Sequencing Research Writing and Research Methodology Courses: Implications from Students' Course Evaluation

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ABSTRACT

The purpose of this study is to examine if there are any significant differences in Research Writing course evaluation made by English Linguistics (EL) students learning Research Writing (RW) before Research Methodology (RM) (group 1) and those learning RW after RM (group 2) at the International University – Vietnam National University (IU-VNU), from which students' perceptions towards the sequencing of the two courses are discovered. Initially, a questionnaire was designed to collect the RW course evaluation from 119 EL students in both groups. Subsequently, the Mann-Whitney U test was employed to identify which questionnaire items showed significant differences between group 1 and group 2 responses, from which interview prompts were developed to elicit interviewees' perceptions of RM-RW course sequencing in both groups. The study revealed that four items showed significant differences between group 1 and group 2's evaluations. Moreover, all interviewees perceived that taking RW after RM helped facilitate RW learning more than taking RW before RM. These findings may suggest that RW should be required to learn after RM to improve the performance of IU EL students in the RW course.

Keywords: course sequencing, Research Method (RM), Research Writing (RW), course evaluation, CIPP model

Introduction

In the School of Languages (SoL) at IU-VNU, English Linguistics and Literature (EL) students acquire basic research knowledge through the two compulsory courses, Research Methodology (RM) and Research Writing (RW). The RM course provides students with instructions regarding the employment of appropriate methods and techniques to address research questions (Kumar, 2010). Meanwhile, RW focuses on the accurate use of language in presenting evidence gathered from articles or journals logically and convincingly (Peat et al., 2013). In an academic year at SoL, the RM course is delivered in semester one, while RW is available in semester two. In the curriculum provided by SoL, RM is recommended to be learned before RW. However, there was no official obligation to follow that sequence. Therefore, students can take RM

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before/after RM. However, as a former IU EL student, the researcher was informally told by some other IU EL fellows taking RW before RM that they had difficulties understanding RW lectures. According to Woosley et al. (2010), course sequencing can affect students' performance in a particular course if it is related to other courses in terms of content. Nevertheless, no evaluations were conducted by IU or SoL to examine the impact of course sequencing on IU EL students' evaluations/perceptions of their course performance. Therefore, the researcher conducted this study to investigate whether there are significant differences in RW course evaluations made by IU EL students who took RW before RM and those who took RW after RM, thereby uncovering in depth their perceptions of the sequences of RW and RM.

Research Questions

To fulfill the purpose of the study, the survey sought to answer the following research questions:

1. Are there any significant differences in the evaluation of the RW course made by students who took RW before RM and those who took RW after the RM course?
2. How do IU EL students perceive the two different sequences of RW and RM?

Literature Review

Perception

In pedagogical settings, perception is defined as knowledge and ideas about something, formed through experience related to that thing (Newton & Kinskey, 2021). In the study's context, examining IU EL students' perceptions towards their performance on the RW course and RM-RW course sequencing, perception can be inferred as a student's knowledge and ideas towards his/her RW course performance as well as course sequencing of RM and RW, which is gained through experience of learning these two courses in a specific sequence.

Course sequencing

Course sequencing is defined as the order in which students take courses (Woosley et al., 2010; Richards, 2012). Applying this definition, the course sequencing of RW and RM means the order in which IU EL students take RW and RM courses.

Course sequencing is considered an important element in curriculum design, as it can affect students' academic performance (Deng, 2015; Maitra et al., 2015). According to Allen (2002), courses are interconnected, and proper course sequencing can help students learn more effectively in subsequent courses and develop a broader knowledge base. For example, studies in economics, communication, and psychology have shown that sequencing suitable prerequisites can facilitate learning in subsequent courses (Von Allmen, 1996; Adam, 2012; Maitra et al., 2015; Betancur et al., 2019). Therefore, it is important to carefully examine the sequence of courses in curriculum design.

Course evaluation and evaluation framework

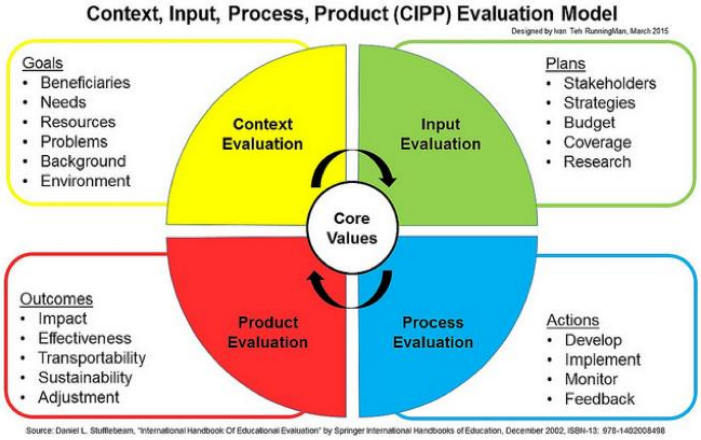
Evaluation is defined as the process of assessing the quality of something (Scriven, 1991; Vedung, 2017). Therefore, course evaluation can be interpreted as the assessment of the quality of a course or RW course in the study's context.

