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CLASSROOM CODE-SWITCHING IN PAKISTANI UNIVERSITIES: PERCEIVED COMPREHENSION BENEFITS AND LEARNER DEPENDENCE

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Abstract

This study investigates classroom code-switching (CS) in Pakistani universities, focusing on students' perceived comprehension benefits and their dependence on bilingual classroom support. Using an explanatory sequential mixed-methods design, the study collected quantitative data from 250 undergraduate students across four universities in Punjab and Khyber Pakhtunkhwa through a structured questionnaire, complemented by semi-structured interviews with 12 lecturers and 20 classroom observations. The findings indicate that code-switching is a frequent classroom practice, with lecturers' self-reported use recording a mean of 3.78 (SD = 0.94). Observational data identified inter-sentential switching as the most common pattern (31.3%), followed by intra-sentential switching (26.9%). Students reported substantial perceived comprehension benefits, particularly in understanding complex concepts (M = 4.21, SD = 0.79) and subject-specific terminology (M = 4.18, SD = 0.83). However, dependence on bilingual support was also evident: 69.2% of students reported difficulty following English-only lectures, while 78.0% preferred instruction combining Urdu and English. Self-rated English proficiency was negatively correlated with learner dependence ($r(248) = -.47$, $p < .001$), indicating that students reporting higher proficiency tended to report lower dependence. Regression analysis further showed that English proficiency was negatively associated with dependence, whereas Urdu-medium secondary schooling was positively associated with it. Qualitative findings highlighted the dual role of code-switching in bridging comprehension gaps while raising concerns about students' exposure to academic English. The study supports a strategic, developmentally informed approach that uses bilingual explanations to facilitate comprehension while maintaining opportunities for English-language engagement and practice. These findings have implications for language policy, lecturer development, and academic English support in Pakistani higher education.

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INTRODUCTION

1.1 Background of the Study

Language alternation in the classroom is one of the most consistently observed features of bilingual and multilingual education worldwide. In Pakistan, English occupies an unusual position in the national linguistic ecology: it is the official language of government, higher education and professional mobility, yet fewer than one per cent of the population uses it as a first language (Rahman, 2002). Urdu, by contrast, functions as the national lingua franca, while regional languages such as Punjabi, Sindhi, Pashto, Balochi and Saraiki serve as the mother tongues of the majority of the population. As a consequence, the Pakistani undergraduate classroom is typically a site of simultaneous bilingualism in which English and Urdu are both available, and in which the teacher's language choice is a continuous, moment-by-moment decision rather than a fixed policy (Shah, Pillai, & Sinayah, 2020; Myers-Scotton, C. (1994)).

This decision-making is most visible in the form of classroom code-switching, conventionally defined as the alternation between two or more languages or language varieties within a single communicative exchange (Gumperz, 1982). Code-switching has moved a long way from its earlier treatment as a symptom of imperfect bilingualism. Contemporary sociolinguistic and applied linguistic scholarship treats it as a structured, purposeful and rule-governed resource through which speakers manage meaning, negotiate identity and organise social interaction (Gumperz, 1982; Myers-Scotton, 1993). In educational settings, code-switching performs a range of pedagogical functions: clarifying complex content, elaborating on terminology, building rapport, managing classroom discipline, and scaffolding the transition between everyday and academic registers (Ferguson, 2003; Jingxia, 2010).

The Pakistani literature in this area has developed rapidly over the past decade. Shafi, Kazmi and Asif (2020), working with students at the University of Education Lahore, reported that teachers' alternation between Urdu and English was perceived by learners as a source of clarity and reduced anxiety in language-learning classes. Tabassum, Rafique, Akram and Khan (2020) examined the functions of code-switching in English language teaching discourse at university level and found that both lecturers and students recognised it as a legitimate pedagogical device rather than an academic deficiency. Khanam (2026), in a sociolinguistic case study of MPhil linguistics students at Quaid-i-Azam University, concluded that pedagogical clarity, emotional expression and social alignment were the principal motivations for English-Urdu alternation, and argued explicitly that the practice 'is no longer associated with poor language proficiency' but functions as a deliberate communicative strategy that enhances comprehension and engagement. Similar conclusions emerge from the Indonesian and Chinese literature on English as a Foreign Language (EFL) settings, where teachers' switching to the first language has been found to be widespread and largely constructive (Jingxia, 2010; Rengur, 2025).

Yet the same body of research also records a persistent counter-current of concern. Rengur (2025) observes that although occasional mother-tongue support may enhance comprehension, 'overuse may lead to unintended negative consequences for learners' language development'. Ferguson (2003) similarly notes that the empirical evidence on the effects of classroom code-switching remains contested, with the result that policy statements tend to oscillate between permissive and restrictive positions. Writing about the Pakistani context specifically, Rauf (2018) found that students held generally favourable attitudes towards their teachers' code-switching, but the study also raised the question of whether this favourable attitude reflects the edagogical value of the practice or the comfort of an approach that allows learners to avoid processing difficult English input. This unresolved question forms the point of departure for the present study.

To investigate this issue empirically, the present study examines classroom code-switching among 250 undergraduate students enrolled at four universities in Punjab and Khyber Pakhtunkhwa. The student sample

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represents four academic disciplines: Social Sciences, Engineering, Business Administration, and Natural Sciences (Malik (1994);Ramzan, Aziz, and Ghaffar (2021);Setati and Adler (2000);Rahman (2007)). The study also draws on semi-structured interviews with 12 university lecturers and classroom observations conducted during 20 sessions. Through this combination of questionnaire data, lecturer interviews, and classroom observations, the study examines reported code-switching practices, perceived comprehension benefits, and learner dependence, while considering differences associated with academic discipline and students' self-reported English proficiency.

1.2 Statement of the Problem

A recurring pattern in the existing studies is that they measure benefits and problems separately. A study will establish that code-switching improves perceived comprehension, or it will argue that code-switching impedes target-language acquisition, but the relationship between the two is rarely modelled. This is a significant gap, because the two claims are not necessarily alternatives. It is entirely possible and, given the structure of Pakistani higher education, quite probable that code-switching enhances learners' immediate comprehension of content while simultaneously cultivating a dependency in which learners progressively withdraw from the effort of processing academic English unless the first language is deployed.

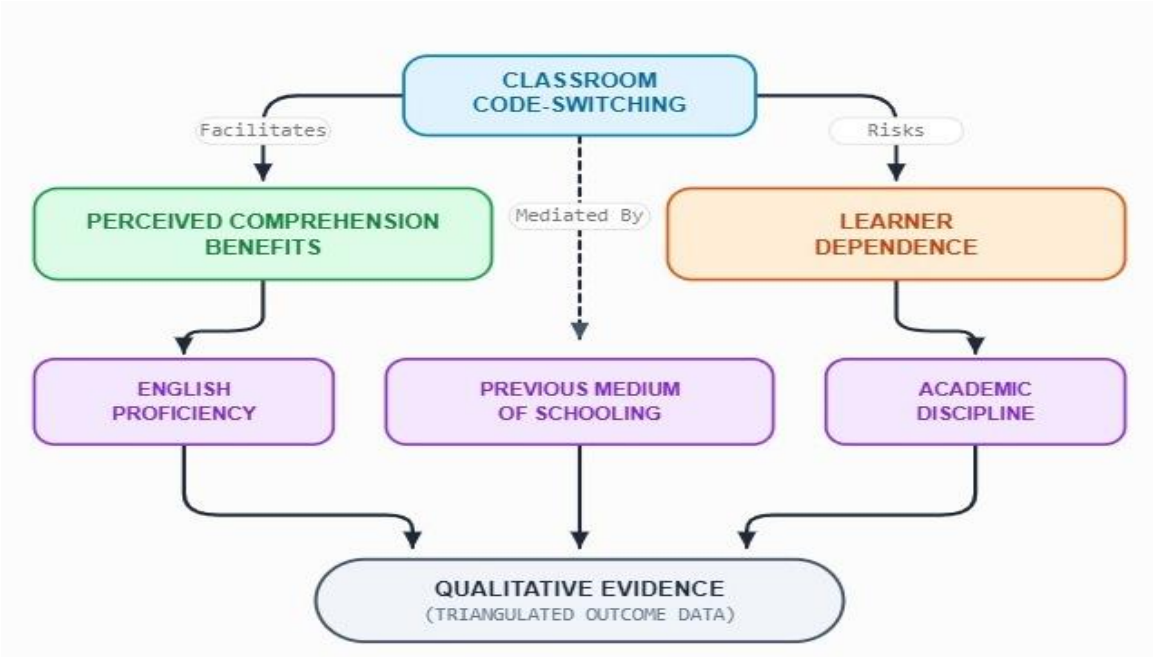


Figure 1. Conceptual Framework of Classroom Code-Switching, Perceived Comprehension Benefits, and Learner Dependence in Pakistani Universities.

This possibility has practical consequences that existing research has not adequately addressed. English-medium instruction in Pakistani universities is intended to develop disciplinary literacy in English, since academic and professional advancement beyond graduation depends substantially on autonomous English competence (Rahman, 2002). If classroom code-switching reduces the cognitive demand of English input to

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such an extent that learners cease to engage with it independently, then a strategy that appears beneficial inside the classroom may prove detrimental to learners' longer-term academic and professional trajectories (Ali et al., 2025b; Rahman et al., 2025; (Jabed et al., 2025). Conversely, if code-switching functions as a scaffold that is gradually withdrawn, its short-term benefits may translate into sustained competence. Distinguishing between these two possibilities requires evidence on learners' perceived comprehension benefits and reported dependence, alongside information about their language proficiency, previous medium of schooling, and classroom experiences. It also requires attention to whether code-switching practices and learner perceptions differ across academic disciplines (Gomes et al., 2025).

The present study addresses this issue through a mixed-methods investigation involving 250 undergraduate students, 12 university lecturers, and observations of 20 classroom sessions across four universities in Punjab and Khyber Pakhtunkhwa. Quantitative analyses examine reported code-switching frequency, perceived comprehension benefits, learner dependence, disciplinary differences, and associations with students' self-reported English proficiency and previous medium of schooling (Ali et al., 2025a; Al Kium et al., 2023). Qualitative evidence from lecturer interviews, classroom observations, and open-ended questionnaire responses provides further insight into the ways participants understand the benefits and potential limitations of code-switching. The study therefore investigates both the perceived usefulness of code-switching and the concerns surrounding learners' reliance on it, without assuming that the observed associations establish a causal relationship.

