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Impact of Library Instruction Tutorial Format on Student Preference and Performance in First-Year Chemistry

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Abstract

This research study investigates the effects of library instruction tutorial format (written versus video) on student preference and performance in chemistry education. The authors assessed the format of tutorials used to provide library instruction in an introductory chemistry course by observing 27 student participants as they took in instructions in either a video or a written format and then completed two chemistry information tasks. While participants expressed strong preferences for particular formats, neither the video tutorials nor the written instructions significantly improved task completion speed or performance. Rather, the authors determined that student preference alone is enough to justify the continued production of multiple versions of instructions for the same assignment.

Keywords: blended learning, information literacy tutorials, student engagement, science librarianship

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Impact of Library Instruction Tutorial Format on Student Preference and Performance in First-Year Chemistry

MacEwan University librarians and chemistry instructors collaboratively developed a blended model of information literacy (IL) instruction for students enrolled in the university's introductory chemistry course, CHEM 101. An online asynchronous library tutorial is used in tandem with written instructions in the lab manual. Students are directed to watch the tutorial videos and read the lab manual prior to attending their lab. During the lab session, a librarian delivers a quick in-person library instruction session to review key concepts and assist students in completing a library lab assignment. After several years of using this instruction model, the researchers undertook a study to assess the relative effectiveness of the written versus the video instructions. This article, which presents the results of this research, centers on student format preferences for learning and the effectiveness of teaching material formats. The guiding research questions were:

- RQ1: How does instruction format impact the way participants use and interact with directions?
- RQ2: How does instruction format impact task completion?
- RQ3: When learning CHEM 101 content, do students have a format preference between video and text-based tutorials?

By providing students with both text and video options and reinforcing both options with a brief in-person session, we hoped that students could use what works for them and disregard what does not. The authors expected that the visuals of the video instructions, compared to the text-only written instructions, would aid in task completion and that participants who received video instructions would complete the tasks more quickly than those who received written instructions. Similarly, we expected that the visual nature of the video instructions would result in fewer false starts for participants using video instructions compared to written instructions. Conversely, we expected that participants would be more likely to revisit the written instructions compared to the video instructions due to the ease of revisiting written instructions compared to a video. The tasks participants completed were based on an assignment used in introductory chemistry (CHEM 101). Most CHEM 101 students do very well on the assignment, with many scoring 100%. The authors

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expected that most participants in the study would be able to complete the tasks and find the correct answers successfully.

Literature Review

The ascent of educational tutorials within library instruction programs has been well documented in the Library and Information Science literature. While the reasons for this are varied, much of the attraction of using tutorials to deliver information literacy instruction resides in the following: the hardship of meeting increasing instructional workloads through face-to-face instruction alone (Dewald, 1999; Fontane, 2017; Ganster & Walsh, 2008; Gravett, 2010; Stiwinter, 2013; Tomaszewski, 2021); ever-multiplying developer-tools for creating customizable, scalable learning experiences (Gravett, 2010; Kammerlocher et al., 2011; Slebodnik & Riehle, 2009; Watts, 2018); as well as user preferences, particularly those of students as the end-users (Bowles-Terry et al., 2010; Gonzales, 2014; Held & Gil-Trejo, 2016; Lantz et al., 2017).

Research into educational tutorials generally has focused on the quality of the resulting learning experiences. Learning comprises both measurable achievement and affective responses, and these two facets are often interrelated (Kraiger et al., 1993; Zhang et al., 2007). In the context of library instruction, achievement outcomes focus on the extent to which the tutorials have met their information literacy learning goals for students, namely that students have learned and can apply the conceptual and procedural knowledge covered in the tutorials. Affective outcomes, in turn, center on the attitudinal and motivational issues, such as student tutorial instructional preferences, self-efficacy, and perceived performance capabilities (Zhang et al., 2007).

With respect to achievement facets, tutorial assessment has been approached in a multitude of ways. A recognized challenge in the literature has been the variation in tutorial types under consideration; the circumstances of delivery; and analysis through differing methods of evaluation (Bury & Oud, 2005; Zhang et al., 2007).

