

1 **Ultra-short Presentations with Immediate In-Class Public Feedback to**
2 **Enhance Skill Development with Low Class Time and Instructor Time**

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20

21 **Abstract.** The development of oral presentation skills requires multiple opportunities to
22 present and receive focused feedback. In typical discipline-based and general-education
23 courses, class time is precious, and even when oral presentations are part of a course, students
24 may receive only one or two opportunities to present with feedback. Here we describe an
25 approach to develop presentation skills with ultra-short, one-minute presentations followed
26 immediately by brief, supportive, focused, public in-class instructor feedback. Feedback is
27 offered as one positive comment (*one thing I liked*) and one targeted goal for improvement
28 (*one thing to work on*). The short time frame maximizes the number of iterative cycles of
29 practice, feedback, and implementation of feedback. This approach was used with students in
30 several semester-long courses offering three to eight opportunities to present. Students took
31 anonymous surveys immediately after the experience and again up to two and a half years
32 post-experience. Over 95% reported that they learned a great deal about how to improve their
33 own presentations by watching other presentations and hearing the instructor's immediate
34 feedback. Respondents reported lasting gains in skills, increased confidence in their public
35 speaking abilities, and all would recommend the experience to others.

36 **Introduction**

37 Public speaking is a core skill for many careers, but developing a proficiency in
38 public speaking is challenging (Scherer and Volk, 2011). The most effective development of
39 any skill includes frequent practice with feedback and increasing challenges (van Ginkel et al.
40 2015). Even very short, in-class speaking experiences can result in students evaluating future
41 public speaking assignments more favorably (Sleigh, 2013). Typical "brief" or "short"
42 speeches in public speaking education are generally defined as four to five minutes in
43 duration (Horvath et al., 2004; Yu-Chih, 2008; Sleigh, 2013), allowing a maximum of 10
44 students to present in a 50-minute class. Shorter presentation times would allow many more
45 opportunities to present and practice (Calcich & Weilbaker, 1992); one-minute presentations

46 could allow 15 presentations in a 50-minute session and still preserve half of the class time
47 for other activity. Instruction using shorter presentations appears to be rare, and we could find
48 only one published example under four minutes: a course for non-native English speakers
49 that required a single one-minute presentation before subsequent typical longer-length
50 presentations (Hill & Storey, 2003). While brief “elevator” speeches are increasingly
51 common, we have been unable to find materials or research on the use of multiple ultra-short,
52 one-minute speeches with immediate in-class public feedback. We propose such a method for
53 the efficient development of oral presentation skills.

54 We sought to create an effective method for developing students’ oral presentation
55 skills in discipline-based courses. We reduced presentation time to one minute followed by
56 brief, immediate in-class feedback and provided multiple opportunities for practice. Our goal
57 in this approach, “one-minute, one-figure Presentations” (hereafter referred to as one-minute
58 presentations), was to improve oral presentation skills while using time efficiently for
59 preparation, delivery, and feedback. Students received multiple opportunities for practice in a
60 positive environment that was structured to reduce stress. We applied the method in three
61 settings: (1) in a required first-year general education college course, (2) in two discipline-
62 specific college biology courses, and (3) in formal meetings of an undergraduate biology
63 research laboratory group. Here, we describe the technique and an assessment in the form of
64 anonymous surveys from immediately after the experience and up to 2.5 years later.

65

66 **Method and Rationale**

67 Prior to obtaining results reported here, pilot trials were conducted with students in an
68 advanced undergraduate biology seminar course. Below we provide a brief overview of the
69 method, details and a rationale for each element of the method, and an assessment based on

70 anonymous student surveys.

71 ***Brief Description***

72 Students were allotted 8 or 12 minutes, either before or during the class session to prepare
73 each presentation (or “talk” or “speech,” used interchangeably hereafter). Within the time
74 limit, students were to choose a topic, hand-draw a single figure, and photograph the figure.
75 Each student was allowed 60 seconds to present, displaying the figure with any available
76 technology. The audience was expected and encouraged to interact, especially by making eye
77 contact, smiling, regular nodding, and applauding after each presentation. No time was
78 allotted for question and answer. Presenters were told to focus entirely on their presentation
79 skills for their one-minute presentations, while content-related skills would be developed at
80 other times.

