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USING PROCESS-ORIENTED, GUIDED-INQUIRY LEARNING IN THE TEACHING OF ACADEMIC LITERACY

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ABSTRACT

This paper presents a quantitative analysis of an intervention study that used process-oriented, guided-inquiry learning (POGIL) to teach grammar as part of an academic literacy module in the Extended Curriculum Programme (ECP) at a South African university. In the first semester of the Language and Study Skills (LST) module, four key grammatical functions (parts of speech, sentence structure, punctuation, and discourse markers) are foundational to subsequent writing skills taught throughout the year. The POGIL-based intervention study for the LST module was designed to respond to the specific educational context and needs of the ECP students. A teaching intervention was conducted using POGIL-style worksheets, after which the performance of the intervention group was compared to the performance of a control group using data from items in formal assessments (two semester tests and an examination). Analysis of this data indicates that the POGIL group performed better than the control group in all four constructs, though the difference in performance was statistically significant in only three constructs. The paper concludes with a suggestion that further research should be conducted to investigate the relationship between students' level of capability and their response to POGIL-style language instruction; some possibilities for the continuation of the study are outlined. The research therefore contributes to the small, but growing body of work on POGIL instruction by expanding it to include academic literacy and ECP instruction.

KEYWORDS

academic literacy, higher education, extended curriculum programme, process-oriented, guided-inquiry learning (POGIL), English grammar

INTRODUCTION

Language and academic literacy courses are an increasingly prominent feature of many undergraduate programmes at South African universities (Fouche, 2016). This reflects a larger global trend which recognises the need for improved writing, critical thinking, and information processing skills at a tertiary level, all of which are essential to student success in completing a graduate qualification as well as in the workplace. In a South African context, academic literacy instruction forms an essential part of most Extended Curriculum Programmes (ECPs). These programmes include an additional year of study to lay strong skills and knowledge foundations for students pursuing undergraduate degrees in an attempt to address attrition rates at South African tertiary education institutions which typically see only half of first-year students make it all the way through an undergraduate qualification (Van Broekhuizen and Spaull, 2017: 10).

Extended programmes therefore offer one possible solution to the problem of low participation rates and the fact that students are poorly prepared by the basic education system for the demands of tertiary education (Parkinson, Jackson, Kirkwood & Padayachee, 2008). The Language and Study Skills (LST) module under discussion is an example of an academic literacy module that is designed to support academically vulnerable students in an extended programme.

As the ECP at the university in question follows a learner-centred approach that strives to respond dynamically to student needs, emphasis is placed on consistent evaluation of which instructional practices are best suited to different content areas. Currently, as part of the general drive towards hybrid learning at South African institutes of higher education, particular sections of the LST course are taught and assessed through a commercial online platform. These sections are focused on technical language aspects and grammatical functions, and lend themselves to simple quiz-style instruction in some ways. However, the fact that certain material is adaptable to online instruction does not automatically mean that online instruction is the optimal mode for students to learn that material. In the case of first-semester LST content, many students still struggle with the application of material taught online well into the second semester. To the researchers, who are both also LST lecturers, this prompted a reconsideration of how this material might be best presented to students.

A possible alternative to quiz-based online instruction is a guided-inquiry approach, of which POGIL is one version. POGIL and guided-inquiry models in general have been used successfully in STEM instruction. As indicated by a meta-analysis by Walker and Warfa (2017) comparing POGIL and standard lecture methods in STEM subjects, the POGIL method substantially increased students' odds of passing a module. However, this approach has received little attention in language and academic literacy educational research, and so few guidelines are available for its application to a subject such as LST. Furthermore, the few tangentially relevant studies that do exist are context-bound to international educational systems, and so any application of their conclusions to tertiary instruction in South Africa would be necessarily limited.

Against this scarcity of research, the motivation for exploring potential applications of POGIL to LST is that the method aligns with the setup of LST classrooms, where students often work in groups, and emphasis is placed on practical application activities and student participation. In a similar vein, the POGIL method requires small teams of students to complete worksheets that facilitate guided-inquiry and encourages students to tackle problems as part of a group. Thus, students are prompted to actively construct knowledge and to apply it, promoting deep learning and laying the foundations for independent learning. At the same time, the strategic scaffolding of the learning process and the focus on peer-learning may reduce the chances of struggling students becoming demotivated and ultimately being left behind. The researchers therefore designed a POGIL-based intervention study for the LST course to test whether this guided-inquiry-based method would significantly improve students' application of certain grammatical functions when compared to the current instructional mode.

