Language, typography, pictures and layout

1. Overview

Good information design can help manage essential and generative cognitive processing by making sure that information is clearly structured and understood so that it can be acted upon. Clear layout, typographic hierarchy, graphic cueing and meaningful use of colour are needed to design effective information (Dickinson & Gallina, 2017; Tong et al., 2014; Waller & VandenBerg, 2017; Walker, 2017).

Research has shown that:

. clear and legible text helps people follow steps in instructions

. the relationship between text and pictures affects understanding.

2. What we know

1   **Clear language helps people understand instructions**

Research in health communication has shown that informational text in simple language is preferred by people, the content is better understood and leads to more adherence to medical advice (Kools, 2012; Smith & Wallace, 2013). Some of the principles of writing simply for health communication include: use short sentences and paragraphs, don't use jargon, use familiar words, and use the active voice.

2   **Pictures help people to understand and use a medical device**

Research shows that the use of images aids recall and improves the execution of the task when compared with text-only instructions (Kools et al., 2006). Images help readers relate to procedures in each of the steps in an instructional text.

    In their review of the use of pictures for health communication, Houts et al. (2006) found pictures should be used to support the main points and be combined with simple text. They found that distracting detail in pictures should be avoided, and images should be combined with text so they are not misunderstood by viewers.

3   **Clear words and pictures do not make instructions clear on their own**

Written instructions on their own are not enough to ensure that people execute the task correctly. Studies have shown that simply written health materials may not lead to correct comprehension of the information and that illustrated instructional pamphlets can fail to teach errorless execution of procedures (Dickinson et al., 2010; Dowse et al., 2011; Lindemann et al., 2012).

4   **Typography helps people navigate a text and grasp it easily**

Segmented text helps people to find information quickly. Further, type size, type weight and colour to denote hierarchy and differentiation helps people find their way around a text (Hartley, 2013). In instructions, fixed goals can be presented as dominant headings and action steps can be presented in short paragraphs to reduce the cognitive load of searching for information (Ganier, 2004; Harvey, 2008; Kools et al., 2008; Lemarié et al., 2012).

5 Keep related words and images together, and keep their size and arrangement consistent

Mutually referring text and image are better integrated if they are located close to each other (Moreno & Mayer, 1999). For instructions, it is also important to show the steps in sequence in a way that helps readers to follow the order (Spinillo & Dyson, 2001). Consistency in the configuration of image and text helps readers to integrate the information while relating it to previous and subsequent steps.

6 Showing and numbering steps in a procedure helps people follow instructional text

Numbered steps (or identified by consecutive letters) help people find their place in the instructions as they are looking away to execute the action steps (Burnham, 1992). Navigational structures such as overviews and page identifiers should be considered for the same purpose, if instructions extend over several pages.

7 Colour, arrows and other types of cueing in pictures guide attention and improve comprehension

Pictures increase comprehension, but they may be difficult to interpret, especially for viewers without prior knowledge. By signalling to important elements, cueing helps to reduce visual search, making more cognitive resources available for learning and recall (de Koning et al., 2009).

Colour highlighting can be used to guide attention to important information, and may aid picture comprehension (McDougald & Wogalter, 2014). Arrows can be used to cue motion in procedural pictures. Numbers and arrows also identify and order if different elements are being highlighted in static visualisations (Tversky et al., 2008).

3. Recommendations

- Identify all elements that will be used in the procedure with an image and a label to identify them.

- Number action steps and organise them on the page so the order is clear.

- In each action step position text and image so they support each other.

- Use the goals and subgoals to create clear sections within the instruction.

- Consider the relative size and configuration of text and image, and apply consistently wherever possible.

- Position warnings and supportive information close to their relative action step.

- Use colour, arrows and numbers meaningfully in images, to highlight areas, cue motion, or indicate order.

- Use typography to denote hierarchy and emphasis.

3. Recommendations

4. References

Bernhardt, S. (1985). Text structure and graphic design: the visible design. In J. Benson & W. Greaves (Eds.), *Systemic perspectives on discourse. Vol 2* (pp. 18–38).

Burnham, C. (1992). *Improving Written Instructions for Procedural Tasks.*

de Koning, B. B., Tabbers, H. K., Rikers, R. M. J. P., & Paas, F. (2009). Towards a Framework for Attention Cueing in Instructional Animations: Guidelines for Research and Design. *Educational Psychology Review*, *21*, 113–140.

Dickinson, D., & Gallina, S. (2017). Information design in medicine package leaflets. In A. Black, O. Lund, & S. Walker (Eds.), *Information design: Research and practice* (pp. 685–700). London and New York: Routledge.