The CIPP model was created by Daniel Stufflebeam in the late 1960s and is considered a comprehensive framework for examining different aspects of the evaluation of courses, programs, or curricula within the education field (Mathison, 2005; Sopha & Nanni, 2019). In particular, the model assesses 4 dimensions: Context (C), Input (I), Process (P), and Product (P). Context focuses on studying needs, goals, assets, and problems within a defined environment. Input examines the strategies, work plans, and budgets of the selected approach. Process considers the implementation of planned activities. The product aims to assess the descriptions and judgments of outcomes from the intended participants, which helps decide whether to make any modifications to the course (Stufflebeam & Zhang, 2017).

The primary reason the CIPP model is appropriate for this study is that it is not designed to meet the specific needs of certain evaluation types. Instead, it allows the researcher to selectively and appropriately incorporate methods and tools according to the studies' contexts (Stufflebeam & Zhang, 2017). Therefore, it can be inferred that it is unnecessary to cover all elements listed in the four components of the model. The diagram of the CIPP model is presented below.

Figure 1

CIPP model (Stufflebeam, 2003)



Factors affecting students' grades

Students' grades are affected by several factors. For personal factors, some aspects affecting students' grades can be students' gender, interests (David Kolo et al., 2015), and study behavior (Kassarnig et al., 2018; Xu et al., 2019). Regarding family-related factors, parents' income (Igere, 2017; David Kolo et al., 2015), their education (Idris M et al., 2020; Qu, 2025), and study support (Qu, 2025) can affect students' academic performance or grades to some extent. In terms of academic attributes, some factors such as high school grades (Kassarnig et al., 2018), previous-semester mark, and class test grades can also contribute to students' course grade (Al-Barrak & Al-Razgan, 2016; Nahar et al., 2021). Additionally, some institutional factors may have a certain influence on students' grades, such as the medium of instruction (Muttaqin et al., 2022; Masrai et al., 2022), teaching methodology (Tran, 2022; Davaatseren et al., 2024), and curriculum (Le & Le, 2022). In curriculum design, course sequencing is a factor that can affect students' grades, but has not been largely examined (Richard, 2012).

Effects of course sequencing on students' grades

Given that a sequence includes two courses, which are course A and course B, no studies up to now have compared course A's evaluations made by students taking course A before and after course B to investigate the effect of course sequencing on students' perceptions of their performance in course A. Therefore, the studies by Betancur et al. (2019) and Woosley et al. (2010) are considered the most relevant to this research topic. Generally, instead of comparing students' evaluations of course A, these two studies compare course A's grades between students who took course A before and those who took it after course B to examine the effect of course sequencing on students' grade performance in course A.

The study by Betancur et al. (2019) investigated whether students' grades in Psychology courses were related to the sequence in which students take methodological courses (statistics and research methods) and Psychology courses. A longitudinal institutional dataset including 2,720 undergraduate students' grades in psychology-related courses was analyzed. The findings revealed that taking methodological courses before topical Psychology courses tended to result in better grade performance in Psychology courses. This means that the sequence of methodological courses and Psychology courses can contribute to students' high or low grade performance to some extent.

However, the impact of course sequencing on students' performance is ambiguous within the Department of Information Systems (IS) at Ball State University. Specifically, Woosley et al. (2010) used students' academic transcripts from the IS core course to examine whether the order in which students took IS core and business courses had an impact on their grades in IS core. The findings showed that course sequencing, as a sole factor, did not lead to significant differences in students' grade performance in the IS core course.