LITERATURE REVIEW

The POGIL method, first developed in the United States of America in the 1990s for tertiary level chemistry education, is informed by a combination of interconnected pedagogical strategies. Working within a constructivist framework, which assumes learning is based in personal construction of knowledge, the POGIL method focuses not only on achieving conceptual understanding but also on developing the processing skills that lead to understanding. This is done by employing a version of what is known as inquiry-based learning, which, according to Abraham (2005: 42), can be said to consist of four instructional practices. Firstly, students are required to practice inductive reasoning (in other words, focussing on the process of learning and reasoning from specific facts towards generalisations). Secondly, the instructor acts as a facilitator in the quest for knowledge, instead of as the source of knowledge. Thirdly, learning is based on problem-solving activities. Lastly, the *process* of learning certain concepts, in addition to the concepts themselves, are the goals of learning. The combination of teaching students thinking skills in addition to content requires some conceptualisation of what the thinking process looks like. A vocabulary for this is provided by the learning cycle instructional strategy, which attempts to describe the process followed to attain knowledge. This constitutes a practical application of inquiry-based learning and takes place as a five-step process explained by Cracolice (2009: 24), which starts with *engagement*, moves on to *exploration*, *explanation* and *elaboration*, and ends with *evaluation*. A distilled version of the cycle is used for POGIL instruction (Lehman, 2018), which prompts students to work according to a process starting with *exploration*, moving on to *invention*, and ending with *application*.

Practically, the approach requires small teams of students, all of whom are assigned specific roles, to complete worksheets structured according to the simplified learning cycle described above. The three main characteristics of POGIL materials are described by Moog *et al* (2009). Materials allow students to work in self-directed teams, positioning the instructor as a facilitator rather than a manager of the process; she may provide basic guidance to students on completing the worksheets and group interaction, but refrains from content-based assistance. Furthermore, materials are designed to prompt students to construct their understanding of a concept through a process of exploration. Finally, materials use discipline-specific content to impart critical thinking, process skills, and application skills. Effectively, students are expected to engage in collaborative peer-learning, without the option to default to a more passive learning interaction between the instructor and the student. The POGIL method thus places special focus on inquiry-based collaborative and peer-learning to develop and improve students' skills in 'information processing, communication, critical thinking, problem-solving and metacognition and assessment' (Pogil.org, 2021a).

The researchers first developed an interest in the application of the POGIL method to language instruction following a workshop hosted at the university in November 2018. The workshop was presented by Caroline Lehman, a visiting teacher and POGIL practitioner from the USA. While the most obvious relevance of the workshop was to the STEM modules of the ECP, the POGIL method also seemed ideally suited to LST teaching style and some of its content areas: classes are presented to smaller groups of between 50 and 60 students, and emphasis is placed on practical application activities and student participation. As the researchers investigated

whether studies had been done on POGIL in language or in academic literacy modules at undergraduate level, two things became clear. Firstly, POGIL is a well-researched method of instruction in STEM-related subjects, and studies have shown positive results on student engagement and performance. Secondly, very little research explores the possibility of extending the POGIL method into language and academic literacy instruction.

The preponderance of research on POGIL focused on STEM instruction is a logical consequence of its origins in chemistry education. Studies of POGIL-based chemistry content have shown lower attrition rates, (Farrell, *et al*, 1999: 570), increased course grades (Frost, 2010: 127; Chase *et al*, 2013: 410), and improved student perceptions of learning gains (Frost, 2010: 127). Research into POGIL implementation in university teaching and learning has extended into a variety of other STEM subjects, including reading primary scientific literature (Murray, 2014), calculus (Bénéteau *et al*, 2017), engineering (Elliot & Chu-Chuan, 2013), and aviation (Vacek, 2011:78). Walker and Warfa's (2017:1) meta-analysis of studies in STEM education on POGIL compared to standard lecture methods indicates that POGIL increased students' chances of passing a module.