Dickinson, D., Teather, J., Gallina, S., & Newsom-Davis, E. (2010). Medicine package leaflets – does good design matter? *Information Design Journal*, *18*(3), 225–240. https://doi.org/10.1075/idj.18.3.05dic

Dowse, R., Ramela, T., & Browne, S. H. (2011). An illustrated leaflet containing antiretroviral information targeted for low-literate readers: Development and evaluation. *Patient Education and Counseling*, *85*(3), 508–515. https://doi.org/10.1016/j.pec.2011.01.013

Ganier, F. (2004). Factors Affecting the Processing of Procedural Instructions: Implications for Document Design. *IEEE Transactions on Professional Communication*, *47*(1), 15–26. https://doi.org/10.1109/TPC.2004.824289

Guthrie, J. T. (1988). Locating Information in Documents: Examination of a Cognitive Model. *Reading Research Quarterly*, *23*(2), 178. https://doi.org/10.2307/747801

Hartley, J. (2013). Designing instructional text. Routledge.

Harvey, G. (2008). Designing procedural instructions: 5 key components. *Information Design Journal*, *16*(1), 19–24. https://doi.org/10.1075/idj.16.1.03har

Houts, P. S., Doak, C. C., Doak, L. G., & Loscalzo, M. J. (2006). The role of pictures in improving health communication: A review of research on attention, comprehension, recall, and adherence. *Patient Education and Counseling*, *61*(2), 173–190. https://doi.org/10.1016/j.pec.2005.05.004

Kools, M. (2012). Making written materials easy to understand. In M. Kools & C. Abraham (Eds.), *Writing Health Communication: An evidence-based guide* (pp. 23–42). London: Sage Publications.

Kools, M., Ruiter, R. A. C., Wiel, M. W. J. Van De, & Kok, G. (2008). The effects of headings in information mapping on search speed and evaluation of a brief health education text. *Journal of Information Science*, *34*(6), 833–844. https://doi.org/10.1177/0165551508089719

Kools, M., van de Wiel, M. W. J., Ruiter, R. A. C., & Kok, G. (2006). Pictures and text in instructions for medical devices: Effects on recall and actual performance. *Patient Education and Counseling*, *64*(1–3), 104–111. https://doi.org/10.1016/j.pec.2005.12.003

Lemarié, J., Lorch, R. F., & Péry-Woodley, M.-P. (2012). Understanding How Headings Influence Text Processing. *Discours. Revue de Linguistique, Psycholinguistique et Informatique.*, *10*(July), 3–22. https://doi.org/10.4000/discours.8600

Lindemann, D. F., Harbke, C. R., & Huntoon, A. (2012). Beneficial but not sufficient: Effects of condom packaging instructions on condom use skills. *Psychology Research and Behavior Management*, *5*, 11–18. https://doi.org/10.2147/PRBM.S28876

McDougald, B. R., & Wogalter, M. S. (2014). Facilitating pictorial comprehension with color highlighting. *Applied Ergonomics*, *45*(5), 1285–1290. https://doi.org/10.1016/j.apergo.2013.05.008

Moreno, R., & Mayer, R. (1999). Cognitive principles of multimedia learning: the role of modality and contiguity. *Journal of Educational Psychology*, *91*, 358–368.

Smith, M. Y., & Wallace, L. S. (2013). Reducing drug self-injection errors: A randomized trial comparing a "standard" versus "plain language" version of Patient Instructions for Use. *Research in Social and Administrative Pharmacy*, *9*(5), 621–625. https://doi.org/10.1016/j.sapharm.2012.10.007

Spinillo, C. G., & Dyson, M. C. (2001). An exploratory study of reading procedural pictorial sequences. *Information Design Journal*, *10*, 154–168.

Tong, V., Raynor, D. K., & Aslani, P. (2014). Design and comprehensibility of over-the-counter product labels and leaflets: a narrative review. *International Journal of Clinical Pharmacy*, *36*(5), 865–872. https://doi.org/10.1007/s11096-014-9975-0

Tversky, B., Heiser, J., Mackenzie, R., Lozano, S., & Morrizon, J. (2008). Enriching Animations. In R. Lowe & W. Schnotz (Eds.), *Learning with animation: Research implications for design* (pp. 263–285). Cambridge University Press.

Walker, S. (2017). The contribution of typography and information design to health communications. In E. Tsekleves & R. Cooper (Eds.), *Design for Health* (pp. 92–109). New York: Routledge.

Waller, R., & VandenBerg, S. (2017). A one-day transformation project for overdose emergency kits. *Information Design Journal*, *23*(3), 319–333. https://doi.org/10.1075/idj.23.3.05wal

Zielinska, O. A., Mayhorn, C. B., & Wogalter, M. S. (2017). Connoted hazard and perceived importance of fluorescent, neon, and standard safety colors. *Applied Ergonomics*, *65*, 326–334. https://doi.org/10.1016/j.apergo.2017.07.011