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# IMAGINING A FULLER POTENTIAL FOR PLAIN LANGUAGE SUMMARIES: A CASE STUDY OF CANADIAN SCIENCE PUBLISHING

## **Abstract:**

Researchers are increasingly encouraged to produce plain language summaries, but are they doing so, and do these summaries meet the expectations laid out in the guidelines for preparation? To learn more about the use of plain language summaries in scholarly communication in Canada, we conducted a case study of Canadian Science Publishing (CSP), which publishes 23 journals across a range of scientific domains. The case study reveals that while the number of authors who generate plain language summaries of their research has increased steadily since CSP introduced this option in 2016, the percentage is still relatively low. In addition, the plain language summaries that are produced show similar readability scores to the scientific abstracts. We conclude by offering a number of recommendations that CSP could implement to increase the adoption and improve the readability of plain language summaries.

## **1. Introduction**

Researchers, and particularly those in science and health-related fields, are increasingly encouraged to participate in science communication by sharing results with the wider community in a form that is accessible to non-experts (e.g. UNESCO 2021, Science Europe 2022). Science communication can take various formats, and one popular format is the plain language summary (PLS) (Stoll et al. 2022).

According to Cutts (2009), plain language is language that is clear enough to enable readers to understand it the first time that they read it. Frequently cited techniques for writing in plain language include strategies such as avoiding or defining technical jargon, avoiding abbreviations, minimizing pronoun use, using the active voice, and writing sentences of no more than 25 words.

The following benefits of providing PLSs are cited regularly (e.g. Alderdice et al. 2016; FitzGibbon et al. 2020; Maurer et al. 2021; Stricker et al. 2020):

- Provide increased transparency about how public research dollars are used;
- Enable community participants in research projects to understand the findings;
- Help universities to demonstrate the ways that their work benefits society;
- Inform decisions by people outside academia (e.g. policy makers, caregivers, patients);

- Support learning by students or specialists from other domains;
- Enable researchers – especially early career researchers – to increase visibility for their projects and raise their profile, potentially leading to new collaborative opportunities across sectors;
- Facilitate discoverability of research through other languages (e.g. for easier comprehension by researchers reading in an additional language or through increased translation-friendliness of texts for processing via automatic machine translation).

A point that is not often mentioned but which is highly relevant to scholarly communication, where most publications are in English but where the majority of scholars are not Anglophone, is the fact that plain language is easier to understand for people reading in an additional language. In addition, it can also be more easily translated, such as with the help of automatic tools like Google Translate (e.g. Bowker 2023).

While the benefits of writing a PLS to accompany a research article seem evident, it is less clear whether researchers are actually producing them, particularly if the creation of a PLS is deemed optional. To find out more about the use of PLS in scholarly communication in Canada, we conducted a case study of Canadian Science Publishing (CSP).

### **Institutional context and methods**

This is a descriptive case study that seeks to understand the situation with regard to PLS uptake at a major Canadian academic publisher in the sciences. With 23 journals covering a wide range of fields in science and engineering, CSP is described in its strategic plan as “Canada’s largest publisher of international scientific journals” (CSP 2023a: 7). Three of the journals are Gold open access journals, while the remaining 20 journals are hybrid, meaning that they are subscription-based journals, but individual articles can be published in open access if the author pays an article processing charge.

Information about PLSs is found in two different places. Firstly, the CSP website has a set of high-level author guidelines for preparing a manuscript that are common to all of its journals. In the high-level guidelines, there is a section on PLSs where it is stated that these summaries are optional and do not replace the scientific abstract (CSP 2023b). This page also has general guidelines for writing a PLS, links to other resources, and instructions for how to submit a PLS once an article has been accepted (CSP 2023c). Here readers learn that CSP also hosts another webpage on the open online publishing platform Medium where the plain language summaries are posted (CSP 2023b).

Secondly, each journal also contains a set of journal-specific guidelines, and for three of the journals – *Arctic Science*, *Canadian Journal of Plant Science*, and *FACETS* – information about preparing a PLS is repeated or expanded here.

To learn more about the number and nature of the plain language summaries created for CSP journals, we examined CSP’s plain language guidelines, CSP’s Medium website (which contained a total of 216 PLSs published between the launch of the PLS initiative in 2016 and the end of 2022), and the websites for the journals where the original scientific articles were published. We used Excel to keep track of the total number of PLSs, and – as recommended in the CSP guidelines for preparing PLS – we used Microsoft Word’s readability statistics to investigate and compare the readability of the PLS and scientific abstracts. The readability analysis was conducted on a sample of 108 PLS which represented 50% of the total number of PLS. The sample was obtained by selecting every second PLS published on the CSP website beginning with the first one and ending with the second-to-last PLS published before the end of 2022. As a point of comparison, the scientific abstracts corresponding to the PLSs in the sample were also collected and analyzed for readability.