Some research has also been done on the implementation of POGIL in other disciplines. For example, articles have been written on applying the POGIL method to subjects such as Information Literacy (Mitchell & Hiatt, 2011) and Discourse Analysis (Zukelpi, 2016). Mitchell and Hiatt (2011: 539) present a case study of POGIL applied to the 'research methods' and 'technology tools' sections of a library-instruction Information Literacy course. Zulkepli (2016) discusses the development of POGIL materials in teaching discourse analysis, in the context of tertiary instruction in Malaysia; it is suggested that using POGIL activities would address the perceived problem of underdeveloped critical thinking skills in Malaysian undergraduate students. These studies are of interest as both information literacy and discourse analysis are subjects with some theoretical relation to academic literacy and LST module content. In practice, however, the content overlap is minimal – no work on language skills or basic grammatical functions is included – and neither Mitchell and Hiatt nor Zulkepli present any quantitative data related to the application of the developed POGIL content. Furthermore, these studies are context-bound to the educational systems of the United States of America and Malaysia, so any application of their conclusions to tertiary instruction in South Africa would be necessarily limited.

Beyond these two examples of applications of POGIL to tangentially related fields, there is a scarcity of research on POGIL applied to academic literacy or language instruction. A literature search has not returned any studies on the application of POGIL to courses similar to LST 133. The closest documented example of POGIL applied to language instruction is a study in teaching German as a foreign language (Johnson *et al*, 2011: 1), which recorded higher final exam scores for students being taught using POGIL materials as opposed to those taught using normal lecture material. The student cohort used in the study was small, at less than 20 students per class. Besides the fact that Johnson's study does not cover English language learning, the course seems to have been aimed at general language learning, as opposed to specialised language learning. In contrast, the LST module applies principles of English for Specific

Purposes, which focuses on specific student needs according to the contexts in which they need to use the target language. The only other documentation of English language learning using POGIL is anecdotal and informal, as in a trip report by Ellinger (2018), which records language teachers' positive perceptions of the POGIL method, but does not provide any formal quantitative or qualitative study of applying this method to real classroom situations.

METHODOLOGY

An experimental design was used in order to compare the performance of two groups who received two different interventions on the same content but were otherwise equal. Each group's performance was measured in four constructs at the end of the intervention. Finally, the results were compared across groups and across constructs.

Participants

Participants were sourced from four LST 133 classes who formed part of the BCom non-numerical 2019 cohort of the ECP of the university in question. This cohort was selected as it is the most uniform (all students are registered for the same modules), and it is also the cohort that typically has the poorest performance on average (most likely since this programme has the lowest entry requirements of all the ECP streams), therefore making it the group that would benefit the most from an intervention. None of the ECP students are allowed to repeat the year; they are, thus, all in their first year of university studies. The participants were divided into an online instruction group (n=102) and a POGIL group (n=108). The online instruction group and POGIL group both received six hours of instruction. The online instruction group spent six hours completing online quiz activities, while the POGIL group completed the worksheets in face-to-face, small group activities in class. The POGIL group did not have access to the online quiz activities.

INTERVENTION

Online instruction

The online instruction group completed roughly six hours of online quizzes dealing with the following grammatical functions: parts of speech, sentence structure, punctuation, and discourse markers. These quizzes consisted of multiple-choice and cloze questions. Each participant had to complete each quiz, and many chose to work together. The quizzes typically consisted of roughly 20 questions. The initial quizzes for each of the four functions allowed unlimited attempts over a set period of time, most often a week, so that participants could complete additional iterations of the same quiz if they chose to do so. Each quiz drew on a question bank, so the various iterations of each quiz consisted of different combinations of the same questions. In contrast, the final quiz for each of the functions allowed only one attempt and a limited amount of time in which to complete the quiz.

POGIL instruction

In contrast to the online instruction group, the POGIL instruction group received worksheet-based instruction which they completed in smaller groups of five. Both groups completed the six hours of instruction on the grammatical functions outside of regular class time, and neither group was assisted by LST lecturers or tutors during the process. However, the POGIL participants were involved in a more structured experience. Each of the five group members was assigned one of the following roles: *reader, document controller, timer, spokesperson*, and *manager*. The duties involved in each role were written on cards that were handed out along with the worksheets at the beginning of each session. The roles were rotated to ensure that no one held the same position more than once. Furthermore, the POGIL worksheet sessions had strict time limits, and the small groups were instructed to first reach a consensus before each group member filled in his or her own worksheet. This ensured that a lot of group discussion took place, and none of the participants was able to sit idly by while other group members completed a worksheet on behalf of the group.