Some studies have compared tutorials with face-to-face instruction, with most finding little to no difference between the two modes of instruction (Clark & Chinburg, 2010; Gonzales, 2014; Hess, 2014; Nichols et al., 2003; Zhang et al., 2007). Others have focused on the effectiveness of blended or hybrid instruction, combining face-to-face instruction with online tutorials, often with a flipped design. Kraemer et al. (2017) found blended instruction to be most effective, followed by live instruction, and then strictly online instruction.

Conversely, Anderson and May (2010) found that the three modes were equally effective. Those focused on blended instruction alone have found it to positively impact student learning (Berg, 2018; McGuinness & Fulton, 2019; Tomaszewski, 2021).

Likewise, there have been many considerations of specific software (e.g., Camtasia, Adobe Captivate, Jing, Guide on the Side) as well as tutorials formats, including static text and images tutorials, video tutorials, interactive video tutorials, and split-screen tutorials interacting with live web resources (Artemchik, 2016; Held & Gil-Trejo, 2016; Mery et al., 2014; Mestre, 2012; Mikkelsen & McMunn-Tetangco, 2014; Stiwinter, 2013; Stonebraker et al., 2016; Turner et al., 2015). Students are increasingly accessing tutorials in diverse formats from multiple devices (Becker et al., 2017; Chen & Denoyelles, 2013; Dold, 2016; Salisbury et al., 2015; Vieira, 2017), yet few studies have examined how this might affect measurable achievement (Dold, 2016).

Library research on static text and graphic tutorials versus video tutorials has revealed mixed findings on achievement and has suggested no clear winner between the two. Text tutorials have been found to be quick, convenient, and most utilized by students when presented as an option but may lead to a greater rate of task error (Alexander, 2013; Bowles-Terry et al., 2010; Jackson, 2014; Mestre, 2012; Turner et al., 2015). Video tutorials, in turn, have been found to keep students engaged and on task, to bridge expected and actual learning, and to result in reduced rates of error, but they have also been identified as less convenient and likelier to result in cognitive overload (Alexander, 2013; Dold, 2016; Szpunar et al., 2014). For example, Turner et al. (2015) found that students performed better with PDF tutorials than with video in terms of speed and accuracy and that the PDF tutorial generally elicited greater satisfaction. Mestre (2012) also found that students performed better using a static HTML-based tutorial with screenshots and likewise preferred it to the video tutorial. Conversely, Craig and Friehs (2013) found video to be more effective than an HTML-based tutorial or a live instruction session, although the live instruction session resulted in the most significant gains in student confidence.

In thinking about the affective facets of tutorial learning, such as individual attitudes about and motivations around specific formats, we can consider the long-entrenched but increasingly refuted notion of learning styles and best-fit matches between learners and these styles. While the idea of individual preferences is not in question (Bozarth, 2018), related scholarship has increasingly repudiated the idea that optimal instruction is a matter of identifying and tailoring instruction for individual learning styles. Pashler et al. (2008)

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critically reviewed the body of scholarship around this concept and found it lacking in credible evidence. Most included studies approached it with flawed methodologies, and the few using appropriate methodologies largely appeared to refute the hypothesis (Pashler et al., 2008). Cuevas (2015) followed up on the seminal work of Pashler et al. (2008), reviewing subsequent research, only to arrive at similar conclusions. Subsequent research has continued to find little evidence between performance and learning styles (Cuevas & Dawson, 2018; Husmann & O'Loughlin, 2019; Knoll et al., 2017).

Not surprisingly, scholarship has captured a range of preferences on static text and graphic-based tutorials versus video tutorials. Bowles-Terry et al. (2010) found that student preferences changed according to needs and circumstances, underscoring the importance of creating tutorials in various formats. Keller et al. (2019) found a higher student satisfaction level with interactive video tutorials than with a text-based tutorial. Nevertheless, they found no significant difference in the students' intrinsic motivation with respect to format.