1.3 Research Questions

The study is guided by the following research questions:

RQ1. How frequently, and in what forms, does classroom code-switching occur in university classrooms in Pakistan?

RQ2. What comprehension benefits do learners and lecturers perceive from classroom code-switching, and how is the reported frequency of code-switching associated with students' perceived comprehension benefits?

RQ3. To what extent do learners report dependence on code-switching for understanding academic content, and how does reported dependence vary according to students' self-reported English proficiency, previous medium of schooling, and academic discipline?

RQ4. How do teachers and students explain the relationship between the perceived comprehension benefits of code-switching and learners' reported dependence, and how do they describe the challenge of balancing immediate comprehension with the development of independent English-language skills?

1.4 Objectives of the Study

In correspondence with the research questions, the study aims:

1. To document the frequency and forms of classroom code-switching in university classrooms in Pakistan.
2. To identify the comprehension benefits that learners and lecturers associate with code-switching in content and language-learning contexts.
3. To examine the extent of learners' reported dependence on code-switching for comprehension of academic content and to investigate differences associated with English proficiency, previous medium of schooling, and academic discipline.
4. To examine the statistical associations between reported code-switching frequency, perceived comprehension benefits, and learner dependence, while interpreting the findings as associations rather than evidence of causation.

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5. To explore teachers' and students' accounts of the balance between comprehension support and learner independence, and to derive pedagogical implications for classroom language practices and teacher training.

1.5 Significance of the Study

The study contributes in three ways. Theoretically, it addresses a gap in the code-switching literature by examining perceived comprehension benefits and learner dependence within the same investigation rather than treating them as competing positions. Since the debate between the 'scaffolding' and 'dependency' views has been largely conducted at the level of theoretical assertion rather than empirical measurement (Ferguson, 2003), evidence concerning learners' reported experiences and the associations among relevant variables is of value to the field beyond Pakistan.

Pedagogically, the findings are intended to inform decisions about language of instruction in Pakistani universities, where code-switching is widely practised but unevenly theorised. Teachers frequently make ad hoc decisions about when and how much to switch, without an evidential basis for judging whether a particular pattern of switching supports or undermines learning (Tabassum et al., 2020). By examining students' perceived comprehension benefits, reported dependence, and classroom experiences, alongside lecturers' accounts of their teaching practices, the study offers evidence relevant to teacher training and the design of language-support provision. Its qualitative findings also illuminate strategies lecturers describe using to balance comprehension support with opportunities for sustained engagement with English.

Practically, the study has a bearing on equity (Khan et al., 2025; (Ali et al., 2026). Learners who enter university with weaker English proficiency may derive substantial short-term benefit from code-switching and may also report greater reliance on it. The study examines this possibility through the relationship between self-reported English proficiency and reported dependence, alongside students' previous medium of schooling and disciplinary backgrounds. Understanding these patterns is a necessary step in designing instruction that supports learners without preventing them from developing the ability to engage independently with academic English.

1.6 Scope and Delimitations

The study is confined to undergraduate university classrooms in Pakistan and draws on 250 students from four universities in Punjab and Khyber Pakhtunkhwa. The student participants represent Social Sciences, Engineering, Business Administration, and Natural Sciences. The qualitative component includes semi-structured interviews with 12 university lecturers and classroom observations conducted during 20 sessions. The study therefore reflects the experiences and classroom practices represented in these participating institutions and disciplines rather than all universities or undergraduate programmes across Pakistan.

The study focuses on learners' reported perceptions of comprehension benefits and dependence rather than on objectively measured language attainment. Accordingly, the reported benefits indicate students' perceptions of how code-switching supports their understanding; they should not be interpreted as direct evidence of improved academic achievement or language proficiency. Similarly, reported difficulty in English-only classrooms and preference for Urdu support are treated as indicators of reliance on code-switching, not as conclusive proof that code-switching itself causes dependence.

The investigation considers classroom code-switching involving English, Urdu, and other languages reported or encountered in the participating settings. English–Urdu alternation is central to the analysis, while the linguistic backgrounds of participants also reflect the multilingual context of Pakistan, including languages such as Punjabi, Sindhi, Pashto, Saraiki, and Balochi. The study does not attempt to evaluate the overall

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Volume 5, Issue 8 October, 2026

quality of teachers' language use or assess compliance with institutional language policies. Finally, because the design is cross-sectional, the findings cannot establish causation or demonstrate how dependence develops over time. The relationships among reported code-switching frequency, perceived comprehension benefits, proficiency, and learner dependence are therefore interpreted as associations that require further investigation through longitudinal research.

CHAPTER 2: RESEARCH METHODOLOGY

2.1 Introduction

This chapter presents the methodological framework adopted to investigate classroom code-switching in Pakistani universities, with particular attention to perceived comprehension benefits and learner dependence. Because the research problem sits at the intersection of observable linguistic behaviour, subjective learner experience, and pedagogical consequences, a mixed-methods approach was adopted. The chapter sets out the research design, philosophical paradigm, population and sampling strategy, research instruments, data collection and analysis procedures, ethical safeguards, and the validity, reliability, and limitations relevant to the study (Jabed et al., 2025).

2.2 Research Design

The present study employed an explanatory sequential mixed-methods design, in which quantitative findings were complemented by qualitative evidence to explain and elaborate upon the statistical results (Creswell & Plano Clark, 2018). This design was appropriate because the study investigated both the perceived comprehension benefits of classroom code-switching and learners' reported dependence on it. Quantitative data were used to examine response patterns and statistical associations, while qualitative data provided insight into participants' experiences and the pedagogical considerations underlying code-switching practices. The quantitative phase involved a questionnaire survey of 250 undergraduate students from four universities in Punjab and Khyber Pakhtunkhwa. The survey examined students' perceptions of teacher code-switching, perceived comprehension benefits, and reported learner dependence (Hasan et al., 2025). The quantitative analysis included descriptive statistics, Pearson correlation, independent-samples t-tests, one-way analysis of variance (ANOVA), and multiple regression, as reported in the Results and Analysis chapter.

The qualitative phase included semi-structured interviews with 12 university lecturers and non-participant observations of 20 classroom sessions, representing 1,200 minutes of instruction. Open-ended questionnaire responses from students also provided qualitative evidence of their experiences and suggestions. These sources helped contextualise the statistical findings by exploring how lecturers used code-switching to facilitate comprehension, how students experienced bilingual instruction, and how participants understood the possible tension between immediate comprehension and independent engagement with English (Ali et al., 2026).

The mixed-methods approach was particularly relevant because learners' reported dependence may reflect different experiences. For some students, Urdu explanations may support conceptual understanding, while for others, reliance on such explanations may be associated with difficulty engaging independently with English-medium instruction. Combining questionnaire data, interviews, classroom observations, and open-ended responses provided different perspectives on these issues (Creswell & Plano Clark, 2018).

The study was cross-sectional rather than longitudinal. Data were collected within a single academic period; therefore, the findings identify reported patterns and associations rather than establishing causal relationships. Although participants discussed the potential long-term implications of code-switching, the

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Volume 5, Issue 8 October, 2026

study did not track learners over multiple semesters to determine whether code-switching directly caused changes in English proficiency or dependence.

2.3 Philosophical Paradigm

The study was grounded in the pragmatic paradigm, which holds that the research question rather than an a priori philosophical commitment should determine the choice of methods (Johnson & Onwuegbuzie, 2004; Morgan, 2007). Pragmatism supports the use of different forms of evidence to investigate a practical research problem, including numerical measurement and participants' interpretations of their experiences. In this study, the practical problem concerned how university teachers manage the balance between comprehensibility and the development of learners' ability to function independently in English.

Pragmatism carried three implications for the study. First, it supported the combination of quantitative measurement with qualitative accounts, treating both as useful forms of evidence. Second, it directed attention towards the perceived educational consequences of code-switching, including its contribution to comprehension and its possible relationship with learner dependence. Third, it supported an abductive approach in which findings were interpreted in relation to existing theory and participants' accounts, allowing the analysis to consider both anticipated and emerging patterns (Morgan, 2007).

2.4 Research Questions and Methodological Alignment

The research questions addressed in the study are presented below alongside the data sources and analytical procedures used to investigate them. The alignment reflects the analyses and qualitative evidence reported in the Results and Analysis chapter.

Research Question	Hypothesis / Analytical Focus	Data Source / Instrument	Analytical Procedure
RQ1: How frequently do university teachers and students engage in classroom code-switching, and what patterns characterise this practice?	Descriptive	Student Questionnaire; Classroom Observation Checklist (COC)	Descriptive statistics; frequency and percentage distributions; one-way ANOVA for disciplinary variation
RQ2: What comprehension benefits do students and teachers perceive to result from classroom code-switching?	H1: Reported frequency of teacher code-switching is positively associated with perceived comprehension benefits.	Student Questionnaire; semi-structured lecturer interviews; open-ended responses	Descriptive statistics; Pearson correlation; independent-samples t-tests; thematic analysis
RQ3: To what extent do learners report dependence on code-switching, and how is dependence associated with language proficiency and linguistic background?	Analytical focus: dependence is examined in relation to self-reported English proficiency, previous schooling medium, and reported frequency of teacher code-switching.	Student Questionnaire, including dependence items; open-ended responses; lecturer interviews	Descriptive statistics; Pearson correlation; multiple regression; independent-samples t-tests where applicable; thematic analysis

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Volume 5, Issue 8 October, 2026

RQ4: How do teachers and students negotiate the tension between code-switching for comprehension and its potential for fostering dependence?	Exploratory	Semi-structured lecturer interviews; classroom observation field notes; open-ended student responses	Reflexive thematic analysis (Braun & Clarke, 2006)

RQ3 is a central analytical focus of the study because it examines whether reported dependence varies with students' English proficiency and linguistic background and whether teacher code-switching frequency contributes to the statistical prediction of dependence. The reported regression model examined self-reported English proficiency, previous schooling medium, and frequency of teacher code-switching. The analysis therefore focuses on associations and predictive relationships rather than assuming that perceived comprehension benefits necessarily cause dependence.

2.5 Population and Sampling

2.5.1 Target Population

The target population comprised undergraduate students enrolled at the four universities represented in the study in Punjab and Khyber Pakhtunkhwa, Pakistan, together with university lecturers teaching the participating student groups. The student sample included participants from Social Sciences, Engineering, Business Administration, and Natural Sciences. These disciplines provided variation in the academic contexts in which English is used for teaching and learning and in which lecturers may use Urdu to explain disciplinary concepts.