MATERIAL DEVELOPMENT

The content for both modes of instruction was developed by a team of academic literacy instructors. The online quizzes completed by the online group were adapted from existing tests and tasks used in the module in accordance with the guidelines set up by Lehman (2018) and those available on the POGIL project's website (Pogil.org, 2021b). Drafts of the POGIL worksheets were given to other academic literacy instructors to complete and were then adapted and finalised based on these subject experts' feedback.

OBSERVATIONS

POGIL groups

The POGIL groups appeared to be a little bewildered by the new instructional mode with which they were not familiar; however, they quickly adapted. The first session was especially noisy and quite chaotic. Several of the small groups argued furiously about the answers they would write and consequently did not manage to complete the worksheet in the time provided. Many participants frequently asked the instructors who invigilated the sessions what the answers were as soon as the group got stuck; some of these students appeared quite frustrated when the instructors would not give them the correct answers and were reluctant to tackle difficult questions. One student remarked that the worksheet was making him 'feel stupid'. The apparent challenge that the first worksheet presented was all the more remarkable as it dealt with parts of speech, a subject which South African schools introduce in Grade 3 (Department of Basic Education, 2011: 116) and is taught, in some form, until Grade 12. In conversation, many LST students have been somewhat dismissive of this section of the module, stating that their knowledge of parts of speech is sufficient. This attitude was so pervasive that the LST 133 module was reorganised to start with referencing instead of grammar as students appeared to dismiss the module as irrelevant when it started with content with which they were familiar, such as parts of speech. One of the reasons why the first session was so chaotic was that most

students had opinions about the content, but few seemed aware of the limitations of their own understanding. A particularly noteworthy effect of the POGIL mode was that it made participants aware that they did not necessarily know as much about basic grammatical functions as they initially assumed they did. This realisation was understandably unsettling, thus, the chaotic and argumentative first session. Nevertheless, it was a shared experience, which likely made it less daunting. Once the participants started to become aware of the limitations of their own understanding and, importantly, were reassured that they were not the only ones in the dark, they became much more amenable to learning and invested much more in the process.

Online group

The participants in the online group also appeared to experience a bit of a learning curve, although theirs had to do with technology and computer literacy. While current instructional approaches such as hybrid learning models seem to assume a certain degree of computer literacy in all students, many ECP students need extensive support to access and complete online tasks, much less learn from them. Since these students are often those who come from disadvantaged backgrounds, making blank assumptions about whole cohorts' capabilities is risky. It can increase the gap between privileged students, who have frequent interactions with a range of online platforms and access to many computer literate adults, and underprivileged students, who do not benefit from these opportunities and connections (Tshuma, 2012: 24; Schlebusch, 2018: 72). The grammatical functions instruction takes place early in the year, and many students struggle with the mode of instruction. Nevertheless, all the participants in this study did eventually find their feet in the online world and were then eventually able to continue with online instruction without requiring assistance. Unfortunately, the grammatical functions content is fairly hierarchical; setbacks early on will undoubtedly have a negative effect on content that is delivered later on. Another noteworthy observation is that participants in the online group would sometimes take photographs of their answers, or of the feedback they received, and share these with friends who had not yet started the online quizzes. The participants appeared to take the tasks fairly seriously initially, but by the end of the semester, many seemed to regard the online quizzes as something that just had to be done, and not as much of a learning opportunity.

FEEDBACK

POGIL group

To fully adhere to guided-inquiry teaching and learning principles (Lehman, 2018; Abraham, 2005), the researchers did not provide participants in the POGIL group with a memorandum once they had completed the worksheets. Instead, the completed worksheets were collected and analysed, but not marked. Incorrect answers were indicated but not corrected. The worksheets were then returned to the participants who were tasked with fixing their errors; thereafter, the worksheets were collected and analysed again. Interestingly, the researchers found that students were more often than not capable of correcting a previous error with no more prompting than simply pointing out that an error had occurred. Any muddy points, where several groups failed

to arrive at the correct answer even after being prompted, were noted. Finally, a brief recap presentation addressed the fundamental grammatical structures that underlie these muddy points to ensure that there were no knowledge gaps going forward.

Online group

Participants in the online group received automatic feedback, either after each question or after completing the whole task. Where possible, the material developers tried to anticipate common errors, provide distractors in multiple-choice questions that tested these common errors, and then explained the error in the feedback. In such scenarios in particular, and wherever possible, individual feedback was developed for each distractor in an attempt to address a wide variety of misunderstandings. Often, this feedback referred participants back to the relevant section in their workbook.