Research gaps

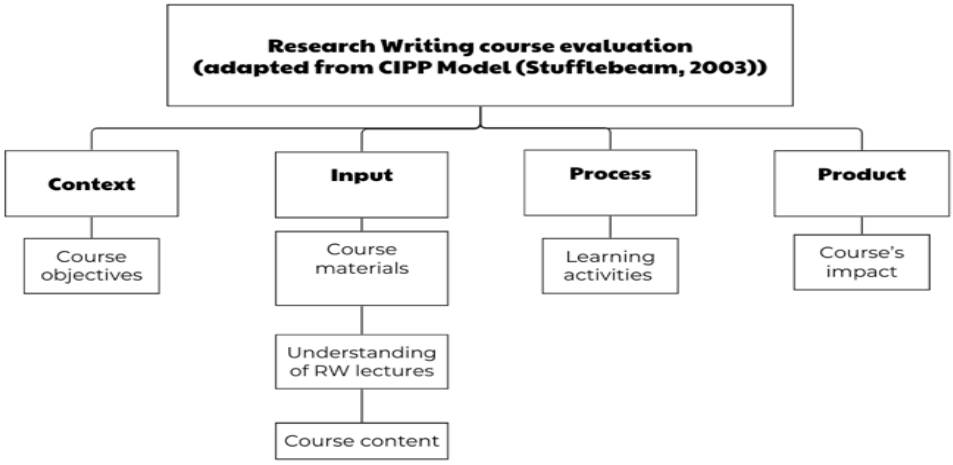
The aforementioned studies used students' grades to examine the effect of course sequencing on the students' grade performance in one course within the sequence. However, so far, the researcher has found no studies that use students' course evaluations to examine the effect of course sequencing on students' perceptions of their performance in a course. Additionally, there is hardly any previous research examining students' perceptions of course sequencing. Therefore, this study was conducted to address these two gaps by examining whether there are significant differences in RW course evaluations made by IU EL students learning RW before and after RM, and by delving into students' perceptions of the sequence of RM and RW courses.

Conceptual framework

As Stufflebeam and Zhang (2017) noted, it is unnecessary to cover all elements in the four components of the CIPP model. In this study, which focuses on RW course evaluation, the Context component examines the course objectives, while the Input dimension examines the RW course materials, content, and understanding of RW lectures. Regarding process, learning activities in RW classes are rated in terms of difficulty level to see if students struggle with any activities. The last aspect – Product examines students' general attitude towards research after finishing the RW course, or the course's impact in brief. The course evaluation's framework is outlined in Figure 2. Then, the interview guide will be established based on the results of the course evaluation.

Figure 2

Conceptual framework



Methods

Pedagogical Setting & Participants

The targeted population of this research was all IU EL juniors (K21) and seniors (K20) who completed both Research Methodology and Research Writing courses. According to SoL's course sequencing, students are expected to complete the skills subjects (Listening, Reading, Speaking, Writing) in the first year before taking RM and RW courses in the second or third year, which is equivalent to C1 level on the CEFR. According to the School of Languages' statistics, the number of students across the two intakes was approximately 160. Among 160 students from the two intakes, the researcher collected data via questionnaires from 119 participants using purposive sampling. Sixty-eight of them took RW before RM, and 51 took RW after RM. Collecting data from two intakes increased the sample size compared to a single intake.

Based on the results of RQ1, interviews were conducted to delve into the reasons for interviewees' evaluations of these items, from which their opinions on the sequence of RM and RW were examined. Regarding qualitative data, the researcher was able to interview four participants from the questionnaire due to limited data-collection time. In each sequence (learning RW before/after RM), two participants who were familiar with the researcher were selected to examine their perceptions of the RM-RW course sequencing. Therefore, interviews were conducted to delve into the interviewees' explanations of their evaluations of these items, from which their opinions on the sequence of RM and RW are examined. There were four participants taking part in the interviews. Two of them took RW before RM (group 1), and the other two took RW after RM (group 2). Since participants' names were confidential information, they were assigned codes to facilitate differentiation. Particularly, group 1 included participants 1-A and 1-B, while group 2 included participants 2-A and 2-B.

Design of the Study

This study employed a mixed-methods, sequential, explanatory design to thoroughly examine the IU EL students' RW course evaluations and perceptions of the sequencing of RM and RW. Specifically, this design includes two stages. In the first stage, quantitative data were collected and analyzed, followed by a qualitative approach using thematic analysis in the second stage (Creswell & Clark, 2011). Findings from the qualitative phase were used to explain and elaborate on interpretations drawn from the quantitative phase (Kroll & Neri, 2009).

Instruments

Regarding Research Question 1 (RQ1), an online questionnaire with 5-point Likert scales was distributed via Google Forms to collect quantitative data. Except for five questions asking for personal information and the sequence of RM and RW, the survey contains 38 items (see Appendix A). The questionnaire was self-developed by the researcher using the CIPP model and the RW course syllabus (see Appendix A). There were four main parts in the survey: Context, Input, Process, and Product. The Context part examined course objectives, while the Input examined course materials, understanding of lectures, and course contents. The Process and Product parts were intended to evaluate the difficulty of learning activities in RW classes and the impact of the RW course on students after completing it.