While no definitive "best" instruction mode has emerged from this literature, general consensus in library scholarship is that online tutorials provide students with effective information literacy instruction and that "best" in this context should be understood as highly situational (Mestre, 2012; Mikkelsen & McMunn-Tetangco, 2014; Watts, 2018). As originally noted by Nielsen (1993) and later reiterated by Bury and Oud (2005), the goal for any tutorial—text, video, or otherwise—should be a learning object that is easy to learn, efficient to use, easy to remember, results in few errors, and is satisfying to use. And in the point-of-need for students, the findings of Connaway et al. (2011) and Dold (2016) noted the overriding importance of convenience in determining which resource—the text tutorial, video tutorial, or both—most satisfices the situation at hand.

Methods

Twenty-eight undergraduate students were recruited to participate in the study from introductory psychology courses and received a research participation credit for their participation. The recruitment screening questionnaire specified that participants should not have taken any university-level chemistry courses to exclude students who had already completed the CHEM 101 assignment used in this study. One participant was eliminated after secondary screening revealed completion of CHEM 101, resulting in a total of 27 participants. Each participant was asked to complete two chemistry information tasks on a provided laptop and invited to think aloud as they worked through the tasks. Task 1

involved looking up physical constants for a given chemical substance in the online version of the *CRC Handbook of Chemistry and Physics* (99th Edition), and Task 2 involved looking up safety information on a given chemical substance from a material safety data sheet (MSDS) from the Fisher Scientific website.

Fifteen participants received written instructions for Task 1 and video instructions for Task 2. Of these 15, one participant only completed Task 2, leaving us with only 14 participants who used the written instructions for Task 1. Twelve participants received video instructions for Task 1 and written instructions for Task 2. The questions participants sought to answer for each task can be found in Appendix A. The authors created a pair of Google Forms to guide participants through the instructions and the two tasks. After working through and submitting an answer for each of the two tasks in the Google Form, each participant was also asked the following reflection questions:

- How helpful were the WRITTEN instructions for completing the task?
  (Rated on a scale of 1 to 5, where 1 is not helpful at all and 5 is very helpful).
- How helpful were the VIDEO instructions for completing the task?
  (Rated on a scale of 1 to 5, where 1 is not helpful at all and 5 is very helpful).
- Describe any difficulties you had with Task 1
  (finding physical properties in the CRC Handbook)
- Describe any difficulties you had with Task 2
  (finding safety information from material safety data sheets)
- Additional comments

Participants were placed in a room alone to complete the task. Microsoft PowerPoint 2016 was used to make screen recordings and record audio of each participant completing the pair of tasks. After collecting and watching the screen recordings, the results for Task 1 for a single participant were excluded from the final analysis because the participant had inadvertently accessed both versions of the instructions. This resulted in 12 participants who completed Task 1 (CRC Handbook) with video instructions and Task 2 (MSDS) with written instructions compared to 14 participants who completed Task 1 (CRC Handbook) with written instructions and 15 participants who completed Task 2 (MSDS) with video instructions.

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The results were analyzed by comparing the time to complete each task for each of the two instruction modes, video and written. The authors also examined if instruction mode had an impact on false starts, if participants revisited the instructions, and if participants were able to complete the task successfully and find the correct answers. Additionally, participants' verbal comments made while they completed the tasks were recorded, and participants' written feedback on the tasks were analyzed using qualitative textual analysis techniques.

Results

Sixteen participants made no audible verbal comments while completing the tasks. Eleven participants did make audible comments, but the majority of these were not substantive. Many of these 11 participants simply read the instructions aloud to themselves or talked themselves through the process of completing the tasks. The lack of substance of these verbal comments led them to be excluded from the analysis of the results.