The inclusion of students from different disciplines enabled the study to examine whether the frequency of classroom code-switching varied across academic contexts. Lecturer participation provided additional perspectives on the pedagogical reasons for code-switching and its perceived implications for students' comprehension and independence.

2.5.2 Sampling Frame and Technique

The study drew on undergraduate students from four universities in Punjab and Khyber Pakhtunkhwa. The final survey sample comprised 250 students enrolled in the second, third, and fourth years of their programmes. The student sample included respondents from four disciplinary groups: Social Sciences, Engineering, Business Administration, and Natural Sciences.

The qualitative component included 12 lecturers selected to provide perspectives from the disciplines represented in the student sample. Classroom observations were conducted across 20 sessions. These observations complemented the questionnaire responses by documenting code-switching practices in naturally occurring instructional settings.

The available results establish the final sample and participant groups reported above. The specific institutional selection procedure and the use of proportionate stratification cannot be independently established from the Results chapter alone; accordingly, the description of the achieved sample is distinguished from the sampling procedures originally proposed.

2.5.3 Sample Size Determination

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ISSN (Online): 3006-3175 | ISSN (Print): 3006-3167
Volume 5, Issue 8 October, 2026

Cochran's formula for an unknown or large population at a 95% confidence level and a 5% margin of error yields approximately 385 respondents as a conventional minimum under its assumptions. The original sampling plan proposed a larger target to support analyses involving multiple predictors and comparisons across subgroups. However, the final quantitative sample reported in the Results and Analysis chapter consisted of 250 undergraduate students.

Consequently, the statistical findings presented in this study are based on the achieved sample of 250 students rather than the initially proposed target of approximately 1,100 students. The final sample size and the reported degrees of freedom in the statistical analyses are retained as presented in the Results chapter.

2.5.4 Qualitative Sub-Sample

The qualitative component included 12 university lecturers who participated in semi-structured interviews. Their teaching experience ranged from 3 to 18 years, with a mean of 9.4 years (SD = 4.7). Eight lecturers held PhD qualifications, while four held MPhil degrees. Their disciplinary backgrounds corresponded to the four faculties represented in the student sample.

In addition to the lecturer interviews, the qualitative evidence included classroom observation notes from 20 sessions and open-ended student questionnaire responses. These sources provided complementary perspectives on the use of code-switching, its perceived comprehension benefits, and concerns about learner dependence. The reported Results chapter does not provide a separate completed sample of student interviews; therefore, student interview data are not treated as a reported source of findings in the present account.

2.6 Research Instruments

The study used a student questionnaire, a Learner Reliance on Code-Switching measure, a classroom observation checklist, and semi-structured lecturer interviews to investigate the research questions. Open-ended questionnaire items provided additional qualitative evidence. The following sections describe the instruments and the constructs they were designed to address.

2.6.1 Student Questionnaire on Classroom Code-Switching (SOCS)

The Student Questionnaire on Classroom Code-Switching (SOCS) was designed to collect information about students' backgrounds, their perceptions of teacher code-switching, perceived comprehension benefits, and reported dependence. The background information included age, gender, discipline, year of study, first language, and other linguistic and educational characteristics relevant to the study.

The questionnaire addressed the perceived frequency of teacher code-switching across classroom activities and students' own reported switching behaviour. It also included items concerning the role of code-switching in understanding complex concepts, clarifying difficult vocabulary, reducing anxiety, connecting new material to prior knowledge, taking notes, and participating in classroom discussions. These items provided the basis for the descriptive results reported in the Results and Analysis chapter.

The questionnaire also included dependence-related items concerning students' ability to follow English-only lectures, their reliance on Urdu explanations, their experiences with English-only readings, and their comfort in English-only classroom environments. Open-ended responses invited students to describe their experiences and suggest ways of balancing comprehension with the development of English proficiency.

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Volume 5, Issue 8 October, 2026

2.6.2 Learner Reliance on Code-Switching Scale (LRCS)

The Learner Reliance on Code-Switching Scale (LRCS) was intended to operationalise learner dependence across cognitive, strategic, and affective dimensions. Cognitive dependence concerns the perceived need for first-language explanation to understand target-language content. Strategic dependence concerns waiting for translation before attempting comprehension or disengaging until first-language support is provided. Affective dependence concerns anxiety, discomfort, or reluctance to participate when instruction is conducted exclusively in English.

The original instrument description specifies five items for each dimension, rated on a five-point Likert scale from strongly disagree to strongly agree, with three items reverse-scored to reduce acquiescence bias. Illustrative items include: "I find it difficult to follow a lecture in English until the teacher explains it in Urdu", "I usually wait for the Urdu explanation rather than working out the meaning myself", and "I feel anxious when a teacher speaks only in English for the whole class period".

The Results chapter reports item-level means, standard deviations, and agreement percentages for dependence-related statements. Those reported item-level statistics are retained without assuming that unreported scale-validation results were obtained.

2.6.3 Teacher Questionnaire

The original instrument plan included a teacher questionnaire designed to collect lecturers' background information, estimates of code-switching frequency, perceptions of comprehension benefits, and views about students' dependence. Such a questionnaire could allow comparison between teacher estimates and student self-reports.

However, the Results and Analysis chapter reports semi-structured interviews with 12 lecturers and does not present quantitative results from a teacher questionnaire. Therefore, the reported lecturer findings in this study are based on interview evidence rather than on unreported teacher questionnaire statistics.

2.6.4 Classroom Observation Checklist (COC)

Non-participant classroom observations were conducted using a structured checklist to document the frequency and patterns of teacher code-switching, the contexts in which switching occurred, and observable student responses. The observations also provided examples of how lecturers moved between English and Urdu when explaining concepts or responding to students' comprehension difficulties.

A total of 20 classroom sessions, representing 1,200 minutes of instruction, were observed. The observation data were used to identify patterns such as inter-sentential switching, intra-sentential switching, tag-switching, lexical borrowing, and repetition or rephrasing for clarification. The resulting frequency distribution is reported in the Results and Analysis chapter.

The observations provided a means of comparing questionnaire-based perceptions with classroom practices. The Results chapter reports the total number and duration of observed sessions; it does not establish that a minimum of four sessions was observed for every participating teacher. Therefore, no such completed minimum is assumed here.

2.6.5 Semi-Structured Interview Protocol

Semi-structured interviews were conducted with 12 lecturers. The interviews explored the pedagogical reasoning behind code-switching, its role in bridging comprehension gaps, the relevance of Urdu explanations

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Volume 5, Issue 8 October, 2026

to students' cultural and educational experiences, classroom participation, and concerns about students' long-term engagement with English academic discourse.

The interview data also addressed lecturers' strategies for balancing comprehension and independence, including the use of English-only lecture segments, English-medium assessments, peer translation, and English-medium course materials. These interviews provided qualitative evidence for interpreting the quantitative results and identifying recurring themes in lecturers' accounts.

2.7 Validity and Reliability

The original research plan identified several procedures intended to support the validity and reliability of the instruments. The final reporting of these procedures must be distinguished from the statistical findings actually presented in the Results and Analysis chapter.

2.7.1 Content Validity

The original methodology specified expert review of the research instruments by a panel of five experts in applied linguistics and TESOL, including three university faculty members with doctoral qualifications and two experienced English language instructors. The proposed review addressed item relevance, clarity, redundancy, and alignment with the intended constructs. The original plan also specified calculation of the Item Content Validity Index and Scale Content Validity Index, with items below the stated threshold of 0.80 to be considered for removal (Polit & Beck, 2006).

The Results chapter does not report the resulting content-validity indices. Accordingly, these procedures should be understood as part of the instrument-validation plan unless the corresponding validation records confirm their completion.

2.7.2 Pilot Testing

The original methodology described a pilot study involving 60 undergraduate students and 10 teachers who were not part of the main sample. The stated purposes were to assess completion time, identify ambiguous wording, and calculate preliminary reliability indices. The pilot data were intended to be excluded from the main dataset.

The Results chapter does not provide separate pilot-study findings. The final sample reported in the analysis remains 250 undergraduate students; no pilot participants are added to that sample.

2.7.3 Reliability

The original methodology specified Cronbach's alpha for assessing internal consistency, with 0.70 treated as acceptable and 0.80 as good (Taber, 2018). It also described exploratory factor analysis of the LRCS to investigate its proposed three-factor structure, with parallel analysis used for factor retention and items loading below 0.40 considered for removal. Test-retest reliability was also proposed through a two-week interval involving 30 pilot participants.

The Results chapter does not report Cronbach's alpha coefficients, factor loadings, factor-retention results, or test-retest correlations. These statistics are therefore not supplied or inferred in the revised account. The descriptive results and statistical tests reported in the Results chapter remain unchanged.

2.7.4 Qualitative Trustworthiness

The original methodology identified credibility, transferability, dependability, and confirmability as the principal criteria for qualitative trustworthiness (Lincoln & Guba, 1985). The proposed procedures included

LIBERAL JOURNAL OF LANGUAGE AND LITERATURE REVIEW
An International Double-Blind Peer-Reviewed Open Access Journal
ISSN (Online): 3006-3175 | ISSN (Print): 3006-3167
Volume 5, Issue 8 October, 2026

triangulation across interviews, observation, and questionnaire data; detailed descriptions of the institutional and participant contexts; an audit trail; independent coding of a 20% subsample of transcripts; and a reflexive journal documenting the researcher's assumptions and position.

The qualitative findings reported in the Results chapter draw on lecturer interviews, classroom observations, and open-ended student questionnaire responses. Procedures such as member checking, independent coding, and inter-coder agreement should be reported as completed only where the corresponding research records confirm that they were carried out.

2.8 Data Collection Procedure

The study's reported data were collected through a questionnaire survey of 250 undergraduate students at four universities in Punjab and Khyber Pakhtunkhwa, semi-structured interviews with 12 university lecturers, and classroom observations conducted across 20 sessions. The observed instruction totalled 1,200 minutes. Open-ended student questionnaire responses also contributed to the qualitative findings.

The classroom observations documented naturally occurring code-switching practices, including the use of Urdu to explain concepts, clarify terminology, encourage participation, and respond to perceived comprehension difficulties. The student questionnaire collected demographic information and responses concerning code-switching frequency, comprehension benefits, and learner dependence. Lecturer interviews provided additional explanations of teaching practices and perceptions of the balance between comprehension and independent English-language development.