The Cronbach alpha values are around 0.7 or more for most constructs, indicating that the questionnaire is reliable (Hair, Black, & Babin, 2010; Schmitt, 1996) (Table 1). Regarding the "Understanding of lectures" construct, its Cronbach's alpha value (0.356) is generally considered low for reliability. However, Sijtsma (2009) stated that a low alpha value could be attributed to the data's multidimensionality. This means a large variation in answers may lead to a low Cronbach's alpha value. This was true for the case of the "Understanding of RW lectures" construct since the SDs for all items in this construct were relatively high (Figure 3). This indicated that the large variation in answers may be the reason for the low alpha value for this construct, not because items are unreliable. Therefore, this construct's items are still analyzed in this study.

Regarding Research Question 2, interview guides were used to collect the students' opinions on the sequence of RM and RW courses. The guides consist of 6 compulsory items and four optional questions for those taking RW before RM (group 1). Regarding those taking RW after RM (group 2), there were seven compulsory items and four optional questions (see Appendix B). Subsequently, general prompts asked about students' perceptions of the RM and RW course sequencing, with two for group 1 and three for group 2. These guides were developed based on the results of RQ1, which showed that four questionnaire items demonstrated significant differences in evaluations made by IU EL students taking RW before and after RM. For each item, there was one compulsory prompt asking the interviewees to explain their choices for that item. Additionally, there was an optional question asking whether learning RM first could help interviewees learn RW better, particularly in the situation described in the item.

Table 1

Cronbach's alpha of the main study's questionnaire

Construct	Number of items	Cronbach's alpha
Course objectives	4	0.737
Course materials	4	0.730
Understanding of lectures	5	0.356
Course contents	10	0.802
Learning activities	12	0.784
Course's impact	3	0.655

Figure 3

SDs of Understanding of the lectures' items

Descriptive Statistics

	N	Std. Deviation
C1	119	.850
C2	119	.792
C3	119	1.006
C4	119	.915
C5	119	.957

Data collection

In this study, the quantitative component involved using questionnaires to collect students' evaluations of the RW course. Firstly, the consent form was sent to the SoL to ask for permission to collect data in targeted classes. After receiving permission, the researcher sent emails to the classes' lecturers to determine the time for data collection. Then, the questionnaire was shared with the students who had completed both RM and RW via class visits. Before asking for students' consent to take part in the study, they were given basic information about the research topic and clear instructions on how to complete the questionnaire.

Regarding the qualitative components, after collecting sufficient data for the questionnaire, the researcher selected two participants who had previously completed the questionnaire in each group and obtained their consent before conducting semi-structured interviews.

Data analysis

To examine whether there are significant differences between responses of participants taking RW before RM (group 1) and those taking RW after RM (group 2), a frequency chart was observed to examine group 1 and group 2's answer distribution of each item. Then, the Mann-Whitney U (MWU) test was used to analyze the responses to determine whether any items showed significant differences in the evaluations made by group 1 and group 2. The MWU test

is used to compare differences between two independent groups when the dependent variable is ordinal or continuous data. Since the dependent variable in this study, a 5-point Likert scale, was ordinal, this test was appropriate. Items with p-values < 0.05 from the MWU test results were considered to have significant differences in item evaluation between group 1 and group 2. The mean ranks of these four items were then examined to compare the trend of responses between the two groups. Based on the results of RQ1, open questions regarding these items were developed for the interview. The researcher aims to interpret the mean ranks of the four items showing significant differences in the two groups' evaluations. Moreover, comparisons with other studies/theories are made if possible. For further reference, see Table 2 for the statistics on these items.

Thematic analysis was used to analyze the study's qualitative data across five stages. First, the recordings from the interviews were transcribed and translated into English, and the researcher reviewed the answers to identify general points. Second, keywords/phrases expressing the main ideas of interviewees' answers were highlighted. From that, themes were identified in the next stage. Then, the themes were reviewed to ensure the accurate interpretation of interviewees' answers. Lastly, the themes were named and their content documented.

Results/Findings

Findings from the survey

According to the MWU test results, four items have P-values < 0.05 (Table 2). This indicates significant differences in the evaluation of these four items (A4, C1, D8, E5) between IU EL students who took RW before RM (group 1) and those who took RW after RM (group 2). Specifically, these items refer to four aspects, which are RW objectives achievement (A4), the need to read materials before classes (C1), the difficulty level of the topic "Writing the Methods section" (D8), and the difficulty level of the task of identifying a section's elements (E5). Regarding item A4, it can be inferred from the mean rank that group 2 tended to find the RW objectives more achievable than group 1. Regarding item C1, group 1 was more likely to agree that they tended to read materials before class to better understand the lectures than group 2. In item D8, group 2 tended to find the topic about the Methods section in the RW course easier than group 1. Concerning item E5, group 2 tended to find the activity "identifying different elements of a section" easier than those in group 1.