81 On the first day (Supplemental Materials A), feedback to speakers was limited to
82 applause and, for upper-level students, a single comment from the instructor framed as *one*
83 *thing I liked* (examples provided in Supplemental Materials B). By the 2nd to 4th
84 presentations, the instructor offered *one thing I liked*, and one directive for improvement
85 framed as, *one thing to work on* (examples provided in Supplemental Materials C and D).
86 The *one-thing-I-liked* was varied among students to highlight different aspects of effective
87 presentations. Each *one-thing-to-work-on* was chosen for greatest potential improvement of
88 that speaker with reasonable student effort. Students were expected to focus on that
89 improvement in their next presentation. During each presentation, the instructor made brief
90 notes and checkmarks on a rubric sheet (Supplemental Materials E: Instructor’s rubric). In
91 the implementations described here, the grade component for one-minute presentations was
92 based on the amount of improvement by the end of the course.

93 The method was applied initially in a first-semester freshman general education
94 course (N = 14), and then tested with additional undergraduate students in two biology

95 seminar courses (N = 11 and 14) and in an undergraduate research laboratory group (N = 6)
96 (Total N = 45). On days with presentations, all or nearly all students gave a presentation.
97 The number of one-minute presentations given by each student ranged from 8 in the freshman
98 course (one every 1-2 weeks), to a median of 4 (range 3-7) in the other courses and in the
99 research laboratory group.

100

101 *Student Apprehension*

102 An active strategy encouraged “buy-in” and reduced apprehension. At the start of the
103 first presentation exercise, students were given the objectives: improve oral presentation
104 skills with opportunities to (a) experiment, (b) practice oral communication techniques, (c)
105 practice developing figures that complement a spoken presentation, and (d) learn how to
106 interact with an audience. Students were told that immediate in-class feedback was a
107 suggestion from previous students and that the style of in-class feedback was developed with
108 student input. The idea of public feedback created initial apprehension. Therefore,
109 individuals were asked to volunteer for the earliest presentations, allowing others to realize
110 that in-class feedback would be positive and constructive. To further minimize apprehension,
111 presenters were given the option to request alternatives, such as initial presentations by video
112 or one-on-one with the instructor, or to receive feedback in private. However, no students in
113 this sample of 45 chose any alternative option.

114 Common sources of public speaking anxiety commonly include grades (Ayres &
115 Ratfis, 1992; Rumbough 1999), lack of confidence (Raja, 2017), and perceived subordinate
116 status (Beatty, 1988). In order to help reduce anxiety and develop a supportive class
117 atmosphere, students were informed that initial presentations were ungraded (“*On our first*
118 *day, you just need to survive.*”). For later presentations, students were informed that grading
119 would be based solely on improvement and on audience participation in support of speakers.

120 We wanted students to understand they were not in competition to achieve a high grade by
121 becoming the best speaker in the course, and that active support and encouragement of others
122 would benefit all.

123

124 ***Class Atmosphere***

125 A course axiom was “*every presentation is a conversation*” because audiences play a
126 role in developing a good presentation. Perceived audience pleasantness and familiarity have
127 a strong effect on student willingness to present (MacIntyre & Thivierge, 1995), while
128 negative nonverbal feedback during a presentation increases stress and can ultimately worsen
129 public speaking anxiety (Hsu, 2009). Students were instructed on nonverbal interactions with
130 the speaker, including gaining a response from a speaker in the form of eye contact, a smile,
131 nod, gesture, or laugh as part of the conversation. A class atmosphere of positive two-way
132 communication between speaker and audience encouraged students to feel safe
133 experimenting with something new, interesting, and/or difficult.