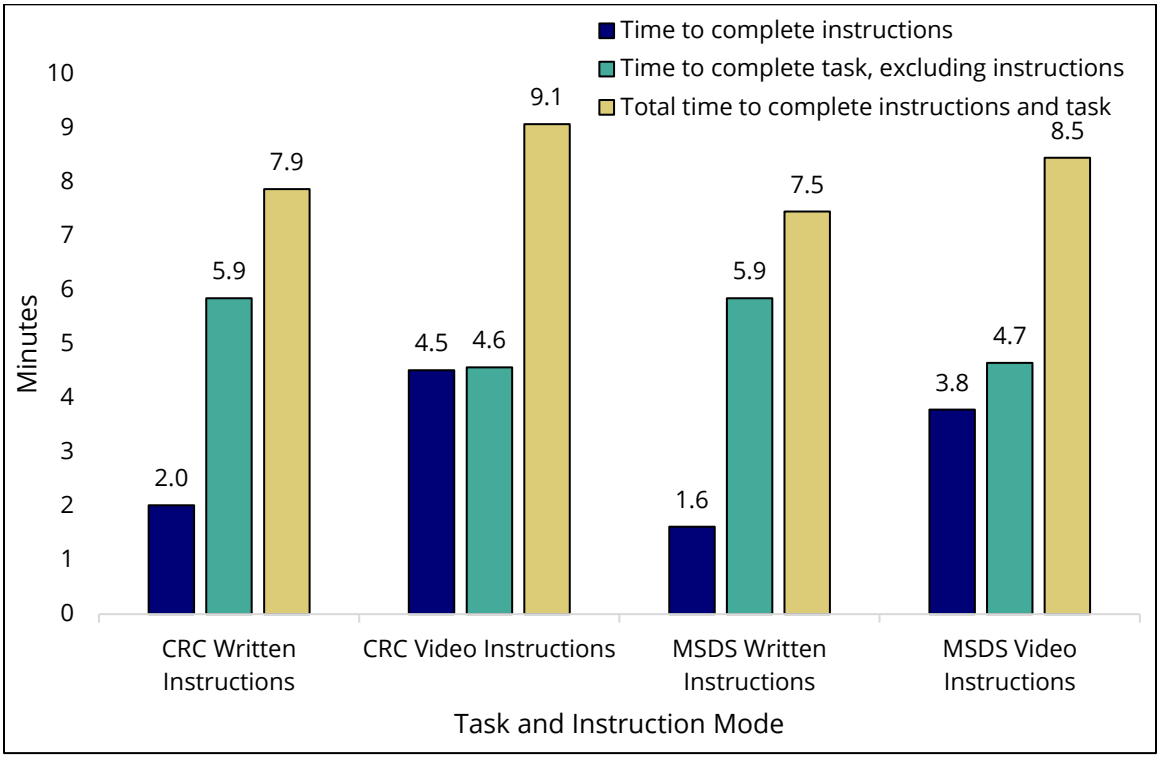
Time to Complete Tasks and Instruction Mode

The authors examined the relationship between the time to complete the given tasks and the mode of instruction provided. Participants were timed from when they started the instructions to when they submitted the answers to the task questions. The time at which participants finished the instructions, marked by when they closed them on the screen or switched browser tabs, was also noted. The time taken to complete the instructions was subtracted from the total time to complete the task to give us the time it took to complete the task only.

While the mean time it took participants to complete the tasks after having received video instructions was faster than the mean time to complete the tasks after having received written instructions (Figure 1), these results were not found to be statistically significant.

Using an alpha level of 0.05, a *t* test was performed to determine the relationship between the mean time, in seconds, that it took participants to complete Task 1 (CRC Handbook) and Task 2 (MSDS) and the mode of instruction provided for the task. No significant difference was found in the time it took participants to complete Task 1 (CRC Handbook) based on if they had received instructions in a written ($M = 351.2$, $SD = 213.7$) or video format ($M = 273.5$, $SD = 243.3$); $t(22) = 2.07$, $p = .40$. Similarly, no significant difference was found in the time it took participants to complete Task 2 (MSDS) based on if they had received written ($M = 350.6$, $SD = 190.7$) or video instructions ($M = 279.4$, $SD = 145.2$); $t(20) = 2.09$, $p = .30$.

