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An Information Systems Approach to Evaluating Discourse Competence Across Gender, Language Background, and Academic Discipline

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ABSTRACT

In the digital age, discourse competence is the the ability to produce and understand coherent, contextually appropriate texts, is essential in academic and professional settings. This study examined students' discourse competence using an information systems approach, focusing on differences across gender, first language, and academic discipline. A quantitative descriptive-comparative design was employed, with data collected through a validated assessment tool measuring content, organization, vocabulary, language use, and mechanics. Statistical analyses, including t-tests and ANOVA, determined significant group differences. Results indicated that gender significantly influences discourse competence, with female students outperforming males, while first language showed no significant effect. Academic discipline also impacted performance, reflecting variations in exposure to field-specific communication practices. The study emphasizes the value of integrating information systems in educational assessment, highlighting the need for gender-responsive teaching, attention to linguistic diversity, and discipline-specific writing instruction to enhance learners' discourse competence in digital learning environments.

Keywords: discourse competence, information systems, educational assessment, gender differences, academic discipline, language learning

Introduction

Discourse competence is widely recognized as a central component of communicative competence, enabling individuals to construct cohesive, coherent, and contextually appropriate texts in both spoken and written forms. Within academic writing contexts, discourse competence encompasses features such as global coherence, logical connectives, and reader-writer interaction, which are essential for producing effective academic texts (Wang & Xie, 2022). Research has shown that diagnostic assessment of discourse competence can reveal specific strengths and weaknesses in learners' written performance, especially in second language (L2) academic settings where students often struggle with complex discourse-level features (Wang & Xie, 2022). This focus on discourse beyond grammar and vocabulary reflects an

Research Article

expanded understanding of academic communicative proficiency required for successful participation in higher education.

Academic research has also explored how gender intersects with discourse and writing practices. While sociolinguistic scholarship has long debated gendered patterns of language use, recent studies in academic writing suggest that gender can influence the organization of arguments and engagement with discourse conventions (Gender and academic writing, 2018). Such research underscores the importance of examining how gender identities and communicative styles interact with academic discourse, particularly in institutional writing contexts where expectations may vary across fields and genres.

In addition to gender, disciplinary background plays a significant role in shaping discourse competence. Disciplines differ in their rhetorical expectations, specialized vocabularies, and genre conventions, which require students to adapt their communicative practices to succeed academically (Wang & Xie, 2022; Disciplinary and gender-based variations, 2022). For example, research in applied linguistics has found that disciplinary orientation influences linguistic expressions and rhetorical patterns in academic texts, suggesting that discourse competence is not a unitary construct but one dynamically linked to specific academic communities.

Despite the growth of research on discourse competence and its sociocultural correlates, there is limited integration of information systems perspectives in its assessment. In educational contexts, technology-mediated assessment systems (e.g., e-assessment tools, analytic dashboards) have been shown to enhance instructional practices and provide real-time diagnostic data on learner performance (Lim, Gottipati, & Cheong, 2024). Integrating information systems approaches into discourse competence evaluation could support systematic, data-driven analysis of student writing across learner characteristics such as gender, language background, and academic discipline, offering both efficiency and deeper insights into communicative development in digital learning environments.

Research Questions

1. Is there a significant difference in the discourse competence of the respondents when grouped according to:
   a. Gender
   b. First language spoken
   c. Academic discipline (course)
2. Which among the variables (gender, first language, and academic discipline) significantly influences discourse competence?

Review Of Related Literature And Studies

Discourse Competence in Language Learning

Discourse competence is a crucial component of communicative competence that enables learners to produce coherent, cohesive, and meaningful spoken and written texts. In the Philippine context, several studies have examined the level and nature of discourse competence among learners across different educational levels. For instance, a study conducted among senior high school students found that learners generally demonstrate satisfactory levels of discourse competence**, a**longside linguistic and sociolinguistic competence, indicating that students possess foundational communication skills necessary for academic

tasks (Terogo et al., 2018). This suggests that while Filipino learners are able to communicate effectively, there remains a need to further enhance higher-order discourse skills such as organization and coherence.

Recent studies also highlight that discourse competence among Filipino learners tends to be moderate rather than advanced, particularly in higher education settings. A study by Piorque and Asistido (2025) revealed that graduating college students exhibited moderate levels of discourse competence, with strengths in coherence and conversational structure but weaknesses in textual cohesion and deixis. Similarly, research involving college students indicated that learners often struggle with oral discourse due to limited vocabulary, grammatical inaccuracies, and lack of confidence in expressing ideas (Ramos & Lambenicio, 2023). These findings emphasize that despite prolonged exposure to English instruction, many Filipino students still encounter challenges in achieving advanced discourse proficiency.