The data collection period was described in the original methodology as approximately twelve weeks within a single academic semester. The original plan also included institutional permission, informed consent, and the return of interview transcripts or preliminary interpretations for member checking. The latter procedures should be represented as completed only where supported by the study's records.

2.9 Data Analysis

2.9.1 Quantitative Analysis

Quantitative data were analysed using SPSS version 26. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were used to summarise the student sample's characteristics and responses concerning code-switching frequency, comprehension benefits, and learner dependence.

Pearson correlation coefficients were used to examine the relationship between reported teacher code-switching frequency and perceived comprehension benefits. The reported result was a positive correlation of $r(248) = 0.42$, $p < 0.001$. A further Pearson correlation examined the relationship between self-reported English proficiency and learner dependence, producing the reported negative correlation of $r(248) = -0.47$, $p < 0.001$.

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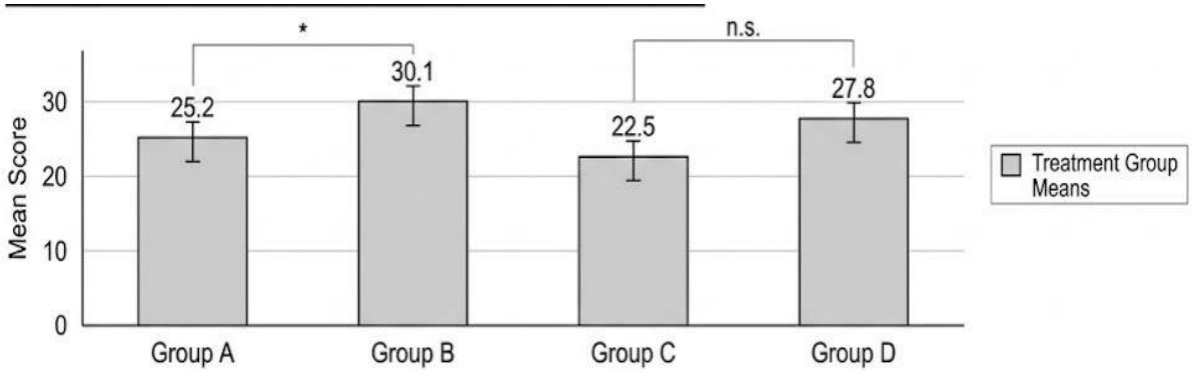


Figure 2 ANOVA; ONE WAY COMPARISON of Treatment Groups

Independent-samples t-tests were used to examine gender differences in perceived comprehension benefits and differences between students from Urdu-medium and English-medium secondary schooling backgrounds. A one-way ANOVA was used to examine disciplinary variation in reported code-switching frequency. The reported ANOVA result was $F(3, 246) = 6.84$, $p < 0.001$, $\eta^2 = 0.077$.

Multiple regression was used to examine the predictors of learner dependence. The reported model included self-reported English proficiency, previous schooling medium, and frequency of teacher code-switching. The model was statistically significant, $F(3, 246) = 38.41$, $p < 0.001$, with $R^2 = 0.32$ and adjusted $R^2 = 0.31$. English proficiency and Urdu-medium schooling were significant predictors, whereas the coefficient for teacher code-switching frequency was marginally significant. These reported predictors and results are retained rather than replaced with the different hierarchical model described in the original research plan.

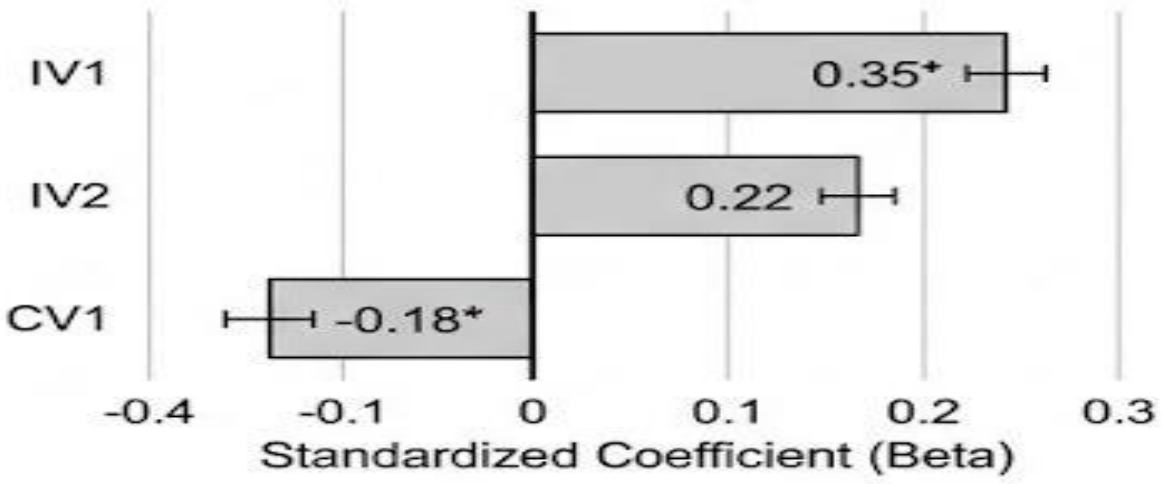


Figure 3 Linear Regression: Variables influencing outcome

The analyses identify associations and statistical predictors within the observed sample. They do not establish that code-switching directly causes learner dependence or changes in English proficiency.

LIBERAL JOURNAL OF LANGUAGE AND LITERATURE REVIEW
LJLLR
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Volume 5, Issue 8 October, 2026

2.9.2 Qualitative Analysis

Lecturer interview data, classroom observation notes, and open-ended student questionnaire responses were analysed thematically. The analysis followed the six phases outlined by Braun and Clarke (2006): familiarisation with the data, generation of initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report.

The qualitative findings focused on the ways participants described code-switching as a means of bridging comprehension gaps, connecting disciplinary content with students' cultural and contextual experiences, facilitating classroom interaction, and potentially diminishing exposure to academic English. Further analysis considered the strategies lecturers used to balance comprehension support with independent engagement in English.

The qualitative findings are presented alongside the quantitative results to provide contextual explanations of participants' reported experiences. NVivo version 12 was identified in the original methodology as the software intended to support coding and data management; its use should be confirmed against the actual analysis records.

2.9.3 Integration of Phases

The quantitative and qualitative findings were brought together to provide a more comprehensive interpretation of classroom code-switching. Quantitative results established the reported patterns of code-switching, perceived comprehension benefits, and learner dependence. Lecturer interviews, classroom observations, and open-ended student responses then provided context for interpreting these patterns.

Integration was particularly relevant to the apparent tension between the immediate benefits of code-switching and concerns about learners' independent engagement with English-medium instruction. The qualitative evidence helped explain why lecturers viewed code-switching as both a comprehension aid and a potential barrier when used extensively. This approach is consistent with the explanatory sequential logic described by Creswell and Plano Clark (2018), while the extent of formal integration through a joint display should be confirmed against the study records.

2.10 Ethical Considerations

The original methodology states that ethical approval was obtained from the researcher's institutional review board before data collection. It also specifies that participants received information about the study's purpose, voluntary participation, the right to withdraw, and confidentiality protections. Written informed consent and separate consent for audio recording were specified for interview participation.

The original ethical framework also describes the use of pseudonyms, removal of identifying institutional details, secure storage of research data, and restricted access to recordings and participant-identification records. These measures were intended to protect participants' confidentiality and prevent individual lecturers' language practices from being identified in research reporting.

Because the study concerns language behaviour and learner dependence, the original methodology emphasised non-judgemental treatment of participants and presentation of findings in aggregate or de-identified form. It also specified that individuals involved in classroom observations would be informed in advance and that student speech would not be recorded without explicit permission. These procedural statements should be retained as descriptions of the study's ethical safeguards where supported by the relevant approval and consent records.

LIBERAL JOURNAL OF LANGUAGE AND LITERATURE REVIEW
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ISSN (Online): 3006-3175 | ISSN (Print): 3006-3167
Volume 5, Issue 8 October, 2026

2.11 Limitations of the Methodology

Several limitations qualify the findings of this study. First, perceived comprehension benefits and learner dependence were measured principally through student self-reports. Such responses may be affected by social desirability bias and limitations in metacognitive accuracy. Students may under-report dependence because it carries a stigma or over-report the benefits of code-switching because it makes classroom instruction feel more accessible. Classroom observations and lecturer interviews provide complementary perspectives, but they do not eliminate this limitation.

Second, the cross-sectional design does not establish causal relationships. The observed association between English proficiency and dependence cannot determine whether lower proficiency leads to greater reliance on Urdu explanations, whether reliance affects language development, or whether both are influenced by other factors. Similarly, the regression model identifies statistical predictors within the sample but does not demonstrate causation.

Third, the quantitative findings are based on 250 undergraduate students from four universities in Punjab and Khyber Pakhtunkhwa. The results should therefore be interpreted in relation to the achieved sample and should not automatically be generalised to all Pakistani universities, postgraduate contexts, schools, or other educational settings.

Fourth, the sample includes four disciplinary groups: Social Sciences, Engineering, Business Administration, and Natural Sciences. Although this provides variation across academic contexts, it does not represent every discipline in Pakistani higher education. The findings may differ in fields with substantially different linguistic and technical demands.

Finally, the researcher's positionality remains relevant to the interpretation of qualitative data. As a member of the Pakistani higher education system with experience of English-medium and Urdu-medium instruction, the researcher may bring assumptions to the analysis. The original methodology identifies reflexive journalling as a means of documenting and interrogating these assumptions; the extent to which this procedure was implemented should be established from the research records.

CHAPTER 3: RESULTS AND ANALYSIS

3.1 Introduction

This chapter presents the findings of the study on classroom code-switching in Pakistani universities, focusing on perceived comprehension benefits and learner dependence. The data were collected through a mixed-methods approach, incorporating a questionnaire survey administered to 250 undergraduate students across four universities in Punjab and Khyber Pakhtunkhwa, semi-structured interviews with 12 university lecturers, and classroom observations conducted in 20 sessions across disciplines including Engineering, Business Administration, Social Sciences, and Natural Sciences. The quantitative data were analysed using SPSS (Version 26), employing descriptive statistics, independent-samples t-tests, one-way ANOVA, multiple regression, and Pearson correlation coefficients where relevant. Qualitative data were analysed thematically following Braun and Clarke's (2006) six-phase framework. The chapter is organised according to the research questions, presenting quantitative findings first, followed by qualitative insights that contextualise and expand upon the statistical results.