Figure 1: Average Time to Complete Task Components by Instruction Mode



Revisiting the Instructions and Instruction Mode

The authors examined the relationship between the mode of instruction and the frequency with which participants revisited the instructions while completing the tasks. Half of the participants ($n = 6$) who completed Task 1 (CRC Handbook) with video instructions revisited the instructions while completing the task, and 71% of participants ($n = 10$) who completed this task with written instructions revisited the instructions. For Task 2 (MSDS), 27% of participants ($n = 4$) who received the video instructions revisited the instructions, and 83% ($n = 10$) who received written instructions revisited the instructions.

Using an alpha level of 0.05, a chi-square test of independence was performed to determine if a relationship existed between instruction mode and the frequency with which participants revisited the instructions for Task 1 (CRC Handbook) and Task 2 (MSDS). For Task 1 (CRC Handbook), no significant relationship was found between the frequency of revisiting the instructions and the mode of instruction, χ^2 (1, $N = 26$) = 1.25, $p = .26$. However, for Task 2 (MSDS), participants were more likely to revisit the written instructions compared to the video instructions, χ^2 (1, $N = 27$) = 8.57, $p = .0034$.

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False Starts and Instruction Mode

The authors examined the relationship between instruction mode and the frequency with which participants committed false starts while completing the tasks. The authors define a false start as an attempt to begin the task where the participant fails to find the information they are seeking and starts the task again from the beginning or close to the beginning. For Task 1 (CRC Handbook), 58% of participants ($n = 7$) who received video instructions experienced false starts compared to 50% of participants ($n = 7$) who received written instructions. For Task 2 (MSDS), 27% of participants ($n = 4$) who received video instructions experienced false starts, while 67% of participants ($n = 8$) who received the written instructions experienced false starts.

Using an alpha level of 0.05, a chi-square test of independence was performed to determine whether there was a relationship between instruction mode and the frequency of false starts for Task 1 (CRC Handbook) and Task 2 (MSDS). For Task 1 (CRC Handbook), no significant relationship was found between the frequency of false starts and the mode of instruction, χ^2 (1, $N = 26$) = 0.18, $p = .67$. However, for Task 2 (MSDS), participants were more likely to experience false starts after receiving written instructions compared to the video instructions., χ^2 (1, $N = 27$) = 4.32, $p = .038$.

Task Success and Instruction Mode

A task was considered successfully completed when the participant found, recorded, and submitted the correct answers to the task questions. Participants needed to get all the answers correct for the task to be deemed successfully completed. The authors expected that most participants would successfully complete both tasks, and this held true. Despite observed false starts and confusion expressed in the open-ended questions, nearly all the participants successfully completed the tasks and found the correct answers (Table 1).