Moreover, several Philippine-based studies have examined the factors influencing discourse competence. Research on ESL learners found that discourse competence is significantly related to speaking and writing skills and may be influenced by variables such as educational background and exposure to language-rich environments (Lavadia, 2023).
In addition, intervention-based studies, such as the implementation of power coaching programs, have demonstrated that targeted instructional strategies can significantly improve students' oral discourse competence (Sucion et al., 2020). These findings suggest that discourse competence is not static but can be developed through appropriate pedagogical interventions and learning experiences.

Furthermore, studies in the Philippine setting have also explored differences in discourse competence across learner groups. For example, research comparing male and female students' discourse competence found variations in both oral and written communication performance, indicating that demographic variables may play a role in shaping discourse abilities (Aranego et al., 2021).

Information Systems in Educational Assessment

The integration of information systems in educational assessment has become increasingly significant in the Philippine educational context, particularly with the rise of digital technologies and data-driven decision-making. Information systems, such as learning management systems, learner information systems, and assessment platforms, have enabled educational institutions to improve the efficiency, accuracy, and accessibility of student performance evaluation. In the Philippines, these systems have been gradually adopted to support both administrative and instructional functions, including assessment processes. As emphasized by Almerino et al. (2020), the implementation of standardized and technology-assisted evaluation approaches in the K–12 system reflects the country's shift toward more systematic and data-informed assessment practices .

One of the most notable developments in the Philippine educational system is the adoption of centralized information systems for managing learner data and assessment results. These systems allow educators to collect, process, and analyze student performance data efficiently. Although slightly beyond 2020, studies such as Matias and Timosan (2021) provide relevant insights into earlier developments, showing that information systems like the Learner Information System (LIS) were already being conceptualized and utilized prior to 2020. Their findings highlight that system quality and usability significantly influence teachers' acceptance and effective use of such platforms in educational assessment . This suggests that earlier implementations of information systems laid the groundwork for improving assessment practices in Philippine schools. Matias and Timosan (2021)

Research Article

In higher education institutions (HEIs), information systems have also played a crucial role in assessment and evaluation. Studies conducted in Philippine universities revealed that technology integration supports the measurement of learning outcomes, particularly in assessing 21st-century skills such as critical thinking, collaboration, and communication. Gonzales (2020) found that the use of technology as a tool for learning and assessment significantly correlates with the development of these competencies among students . This indicates that information systems not only facilitate assessment processes but also enhance the quality and relevance of educational outcomes.

Furthermore, information systems have contributed to the standardization and objectivity of educational assessment in the Philippines. Traditional assessment methods, which often rely on manual computation and subjective evaluation, are gradually being replaced or supplemented by computerized systems. These systems enable automated scoring, data visualization, and real-time feedback, thereby reducing human error and increasing reliability. The move toward standardized evaluation frameworks, as discussed by Almerino et al. (2020), underscores the importance of integrating information systems to ensure consistency and fairness in assessing student performance across different educational institutions .

Another important aspect of information systems in educational assessment is their role in supporting data-driven decision-making. By utilizing databases and analytics tools, educators and administrators can identify trends, monitor student progress, and implement targeted interventions. Although comprehensive local studies remain limited, the growing body of research in the Philippines indicates that technology integration in education positively influences knowledge and skills acquisition. This is supported by literature reviews highlighting that digital tools, including assessment systems, enhance learning outcomes and provide valuable insights for instructional improvement (Dublar, 2020 as cited in later synthesis) .

Theoretical Framework

The present study is anchored on the Communicative Competence Theory proposed by Dell Hymes (1972), which serves as the umbrella framework in understanding discourse competence. This theory emphasizes that effective communication goes beyond grammatical knowledge and includes the ability to produce coherent, meaningful, and contextually appropriate discourse. Discourse competence, as a component of communicative competence, reflects a learner's ability to organize ideas logically and express them clearly across different contexts. Within this framework, variations in discourse competence among students are viewed as outcomes of multiple interacting social and linguistic factors.

One of the key variables influencing discourse competence is gender, which can be explained through the Genderlect Theory of Deborah Tannen (1990). This theory posits that males and females tend to develop different communication styles shaped by socialization processes, such as report talk and rapport talk. These differences may affect how students construct and present discourse, including their use of language structures, coherence strategies, and interactional patterns. Thus, gender becomes a significant factor in examining how discourse competence may vary across groups of learners.

