic



North Sumatera Province Infographic Illustration

7. **Use your data effectively**

8. **Consider the impact**

Comic

Storytelling

Comic Illustrations



Big Data Comic Illustration

Results (1)

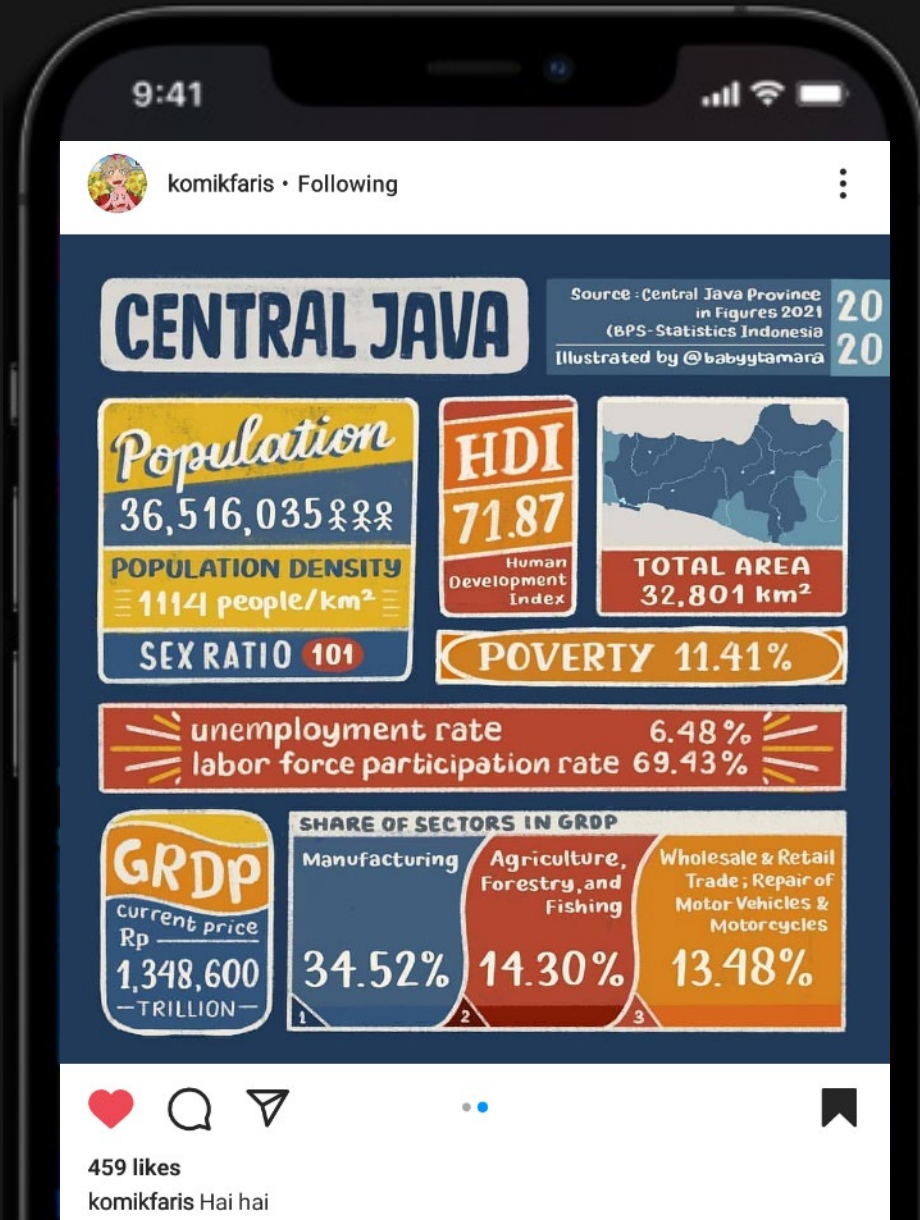


122 shares
123 reactions
200 impressions

255 Likes, Comments & Shares		
0 Post Clicks		
0 Photo Views	0 Link Clicks	0 Other Clicks
NEGATIVE FEEDBACK		
0 Hide All Posts	0 Hide Post	
0 Report as Spam	0 Unlike Page	
255 Likes, Comments & Shares		
BRANDED CONTENT DISTRIBUTION View Breakdown		
176 Total Reach	176 Organic Reach	0 Paid Reach
200 Total Impressions	200 Organic Impressions	0 Paid Impressions

RB BPS Facebook Fanpage
(Bureaucratic Reform of Statistics Indonesia)

Results (2)