Table 2

MWU test result of item A4, C1, D8, E5

Item	Group 1 (RW>RM)	Group 2 (RW<RM)	z	P-value
	Mean rank			
A4: Overall, I think these objectives are achievable. (RW objectives: Appendix A)	58.68	61.75	-1.98	.047
I had to read the course materials (*coursebooks and the supplementary handout provided by the instructor*) **BEFORE** the class to better understand the lectures.	61.09	58.55	-2.69	.007
D8: Rate the difficulty level of the topic: **Writing the Methods section** (**Contents:** Structure and content; a model for the Methods section; useful words and phrases)	55.09	66.55	-2.26	.024
E5: How difficult did you find it when identifying different elements of a section?	55.17	66.44	-2.17	.03

Findings from the interview

As presented in the previous section, four items (A4, C1, D8, E5) were found to have significant differences in evaluation between students taking RW before and after RM. Therefore, interviews were conducted to delve into interviewees' explanations of their evaluations of these items, from which their opinions on the sequence of RM and RW are examined. There were four participants taking part in the interviews. Two of them took RW before RM (group 1), and the other two took RW after RM (group 2). They were assigned codes for easier differentiation. Particularly, group 1 included participants 1-A and 1-B, while group 2 included participants 2-A and 2-B.

The interview results indicated that all participants acknowledged that learning RM before the RW course helped students achieve the RW course objectives more effectively. In particular, two interviewees who learned RW before RM were not certain they could achieve the objective: "I could write up a research paper in my areas of interest after the RW course." Regarding the reason, interviewee 1A did not think she achieved the objective relating to writing research papers because "[she] had difficulties in writing the data analysis part*"* while 1B supposed "RW focuses more on language used to express the available information", not about "what information should be included in each section.*"* Therefore, sometimes she did not know which content should be written in some sections of a research paper, which was taught more in depth in the RM course. This led her to believe that she "would be able to write a research paper better after the RW course if [she] learnt RM before RW.*"* Meanwhile, both interviewees learning RW after RM were confident that they could achieve this objective. Interviewee 2A could "understand the purposes of different sections, write a research paper with correct structure*"* while 2B said her score in the RW course *"*was quite high*",* which somehow reflected that she

"could achieve all objectives after the RW course."

Regarding the need to read materials before classes, all interviewees believed that learning RM first could help them understand RW lectures better, without needing to read materials beforehand. Interviewees who learned RW before RM seemed to have difficulty understanding RW lectures if they did not read the materials beforehand. Interviewee 1A mentioned that "The Methods section had some specialized terms which were quite difficult to understand without reading the textbooks before the class". However, interviewees in group 2 did not read the material before RW classes, yet still understood RW lectures well. One of them explained that she already had "knowledge regarding the structure and definitions of specialized terms of a research paper from the RM course", so she could "understand RW lectures in class without reading materials before classes." All interviewees later supposed that learning RM first could help them understand RW lectures better.

In terms of the difficulty level of the topic"Writing the Methods section" in RW course, 1A rated this topic as "Quite difficult" because the RW course focused more on the writing skills while knowledge regarding methods and data collection was not taught in detail, [she] mainly learnt it from reading research papers." In contrast, 2B found this topic "quite easy" because she "gained knowledge about the Methods section in RM course before". Therefore, when she learnt the topic the topic "Writing the Methods section" in RW, she could "have another opportunity to review this section." Finally, interviewees in both groups agreed that learning the RM course first could help them better understand this topic in the RW course, since the structure, content, and specialized terms of the Methods section were explained in greater depth in the RM than in the RW courses.

Regarding the task "identifying elements of a section" in the RW course, all interviewees found this task quite challenging, but in different sections. 1A found the Methods and Results sections were "the most difficult part to identify elements since [she] did not learn RM before RW," while the Literature review was the most difficult one for 1B, as she "had to read many previous papers relating to the research topic and identify the gaps, which was quite difficult for [her]." Turning to group 2, 2A found other sections quite difficult to identify elements, except for the Methods section, because the elements in this part "had clearer division compared to other sections". Moreover, she added that sometimes she referred to the RM materials "to search for meaning of some specialized words/phrases in Methods section", which was partly the reason why she "found the Methods section's elements easy to identify." According to 2B, Literature review was the "most difficult part to identify elements" because she spent "lots of time finding the articles, and then background in Introduction section." Regarding other sections' elements, she found them "somehow relevant to knowledge learnt in RM course", which was "quite easy to identify."

Discussion

Research Question 1

In this section, the researcher aims to interpret the mean ranks of the four items showing significant differences in the two groups' evaluations. Moreover, comparisons with other studies/theories are made if possible.