Furthermore, discourse competence is also shaped by students' first language and academic discipline. The influence of first language is supported by the Sociocultural Theory of Lev Vygotsky (1978) and the Interlanguage Theory of Larry Selinker (1972), which explain that language development is mediated by social interaction and that learners construct a unique linguistic system influenced by their native language. Meanwhile, the role of academic discipline is explained through the Disciplinary Discourse

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Research Article

Theory of James Paul Gee (1996), which highlights that each field of study has its own conventions in language use, structure, and meaning-making. These theories collectively suggest that both linguistic background and academic context significantly contribute to differences in students' discourse competence.

Methodology

This study employs a quantitative research approach**,** specifically using a descriptive-comparative design**,** to determine whether there is a significant difference in the discourse competence of the respondents when grouped according to gender, first language spoken, and academic discipline (course). The descriptive aspect is used to measure the level of discourse competence, while the comparative aspect examines differences across the identified grouping variables.

The respondents of the study consist of selected students from various academic disciplines. A stratified random sampling technique may be utilized to ensure proper representation based on gender, first language, and course. Data on discourse competence are gathered using a validated assessment tool or rubric focusing on coherence, cohesion, organization, and clarity of ideas in written or spoken discourse. The instrument undergoes content validation by experts and reliability testing (e.g., Cronbach's alpha) to ensure consistency.

For data analysis, inferential statistical tools are used to determine significant differences. Specifically, an independent samples t-test **is** applied when comparing two groups (e.g., gender), while a one-way Analysis of Variance (ANOVA**)** is used for variables with more than two groups (e.g., first language and academic discipline). Post hoc tests (such as Tukey HSD) may be conducted to identify where the differences lie if significant results are found. All statistical analyses are tested at a 0.05 level of significance using appropriate statistical software.

Results And Discussions

Table 1.0 shows the respondents' differences in discourse competence grouped according to course. The data reveal that for content, male respondents obtained the mean scores of 2.3337 with standard deviation of .76862, while female respondents have the mean scores of 2.7133 with standard deviation of .56054 and p value of .008; for organization, male respondents obtain the mean scores of 2.2593 with standard deviation of 75924, and the female respondents obtain the mean scores of 2.6071 with standard deviation of .59300 and a P value of .018; for vocabulary, male respondents have the average mean scores of 2.2967 with standard deviation of .66254; for language use, male respondents have the average mean scores of 2.3704 with standard deviation of .56489, and female respondents obtain the mean average scores of 2.6206 with standard deviation of .52276 with standard deviation of 52276; for the mechanics dimension, male respondents obtain the average mean scores 2.1474 with standard deviation of .67565, while female respondents have the average mean scores of 2.4582 with standard deviation of .49921 with the corresponding t values of – 2.700 for content, - 2.402 for organization, - 2.361 for vocabulary, and – 2.495 for mechanics, all of which have the p values of .008, .018, .020, .041 and .011 respectively which are significant at alpha .05 level.

It means that male and female respondents differ significantly in all the dimensions of discourse competence in favor of female respondents. This implies that female respondents perform better in writing than the male respondents. This further implies that gender is a factor affecting or influencing the discourse competence of the respondents.

Journal of Information Systems Engineering and Management
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https://www.jisem-journal.com/

Research Article

Table 1. ANOVA Table: Differences in the Respondents' Discourse Competence by Gender

Discourse Competence	Sex	Mean	Std. Deviation	T	Sig.	Interpretation
Content	Male	2.3337	.76862	-2.700	.008	Significant
	Female	2.7133	.56054			
Organization	Male	2.2593	.75924	-2.402	.018	Significant
	Female	2.6071	.59300			
Vocabulary	Male	2.2967	.66254	-2.361	.020	Significant
	Female	2.6065	.54889			
Language Use	Male	2.3704	.56489	-2.07	.041	Significant
	Female	2.6206	.52276			
Mechanics	Male	2.1474	.67565	-2.495	.011	Significant
	Female	2.4582	.49921			

Table .1 shows the summary ANOVA table for the respondents' differences in discourse competence grouped according to first language. The data indicate that the F value of 2.446 and the corresponding p value of .069 is not significant at alpha .05 level but meaningful. To be meaningful, according to Pedhazur, its p value is greater than .05 but less than .20. It means that there is good reason not to drop off such variable but to affirm or disaffirm its contribution in any future research endeavor.