DATA COLLECTION

Data was collected from two semester tests and one exam. All of these instruments were developed by a team of LST lecturers and moderated by the module coordinator. All LST students, including the participants, wrote the two tests and the exam under regular test conditions. The researchers identified a total of 43 items in these instruments that are relevant to the study: 18 items testing parts of speech, seven items testing sentence structure, nine items testing punctuation, and nine items testing discourse markers. These questions were isolated, remarked to ensure accuracy, and captured for data analysis. The results from these tests were analysed using a t-test to determine whether one of the two intervention group's abilities improved more than the other group's abilities.

DATA ANALYSIS

According to Hanneman, Kposowa and Riddle (2013: 302) "Inferential statistics are a powerful tool for letting us assess how much confidence we have in reaching conclusions that sample results are, or are not, consistent with the predictions of theories." Firstly, to establish if the two groups were on equal footing before the intervention took place, the participants' first assignment, submitted at the beginning of the semester, was analysed by two independent markers who tallied all the grammar errors in each assignment. An independent t-test was conducted to examine whether there were statistically significant differences between the average marks of the intervention and control groups. The results revealed no statistically significant difference between the intervention (M=12.89) and control (M=13.98) group (t-ratio=-1.704, df=206, p=0.09).

Secondly, to compare the two group's performance after the intervention, an independent t-test was used to analyse each of the four constructs and to produce a probability value (p-value). The p-value indicates statistical significance at a 95% level of confidence if the calculated p-value is smaller than 0.05 (Krzywinski & Altman, 2013: 809).

These tests were conducted based on certain assumptions relating to the data, namely that the population which provided the data has a normal distribution, and that the data meets the

assumption of homogeneity of variance (Salkind, 2010: 1604). A histogram and the skewness measure of between -1.5 and 1.5 was used to assess normality, and Levine's Test was used to test for homogeneous variances. The p-value for Levine's Test was 0.48, indicating homogeneous variances; in other words, the assumption of homogeneous variances is not violated (Salkind, 2010: 578). The histograms indicated fairly normal distributions with skewness measures of -0.78 and -0.36 for the intervention and control groups, respectively, which is well within the range for normality (Howell, 2013: 115).

ETHICAL CONSIDERATIONS

Ethical clearance for this study was obtained from the university where it was conducted. Before the interventions started, the process and intention of the study were explained to the students who were then asked to indicate whether or not they gave informed consent for their data to be used. The participants were encouraged to ask questions about the study and were informed that they could withdraw consent at any stage without suffering any consequences. Finally, all participants remained anonymous.

RESULTS AND DISCUSSION

The results of the data collected from both the online and the POGIL groups are presented in the sections that follow.

Table 1 Descriptive Statistics per Quartile

The following table compares the means of the control and intervention groups for each construct per quartile.

Quartile	**Parts of Speech**		**Sentence Structure**		**Punctuation**		**Discourse Markers**	
	Ctrl	**Interv.**	**Ctrl**	**Interv.**	**Ctrl**	**Interv.**	**Ctrl**	**Interv.**
Q1	27.56	30.25	18.13	37.04	49.57	46.91	24.36	32.51
Q2	46.00	49.40	47.43	71.94	66.67	73.02	43.56	56.15
Q3	56.25	61.73	64.88	85.71	77.31	82.30	56.02	69.75
Q4	68.72	77.98	78.84	97.35	86.42	91.77	72.22	82.10

Table 2 Statistical Significance and Effect Size

In the following table, p-values and Cohen's D are used to determine the statistical significance of the difference in means for the two groups as well as the effect size of the POGIL intervention.

Construct	**Group**	**Mean**	**p-value**	**Cohen's D**	**Conclusion**
Parts of Speech	Control	49.73	0.021	0.32006	Significant small effect
	Intervention	55.30			
Sentence Structure	Control	60.22	<0.0001	0.55661	Significant medium effect
	Intervention	74.37			
Punctuation	Control	70.74	0.12	0.21553	Not significant small effect
	Intervention	74.18			
Discourse Marker	Control	50.17	<0.0001	0.60667	Significant medium effect
	Intervention	61.21			
Average (all four constructs)	Control	57.55	<0.0001	0.62579	Significant medium effect
	Intervention	66.05			