459 likes
11 comments
3 shares
17,627 accounts reached

459	11	3	21
Interaksi			
42			
Tindakan yang diambil dari postingan ini			
Kunjungan Profil			41
Ketukan Situs Web			1
Temuan			
17.627			
Akun Dijangkau			
24% tidak mengikuti komikfaris			
Impresi			23.679
Dari Beranda			13.027
Dari Profil			10.090
Dari Jelajahi			380
Dari Lainnya			67

Instagram Personal Account of BPS Employee @komikfaris

Results (3)



368 reaction
308 likes
5 loves
6 comments
49 shared
17,496 people reached

17,495 People Reached		
368 Reactions, Comments & Shares		
308 Like	207 On Post	101 On Shares
5 Love	3 On Post	2 On Shares
6 Comments	2 On Post	4 On Shares
49 Shares	49 On Post	0 On Shares
449 Post Clicks		
110 Photo Views	0 Link Clicks	339 Other Clicks
NEGATIVE FEEDBACK		
0 Hide Post	0 Hide All Posts	
0 Report as Spam	0 Unlike Page	

BPS Facebook Fanpage
20 days (July 9th -29th, 2021)

Lesson and Discussion

We found that **the visual storytelling using illustration infographic and comic successfully increase awareness the readers about statistics.**

Social media also helps to facilitate infographic and comic illustration content **to reach readers** without having to meet them in person.

The weakness of this study:
Age limit for social media users (above 13 years old).

For children **under the age of 13**, it is indeed **more effective if we meet and teach them directly** through interesting games as did BPS before the COVID-19 pandemic.

But for now, this cannot be done until the core pandemic can be more controlled.

Conclusion

The study shows that improving statistical literacy through illustration infographic and comics are noteworthy approach and it has been accepted widely by kids and adolescents using social media

References

- Boyatzis C. & Varghese R. (1994) Children's Emotional Associations with Colors. *The Journal of Genetic Psychology* 155(1):77-85
- BPS-Statistics of Sumatera Utara Province. (2017). Sumatera Utara Province in Figures 2017
- Farinella, Matteo. (2018). The Potential of Comics in Science Communication. *Journal of Science Communication*.
- Faris, Maulana & Pramana, Setia (2021). Comic for Developing Big Data Literacy.
- Ferreira, J. (2014). Infographics: An introduction. Centre for Business in Society. Coventry University
- Gal, I. (2002). Adults' statistical literacy: Meanings, components, responsibilities. *International Statistical Review*, 70(1), 1-25
- Garfield, J. & Ben-Zvi, D. (2007). How students learn statistics revisited: A current review of research on teaching and learning statistics. *International Statistical Review*, 75(3), 372-396.
- Gonick, Larry & Smith, Woolcott. (1993). *The Cartoon Guide to Statistics*. HarperCollins Publishers.
- Hermanto, Y. A. L. (2019). Visual storytelling in folklore children book illustration. *Asian Journal of Research in Education and Social Sciences*, 1(1), 62-70.
- Hosler, J. and Boomer, K. B. (2011). 'Are Comic Books an Effective Way to Engage Nonmajors in Learning and Appreciating Science?' *CBE — Life Sciences Education* 10 (3), pp. 309–317.
- Justin Beegel, M. B. A. (2014). *Infographics for dummies*. John Wiley & Sons.
- Levie, W.J. & Lentz, R. (1982). Effects of text illustrations: a review of research, *Educational Communication and Technology*.
- Merieb, E.N. & Hoehn, K. (2007). *Human Anatomy & Physiology 7th Edition*, Pearson International Edition.
- Onwuegbuzie, A. J., DaRos, D., & Ryan, J. (1997). Perfectionism and statistics anxiety: A phenomenological study. *Focus on Learning Problems in Mathematics*, 19(4), 11–35
- Root-Bernstein, R.S. et al. (2011) *ArtScience: Integrative collaboration to create a sustainable future*. *Leonardo* 44, 192
- Spiegel, A. N., McQuillan, J., Halpin, P., Matuk, C. and Diamond, J. (2013). 'Engaging Teenagers with Science Through Comics'. *Research in Science Education* 43 (6), pp. 2309–2326
- Takahashi, Shin. (2008). *The Manga guide to Statistics*. Ohmsha, Ltd. Tokyo, Japan.
- Weingerl, P., & Javoršek, D. (2018). *Theory of Colour Harmony and Its Application*.
- Yuniarti & Faris, Maulana. (2018). Comics for Statistics Literacy-Understanding Seasonal Adjustment. *Asia-Pacific Economic Statistic Week 2018*.
- Yuniarti & Faris, Maulana. (2019). Comics for Investing Statistical Knowledge. *ISI World Statistics Congress 2019*.
- Zeidner, M. (1991). Statistics and mathematics anxiety in social science students-some interesting parallels. *British Journal of Educational Psychology*, 61, 319–328.



THANK YOU