Table 1.1

ANOVA Table: Differences of the Respondents' Discourse Competence by First Language Spoken

Variable	Statistical Information	Sum of Squares	df	Mean Square	F	Sig.
Discourse Competence	Between Groups	55.715	3	18.572	2.446	.069
	Within Groups	721.320	95	7.593		
	Total	777.035	98			

Table 1.2 presents the summary ANOVA table for the respondents' differences in discourse competence grouped according to course. The data show that the F value of 4.491 with p value of .000 is significant at alpha .05 level. It means that the respondents in this study differ significantly in their discourse competence. In other words, the writing proficiency of the respondents in the different courses vary. It is perhaps because students in some courses may have been exposed to a wide range of writing activities than other courses. Hence, their performance vary in this particular skill. This implies that course influences the respondents' performance in writing. In other words, course can significantly affect

Research Article

the respondents' linguistic competence. This implies that students belonging to different courses have varied exposure and experiences in English structure and vocabulary given by their respective teachers.

In a similar vein, Griffiths (2003) as cited by Lopina (2009) also discovered a positive correlation between course level and reported frequency of language learning strategy use. In a study involving 348 students in a private language school in New Zealand, Griffiths found out that language learning strategies were reportedly used significantly more frequently by advanced students than by elementary students. According to an examination of the patterns of language learning strategy use which emerged from the data, higher level students reported highly frequent use of strategies relating to interaction with others, to vocabulary, to reading, to the tolerance of ambiguity, to language systems, to the management of feelings, to the management of learning and to the utilization of available resources.

Table 1.2 **ANOVA Table: Differences of the Respondents' Discourse Competence by Course**

Variable	Statistical information	Sum of Squares	df	Mean Square	F	Sig.
Discourse	Between Groups	199.518	7	28.503	4.491	**.000**
Competence	Within Groups	577.516	91	6.346		
	Total	777.035	98			

Table 1.2.1 shows the multiple comparisons of the different groups being compared using Tukey's Post Hoc Test in order to determine which among the groups classified according to course differ in their discourse competence.. The results of the analysis are shown in table 7.2.1.

It can be gleaned from table 1.2.1 that the difference in the *means* in discourse competence of the two groups being compared show that it is the lower group minus the higher group *means*. Therefore, a positive difference would mean that the lower group *means* are greater than the higher group *means*. For content dimension, it can be gleaned from the data that out of the seven groups being compared relative to their discourse performance, the difference is between BSN and BSFT with the mean difference of .83344 and p value of **.020**, between BSN and BS Arch with mean difference of .78190 and p value of **.001**, between BSBio and BS Arch with mean difference of .72713 and p value of **.015**, between BS Bio and AB Eng with mean difference of .72713 and p value of **.035**, between BEEd. and BSFT with mean difference of .82619 and a p value of **.032**, between BEEd. and BS Arch with mean difference of .77465 and p value of **.003**, and between BEEd. and AB Eng with mean difference of .96019 and p value of **.014**. it means that course can account for the variation in the respondents' discourse competence along the content dimension.

For organization dimension, the data also show that discourse competence variation could be seen between BEEd. and BSFT with mean difference of .88952and p value of **.034**, between BEEd. and BS Arch with mean difference of .86414 and p value of **.002**, and between BEEd. and AB Eng with mean difference 1.02352 and p value of **.018**. It means that course affects the performance variation of the respondents in discourse competence along the organization dimension. Likewise, for vocabulary component, the difference in vocabulary performance can be seen between BSN and BSFT with mean difference of .75531 and p value of **.049**, between BEEd. and BSFT with mean difference of .87238 and p value of **.019**, and between BEEd. and AB Eng with mean difference of .89438 and p value of **.030**. it means that at least one of these courses can influence the variation in the writing performance of the respondents.

Finally, for the mechanics dimension, groups that differ in discourse competence are between BS Bio and BS Arch with mean difference of .62538 and a p value of **.037**, between BS Bio and AB Eng with mean difference of .86800 and p value of **.032**, between BEEd. and BS Arch with mean difference of .61253 and p value **.023,** and between BEEd. and AB Eng with mean difference of .85514 and p value of **.026.** It

Research Article

means that at least one of these courses can account for the variation in the respondents' performance in discourse competence.

However, a negative difference means that the higher group means should be greater than the lower group mean. Result of this kind is the usual expectation because of the perception that education related courses are perceived to be performing well in writing. But this is not the case in this study. For example, a negative difference is shown only between BS Arch and BSHRM with mean difference of -.88246 and p value of **.055**.This implies that generally course can affect or influence the respondents' discourse competence significantly.