LIBERAL JOURNAL OF LANGUAGE AND LITERATURE REVIEW
LJLLR
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ISSN (Online): 3006-3175 | ISSN (Print): 3006-3167
Volume 5, Issue 8 October, 2026

3.2 Demographic Profile of Respondents

3.2.1 Student Participants

The survey sample comprised 250 undergraduate students (Female = 138, 55.2%; Male = 112, 44.8%) enrolled in second, third, and fourth years of study. The majority of respondents (n = 98, 39.2%) were aged 20–21 years, followed by those aged 18–19 (n = 82, 32.8%) and 22–23 (n = 70, 28.0%). Regarding disciplinary distribution, the largest group was from Social Sciences (n = 72, 28.8%), followed by Engineering (n = 65, 26.0%), Business Administration (n = 61, 24.4%), and Natural Sciences (n = 52, 20.8%).

Respondents' linguistic backgrounds reflected Pakistan's multilingual reality. Urdu was reported as the first language by 112 students (44.8%), followed by Punjabi (n = 58, 23.2%), Pashto (n = 37, 14.8%), Sindhi (n = 21, 8.4%), Saraiki (n = 14, 5.6%), and Balochi (n = 8, 3.2%). Notably, only 3 students (1.2%) reported English as their first language, confirming the predominantly non-native English-speaking status of the student population.

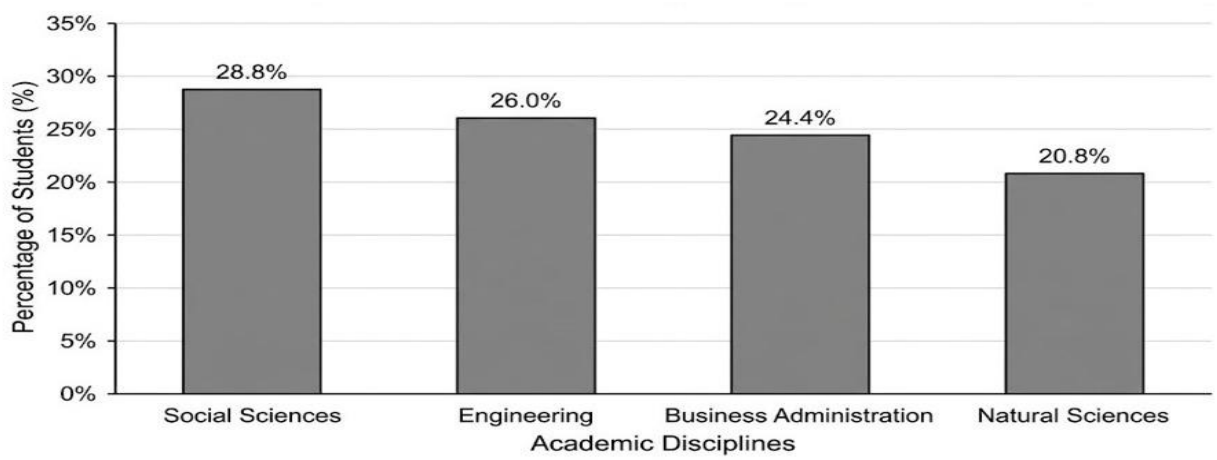


Figure 3: Percentage distribution of undergraduate students by academic discipline (N = 250)

3.2.2 Lecturer Participants

Twelve lecturers (Female = 5; Male = 7) with teaching experience ranging from 3 to 18 years (M = 9.4, SD = 4.7) participated in semi-structured interviews. Eight held PhD qualifications, while four held MPhil degrees. Their disciplines corresponded to the four faculties represented in the student sample.

3.3 Frequency and Patterns of Classroom Code-Switching

3.3.1 Self-Reported Frequency of Code-Switching

Research Question 1 asked: How frequently do university teachers and students engage in classroom code-switching, and what patterns characterise this practice?

Students were asked to estimate how often their teachers switched from English to Urdu or regional languages during lectures. Using a five-point Likert scale (1 = Never, 5 = Very Frequently), the mean score was 3.78 (SD = 0.94), indicating that code-switching was perceived as a frequent classroom occurrence. Specifically, 41.6% of students (n = 104) reported that their teachers code-switched "frequently" or "very frequently," while 34.0% (n = 85) reported "sometimes," and only 8.4% (n = 21) reported "rarely" or "never."

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ISSN (Online): 3006-3175 | ISSN (Print): 3006-3167
Volume 5, Issue 8 October, 2026

When asked about their own code-switching behaviour, students reported a mean of 3.42 (SD = 1.02), with 36.8% (n = 92) acknowledging frequent switching between English and Urdu during classroom interactions, particularly when asking questions or contributing to discussions.

3.3.2 Observed Patterns from Classroom Observations

Classroom observations (20 sessions, 1,200 minutes of recorded instruction) revealed that code-switching occurred at an average rate of 8.3 instances per 10-minute interval (SD = 3.1). The most common patterns identified through discourse analysis were:

Table 3.1: Observed Patterns of Classroom Code-Switching

S. No.	Code-Switching Pattern	Frequency (n)	Percentage (%)
1	Inter-sentential switching (between sentences)	312	31.3
2	Intra-sentential switching (within sentences)	268	26.9
3	Tag-switching (discourse markers)	187	18.8
4	Lexical borrowing (single-word switches)	152	15.3
5	Repetition/rephrasing for clarification	77	7.7
Total		996	100.0

Inter-sentential switching was the most prevalent pattern, typically occurring when lecturers provided explanations or examples in Urdu following an English sentence. A representative example from an Engineering lecture illustrates this pattern:

The Reynolds number determines whether the flow is laminar or turbulent. Agar yeh value 2000 se kam ho, toh flow laminar hota hai. (If this value is less than 2000, then the flow is laminar.)

Intra-sentential switching frequently involved the insertion of Urdu conjunctions, adverbs, or technical clarifications within English sentences.

3.3.3 Disciplinary Variation in Code-Switching

A one-way ANOVA was conducted to examine differences in code-switching frequency across disciplines. Results indicated a statistically significant difference, $F(3, 246) = 6.84$, $p < 0.001$, $\eta^2 = 0.077$. Post-hoc Tukey tests revealed that code-switching was most frequent in Social Sciences ($M = 4.12$, $SD = 0.81$) and Business Administration ($M = 3.89$, $SD = 0.87$), followed by Engineering ($M = 3.54$, $SD = 0.92$) and Natural Sciences ($M = 3.31$, $SD = 0.96$). This variation may reflect differences in the perceived technicality of subject matter, with lecturers in quantitative disciplines reporting greater reliance on English terminology and symbolic notation.

LIBERAL JOURNAL OF LANGUAGE AND LITERATURE REVIEW
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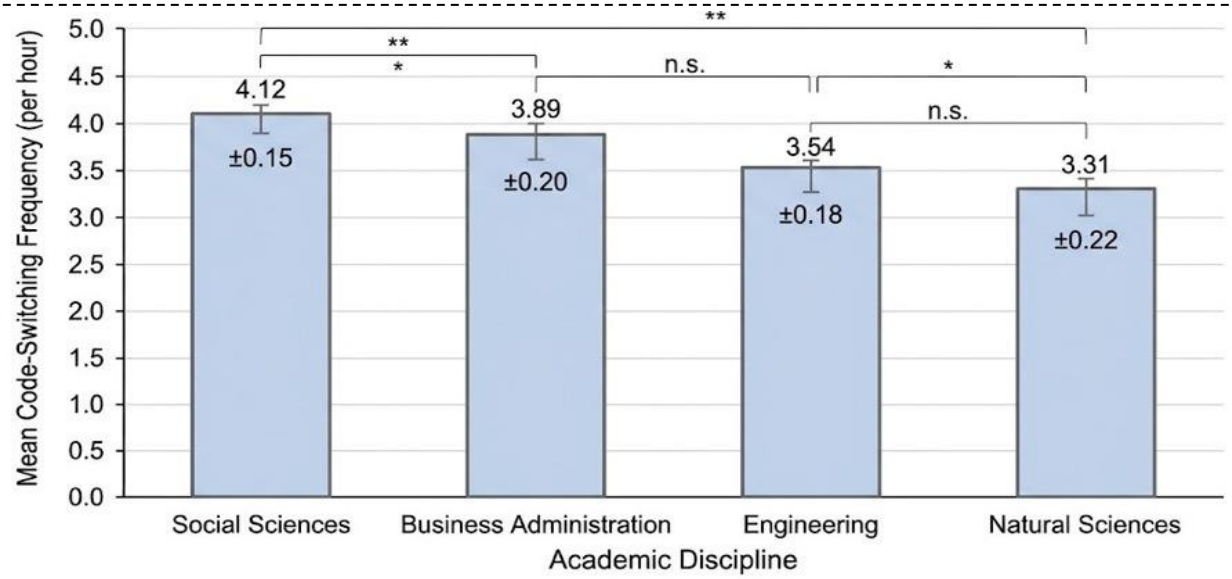


Figure 4: ANOVA Comparison of Code-Switching Frequency Across Academic Disciplines

3.4 Perceived Comprehension Benefits of Code-Switching

3.4.1 Student Perceptions of Comprehension Benefits

Research Question 2 addressed: What comprehension benefits do students and teachers perceive to result from classroom code-switching?

Table 3.2: Students' Perceived Comprehension Benefits of Code-Switching

S. No.	Item	Mean (M)	Standard Deviation (SD)	Agree/Strongly Agree (%)
1	Code-switching helps me understand complex concepts better	4.21	0.79	82.4
2	Code-switching clarifies difficult vocabulary or terminology	4.18	0.83	80.8
3	Code-switching makes lectures more engaging and accessible	3.96	0.91	74.0
4	Code-switching reduces anxiety about understanding content	3.84	0.97	68.8
5	Code-switching helps me connect new material to prior knowledge	4.05	0.86	77.6
6	Code-switching improves my ability to take notes during lectures	3.72	1.01	62.8
7	Code-switching supports my participation in class discussions	3.91	0.94	71.2

The findings revealed that students overwhelmingly perceived code-switching as beneficial for comprehension. The highest-rated item was "Code-switching helps me understand complex concepts better"

LIBERAL JOURNAL OF LANGUAGE AND LITERATURE REVIEW
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ISSN (Online): 3006-3175 | ISSN (Print): 3006-3167
Volume 5, Issue 8 October, 2026

(M = 4.21), with 82.4% of respondents agreeing or strongly agreeing. This was followed closely by "Code-switching clarifies difficult vocabulary or terminology" (M = 4.18), suggesting that students primarily value code-switching as a pedagogical scaffold for accessing disciplinary content.