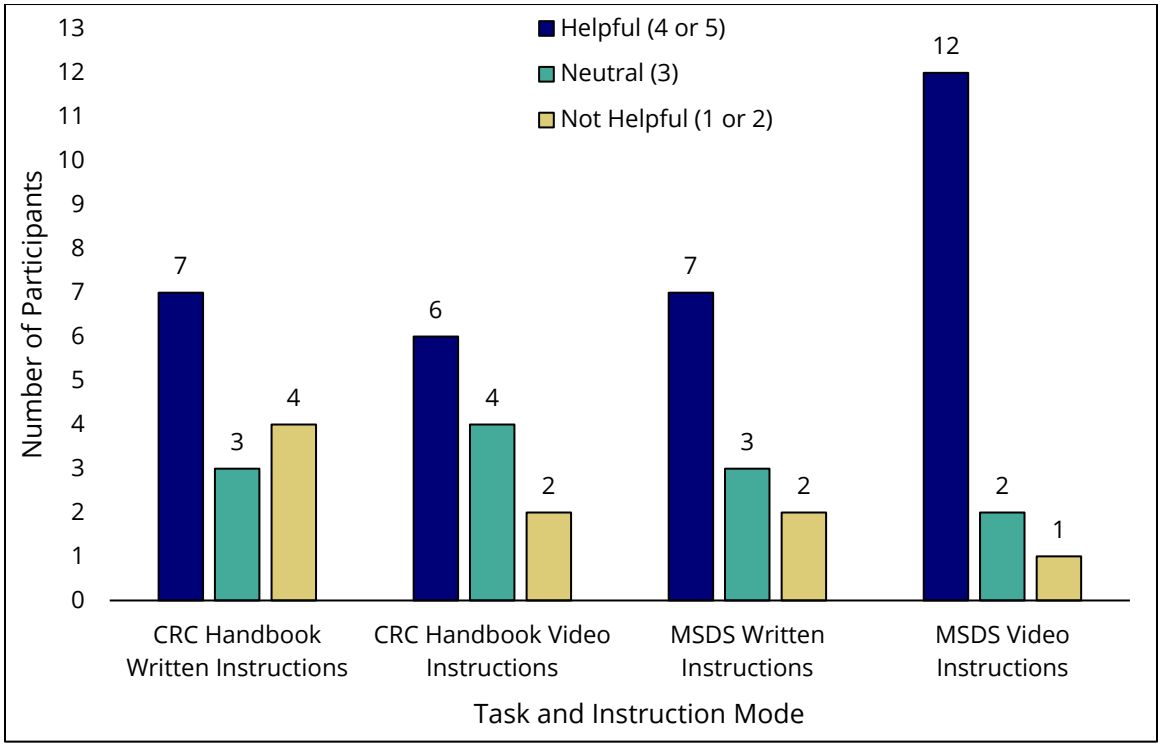
Table 1: Number of Participants Successfully Completing the Tasks by Task Type and Instruction Mode.

Task and Instruction Mode	Correct Answer	Incorrect Answer	Total
Task 1 (CRC Handbook) - Written Instructions	13	1	14
Task 1 (CRC Handbook) - Video Instructions	11	1	12
Task 2 (MSDS) - Written Instructions	8	4	12
Task 2 (MSDS) - Video Instructions	12	3	15

Participant Feedback

After completing the tasks, participants were asked to rate the helpfulness of the instructions on a scale of 1 to 5, where 5 was very helpful, and 1 was not helpful. All 27 participants provided ratings of the instructions' helpfulness (Figure 2).

Figure 2: Participant Reported Helpfulness of the Instructions for Each Task and Instruction Mode



In the written comments, most participants reported that they found the instructions helpful, regardless of the mode of instruction or the task. For each task and instruction mode, 50% or more of participants rated the helpfulness of the instructions at 4 or 5. While some participants rated the helpfulness at a 2, no one rated any of the instructions at a 1. The instructions that were reported to be the most helpful by participants were the video instructions for Task 2 (MSDS), where 12 out of 15 participants, or 80%, rated them at a 4 or a 5.

After completing the two tasks, participants were asked to describe any difficulties they had completing each task. They were also given space to provide additional open-ended comments. All but one participant provided some written comments about the tasks and instructions.

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For Task 1 (CRC Handbook) with video instructions, 4 of the 12 participants reported that they had no difficulties with the instructions or the task. Six participants indicated that they either had difficulty with the instructions or with navigating and using the CRC Handbook itself. One participant commented about the video instructions, saying, "It was difficult not physically being able to refer back to the instructions again." Another commented on the usability of the CRC Handbook, stating, "When I used the search bar, no results were found, so I had to physically go through the 162 pages of inorganic compounds to find potassium thiocyanate." The remaining comment related to confusion over chemistry symbols.

For Task 1 (CRC Handbook) with written instructions, four of 14 participants reported no difficulties with the instructions or task. Four participants commented on the instructions, with many of these expressing that the lack of visuals in the written instructions made the task more challenging. One example of such a comment is: "I found it a little harder to follow instructions because I wasn't seeing how to do them while I was reading, whereas I was actually seeing what to do step by step in the video for Task 2." Two participants commented on the usability of the CRC Handbook, noting that it was difficult to search for their chemical substance and it was challenging to find the right sections of the handbook. The final three comments all related to participants admitting that they found the instructions too long or they did not read them carefully. For example, one participant commented that they "did not read the instructions as in depth [sic], causing [them] to look at wrong areas of the website."