134

135 ***Topics and Preparation Time***

136 On days for student presentations, a range of potential topics or goals were either
137 outlined at the beginning of class or presented in advance – for example, “*something relevant*
138 *to today’s readings.*”

139 Setting a time limit for developing a presentation had two goals. First, the time limit
140 minimized the time students spent worrying or overinvesting in speech writing, pushing
141 students to plan efficiently. The speech preparation procedure of anxious students is
142 characterized by active avoidance. Procrastination for public speaking is correlated with
143 communication apprehension and low self-perceived public speaking competence (Behnke &
144 Sawyer, 2009). A short preparation time limits student opportunity for procrastination. In

145 different settings, 8 or 12 minutes was enough for students to prepare a talk they could
146 present, but not enough time to dither about details. Second, the time limit reduced internal
147 expectations: 8 or 12 minutes is obviously too short to construct a polished, well-structured
148 presentation. But with experience, students reported that developing an ability to prepare a
149 competent presentation in 12 minutes built confidence that, for most, transferred to other
150 courses and activities.

151

152 **One Figure**

153 The goal of a single hand-drawn figure was to build skill at crafting figures that add to
154 a presentation without distracting from the presentation. Students were instructed to use the
155 figures (1) for practice interacting with a figure/text while also interacting with the audience,
156 (2) to help make a point, and (3) learn how to construct and interact with figures to support
157 their spoken words. Hand drawing focused attention on the content of figures, rather than the
158 mechanics of using a graphics program. The inclusion of a single figure needed minimal time
159 while helping students learn to communicate with figures.

160

161 ***One-minute Presentation Length***

162 Sixty seconds of presentation time was sufficient for students to apply and practice
163 many elements of good presentation, and it was enough time for the instructor to observe, jot
164 notes, and decide upon feedback. Longer presentations in the pilot trials added little
165 information useful for formative or summative assessment of presentation skills.

166 Sixty seconds maximized engagement of the student audience. A speaker's
167 perception of audience congeniality at the end of a presentation improves self-assessed
168 competence and gradually reduces anxiety (MacIntyre & MacDonald, 1998). A disengaged
169 or bored audience provides only negative reinforcement to speakers. As audiences gained

170 understanding of effective presentations skills and knew the goals of the presentations, they
171 became curious and focused on how well each speaker might perform. Short presentations
172 interleaved with brief, usually interesting public feedback from the instructor made students
173 more likely to stay engaged and play active roles in every presentation.

174 Presentations were self-timed or timed by a volunteer who gave a warning signal at
175 about 45 seconds and could gently halt the presentation at 70 seconds. Students rapidly
176 mastered the 60-second target, and no penalty was needed for short presentations or for
177 failing to finish.

178

179 ***Eliminating Questions and Answers***

180 Eliminating questions was important to keep students focused on the delivery of the
181 presentations. Questions create a delay that allows the speaker and audience to forget details
182 of a presentation. Eliminating questions allowed speakers and audience to connect easily in
183 their own memory the *one-thing-I-liked* and *one-thing-to-work-on* to the presentation they
184 had just heard, maximizing the value of feedback.

185

186 ***Formative Assessment***

187 Individuals with public speaking anxiety under-rate their performance compared to
188 objective observers (Cheng, Niles, & Craske, 2017). This negativity bias can intensify their
189 fear of presenting. Emotional processing theory proposes that controlled exposures can alter
190 the relationship between a stimulus and a fear response (Foa & Cahill, 2006). Students' fear
191 networks are activated when they are asked to present, but by following up this stressful
192 stimulus with positive feedback, the experience of public speaking can be recoded as
193 nonthreatening. Repeated practice and immediate feedback provides students with an
194 opportunity to hear how their presentation is objectively evaluated by an audience, gradually

195 correcting their negativity bias. The first day of presentation involved either applause for the
196 speaker and feedback for the audience or, in some settings, added a *one-thing-I-liked*.
197 Furthermore, presenters knew that the audience was being assessed, transferring some of the
198 attention and stress from presenters to the audience. The audience was assessed formatively
199 on the first and subsequent days on their ability to make eye contact, their combined ability to
200 gain acknowledgment from the speaker, and their combined ability to improve their
201 interactions with each new speaker. Examples of audience feedback included: “*many of you*
202 *were smiling at the beginning, but then faces went expressionless. Keep smiling.*” “*I saw*
203 *some nodding, but not enough; your goal is to give feedback to the speaker, so nod more*
204 *often.*” As either the presenter or as an audience member, students were pushed to develop
205 active communication.