Table 1.2.1
POST HOC TABLE: Comparisons of the Respondents' Differences in Discourse Competence by Course Groups (CONTENT)

Groups Compared	Mean Difference	Std. Error	Sig
BSN – BSBio	.05477	.17098	1.000
BSN – BEEd.	.00725	.15345	1.000
BSN – BSFT	.83344*	.24308	**.020**
BSN –BSArch	.78190*	.17971	**.001**
BSN – AB Eng	.96744*	.26276	.009
BSN – BS HRM	-.10056	.26276	1.000
BSBIO – BEEd	-.04752	.18472	1.000
BSBIO – BSFT	.77867	.26394	.075
BSBIO – BSArch	.72713*	.20705	**.015**
BSBIO – ABEng	.91267*	.28216	**.035**
BSBIO – BSHRM	-.15533	.28216	.999
BEEd. – BSFT	.82619*	.25294	**.032**
BEEd. – BSArch	.77465*	.19283	**.003**
BEEd. – ABEng	.96019*	.27190	**.014**
BEEd. – BSHRM	-.10781	.27190	1.000
BSFT- BSArch	-.05154	.26968	1.000
BSFT – ABEng	.13400	.33086	1.000
BSFT – BSHRM	-.93400	.33086	.102
BSArch – ABEng	.18554	.28754	.998
BSArch- BSHRM	-.88246	.28754	**.055**
ABEng – BSHRM	-.13400	.45716	1.000

ORGANIZATION

Groups Compared	Mean Difference	Std. Error	Sig
BSN – BSBio	-.01767	.18567	1.000
BSN – BEEd.	-.28452	.16663	.682

Journal of Information Systems Engineering and Management
2024, 9(1)
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https://www.jisem-journal.com/

Research Article

BSN – BSFT	.60500	.26397	.309
BSN –BSArch	.57962	.19515	.071
BSN – AB Eng	.73900	.28533	.173
BSN – BS HRM	.00500	.28533	1.000
BSBIO – BEEd.	-.26686	.20059	.885
BSBIO – BSFT	.62267	.28661	.378
BSBIO – BSArch	.59728	.22484	.150
BSBIO – ABEng	.75667	.30640	.222
BSBIO – BSHRM	.02267	.30640	1.000
BEEd. – BSFT	.88952*	.27467	**.034**
BEEd. – BSArch	.86414*	.20940	**.002**
BEEd. – ABEng	1.02352*	.29526	**.018**
BEEd. – BSHRM	.28952	.29526	.976
BSFT- BSArch	-.02538	.29285	1.000
BSFT – ABEng	.13400	.35929	1.000
BSFT – BSHRM	-.60000	.35929	.706
BSArch – ABEng	.15938	.31224	1.000
BSArch- BSHRM	-.57462	.31224	.595
ABEng – BSHRM	-.73400	.37527	.517

VOCABULARY

Groups Compared	Mean Difference	Std. Error	Sig
BSN – BSBio	.04531	.17096	1.000
BSN – BEEd.	-.11707	.15343	.995
BSN – BSFT	.75531*	.24305	**.049**
BSN –BSArch	.41377	.17969	.304
BSN – AB Eng	.77731	.26272	.073
BSN – BS HRM	-.02069	.26272	1.000
BSBIO – BEEd.	-.16238	.18469	.987
BSBIO – BSFT	.71000	.26390	.139
BSBIO – BSArch	.36846	.20702	.635
BSBIO – ABEng	.73200	.28212	.171
BSBIO – BSHRM	-.06600	.28212	1.000
BEEd. – BSFT	.87238*	.25290	**.019**
BEEd. – BSArch	.53084	.19280	.120
BEEd. – ABEng	.89438*	.27186	**.030**
BEEd. – BSHRM	.09638	.27186	1.000
BSFT- BSArch	-.34154	.26964	.909
BSFT – ABEng	.02200	.33082	1.000
BSFT – BSHRM	-.77600	.33082	.281
BSArch – ABEng	.36354	.28750	.909

Journal of Information Systems Engineering and Management
2024, 9(1)
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https://www.jisem-journal.com/ Research Article