For Task 2 (MSDS) with the video instructions, four of the 15 participants reported no difficulties with the instructions or the task. Eight other participants provided comments, all related to the instructions, with many participants commenting that the instructions lacked the detail they needed to easily complete the task. One participant commented, "The video didn't really help," and another expressed that they "felt like the video instructions went by too fast."

For Task 2 (MSDS) with the written instructions, four of the 12 participants reported no difficulties with the instructions or the task. Five participants commented on the instructions or the usability of the MSDS website. Many of these participants expressed difficulty knowing what to do on the MSDS website to complete the task. For example, one participant commented, "Trying to figure out which ones were which, where the composition was, and how to know which sheet was right when there were multiple different ones." Three participants admitted that they had not read the instructions very

carefully. One participant stated, "I tend to skim as I read, and I kept having to go back and re-read a lot...and I'm not even sure I followed the instructions properly."

In addition to providing written comments specific to each task, participants were also invited to provide additional written comments. Of 27 participants, 11 provided additional comments. One participant commented that they had no difficulties completing the two tasks. Another participant commented that their difficulties were due to not closely reading the instructions, and a third commented that "both [tasks] were pretty simple, but I also get confused very easily." The remaining eight comments related to the instructions, with seven participants commenting that they preferred one mode over the other. Five participants clearly preferred video instructions, with comments such as, "I found the video more useful" and "The video tutorial made it easier for me to find the information I was looking for." One participant expressed a preference for written instructions, commenting, "I most definitely preferred the written instruction form of instructions." The final comment expressed a preference for each format depending on the circumstances, saying, "I believe that for simpler concepts video instructions are alright, but for complex concepts I believe that written instructions are better so that the individual can refer back to them when needed."

Discussion

While patterns can be observed in the data, very few of the results were statistically significant. We expected that students who received the video instructions would complete the tasks faster than those who received the written instructions. While this was observed, the results were not statistically significant, so we cannot conclude that instruction mode affected task completion time. Overall, this study did not find a strong relationship between instruction format and how participants interacted with the materials or the speed with which they completed the tasks.

While we posited that the videos would provide the advantage of visuals, we also predicted that the written instructions would be revisited more often because it is easier to revisit written instructions than to scan through a video to revisit a portion of the instructions. We found that participants who received written instructions were more likely to revisit the instructions while completing the task. However, these findings were only statistically significant for the MSDS task and not for the CRC Handbook task.

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We expected that the visual nature of the video instructions would provide an advantage when it came to false starts, predicting that participants who received video instructions would commit fewer false starts than those who received written instructions. This held true for the MSDS task but not for the CRC Handbook task. Instruction mode did not seem to make much difference for the CRC Handbook: it was confusing regardless of instruction mode and resulted in a fair number of false starts. For the MSDS instructions, the written instructions resulted in many more false starts than the video instructions. The MSDS video instructions provided clarity for finding an MSDS that the written instructions failed to duplicate.

Despite the shortcomings of the instructions and the task resources, most participants successfully completed the tasks. No relationship was found between instruction mode and task completion, although more students failed to find the correct MSDS information compared to the CRC Handbook. This is likely the fault of both the instructions and the design of the Fisher Scientific MSDS search. Observing the recordings of the participants working revealed many ways in which to improve the written instructions to make them more straightforward. The original version of the written instructions formed part of a hardcopy CHEM 101 lab manual printed in black and white, which made it impractical to include screenshots. In recent years, however, the lab manual has been available to students as a digital document, making it possible to include color screenshots alongside written instructions. Despite observed difficulties, most participants reported that they found the instructions helpful. Overall, participants found the MSDS instructions more helpful than the CRC Handbook instructions, which is expected based on the differences in observed false started between these two tasks.