As can be seen in Table 1, the POGIL group performed better, on average, than the online group in all constructs. However, closer scrutiny reveals that this difference was statistically significant in only three of the four constructs, and that the difference in performance in discourse marker usage was the most noteworthy (refer to Table 2). The POGIL group completed their discourse marker worksheets last. Since it took these participants some time to become accustomed to the POGIL mode of instruction, it is reasonable to assume that they will benefit more from content covered later in the intervention than from content covered early in the intervention. In addition to discourse markers, the difference in sentence structure performance was also noteworthy. Both of these constructs relied on terminology and concepts

that would likely have been unfamiliar to most students. This aspect was not sufficiently accounted for in the online tasks, which tended to assume a reasonable amount of background knowledge. In contrast, all of the POGIL worksheets started at a fairly basic level and gradually increased in difficulty in accordance with the learning cycle (Cracolice, 2009: 24). Lastly, less capable students appear to benefit more from POGIL than do more capable students, with the POGIL Quartile 1 displaying an average of 11.5% higher than their peers in the online group, compared with the POGIL Quartile 4 group scoring, on average only 8.25% higher than their peers. Interestingly, this contradicts studies that have found guided-inquiry learning to be unsuitable to struggling students (Stanovich, 1994: 264). Further research is needed to investigate the relationship between students' level of capability and their response to POGIL-style-language instruction.

Implication of findings for language instruction

The findings of this study suggest that POGIL-style instruction can indeed be adapted to language instruction. Moreover, academically vulnerable students, such as those enrolled in an Extended Curriculum Programme do appear to benefit from this type of instruction. It is worth noting that the content that was taught during this intervention was particularly suited to self-directed learning in that it is based on fairly regular and predictable 'rules' and principles, much like the STEM content for which POGIL is typically used (as discussed in the Literature Review). Content that relies on processes that are less regular, such as analysing poetry, paraphrasing ideas, or inferring content while reading, might not be as readily adapted to the type of self-directed worksheets that were used in this study. Future research endeavours might consider the nature of the relationship between the type of content being taught and the suitability of guided-inquiry learning.

CONCLUSION

While there are few documented applications of POGIL-style instruction to language and academic literacy modules, the LST intervention study indicates that this is a research area that warrants continued investigation. The context of the study provides a unique starting point. The student-centred ethic of the Extended Curriculum Programmes encourages intentional reflection on and improvement of teaching and learning to respond to student needs. Within this context, an analysis of the data collected by the study suggests that students may benefit from certain components of language being taught through a guided-inquiry approach. This is of particular interest, as inquiry learning purposes to instil foundational processing and thinking skills, forming the foundations for independent, deep learning; this aligns with the academic support offered by ECPs, which are designed to equip students with the skills to complete their academic qualifications. The analysis of potential benefits of this approach will be served by further iterations of the study, which will include the developing and refining materials and instruments for assessment.

When the study was conducted in 2019, one of the most pertinent issues it touched upon was the hybrid model of instruction at tertiary level. The LST module team, who had already established a thorough and well-functioning online component, needed to consider how best to

use the tools and systems available to them. While quiz-style online instruction was a convenient, efficient, and technology-forward way of presenting grammatical functions, students did not seem to benefit maximally from this presentation. In 2021, the same set of concerns around online teaching strategies has gained even more urgency. Since the first COVID-19 lockdown was initiated in March 2020, the LST module and the ECP at the university in question have been presented completely online. While emergency online teaching has created many opportunities to explore online tools, it has also highlighted the plight of students who do not have the resources and skills to sustain learning under these circumstances. At the same time, even before the COVID-19 pandemic, the researchers considered that future iterations of the POGIL intervention would need to be reworked to be scalable to the entire LST cohort and that this would likely involve some technological components. At the time of writing, it is not yet clear when and to what extent normal on-campus activities will resume; this remains contingent on developments in the pandemic and consequent national regulations. Nevertheless, the situation allows for the development of two new versions of the intervention study. Firstly, and in the short term, the POGIL worksheets developed for this study are being adapted for complete online presentation. In the medium term, and dependent on changes in COVID-19 regulations, another version may include a hybrid model of the worksheets presented partially in person and in class, and partially online. In the long term, therefore, the continuation of the study may offer valuable insights into different iterations (on a spectrum ranging from traditional in-class to completely online presentation) of a guided-inquiry learning approach in language teaching at a tertiary level.

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