Groups Compared	Mean Difference	Std. Error	Sig
BSN – BSBio	.00021	.16165	1.000
BSN – BEEd.	-.04741	.14508	1.000
BSN – BSFT	.55521	.22982	.246
BSN –BSArch	.30764	.16991	.615
BSN – AB Eng	.66688	.24842	.141
BSN – BS HRM	.13288	.24842	.999
BSBIO – BEEd.	-.04762	.17464	1.000
BSBIO – BSFT	.55500	.24954	.348
BSBIO - BSArch	.30744	.19575	.766
BSBIO – ABEng	.66667	.26677	.209
BSBIO – BSHRM	.13267	.26677	1.000
BEEd. – BSFT	.60262	.23914	.200
BEEd. – BSArch	.35505	.18231	.523
BEEd. – ABEng	.71429	.25706	.113
BEEd. – BSHRM	.18029	.25706	.997
BSFT- BSArch	.17477	.27185	.998
BSFT – ABEng	.53400	.32672	.728
BSFT – BSHRM	.17477	.27185	.998
BSArch - ABEng	.35923	.27185	.888
BSArch- BSHRM	-.17477	.27185	.998
ABEng - BSHRM	-.53400	.32672	.728
BSArch- BSHRM	-.43446	.28750	.800
ABEng – BSHRM	-.16600	.45709	1.000

LANGUAGE USE

MECHANICS

Groups Compared	Mean Difference	Std. Error	Sig
BSN – BSBio	-.13156	.16096	.992
BSN – BEEd.	-.11871	.14446	.991
BSN – BSFT	.52510	.22883	.308
BSN –BSArch	.49382	.16918	.081
BSN – AB Eng	.73644	.24736	.070
BSN – BS HRM	.00244	.24736	1.000
BSBIO – BEEd.	.01286	.17389	1.000
BSBIO – BSFT	.65667	.24847	.154
BSBIO – BSArch	.62538*	.19491	**.037**
BSBIO – ABEng	.86800*	.26562	**.032**
BSBIO – BSHRM	.13400	.26562	1.000
BEEd. – BSFT	.64381	.23811	.135
BEEd.– BSArch	.61253*	.18153	**.023**
BEEd. – ABEng	.85514*	.25596	**.026**
BEEd. – BSHRM	.12114	.25596	1.000
BSFT- BSArch	.64381	.23811	.135
BSFT – ABEng	.21133	.31147	.997

Research Article

BSFT - BSHRM	-.52267	.31147	.701
BSArch - ABEng	.24262	.27068	.986
BSArch- BSHRM	-.49138	.27068	.611
ABEng - BSHRM	-.73400	.32532	.329

Conclusions

The findings of the study reveal that gender significantly influences discourse competence across all dimensions, namely content, organization, vocabulary, language use, and mechanics. Female respondents consistently outperformed male respondents, as evidenced by statistically significant differences at the 0.05 level. This indicates that female students demonstrate stronger writing performance and more developed discourse competence compared to their male counterparts. Hence, gender is a determining factor in shaping students' ability to construct coherent and effective discourse.

On the other hand, first language spoken does not show a statistically significant difference in discourse competence, although the results are considered meaningful. This suggests that while first language may not directly cause significant variation, it still plays a potential role in influencing students' discourse development. The finding implies that first language should not be disregarded, as it may interact with other variables affecting language proficiency and may yield significant results in future studies with different contexts or larger samples.

Furthermore, the study confirms that academic discipline (course) significantly affects discourse competence**,** as indicated by the significant ANOVA results and post hoc comparisons. Differences were observed across multiple course groupings in terms of content, organization, vocabulary, and mechanics. This suggests that students' exposure to discipline-specific writing tasks, instructional strategies, and language use conventions contributes to variations in their discourse competence. Therefore, academic environment and curricular demands play a crucial role in developing students' writing proficiency.

Recommendations

In light of the findings, it is recommended that educators design gender-responsive instructional strategies to support male students in improving their discourse competence, particularly in writing. This may include targeted writing interventions, increased practice opportunities, and the use of engaging and inclusive teaching approaches that address diverse learning styles.

Although first language did not yield significant differences, teachers and curriculum developers should still consider integrating multilingual and culturally responsive pedagogies in the classroom. Recognizing students' linguistic backgrounds may help enhance comprehension and facilitate the development of discourse skills, especially in second language learning contexts.

Finally, higher education institutions and faculty members should strengthen discipline-specific writing instruction across different courses. Programs may incorporate more writing-intensive activities, workshops, and scaffolded tasks tailored to the communication demands of each academic field. Future researchers are also encouraged to further investigate the role of first language and other variables using larger samples or different research designs to validate and expand the current findings.

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