206 The speaker received *one-thing-I-liked* as a single positive comment, with the
207 instructor varying among speakers the type of comment and presentation skill addressed
208 (“*One thing I liked was your eye contact with most of the room; that helped keep your*
209 *audience engaged;*” and see additional examples in Supplemental Materials B). By the end
210 of a single day of presentations with *one-thing-I-liked*, all students had heard about multiple
211 specific elements of an effective presentation, with some elements reinforced more than once.

212 To aid the speakers’ skill development, we worked to move students through the zone
213 of proximal development, the difference between what a learner can do without help and
214 what they can achieve with guidance from a skilled partner (McLeod, 2019). Three key
215 components which aid progress include a knowledgeable tutor, interactions that allow the
216 student to both observe and practice their skills, and scaffolding or supportive activities
217 (Vygotsky, 1978). Skill development through *One-thing-to-work-on* was added after the
218 second presentation. This was the instructor’s opinion of the most useful presentation
219 element on which a speaker should focus for improvement in their next talk (see examples in

220 Supplemental Materials C). This feedback helped students learn key tenets of public speaking
221 from a knowledgeable instructor. Subsequent presentations gave students the opportunity to
222 practice the target skills and observe the behaviors in their peers' presentations. To emphasize
223 these target skills, students were asked, at their preference, to end or preface each talk by
224 specifying what they were trying to improve. In addition to helping students focus on a
225 single goal, this helped the audience engage with the speaker's goals and helped the
226 instructor track each student's progress, responding either "*well done, that was successful*",
227 or "*good effort, but try again.*" Students in the audience became invested in each other's
228 success, often responded nonverbally to success, and empathized when a speaker did not
229 succeed. With audience investment and participation, each presentation felt like a
230 conversation, albeit one with the audience contribution being entirely nonverbal.

231 Specifying only *one-thing-to-work-on* focused student attention on steady
232 improvements in a logical, achievable sequence. This is a key element of scaffolding, which
233 suggests students progress most effectively when their attention is focused on a single
234 simplified task appropriate for their current developmental level (Wood, Bruner, & Ross,
235 1976). Attention divided across multiple areas for improvement can be so challenging as to
236 block improvement, especially when presenting a talk already carries a high cognitive load.
237 Effective scaffolding requires constantly adjusting student goals as skills develop (Wood,
238 Burner, & Ross, 1976). As students improved, the instructor set new challenges, steadily
239 raising the bar for success, but always defined by the developmental stage of the student.
240 Advanced students skilled at basic elements might be told, for example, to "*experiment with*
241 *extremes in movement. Get wild at least once,*" or "*try a rhetorical device: next time, try*
242 *repeating twice at least one word or phrase in your introduction, then again in the middle*
243 *repeat a phrase after a pause, and again repeat something at the end – each chosen to give*
244 *maximum power in your introduction, again for a key point in the middle, and again in your*

245 *conclusion*". For students, the message always was "we don't care if it works in every
246 *presentation – just try new things to expand your skills*". All students showed improved
247 presentation skills as a result of the one-minute presentations, while experimenting with
248 elements of speech.

249

250 ***Repeated Practice***

251 Repeated opportunities to present addresses public speaking anxiety that is rooted in
252 circumstance novelty and prior history (Beatty, 1988; Finn, 2009). Exposure therapy in which
253 initial speeches are not accompanied by negative consequences can diminish anxiety during
254 subsequent presentations (Gray & McNaughton, 2000). Repeated exposures develop
255 habituation as students learn not to respond to a stressful stimulus when it is presented
256 repeatedly in the absence of significant consequences (Behnke & Sawyer, 2004). Repeated
257 practice also provides students with opportunities to implement feedback and receive
258 confirmation their adjustments have been successful.

259

260 ***Peer Critique***

261 In the first-semester general education class, one goal for students was to learn how to
262 critique a presentation. Therefore, during two later sessions, each student was assigned two
263 talks to critique using the instructor rubric. Peer critiques were graded on how well they
264 replicated elements on the rubric noted by the instructor. Peer critiques were neither shared
265 with speakers nor used to assign grades to speakers.