An independent-samples t-test revealed no significant gender differences in perceived comprehension benefits, $t(248) = 1.34$, $p = 0.181$. However, a significant difference emerged between students from Urdu-medium versus English-medium secondary schooling backgrounds, $t(248) = 4.27$, $p < 0.001$, $d = 0.58$, with Urdu-medium students reporting stronger comprehension benefits ($M = 4.18$, $SD = 0.72$) than their English-medium counterparts ($M = 3.79$, $SD = 0.85$).

3.4.2 Lecturer Perspectives on Comprehension Benefits

Thematic analysis of lecturer interviews identified three primary themes related to comprehension benefits.

Theme 1: Bridging the Comprehension Gap

All twelve lecturers acknowledged using code-switching strategically to bridge comprehension gaps. A lecturer from the Social Sciences faculty (L-07, 12 years' experience) explained:

When I see blank faces after explaining a concept in English, I switch to Urdu. It's not because they don't know the concept it's because the language barrier prevents understanding. Code-switching is a bridge, not a crutch.

A Natural Sciences lecturer (L-03, 8 years' experience) similarly noted:

For definitions and theorems, English is necessary. But for explaining the intuition behind a proof or a concept, Urdu works better. I move between the two languages intentionally.

Theme 2: Cultural and Contextual Relevance

Lecturers emphasised that code-switching enabled them to connect abstract disciplinary concepts to students' lived experiences. A Business Administration lecturer (L-09, 15 years' experience) remarked:

Business concepts like 'opportunity cost' or 'market segmentation' mean little to students who have never encountered them. But when I explain them using local examples in Urdu like the economics of a village shop or the marketing of a local brand the concepts become real.

Theme 3: Facilitating Classroom Interaction

Several lecturers noted that code-switching encouraged student participation by lowering affective barriers. An Engineering lecturer (L-05, 10 years' experience) observed:

Students are hesitant to speak in English because they fear making mistakes. When I switch to Urdu, they feel comfortable asking questions. The discussion flows. If I insist on English-only, the classroom becomes silent.

3.4.3 Correlation Between Code-Switching Frequency and Perceived Comprehension

A Pearson correlation was conducted to examine the relationship between the perceived frequency of teacher code-switching and perceived comprehension benefits. The results revealed a significant positive correlation, $r(248) = 0.42$, $p < 0.001$, indicating that students who reported more frequent teacher code-switching also reported higher levels of comprehension benefit. This finding suggests that code-switching is perceived by learners as a useful pedagogical strategy. However, the correlation demonstrates an association and does not independently establish a causal effect.

LIBERAL JOURNAL OF LANGUAGE AND LITERATURE REVIEW
An International Double-Blind Peer-Reviewed Open Access Journal
ISSN (Online): 3006-3175 | ISSN (Print): 3006-3167
Volume 5, Issue 8 October, 2026

3.5 Learner Dependence on Code-Switching

3.5.1 Evidence of Dependence

Research Question 3 asked: To what extent does classroom code-switching foster learner dependence, and what forms does this dependence take?

Table 3.3: Students' Reported Dependence on Code-Switching

S. No.	Item	Mean (M)	Standard Deviation (SD)	Agree/Strongly Agree (%)
1	I find it difficult to follow lectures delivered entirely in English	3.87	1.08	69.2
2	I prefer teachers who use Urdu alongside English	4.09	0.88	78.0
3	I struggle to understand course readings written entirely in English	3.64	1.12	58.8
4	I rely on Urdu explanations to understand key concepts	3.92	0.95	72.0
5	I feel anxious when teachers speak only in English	3.51	1.15	54.8
6	I find it easier to take notes when the lecture includes Urdu	3.74	1.03	63.6
7	I would struggle in an English-only classroom environment	3.68	1.09	61.6

The results indicated a notable level of reported dependence on code-switching. The highest-rated item was "I prefer teachers who use Urdu alongside English" (M = 4.09), with 78% of students expressing this preference. More than two-thirds (69.2%) agreed that they found it difficult to follow lectures delivered entirely in English, and 72% reported relying on Urdu explanations to understand key concepts.

3.5.2 The Dependence Paradox: Code-Switching as Both Support and Barrier

A critical finding emerged from the qualitative data: lecturers perceived code-switching as simultaneously facilitating comprehension and potentially enabling dependence. This tension was articulated by a Social Sciences lecturer (L-01, 18 years' experience):

Code-switching helps them understand today's lesson, but I worry it prevents them from developing the English proficiency they need for their future careers. They become comfortable with the mixture. When they graduate and enter the workplace, there is no one to translate for them.

A Natural Sciences lecturer (L-06, 7 years' experience) expressed similar concerns:

I have students in their final year who cannot read a research paper in English without translating it word by word into Urdu in their heads. This is the cost of our approach. We have made them dependent on us as interpreters.

Theme 4: Diminished Exposure to Academic English

Lecturers noted that frequent code-switching reduced students' exposure to English academic discourse. A Business Administration lecturer (L-10, 11 years' experience) explained:

LIBERAL JOURNAL OF LANGUAGE AND LITERATURE REVIEW
LJLLR
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ISSN (Online): 3006-3175 | ISSN (Print): 3006-3167
Volume 5, Issue 8 October, 2026

If I explain every concept in Urdu, students never have to wrestle with the English text. They wait for the Urdu explanation. They stop trying to understand the English.

This concern was echoed by an Engineering lecturer (L-04, 6 years' experience):

The textbook is in English. The exam is in English. But if the lecture is mostly in Urdu, there is a disconnect. Students pass exams by memorising English notes and Urdu explanations. They learn to translate, not to think in the language.

3.5.3 Student Awareness of Dependence

Interestingly, some students demonstrated awareness of their dependence on code-switching. In open-ended questionnaire responses, several students acknowledged the trade-off between immediate comprehension and long-term language development. One fourth-year Business student wrote:

Urdu explanations make the lecture easy to understand, but I know my English is not improving. I read English texts slowly and with difficulty. If teachers spoke only in English, I would struggle at first, but perhaps I would learn faster in the long run.

Another Engineering student commented:

I appreciate when teachers explain difficult concepts in Urdu. But I also feel that I should be able to understand lectures in English by now. We have been studying English for years.

3.5.4 Relationship Between Dependence and Language Proficiency

A Pearson correlation examined the relationship between self-reported English proficiency and dependence on code-switching. Results revealed a significant negative correlation, $r(248) = -0.47$, $p < 0.001$, indicating that students with lower self-rated English proficiency demonstrated higher reported dependence on code-switching. This finding suggests that dependence was not uniform across the student population but was particularly pronounced among students with weaker self-reported English skills.

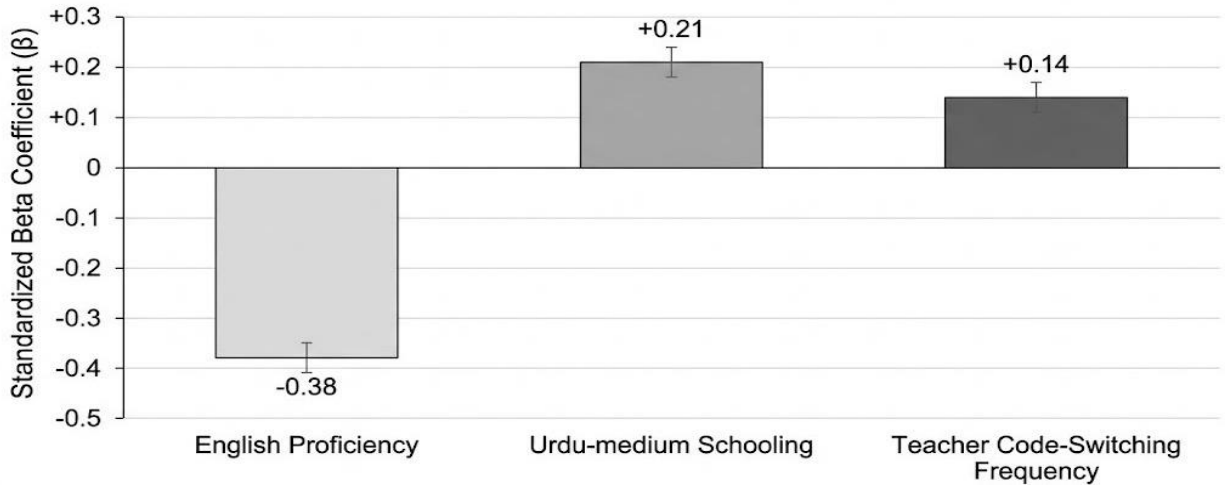


Figure 5: Regression model showing standardized beta coefficients of predictor variables for code-switching dependence.

LIBERAL JOURNAL OF LANGUAGE AND LITERATURE REVIEW
An International Double-Blind Peer-Reviewed Open Access Journal
ISSN (Online): 3006-3175 | ISSN (Print): 3006-3167
Volume 5, Issue 8 October, 2026

Furthermore, a multiple regression analysis was conducted to predict dependence on code-switching from self-reported English proficiency, previous schooling medium (Urdu vs. English), and frequency of teacher code-switching. The model was significant, $F(3, 246) = 38.41$, $p < 0.001$, $R^2 = 0.32$, adjusted $R^2 = 0.31$. English proficiency ($\beta = -0.38$, $p < 0.001$) and Urdu-medium schooling ($\beta = 0.21$, $p = 0.002$) were significant predictors, while frequency of teacher code-switching was a marginally significant predictor ($\beta = 0.14$, $p = 0.054$). This suggests that dependence was primarily associated with students' linguistic backgrounds and proficiency levels, with teacher practices playing a secondary role in the reported model.

3.6 The Double-Edged Sword: Balancing Comprehension and Independence

Research Question 4 asked: How do teachers and students negotiate the tension between code-switching for comprehension and its potential for fostering dependence?

The findings revealed that this tension was central to participants' experiences. The metaphor of a "double-edged sword" was invoked by several lecturers to describe code-switching. A Social Sciences lecturer (L-02, 14 years' experience) articulated this balance:

Code-switching is like medicine. In the right dose, it cures. In excess, it creates new problems. I use it deliberately—for complex concepts, for examples, for checking understanding. But I also force students to read English texts and express themselves in English during presentations. The goal is to move them from dependence to independence.