Item A4's mean ranks show that group 2 (students learning RW after RM) tended to find the RW objectives more achievable than group 1 (students learning RW before RM), especially the third objective of the RW course (I could write up research papers in areas of my interest after the RW course). This can be attributed to the different focuses of the RW and RM courses. While RM is a content subject focused on what should be included in a research paper, RW is a language subject focused on choosing appropriate language and structures to deliver that content. Hence, despite developing research writing skills, those learning RW first may have found it difficult to achieve the third RW objective, as they lacked the prior content knowledge that group 2 had gained in the RM course.

The mean ranks for item C1 indicate that group 1 tended to read materials before class to better understand the lectures, whereas group 2 relied more on personal awareness than on classroom rules. This may reflect that group 1 has more difficulty understanding RW lectures than group 2, due to a lack of prior knowledge about the research paper. Therefore, they may not have understood the RW lectures well if they had not read the materials before class.

Item D8's mean ranks show that the topic about the Methods section in the RW course had the tendency to be easier for students in group 2 than in group 1. The different focuses of RM and RW courses can explain this phenomenon. While RW usually focuses on writing skills such as language use and structure, RM concentrates on the content of research papers. Since group 2 had content knowledge from the RM course, such as understanding specialized terms and describing methodology, they found the topic "Writing the Methods section" in RW classes easier to understand than group 1.

Item E5's mean ranks indicate that group 2 tended to find the activity "identifying different elements of a section" less difficult than those in group 1. This may result from the content knowledge of a research paper's structure learnt in the RM course, which enables group 2 to better distinguish the elements of a section than group 1 in RW classes.

To sum up, group 2 (RW after RM) tended to have more positive responses in four items than group 1 (RW before RM). Particularly, group 2 found the RW objectives more achievable than group 1, understood RW lectures better without having to read materials before RW classes, and found the topic "Writing the Method section" and the task of identifying different elements of a section in the RW course easier than group 1. This may indicate that sequencing RW to be learnt after RM results in better comprehension of RW and, more generally, research knowledge.

Research Question 2

Students' perceptions towards learning RW before RM

After analyzing interviewees' answers, the researcher found that those who took RW before

RM tended to have greater difficulty learning RW. First, the third objective of RW (writing a research paper in my areas of interest) was unlikely to be achieved due to a lack of understanding of the structure and content of different sections of a research paper, leading to an inability to write the paper properly. Second, students who learned RW before RM sometimes had difficulty understanding RW lectures without reading the course materials beforehand. This was attributed to specialized terms in research papers, as they were not taught before. Therefore, they had to read the course materials before class to ensure they understood these terms, thereby understanding the RW lectures better. Third, the topic "Writing methods section" in the RW course was not particularly easy to learn before RM, because students could not clearly distinguish specialized terms related to the Methods section, leading to a vague understanding of the topic. Finally, not learning RM beforehand could cause some students to struggle to identify the Methods section in the RW course. The reason is that this section is taught in more detail in the RM course.

Overall, the main reasons for problems in learning RW are a lack of basic knowledge of research papers, such as structure, content, terminology, and research types. This knowledge is taught in more detail in the RM course. Therefore, students may understand RW better when taking RW after RM than when taking RW before RM.

Students' perceptions towards learning RW after RM

The aforementioned problems when learning RW before RM tend to be minimized when RW is taken after RM. Specifically, all interviewees agreed that prior knowledge from the RM course helped them achieve the third RW objective better (write up a research paper in my areas of interest, understand the RW lectures easily, especially the topic "Writing the Methods section", and identify the Methods section's elements more easily). The common reasons were that the RM course provided interviewees with the general structure, content, and definitions of specialized terms in a research paper, serving as a basic understanding of research before delving into writing research papers in the RW course. Moreover, students can refer back to RM materials when they forget some concepts or terms while learning RW, which facilitates their learning of RW.

Generally, RM is somewhat equivalent to an Introduction to research course, and RW is more likely a specialized course. This point aligns with Richards' (2012) study, which showed that students taking lower-division courses before upper-division courses performed better in upper-division courses than those taking them in the opposite sequence.

Suggested learning sequence of RM and RW courses

When asked, all the interviewees suggested learning RW after RM because RM serves as a foundation course, providing general knowledge and skills in research, before learning RW, so that students can benefit more from the RW course. This aligns with Allen (2002), stating that foundation courses (RM), which aim to improve academic skills, should be learnt before exploration courses (RW), which focus more on practical applications and, at the same time, offer opportunities for continued development of the foundation. Additionally, one interviewee suggested that RM and RW should be taught in 2 consecutive semesters in the third year, to prevent students from forgetting research knowledge when writing their theses in the fourth

year.