We were struck by how many students attributed their difficulties in completing the tasks to their own shortcomings rather than the quality of the instructions or the usability of the CRC Handbook or the Fisher Scientific MSDS website. In observing students, as librarians, the authors are inclined to consider at length the role that the tool design plays in confusion rather than attributing blame to the participants. But the participants blamed themselves.

Overall, most of the participants who expressed a format preference expressed a more positive response towards video instructions over written, similar to the student participants in both Alexander (2013) and Keller et al. (2019). Notwithstanding preferences, however, both instruction modes were found to be effective. Alexander (2013) noted minimal differences in terms of the usability of video and written instructions, which is

consistent with the present study's findings. Most participants were able to complete both tasks. Despite false starts and expressed confusion, they figured it out on their own. Regardless of instruction mode, the desired learning outcomes were achieved based on the participants' success in completing the tasks.

The finding of no "best" instruction mode is echoed in the literature. The preferences of students change in different circumstances (Alexander, 2013; Bowles-Terry et al., 2010; Watts, 2018), and regardless of format, the goal should be to create learning objects that are easy to use and achieve the desired learning outcomes (Bury & Oud, 2005). When using digital technology to deliver instruction, per Reyes et al. (2022), educators "should consider the individual learning needs of students and make content accessible to all types of learners across multiple platforms" (p. 385). Outside of a research environment, librarians need to consider digital divides among students. Students may be limited in how and when they can use certain modes of instructions by virtue of device access, device capability, internet access, or other factors (Bowles-Terry et al., 2010; Jackson, 2014; McGuinness & Fulton, 2019). The findings of the present study—that there is no clear winner when it comes to instruction mode—reinforce the idea that instructions should be provided in multiple modes when possible. By maximizing options and flexibility, students are afforded more control in their learning environment to access the necessary instructions, when needed, with consideration towards variable student preferences and circumstances.

Limitations

The small sample size likely contributed to the lack of statistical significance seen in the results. With a larger number of participants, we may have seen a more pronounced effect of instruction mode on performance in the tasks. The instructions themselves could also be a confounding factor. The video instructions for both tasks are straightforward screencasts with overlay highlighting for emphasis as well as voiceover. This makes them consistent with each other. With written instructions, this level of consistency would be difficult to achieve. It is also possible that the variability in the instructions themselves confounds our results.

The nature of the study design likely resulted in some unrealistic behavior on the part of the participants. No participant skipped the video instructions, in contrast to disclosures by some participants of not fully reading the written instructions. Knowing that their actions on the screen were being recorded may have resulted in participants taking in the

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instructions in more detail than they would in a non-research environment. However, screen capture technology has been identified as a means of diminishing common observer effects (Imler & Eichelberger, 2011). With this in mind, we cannot determine if observer effects impacted participant behavior.

Conclusion

The only statistically significant results from this research related to participants revisiting the instructions and experiencing false starts when trying to complete the MSDS task. This result says more about the usability of the Fisher Scientific MSDS search and the quality of the written instructions than it does about the relative usefulness of video instructions versus written instructions. Despite the lack of statistically significant results and an inability to conclude that one instruction mode is more effective, participants had strong opinions about their preferences and the helpfulness of one mode over the other. The participant feedback emphasizes the importance of maintaining multiple modes for students to gain information despite a lack of evidence that those modes make a difference. Personal preference and a desire for flexibility are reasons for the authors to continue making instructional materials available in both video and written formats.

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Appendix A: Task Questions

Task 1

Use the *CRC Handbook of Chemistry and Physics*

Find the Physical Properties for potassium thiocyanate (an inorganic substance) and fill in your answers below.

A. Melting Point (mp/°C)

B. Boiling Point (bp/°C)

C. Density (ρ/g cm^{-3})

Task 2

Use the Fisher Scientific website to search for MSDS

Find an MSDS for potassium thiocyanate and use the information in the MSDS to answer the following questions.

A. What should you do if you get potassium thiocyanate in your eyes?

B. What should you do if you ingest (eat) potassium thiocyanate?