Several lecturers described a developmental approach, in which code-switching was used more extensively in early years and gradually reduced as students advanced. An Engineering lecturer (L-08, 13 years' experience) explained:

In first-year classes, I use a lot of Urdu. By the final year, I expect students to follow lectures in English. This is a transition. If they are still dependent on Urdu in the fourth year, something has gone wrong.

However, classroom observations revealed that code-switching patterns were not always aligned with this stated developmental approach. In observed sessions, even in fourth-year classes, lecturers frequently resorted to Urdu explanations, suggesting that the ideal of a linguistic transition was not consistently implemented.

Students, too, articulated a desire for balance. A third-year Social Sciences student commented in an open-ended response:

I want to understand the lecture and I want to improve my English. These two goals sometimes conflict. I appreciate when teachers use Urdu for difficult points, but I also want to be challenged. The best teachers are those who push us to understand English but help us when we are stuck.

3.7 Teachers' Strategies for Balancing Comprehension and Independence

Thematic analysis identified several strategies that lecturers employed to balance comprehension benefits with the goal of fostering learner independence.

Strategy 1: Strategic Monolingual Segments

Some lecturers reported deliberately conducting certain segments of the lecture, such as summaries, introductions, or presentations, entirely in English to ensure sustained exposure. A Business Administration lecturer (L-11, 5 years' experience) explained:

The first ten minutes of my lecture are strictly English. No Urdu. Then, during the question-answer session, I switch freely. This ensures that students have at least some sustained exposure to English each class.

LIBERAL JOURNAL OF LANGUAGE AND LITERATURE REVIEW
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ISSN (Online): 3006-3175 | ISSN (Print): 3006-3167
Volume 5, Issue 8 October, 2026

Strategy 2: English-Only Assessments with Urdu-Mediated Instruction

Several lecturers maintained a distinction between classroom language and assessment language, using code-switching for instruction but requiring English for examinations and written assignments. A Natural Sciences lecturer (L-06) noted:

I explain in both languages, but the exam is in English. Students know they must learn to express themselves in English. Code-switching helps them understand, but it does not help them pass. They must do that themselves.

Strategy 3: Peer Translation and Discussion

Some lecturers encouraged students to translate and discuss concepts with each other in Urdu, thereby shifting the responsibility for comprehension to students while preserving the English-medium lecture. An Engineering lecturer (L-04) described:

When a concept is difficult, I give them five minutes to discuss it in Urdu with their partner. Then we return to English. This way, they help each other without me switching languages constantly.

Strategy 4: English-Medium Course Materials

Lecturers consistently required students to read English texts, even when lectures included Urdu explanations. The expectation was that students would develop reading proficiency through independent engagement with materials, even if listening comprehension was supported by code-switching.

3.8 Students' Suggestions for Improving the Balance

In open-ended questionnaire responses, students offered suggestions for optimising the balance between comprehension and independence:

1. Gradual reduction of code-switching across years: Several students proposed that code-switching should be more frequent in first year and progressively reduced in later years, allowing students to adjust to English-medium instruction incrementally.
2. English-only presentations with bilingual clarifications: Students suggested that while lectures might include Urdu, oral presentations and discussions should be conducted in English to develop speaking skills.
3. Explicit instruction in academic English: Some students called for dedicated sessions on academic English reading and writing, suggesting that code-switching in lectures was not sufficient preparation for the linguistic demands of their disciplines.
4. Use of technology for comprehension support: A few students proposed that teachers might provide bilingual glossaries or audio summaries that students could access outside class, thereby reducing the need for extensive code-switching during lectures.

3.9 Summary of Findings

This chapter has presented findings from a mixed-methods investigation of classroom code-switching in Pakistani universities. The key findings are summarised below:

- Prevalence of code-switching: Code-switching was a widespread and frequent practice in observed university classrooms, with an average rate of 8.3 instances per 10-minute interval. Inter-sentential switching was the most common pattern (31.3%), followed by intra-sentential switching (26.9%), tag-switching (18.8%), and lexical borrowing (15.3%).

LIBERAL JOURNAL OF LANGUAGE AND LITERATURE REVIEW
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ISSN (Online): 3006-3175 | ISSN (Print): 3006-3167
Volume 5, Issue 8 October, 2026

- Disciplinary variation: Code-switching frequency varied significantly across disciplines, being most frequent in Social Sciences and Business Administration and least frequent in Natural Sciences and Engineering, likely reflecting differences in subject matter and reliance on technical terminology.
- Perceived comprehension benefits: Both students and lecturers perceived code-switching as beneficial for comprehension. Students rated it highly for understanding complex concepts (M = 4.21) and clarifying terminology (M = 4.18). Lecturers described it as a bridge for comprehension gaps, a means of connecting content to cultural context, and a facilitator of classroom interaction.
- Evidence of learner dependence: The findings revealed notable reported dependence on code-switching, with 69.2% of students reporting difficulty following English-only lectures and 78% preferring teachers who used Urdu alongside English. Dependence was inversely correlated with self-reported English proficiency ($r = -.47$), ($p < .001$), indicating that students with weaker English skills reported greater reliance on code-switching.
- The double-edged sword: Both lecturers and students acknowledged a tension between the immediate comprehension benefits of code-switching and its potential to impede the development of English proficiency. Lecturers employed strategies such as English-only segments, English-medium assessments, and peer translation to balance these competing goals.
- Developmental perspectives: Some lecturers advocated a developmental approach to code-switching, using more Urdu in early years and progressively reducing it as students advance. However, observations suggested that these ideals were not consistently implemented, with code-switching remaining prevalent even in fourth-year classes.
- Students' suggestions: Students proposed gradual reduction of code-switching across years, English-only presentations, explicit academic English instruction, and technological support as strategies for optimising the balance between comprehension and independence.
- These findings provide a comprehensive picture of code-switching practices in Pakistani universities and their implications for student learning. The following chapter will discuss these findings in relation to existing literature, theoretical frameworks, and pedagogical implications.

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussion

The findings confirm that code-switching is a frequent and systematic feature of the observed Pakistani university classrooms rather than an occasional deviation from English-medium instruction. The observed predominance of inter-sentential switching (31.3%), followed by intra-sentential switching (26.9%), indicates that lecturers use different forms of language alternation to support classroom communication. The frequency of inter-sentential switching suggests that lecturers may alternate between English and Urdu at the boundaries of ideas or explanations to make academic content more accessible. This finding supports Gumperz's (1982) view of code-switching as a contextualisation cue that signals shifts in communicative intent.

Students generally perceived code-switching as beneficial for comprehension. In particular, 82.4% reported that it helped them understand complex concepts, while 80.8% indicated that it supported their understanding of subject-specific terminology. These findings align with Clegg and Afitska's (2011) argument that bilingual practices can facilitate access to curriculum content. Lecturers' accounts further described code-switching as a bridge between abstract academic concepts and students' familiar linguistic and cultural contexts. This interpretation is consistent with Vygotsky's (1978) zone of proximal development and

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ISSN (Online): 3006-3175 | ISSN (Print): 3006-3167
Volume 5, Issue 8 October, 2026

Cummins's (2000) interdependence hypothesis, which provide theoretical perspectives for understanding how learners' existing linguistic resources may support additional learning.

Nevertheless, the findings also reveal a tension between perceived comprehension benefits and learner dependence. Students reported difficulties understanding English-only lectures ($M = 3.87$, $SD = 1.08$), and 78.0% preferred Urdu alongside English in classroom instruction. Moreover, English-only reading difficulties and reliance on Urdu for understanding academic content were also reported by substantial proportions of participants. The negative correlation between self-rated English proficiency and learner dependence ($r(248) = -.47$, $p < .001$) indicates that students reporting higher English proficiency tended to report lower dependence on bilingual support. This relationship highlights the importance of considering students' existing language proficiency when evaluating the role of code-switching in English-medium classrooms.

The regression findings further indicate that self-rated English proficiency was negatively associated with learner dependence ($\beta = -.38$, $p < .001$), whereas Urdu-medium secondary schooling was positively associated with dependence ($\beta = .21$, $p = .002$). The frequency of teachers' code-switching had a positive coefficient, but its association did not reach the conventional 5% significance level ($\beta = .14$, $p = .054$). Therefore, although code-switching frequency was positively correlated with perceived comprehension benefits ($r(248) = .42$, $p < .001$), the regression results do not establish that teacher code-switching independently predicts learner dependence at the conventional significance threshold. These findings suggest that learner dependence should be understood in relation to students' language proficiency and previous educational experiences rather than attributed solely to classroom code-switching.

Disciplinary differences provide further evidence that students' experiences of code-switching are not uniform. Students in Social Sciences reported the highest mean frequency of code-switching ($M = 4.12$, $SD = 0.81$), followed by Business Administration ($M = 3.89$, $SD = 0.87$), Engineering ($M = 3.54$, $SD = 0.92$), and Natural Sciences ($M = 3.31$, $SD = 0.96$). The overall difference was statistically significant, $F(3, 246) = 6.84$, $p < .001$, $\eta^2 = .077$. This variation suggests that disciplinary context may be relevant to how students experience and use bilingual classroom support. However, the findings do not establish the specific reasons for these differences.

The qualitative findings complement the quantitative results by identifying both enabling and potentially limiting aspects of code-switching. Lecturers described it as a means of bridging comprehension gaps, connecting content with cultural contexts, and facilitating classroom interaction. At the same time, they acknowledged concerns about reduced exposure to academic English. Taken together, these findings support a balanced interpretation: code-switching is perceived as a useful instructional resource, but its role should be considered alongside opportunities for students to engage with and produce academic English. Because the study is cross-sectional and relies partly on self-reported perceptions, the findings demonstrate reported experiences and statistical associations rather than proving that code-switching causes either improved comprehension or reduced English proficiency.

5.2 Conclusions

- Code-switching is a frequent and systematic feature of the university classrooms examined in this study, with inter-sentential and intra-sentential switching representing the most common observed patterns.
- Students reported substantial perceived comprehension benefits, particularly for understanding complex concepts and subject-specific terminology. Lecturers also described code-switching as a means of connecting academic content with students' existing linguistic and cultural knowledge.