266

267 ***Instruction on Presentation Skills***

268 Feedback intervention theory suggests feedback is not universally beneficial and that
269 student personality and feedback style play a role in feedback efficacy. Feedback which

270 focuses on meta-task performance, directing attention to the student themselves, can damage
271 performance. Feedback which focuses on task motivation or learning processes improves
272 performance, suggesting a need to focus feedback on specific behaviors instead of the student
273 (Kluger & DeNisi, 1996). High sensitivity students can be negatively impacted by high-
274 intensity negative feedback (Smith & King, 2004; King, 2016). To maintain a productive
275 learning environment, the feedback provided during these exercises was specific, low-
276 intensity, and targeted at a behavior. The *one-thing-I-liked* segments focused initially on
277 foundational elements. As individual students increasingly mastered the foundations,
278 feedback and goals became more complex, often including elements of presentations new to
279 all, or nearly all, students. Importantly, students could directly connect each piece of
280 feedback with the student presentation given only a minute earlier. Within sessions that
281 included presentations, students heard feedback directed to themselves as well as others
282 equivalent to a lecture including as many as 20 attributes of effective presentations, but with
283 the added benefit of peer examples. Variation among speakers and presentations allowed the
284 instructor to draw class attention to multiple ways to make a presentation effective. The
285 variation among talks and students also demonstrated that there are many ways to affect
286 audience attention and no single “best” presentation style. Students were told not to try to
287 converge on a single style, but rather to practice different elements of effective presentations
288 and decide which they could apply with skill.

289 For *one-thing-to-work-on*, the instructor often added suggestions on ways to address
290 each specific issue. These included, for example, “*Try practicing short segments of a*
291 *presentation on your own in front of a mirror*” (for when a talk can be practiced before class
292 time); “*Choose a single point to emphasize with eye contact – and at that point in your talk*
293 *make eye contact with one person in each quadrant of the room*”; “*Practice varying your*
294 *volume -- for one part of your presentation, raise your voice to a shout and, at another part,*

295 *reduce volume to a whisper*"; and, for students who struggle to remember parts of a
296 presentation or lose track of their place, "*If you tend to forget your speech, use notes*
297 *structured with cascading indents.*" (see Supplemental Materials C)

298 Instruction on presentation skills came entirely through the in-class feedback
299 immediately after presentations. Immediate feedback is viewed more favorably by students
300 compared to delayed or absent feedback, and immediate feedback is effective in improving
301 speech delivery skills such as eye contact, gestures, volume and speaking speed (King,
302 Young & Behnke, 2009). Delayed feedback has been shown to be more effective for
303 performance edits which require deliberation, such as performance lengths and including
304 supporting sources. Deliberative skills were not the focus of this exercise, but may be
305 valuable considerations in future implementations.

306

307 ***Summative Assessment and Grading***

308 Grades on presentations were based on improvements from initial presentations,
309 following a rubric (Supplemental Materials E). According to the rubrics, all students
310 improved in multiple skills. For instructor records and grading, one-minute presentations
311 provided enough time to record key notes on core presentation skills, focused on each
312 individual's *one-thing-I-liked* and *one-thing-to-work-on*. During a presentation, it was
313 usually possible to notice audience behaviors one or several times.

314 After the final presentation, grades for one-minute presentations were assigned based
315 on the time-series of rubric sheets for each student showing the degree of improvement over
316 time. Students who entered the course with weak presentation skills were expected to
317 develop stronger speaking skills, while those entering with stronger presentation skills were
318 expected to improve and refine their speaking style while experimenting with new elements.

319

320 ***Instructor Time for Feedback, Grading and Preparation***

321 One-minute presentations required very little instructor time outside of class sessions,
322 as feedback given entirely in class requires much less time than individual written critiques or
323 one-on-one meetings. For the course with 14 general education students, each giving 8
324 presentations across 8 class periods, with two of those days including peer critiques, the
325 instructor time out of class totaled less than 15 minutes per student for the entire semester.

326 Pre-instruction preparation by the instructor required an understanding of public
327 speaking skills along with familiarity with the instructor rubric and lists of feedback items for
328 *one-thing-I-liked* and *one-thing-to-work-on*. An instructor might need to practice some
329 public speaking behaviors such as how to use changes in volume, replace filler words,
330 interact with a projected figure, and use eye contact before modeling them in class.