From the interviewees' perceptions of RM and RW course sequencing, it can be inferred that sequencing could play a role in students' understanding of the RW course. This interpretation aligns with the results of Betancur et al. (2019)'s study, which found that course sequencing may be one of the factors affecting students' grade performance. Nevertheless, the results of the study by Wooseley et al. (2010) contrasted with those of the present study and Betancur et al. (2019), as it concluded that course sequencing did not show significant differences in students' course grades.

Conclusion

This study examined potential differences in RW course evaluations between IU EL undergraduates who took RW before RM (group 1) and those who took RW after RM (group 2). Additionally, major differences were examined in more detail to uncover students' perceptions of the RM and RW course sequence. After a thorough analysis, this study has successfully answered the two research questions. Regarding RQ1, there were significant differences in the RW course evaluation between students in groups 1 and 2. Regarding RQ2, it was commonly perceived that students who learned RW before RM tended to have more difficulty learning RW than those who took the two courses in the opposite sequence. Furthermore, all interviewees suggested learning RW after RM or learning RM first to facilitate their comprehension of RW. These results have several theoretical and practical implications.

Theoretical implications

This study advances knowledge of course evaluation by using CIPP as a model. Moreover, since there have been few studies on course sequencing, especially regarding students' perceptions of it, this study's results serve as a valuable resource for future research in this area. Additionally, it is expected to offer further insights into the role of course sequencing on students' performance and course evaluation. Finally, this study suggests a new approach to investigating students' perceptions of course sequencing by using results from course evaluations, which future studies can refer to.

Practical implications

Regarding SoL's board of directors, the results of this study may suggest that there should be an official obligation for IU EL students to learn RW after RM to better understand research overall. For teachers at IU SoL, these results may prompt them to pay closer attention to the influence of course sequencing on students' performance not only in RW but also in other courses in the program, enabling them to develop the curriculum more effectively. Regarding IU EL students, this study can provide useful information for them to consider learning RW after RM to better understand RW lectures and research in general.

In terms of educators and curriculum developers of English majors in other Vietnamese universities, they may consider the role of course sequencing when structuring/modifying research courses to enhance students' understanding of research. Additionally, they may become more aware of the impact of course sequencing on students' comprehension of other courses in

the programs.

Limitations

Despite the significant contribution to theoretical and practical aspects, this study still presents certain limitations. First, there are few previous studies relating to students' RW course evaluation and perceptions of the sequencing of RM and RW, for reference, which have led to limited integration of the study into existing literature.

Since the participants in this study are IU EL undergraduates who have taken both RM and RW, they may not accurately recall their experiences with RW, as they learnt these courses a long time ago. To collect more precise information, future studies can target IU EL undergraduates who have taken RW and are learning RM, or those who have taken RM and are learning RW.

Third, the number of interviewees was not large enough due to time constraints. Therefore, future studies should interview more people to obtain more valuable insights into students' perspectives on the sequencing of RM and RW.

In the study's questionnaire, the items in the construct "Understanding of RW lectures" show a relatively low Cronbach's alpha, which may be attributed to a high level of variation in responses. This may result from the ambiguous expression of ideas in the items, leading participants to interpret them differently and, consequently, to a wide distribution of answers. Future studies should be careful in establishing items to avoid misinterpretation among participants.

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Appendices

Appendix A: Questionnaire

CONTEXT

A.Course objectives

(1: Strongly disagree, 2: Disagree, 3: neutral, 4: Agree; 5: Strongly agree)

After the RW course, I could:

1.Explain basic and advanced concepts in research paper writing.

2. Analyze the conventional structure of a research paper and elements of a strong research paper.

3.Write up research papers in my areas of interest.

4.Overall, I think these objectives are achievable.

INPUT

B.Course materials

(1: Strongly disagree, 2: Disagree, 3: neutral, 4: Agree; 5: Strongly agree)

1. The examples in the coursebooks help me understand the lectures better.
2. The coursebooks' exercises allow me to apply what I learnt in class.
3. Coursebooks provide me with enough knowledge of the course.
4. Overall, course's materials supported me well during the course.

C.Understanding of lectures

(1: Strongly disagree, 2: Disagree, 3: neutral, 4: Agree; 5: Strongly agree)

1. I had to read the course materials (coursebooks, supplementary hand out provided by instructor) AFTER the class to understand the lectures more.
2. I had to read the course materials (coursebooks, supplementary hand out provided by instructor) BEFORE the class to understand the lectures more.
3. I had to ask my friends to explain again the part(s) that I did not understand during the lectures.

4. I had to read extra materials beyond the given materials to understand the lectures more.
5. Overall, how confident were you about your understanding of the lectures?

A. 1: not confident, 2: Quite confident, 3:Very confident, 4: Extremely condifdent

D.Course content

How difficult did you find the following topics? Please choose ONE option.