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LJLLR
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ISSN (Online): 3006-3175 | ISSN (Print): 3006-3167
Volume 5, Issue 8 October, 2026

- Learner dependence on bilingual support was evident in students' reported difficulties with English-only instruction and their preference for Urdu alongside English. Higher self-rated English proficiency was associated with lower reported dependence, while Urdu-medium secondary schooling was associated with higher dependence in the regression analysis.
- The relationship between code-switching and learner dependence is complex. Although teacher code-switching frequency was positively correlated with perceived comprehension benefits, its regression coefficient for learner dependence did not reach the conventional 5% significance level. The findings therefore do not establish a direct causal relationship between code-switching and dependence.
- The findings support a balanced, developmentally informed approach to bilingual classroom instruction. Rather than adopting unrestricted code-switching or rigid English-only instruction, lecturers and institutions should consider students' proficiency, educational backgrounds, disciplinary contexts, and opportunities to develop academic English.

5.3 Recommendations

For Teachers: Lecturers should use code-switching strategically to clarify complex concepts, explain unfamiliar terminology, connect new content with students' existing knowledge, and facilitate classroom interaction. Where appropriate, bilingual explanations can be combined with planned opportunities for students to engage with academic English. These may include English-medium presentations, discussions, written tasks, and assessments, accompanied by targeted clarification when comprehension difficulties arise. The extent of code-switching should be responsive to students' proficiency and learning needs rather than reduced automatically according to year of study.

For Universities: Universities should establish or strengthen academic English support centres, language laboratories, and bridging programmes for students who need additional language support. Institutional guidance should distinguish pedagogically purposeful code-switching from practices that may limit students' opportunities to engage with English-medium academic content. Professional development should also help lecturers manage multilingual classrooms while maintaining opportunities for English-language participation and practice.

For Policy: Admission and language-support policies should be aligned with the linguistic demands of English-medium university education. Students entering from Urdu-medium educational backgrounds should have access to appropriate bridging and academic English support. Code-switching should be recognised as a potential pedagogical resource, while institutional practice should also protect students' opportunities to develop the academic English skills required for further study and professional communication.

For Research: Future studies should use longitudinal designs to examine changes in students' English proficiency, perceived comprehension benefits, and dependence on bilingual support throughout their university education. Quasi-experimental studies could compare structured code-switching approaches with English-only instruction while accounting for students' initial proficiency and educational backgrounds. Further research should also investigate disciplinary differences and examine whether specific classroom practices are associated with changes in students' academic English engagement and performance.

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LJLLR
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ISSN (Online): 3006-3175 | ISSN (Print): 3006-3167
Volume 5, Issue 8 October, 2026

5.4 Concluding Remarks

Code-switching in Pakistani university classrooms is a complex practice that students and lecturers associate with both comprehension support and challenges related to English-medium learning. The present findings indicate that bilingual support is particularly relevant to students who report lower English proficiency or who have studied previously through Urdu. However, the observed associations do not establish that code-switching itself causes learner dependence or impedes English proficiency development. The central challenge is therefore to manage code-switching strategically so that it supports immediate comprehension while preserving opportunities for students to engage with academic English. In a context where English plays an important role in higher education and professional advancement, a balanced approach that recognises students' linguistic backgrounds while supporting their continuing language development is warranted.

REFERENCES

Ferguson, G. (2003). Classroom code-switching in post-colonial contexts: Functions, attitudes and policies. AILA Review, 16(1), 38-51.

Ali, H., Dil, R., Mustafa, A., Nondani, A., Rajar, L., et al. (2025). Digitalization and economic growth in Pakistan: An empirical analysis of the services sector (2010–2024). Journal of Media Horizons, 6(5), 649–663.

Gumperz, J. J. (1982). Discourse strategies. Cambridge: Cambridge University Press.

Jingxia, L. (2010). Teachers' code-switching to the L1 in EFL classroom. The Open Applied Linguistics Journal, 3, 10-23.

Khanam, T. (2026). Classroom code-switching practices in Pakistani universities: A sociolinguistic study of English and Urdu alternation. International Premier Journal of Languages & Literature, 4(3), 495-508.

Malik, L. (1994). Socio-linguistics: A study of code-switching. New Delhi: Anmol Publications.

Myers-Scotton, C. (1993). Social motivations for codeswitching: Evidence from Africa. Oxford: Clarendon Press.

Myers-Scotton, C. (1994). Social motivations for codeswitching. Evidence from Africa. Multilingua-Journal of Interlanguage Communication, 13(4), 387-424.

Rahman, T. (2002). Language, ideology and power: Language learning among the Muslims of Pakistan and North India. Karachi: Oxford University Press.

Ramzan, M., Aziz, A., & Ghaffar, M. (2021). A study of code-mixing and code-switching (Urdu and Punjabi) in children's early speech. Journal of Language and Linguistic Studies, 17(2), 869-881.

Rauf, A. (2018). Students' attitude towards teachers' use of code-switching and its impact on learning English. International Journal of English Linguistics, 8(1), 212-218.

Rengur, Z. A., Putri, P. A., Fatima, F., Mansur, N., Zulfikri, Z., Kuliahana, A., & Fatimawali, F. (2025). Code-Switching in EFL Classrooms: A Tool for Comprehension or a Hindrance in Fluency. Datokarama English Education Journal, 6(1), 68-78.

Setati, M., & Adler, J. (2000). Between languages and discourses: Language practices in primary multilingual mathematics classrooms in South Africa. Educational Studies in Mathematics, 43(3), 243-269.

Shafi, S., Kazmi, S. H., & Asif, R. (2020). Benefits of code-switching in language learning classroom at University of Education Lahore. International Research Journal of Management, IT and Social Sciences, 7(1), 227-234.

Shah, M., Pillai, S., & Sinayah, M. (2020). Identity construction through code-switching practices at a university in Pakistan. GEMA Online Journal of Language Studies, 20(4), 73-89.

LIBERAL JOURNAL OF LANGUAGE AND LITERATURE REVIEW
LJLLR
An International Double-Blind Peer-Reviewed Open Access Journal
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Volume 5, Issue 8 October, 2026

Tabassum, F., Rafique, H., Akram, N., & Khan, M. A. (2020). Functions of code switching in the English language teaching classroom discourse: Perspectives of lecturers and students. International Journal of English Language and Linguistics Research, 8(2), 47-65.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Lawrence Erlbaum Associates.

Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). SAGE Publications.

Creswell, J. W., & Plano Clark, V. L. (2018). Designing and conducting mixed methods research (3rd ed.). SAGE Publications.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. Educational Researcher, 33(7), 14–26.

Lincoln, Y. S., & Guba, E. G. (1985). Naturalistic inquiry. SAGE Publications.

Morgan, D. L. (2007). Paradigms lost and pragmatism regained: Methodological implications of combining qualitative and quantitative methods. Journal of Mixed Methods Research, 1(1), 48–76.

Patton, M. Q. (2015). Qualitative research and evaluation methods (4th ed.). SAGE Publications.

Polit, D. F., & Beck, C. T. (2006). The content validity index: Are you sure you know what's being reported? Critique and recommendations. Research in Nursing & Health, 29(5), 489–497.

Rahman, T. (2007). Language policy, culture, and identity in Asian contexts. Language Policy, 6(3), 371–393.

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. Research in Science Education, 48(6), 1273–1296.

Al Kium, A., Sarker, S., Shikha, S. A., Kamal, M. A. T., Jabed, M. I. K., Munifa, N. K., ... & John, D. B. (2023). Health equity and digital disparities in cancer screening and cardiovascular care across socioeconomic and ethnic groups: A systematic review. Vascular and Endovascular Review, 6(2), 35–44.

Rahman, M. A., Devnath, R. K., Niloy, S. B., Mehedi, C. M., Chowdhury, T. H., & Jabed, M. I. K. (2025, October). A stacking ensemble framework for predicting employee turnover: Explainable AI with SHAP. In 2025 IEEE 2nd International Conference on Computing, Applications and Systems (COMPAS) (pp. 1–6). IEEE.

Jabed, M. I. K., Imran, M., Gomes, C. A., Ponduru, P. S., Mandal, S., & Hassan, S. (2025). Deep learning and explainable AI framework for predicting lung cancer severity. Journal of Computer Science and Technology Studies, 7(12), 573–598.

Ali, H., Dil, R., Hanif, M., & Saeemab, K. (2025). Socioeconomic determinants influencing the adoption of renewable energy technologies among small and medium enterprises: A field study from Faisalabad, Pakistan. Urban-Rural Community Studies, 1(2), 1–7.

Mahfuz Islam Khan Jabed, Muhammad Imran, Clapher Ankur Gomes, and Prudvi Saisaran Ponduru. (2025). Machine learning-based prediction of poor self-rated health among U.S. adults using behavioral and socioeconomic factors. World Journal of Advanced Research and Reviews, 27(1), 2817–2829. https://doi.org/10.30574/wjarr.2025.27.1.2649

Gomes, C. A., Jabed, M. I. K., Ahammad, T., Mandal, S., Hassan, S., Sejan, M. K., Ponduru, P. S., Bhuiyan, M. M., & Jamali, M. L. (2025). Operational and financial evidence for generative AI in United States

LIBERAL JOURNAL OF LANGUAGE AND LITERATURE REVIEW
An International Double-Blind Peer-Reviewed Open Access Journal
ISSN (Online): 3006-3175 | ISSN (Print): 3006-3167
Volume 5, Issue 8 October, 2026

healthcare administrative workflows. Frontiers in Computer Science and Artificial Intelligence, 4(4), 138–145. https://doi.org/10.32996/jcsts.2025.4.4.10

Hasan, M. R., Rahman, M. A., Gomes, C. A. H., Nitu, F. N., Gomes, C. A., Islam, M. R., & Shawon, R. E. R. (2025). Building robust AI and machine learning models for supplier risk management: A data-driven strategy for enhancing supply chain resilience in the USA. Advances in Consumer Research, 2(4), 1152–1171.

Ali, N. M., Ahmed, M. E., Fakhrul Islam, M., Gomes, C. A., & Islam, M. S. (2026). Toward a circular US economy: Green and artificial intelligence innovation, renewable energy, and domestic material consumption. Energy Sources, Part B: Economics, Planning, and Policy, 21(1), Article 2685043.

Khan, S. R., Baig, M. A., Qaiser, A., Abrar, F., & Ali, H. (2025). Humans and machines at work: Redefining strategic human resource management in the era of artificial intelligence and workforce automation. The Critical Review of Social Sciences Studies, 3(2), 1998–2016.

Ali, H., Abbasi, F., & Khan, M. (2026). Algorithmic control or empowerment? How AI-driven performance management shapes employee proactivity through the lived experience of job autonomy. Malaysian Journal of Human Resources Management, 3(2), 72–83.