331

332 **Evaluation of Effectiveness**

333 Anonymous surveys (Supplemental Material F) using Qualtrics were used to gain
334 information from participants (approved by the William & Mary Institutional Protection of
335 Human Subjects Committee under protocols PHSC-2018-04-24-12954-pdheid and PHSC-
336 2018-09-18-13141-pdheid). Contact information was available for 44 of 45 students; these
337 were solicited for responses to either a single survey or for two surveys. One respondent was
338 removed from the data set because he/she completed only two presentations. Survey data
339 were collected at two time periods: April-May 2018 and April-May 2019. These represented
340 three time points for students surveyed: (1) immediately after the experience (from both of
341 upper level courses and some research laboratory students; N = 14 respondents, 47%
342 response rate), (2) 1 to 1.5 years after the experience (students in the freshman general
343 education course, one upper-level course, and some research laboratory students; N = 18
344 respondents, 67% response rate), and (3) 2 to 2.5 years after the experience (students in the

345 freshman general education course and some of the research students; N = 10 respondents,
346 63% response rate). At least 26 of the 45 students responded to at least one survey.
347 Demographic data were not collected because the small group sizes would have made some
348 individuals identifiable by their responses. Complete survey responses are available at DOI
349 10.17605/OSF.IO/QHM8J.

350 For each survey, preliminary analysis of Likert-style data indicated that students from
351 the different courses or research settings gave similar responses, and so data were not
352 separated by course for analysis. We conducted binomial statistical tests on the Likert-style
353 data by collapsing to single categories all “*agree*” responses and all “*disagree*” responses,
354 respectively, and discarding from statistical analysis any “*neither agree nor disagree*”
355 responses.

356

357 ***Quantitative Survey Data***

358

359 Survey respondents agreed that by watching other students present and immediately
360 hearing the instructor’s comments they learned “*a great deal about how to improve MY*
361 *presentations*” (Fig. 1A; $P < 0.01$ at each time period). The presentations with feedback in
362 class were considered “*useful and helpful*” (Fig. 1B; $P < 0.01$ at each time period). The
363 experience helped reduce stress or increase enjoyment with presenting (Fig. 1C; $P < 0.01$ at
364 each time period). Nearly all respondents felt that they learned “*more about oral*
365 *presentation skills than other students*” they knew (Fig. 1D; $P < 0.01$ at each time period).
366 Prior to surveys, we predicted that even if students found one-minute presentation
367 experiences useful, many would nonetheless find them stressful or unpleasant. However, in
368 response to that survey question, on average only 20% (10-30%) agreed their presentations
369 were *very stressful or unpleasant* (Fig. 1E; $P < 0.01$ except groups 1-1.5 and 2-2.5, for which

370 $P < 0.05$). All agreed that the experience *would benefit others* (Fig. 1F; $P < 0.01$ at each time
371 period). Not shown in Figure 1, most agreed that they would *not have learned as much* (88%
372 of responses) in an approach to teaching presentation skills using one or two longer
373 presentations (see Q7 in Supplemental Materials F). In an additional question (Q12) included
374 in two of the three surveys, nearly all respondents agreed they would recommend these
375 experiences “*to every student, ideally in freshman year*” (96% of responses)

376 **[Figure 1 near here.]**

377

378 ***Qualitative Survey Responses***

379 Two text response questions asked survey respondents to, (1) *List up to three things about*
380 *what you gained, or what you liked, from doing the one-minute, one-figure presentations. If*
381 *there are none, please write "None";* and (2) *Can you reflect on the impact of these*
382 *presentations on your oral presentation skills? Is there any additional information or*
383 *feedback you would like to offer?* Of the 42 survey responses, 39 included text entries to one
384 or both questions. Because respondents often addressed both questions in one or both text
385 boxes, the responses were combined for analysis. Nearly all comments fell into nine
386 categories (Fig. 2), the two most common referencing increased confidence (except one
387 response reporting increased anxiety and fear from an individual who would nonetheless
388 recommend the experience to others) and improved skills. The specific skills most
389 commonly highlighted were decreasing the use of filler words (*ums, ahs, like*), gaining skills
390 at being an audience member, and learning the use of pauses and intonation to emphasize
391 specific parts of a presentation. The majority of respondents identified gains and/or valued at
392 least one of the following aspects of one-minute presentations: they were fast and efficient,
393 the feedback was focused and specific, there were frequent opportunities for practice, and
394 there was low pressure. Less often mentioned, but still common, were improving skills for

395 timing a talk, ability to interact with an audience, and selecting the essential material for a
396 presentation.