## Findings

Our investigation revealed that all 216 summaries were produced by authors from just 3 of the 23 journals – the same 3 journals that included information about PLS in their journal-specific guidelines. As illustrated in Table 1, we also counted the total number of articles published in each of those 3 journals between 2016 and 2022, which allowed us to calculate the percentage of articles that were accompanied by a PLS.

	<i>Arctic Science</i> # PLS/# articles (%)	<i>Canadian Journal of Plant Science</i> # PLS/# articles (%)	<i>FACETS</i> # PLS/# articles (%)	<i>Total</i> # PLS/# articles (%)
<b>2016</b>	0 / 11	0 / 82	6 / 21 (29%)	6 / 114 (5%)
<b>2017</b>	0 / 39	0 / 104	17 / 58 (29%)	17 / 201 (8%)
<b>2018</b>	6 / 29 (21%)	0 / 110	24 / 51 (47%)	30 / 190 (16%)
<b>2019</b>	0 / 14	0 / 72	19 / 33 (58%)	19 / 119 (16%)
<b>2020</b>	13 / 29 (45%)	19 / 65 (29%)	17 / 60 (28%)	49 / 154 (32%)
<b>2021</b>	4 / 32 (13%)	14 / 85 (14%)	18 / 100 (18%)	36 / 217 (17%)
<b>2022</b>	9 / 54 (17%)	18 / 80 (23%)	32 / 46 (70%)	59 / 180 (33%)
<b>Total</b>	32 / 208 (15%)	51 / 598 (9%)	133 / 369 (36%)	216 / 1175 (18%)

**Table 1.** Number of plain language summaries (PLS) divided by total number of articles in each journal.

To determine whether the authors of the plain language summaries followed the CSP’s writing guidelines (e.g. avoid passives, use short sentences, strive for a lower grade level for readability), we analyzed several features of the PLS as summarized in Table 2. As recommended in the guidelines provided by CSP, we used MS-Word to calculate these readability indicators.

<b>Writing guideline</b>	<b>100 plain language summaries</b>	<b>100 scientific abstracts</b>
% passive sentences	22%	13%
Average # of words per sentence	23.7	23.7
Flesch-Kincaid Grade Level	14.9	16.7

**Table 2.** Readability indicators for PLS and abstracts as calculated by MS-Word.

## **Discussion**

Inspection of the data reveals that in the first two years, only *FACETS* authors contributed PLSs. Beginning in 2018, *Arctic Science* authors began to participate, and two years later, *Canadian Journal for Plant Science* authors joined in. The percentage of articles for which a PLS was produced shows an upward trajectory with the exception of a dip in 2021 (which we speculate may be related to the COVID-19 pandemic, where researchers may have chosen to focus on essential rather than optional tasks, although we cannot prove this). Another observation is that, in 2022, *FACETS* began including the PLS directly on their own site in addition to publishing them on the Medium site. This also corresponds to a considerable increase in the number of PLSs produced by *FACETS* authors that year.

We can also see that, to date, a greater percentage of PLSs have been contributed by authors who publish in open access, which may suggest that authors who already demonstrate a commitment to the open movement may be more likely to produce PLSs.

In terms of readability, the analysis reveals little improvement between the readability of the PLS and the readability of the scientific abstracts. When writing PLSs, authors used a greater number of passive constructions and maintained an identical sentence length as compared to when they wrote the scientific abstracts. The overall readability level was slightly improved according to the Flesch-Kincaid Grade Level; however, this measure indicates the number of years of formal schooling typically required to understand a text, so the PLS average score of 14.9 means that the texts are still targeted at people with some post-secondary education. Overall, the readability results suggest that authors could benefit from receiving more support to learn how to adjust their scientific writing style for a lay audience.

## **Conclusions and recommendations**

At CSP, there is a growing trend for authors to produce a PLS to complement their scientific article. However, there is considerable room for improvement for PLSs to reach their full potential, both with regard to the number of authors who participate and the readability of the summaries that they produce. However, there are some initial straightforward steps that CSP could take to try to increase participation and to help authors create easy-to-read plain language summaries:

- Raise awareness about the option to publish a plain language summary (e.g. include in journal-specific guidelines for all journals).
- Increase visibility of the plain language summaries (e.g. make bi-directional links between journal homepages and Medium page).
- Capitalize on existing receptiveness to the open movement (e.g. promote the option to authors publishing in open access).
- Specify that plain language summaries are translation-friendly (i.e. raise awareness about this less-well known value of plain language for non-Anglophone researchers).
- Allow longer plain language summaries to improve readability (i.e. increase the word limit of PLSs as compared to scientific abstracts).
- Make guidelines easily accessible (e.g. include most useful guidelines on the CSP and journal sites instead of directing authors to third-party resources).
- Make guidelines as concrete as possible (e.g. say “Use no more than 20 words in a sentence” instead of “write shorter sentences”).
- Make guidelines consistent (i.e., double check to make sure that guidelines posted in multiple places say the same thing).

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