(1: Very difficult, 2: Quite difficult, 3:Neutral, 4: Quite easy; 5: Very easy)

1. The academic writing process

(Academic vs. Personal style of writing; Thinking about writing process)

2. Researching and writing

(Types of research; The structure of a research paper; Identifying elements of a research paper)

3. Writing the Introduction

(Structure and content, model for introduction, useful words and phrases; Mapping out the research field; Identifying the research gap; Writing Introduction)

4. Writing definitions

(Definitions in academic text; Writing definitions (sentence, extended, contrastive, comparative))

5. Writing the abstract

(Elements of an abstract; A generic abstract model; Identifying different types of abstract; writing an abstract)

6. Avoiding plagiarism

(What is plagiarism?; Summarizing and paraphrasing; Citing & Referencing in APA 7th)

7. Writing the Literature Review

(Researching ideas and information; Reviewing the literature; Variation in reviewing the literature)

8. Writing the Methods section

(structure and content; a model for the Methods section; useful words and phrases)

9. Writing the Results section

(structure and content; a model for the Results section; useful words and phrases)

10. Writing the Discussion section

(Structure and content; A model for the Discussion section; Useful words and phrases)

PROCESS

E.Implementation of learning activities

Rate the level of difficulty while doing these activities in RW class:

(1: Very difficult, 2: Quite difficult, 3:Neutral, 4: Quite easy; 5: Very easy)

1. How difficult did you find when language practice

(Distinguishing between academic and personal styles; learnning to use language for introduction/Literature Review/Method/Result/Discussion part)

2. How difficult did you find when identifying types of research v

(Examples: Qualitative/Quantitative)

3. How difficult did you find when selecting research topic ?

(brainstorming topics, narrowing down topic)

4. How difficult did you find when identifying different SECTIONS of a research paper ?

(Sections: Introduction/Literature Review/Methodology)

5. How difficult did you find when identifying different ELEMENTS of a section?

(Elements of Introduction section: establish the importance of your field, provide background information,. . .)

6. How difficult did you find when writing the introduction?
7. How difficult did you find when writing different types of definitions?
8. How difficult did you find when identifying research gaps?

9. How difficult did you find when writing an abstract?
10. How difficult did you find when writing the Literature Review section?

(Researching literature for the selected topic; Organising the Literature Review; Reviewing selected work)

11. How difficult did you find when writing the Methods section?
12. How difficult did you find when writing the Result and Discussion section

PRODUCT

F.Course's impact evaluation *(1: Strongly disagree, 2: Disagree, 3: neutral, 4: Agree; 5: Strongly agree)*

1. I gain more knowledge about research writing after the course.
2. I am more confident in writing research paper after course.
3. I intend to participate in a research contest after the course.

Appendix B: Interview prompts

Items	**Students taking RW BEFORE RM**	**Students taking RW AFTER RM**
A4: Overall, I think these objectives are achievable.	- Please explain your choice for this item - (OPTIONAL) Do you think learning RM first will help you achieve objectives of RW course better?	- Please explain your choice for this item - (OPTIONAL) Do you think learning RM first helped you achieve objectives of RW course better?
C1: I had to read the course materials (coursebooks, supplementary hand out provided by instructor) **BEFORE** the class to understand the lectures more.	- Please explain your choice for this item - (OPTIONAL) Do you think learning RM first will help you understand the RW lectures better?	- Please explain your choice for this item - (OPTIONAL) Do you think learning RM first helped you understand RW lectures better?
D8: Rate the difficulty level of the topic: Writing Methods section (structure and content; a model for the Methods section; useful words and phrases)	- Please explain your choice for this item - (OPTIONAL) Do you think learning RM first will help you find the contents of this topic easier to understand?	- Please explain your choice for this item - (OPTIONAL) Do you think learning RM first helped you find the contents of this topic easier to understand?
E5: How difficult did you find when **identifying different ELEMENTS of a section**? (**Elements of Introduction section**: establish the importance of your field, provide background information,. . .)	- Please explain your choice for this item (OPTIONAL) Among 5 sections of the research paper (Inroduction, Literature Review, Methods, Results and Discussion), which parts did you find difficult to identify the elements? Why?	- Please explain your choice for this item (OPTIONAL) Among 5 sections of the research paper (Inroduction, Literature Review, Methods, Results and Discussion), which parts you find difficult to identify the elements?
General prompts	1)What has been the greatest problems you have encoutered when taking RM after RW? 2)In what order would you suggest learning RW and RM? Why?	1)Tell me about how learning RM before RW help you understand RW more in depth. 2) What would be the consequences if students took RW before RM ? 3) In what order would you suggest learning RW and RM? Why?