397

398 **[Figure 2 near here.]**

399 Representative responses on things *gained or liked* were the following:

400 (A) *“The most valuable thing for me was the repetition. I am a very nervous presenter in*
401 *general so being able to do these presentations once a week proved to be very valuable*
402 *for me. Although I dreaded these presentations, I truly believe they benefited me and I*
403 *am a better public speaker because of it. I also really liked watching others present. It*
404 *was much easier to critique them and then reflect on myself to see if I was making those*
405 *mistakes as well.”*

406 (B) *“(1) Confidence - the shortness and low stakes nature of the presentations helped me*
407 *to feel more comfortable in front of a group / (2) The ability to be concise - I am a long*
408 *winded speaker and writer, so these presentations helped me to learn to be concise and*
409 *get to the point / (3) ability to experiment - because we had so many presentations and*
410 *they were so short, we were really able to try and make changes in our presentations*
411 *skills and find what did and did not work for us”*

412

413 In response to a third text entry question about things they might *“like to change*
414 *about the one-minute, one-figure presentations,”* the most common text entry was blank or
415 *“none”* (N = 13). Suggestions tended to be on details such as the chance to add slightly
416 longer presentations (e.g., *“2-3 minutes”* or give a final longer presentation; N = 6), content
417 (e.g., *“how to decide what topic”* or *“more focus on content”*), or feedback (e.g., *“having*
418 *other students anonymously critique”* or *“more feedback”*). Most suggestions occurred in
419 only a single response, and only one suggestion occurred in more than three responses

420 (longer presentation times).

421

422 When reflecting upon the “*impact*” of the experience, most, but not all, students reported

423 significant and often lasting changes, as in the representative range of comments below:

424 (C) *“These truly helped me become a much better speaker. I had a few other*
425 *presentations in other classes and I carried over the improvements into these classes. I*
426 *will always remember this advice! Honestly SO helpful”*

427 (D) *“I think these presentations definitely made me more confident about presentations.*
428 *I find myself more willing to participate and present now than I did that first semester*
429 *freshmen year. Maybe this is just me evolving as a student naturally over time, but I truly*
430 *think the presentation activity had something to do with it!!”*

431 (E) *“Having done several presentations before, I felt that this did not give me much*
432 *information I didn’t already know whether it be how to present and what I personally*
433 *needed to work on, but it did give me a chance to practice”*

434 (F) *“I have noticed a huge difference in how I present now. I am a lot more confident*
435 *and presentations I make now with less preparation time have gone better than*
436 *presentations I made before with a lot of preparation.”*

437 (G) *“I’m general [sic] I am much less stressed about giving presentations now than I*
438 *had been before I took this class/practiced with this kind of presentation. I tend to talk*
439 *very fast when I’m nervous and never pause to let a group digest information and I*
440 *gained skills from the one minute presentation drills that helped with that (counting in my*
441 *head, breathing, making eye contact etc.)”*

442

443 **Discussion**

444 This format allowed students to deliver many presentations, each with specific goals

445 for improvement, while using just a few class periods. Survey responses indicated that
446 participants valued the short format with immediate feedback and would recommend them to
447 other students (Fig. 1). The great majority of respondents did not find them stressful or
448 unpleasant to present, and nearly all felt they had learned more than they would expect from
449 more typical presentation formats (Fig. 1). In text responses, over half of respondents
450 specified confidence and skill development within their top three gains (Fig. 2), meeting
451 goals of the method.

452 Two important questions are how many presentations might be useful for students,
453 and in what settings. These results were obtained with students who had opportunities for
454 three to eight individual one-minute presentations in class sizes/research groups with 6-14
455 individuals. A practical minimum might be four opportunities to present, with up to 15-20
456 students presenting in one day. Subjectively, we observed gains in presentation skills for
457 nearly all students within four presentations. Surveys indicated that even those who gave only
458 3-4 presentations felt they had learned useful skills and recommended the experience for
459 others (Fig. 1 and raw data). A reasonable upper end might be eight presentations, at which
460 point the students in the general education course reported diminishing returns. We suggest
461 one-minute presentations could be useful with four to eight presentations per student. We
462 found them useful in discipline-based and general education courses at the level of first-
463 semester freshmen to last-semester seniors.

464 Limitations of the data include the small sample sizes, application by a single
465 instructor, potential for bias in the survey sample, the use of an unvalidated survey, the
466 absence of demographic data, the lack of a comparison from before and after the intervention,
467 and applying only subjective measures of changes in presentation quality. It will be valuable
468 to conduct more trials with additional instructors and deeper assessment, including objective
469 assessment of pre-post presentations and use of pre-post surveys on (1) communication

470 apprehension and (2) communication self-efficacy.

471 In addition to requiring very little instructor time outside of the classroom, one-
472 minute, one-figure presentations appear to differ from other instructional approaches in five
473 important ways: (1) short preparation time allotted to students to prepare each presentation,
474 which appeared to develop skills for efficient preparation, (2) reduced duration of
475 presentations to a minimum that still permits meaningful assessment, (3) a requirement that
476 the audience appear engaged and send positive nonverbal signals to the speaker, (4)
477 immediate public feedback to both the presenter and audience, and (5) feedback focused on a
478 single accomplishment and a single goal. Students identified all of these characteristics as
479 helpful for developing increased speaking skill and confidence.

480

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488

489

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491 There are no financial interests or benefits to the authors arising from this research.

492

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 584

585 **Figure Legends**

586 **Figure 1.** Responses to six questions from surveys administered after student experiences
 587 with one-minute presentations at intervals of 0, 1-1.5, and 2-2.5 years (N = 14, 18, and 10
 588 respondents, respectively). Questions A – F are listed in the left-most column. For each
 589 question, the horizontal bars show the percentage of students choosing strongly agree, agree,
 590 somewhat agree, neither agree nor disagree, somewhat disagree, disagree or strongly
 591 disagree, showing cumulative percentages in order from left (strongly agree) to right
 592 (strongly disagree). The heat map indicates color and pattern coding for the responses.

593

594 **Figure 2.** Survey responses from two text-response questions asking respondents to: (1)
 595 “List up to three things about what you gained, or what you liked, from doing the one-minute,
 596 one-figure presentations. If there are none, please write none.”; and (2) “Can you reflect on
 597 the impact of these presentations on your oral presentation skills? Is there any additional

598 information or feedback you would like to offer?" The columns show the percentage of
599 respondents that included references interpreted as being in the nine categories shown.

600 (Key words/phrases used to help define each category were as follows:

601 **Confidence** – confidence, comfort, less fear, less anxiety; **Skill Development** – skill,
602 ability, eye contact, audience skills, um, ah, like, uptalk, intonation, voice, movement,
603 using notes, and stutter; **Feedback & Focus** – feedback, focus, critique, simplicity,
604 awareness, bad habits, progression, improve; **Fast & Efficient** – short, brevity, not
605 longer, small time frame, not a large amount of time, prepared in class, increased ability
606 to prepare on the fly, efficient, concise [with connotation of presentation time]; **Practice**
607 **Frequently** – practice, experiment, play around with different things, doing it a lot, in
608 front of peers constantly; **Low Pressure** – play, camaraderie, low stress, comfortable
609 environment, casual environment, not as daunting, not judged; **Using Time & Timing** –
610 time, timing, pacing, slow enough speech, concise [with connotation of the structure of a
611 presentation], time management; **Audience Interaction** – audience, providing feedback
612 to other presenters, actively nodding, show attention, watching others; **Selecting**
613 **Material** – choose important information, gather my thoughts, leave out information,
614 good introduction, figures that aid my presentation, think about the main point.)

615