

The Impact of Foreign Language Integration Initiatives on Supporting Neurodivergent Learners in The Bahamas: The Mediating role of Interdisciplinary Business Curricula in Inclusive Higher Education

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ABSTRACT:

This study examined the effects of Foreign Language Integration Initiatives on enhancing the learning process for Neurodivergent Learners in higher education institutions in The Bahamas through the mediational effects of Interdisciplinary Business Curricula. A quantitative research methodology was used in the study, with data gathered through a structured questionnaire from 275 higher-education institution academic staff members in The Bahamas. The gathered data were analysed using IBM SPSS Statistics, where descriptive statistics, reliability analysis, Pearson correlation, multiple regression, and mediation analysis using PROCESS Macro (Model 4) were employed to test the hypotheses developed. It was found out that the Foreign Language Integration Initiatives had a significant positive effect on Neurodivergent Learners' Learning and Interdisciplinary Business Curricula, and the Interdisciplinary Business Curricula positively impacted Neurodivergent Learners' Learning as well. Moreover, it was concluded that Interdisciplinary Business Curricula partially mediate the relationship between foreign language integration initiatives and neurodivergent learners' learning. This research furthered the Strategic Leadership Theory by revealing the significance of the innovation process in the curricula facilitated through leadership towards inclusive higher education. The research offers practical implications for policymakers, university administrators, and curriculum designers in The Bahamas, in that it shows that the creation of an inclusive, interdisciplinary, and international higher education system is possible to enhance neurodiversity in education.

Keywords: Foreign Language Integration Initiatives, Neurodivergent Learners, Interdisciplinary Business Curricula, Inclusive Higher Education, Strategic Leadership Theory, Mediation Analysis, Higher Education, The Bahamas.

Introduction

In the last two decades, there have been significant changes in higher education, driven by globalisation, technology, transition in the labour market, and growing diversity among students (De Wit & Altbach, 2021). Rather than just disciplinary knowledge, institutions are now tasked with producing students who would have a multi-disciplinary skill set, critical thinking, intercultural competence and adaptability to solve complex global problems. Interdisciplinary curricula, as a consequence, have become an important educational model in which interdisciplinary knowledge is introduced, which helps create a holistic view of the world and transferable skills for students (Akhtar et al. 2024). This is especially beneficial in business education, where employers are increasingly looking for graduates who have technical expertise, communication skills, cultural intelligence, foreign language skills and the ability to work in international contexts (Mainga, Daniel & Alamil, 2022).

Furthermore, these developments are related to Sustainable Development Goal 4, inclusive and equitable quality education for all, as stated by Avelar et al. (2023). Yet curriculum innovation requires practices that are inclusive and can be used when the number of diversity in learners is increasing. According to the World Health Organization (2023), there are about 1.3 billion people, or 16% of the world's population, that experience some level of severe disability, and 1 in 127 of the world's population has autism. Likewise, according to the National Center for Education Statistics (2019), during 602-619, 21% of college undergraduates in the United States were reported to be living with a disability. The above data clearly show that disability and neurodiversity play a key role in higher education today.

Universities are currently more aware of neurodiversity and are thinking about ways to make teaching, assessment and curriculum design more accommodating to neurodiversity. Neurodiversity considers that ASD, ADHD, dyslexia, dyspraxia and other conditions are natural variations in human cognition and not

deficits to be fixed (Stentiford & Koutsouris, 2022). According to Durgungoz and Durgungoz (2025) and Star et al. (2025), while much progress has been made in the higher education sector to improve participation in universities, neurodivergent students still face obstacles linked to traditional modes of teaching, strict assessment practices, communication expectations, and lack of institutional support. This is especially true for interdisciplinary programs, where it is necessary to learn to use knowledge from various fields while simultaneously improving communication and analytical skills. Business programs involving foreign language acquisition are an example of this, as they involve the use of multilingual communication skills, intercultural communication, and collaboration (Hanson, 2022). While such programs provide increased employability and internationalisation, they could also create barriers for neurodiverse students if inclusive curriculum principles are not included in program design.

Moreover, this aspect makes The Bahamas a particularly appropriate setting for investigating the issues at hand. Being an island developing state, The Bahamas is dependent upon tourism, international business, and finance services industries and requires a number of specific graduate qualities, including multilingual communication abilities and intercultural competence (Briguglio, 2022). As Parkinson (2024) reported, the country received 11.22 million international tourists in 2024. Thus, it is evident that students need to be prepared to work in international contexts. To meet this need, higher education institutions have started to promote interdisciplinary business programs combining foreign language education to increase graduates' competitiveness and employability (Mainga et al. 2022a). Nevertheless, studies on the effectiveness of such programs for neurodivergent learners and their ability to provide a proper inclusive learning environment are lacking. All existing literature on inclusive higher education is mostly focused on North America, Europe, and Australia, while Caribbean higher education has remained underexplored (Robertson, 2025; Denny, 2023).

In addition, it constitutes a significant research problem because the current literature has not paid much attention to the interrelationships between neurodiversity, business education, and foreign language learning. Jean-Pierre, (2021) investigated the relationship between these constructs in an interdisciplinary education setting especially in the case of small island developing states. With an increased focus on curriculum innovations and internationalisation at universities, insufficient attention has been paid to investigating whether this phenomenon is equally accessible to neurodiverse students (Clouder et al., 2020; Ndaipa et al., 2023). Without such specific information, universities might continue to implement innovations without knowing that there are still barriers hindering their access to higher education. This study aimed to explore the effect of foreign language incorporation strategies on the support of neurodiverse learners in The Bahamas.

The timeliness and importance of this research are related to the fact that universities worldwide are increasingly incorporating interdisciplinary and internationalised programmes aimed at boosting graduate employability and adjusting to workforce demands (Ramaswamy et al., 2021). Innovative approaches to education will hardly be considered successful if they do not offer equal learning opportunities to diverse learners. In The Bahamas, where higher education plays a vital role in the national economic development and competitiveness of the country in the international arena, it is essential to ensure the availability of interdisciplinary programs and foreign languages, among other programs, to all learners. Hence, this study is a contribution to theory and practice (Rolle, 2024). First, it adds to the current body of work on neurodiversity and inclusive higher education from an under-represented Caribbean perspective, as well as interdisciplinary curriculum development. Second, practically, the outcome of this research could be applied to university management and staffs, curriculum developers, teachers and other parties in developing inclusive education, curriculum and institutional practices within the framework of sustainable development in higher education.

Literature Review

Theoretical Framework

Strategic Leadership Theory is a suitable theory to explain the process of higher education institution developing and implementing programs related to curriculum development for inclusion that is interdisciplinary. Strategic Leadership Theory is a theory that is suitable in explaining the process of developing and implementing in higher education institution in the form of programs related to curriculum development for inclusion that is interdisciplinary. The theory focuses on the importance of leadership capacity in setting a strategic direction, providing resources, leading the change, and building institutional cultures that support the change in the organisation (Weiss et al., 2021). This research is devoted to Strategic Leadership Theory because it is a theory that is important for supporting neurodivergent learners in business curriculum that incorporates foreign language learning, which involves more than making adjustments at the classroom level; it involves institutional commitment, effective governance, and strategic coordination between the business school and the foreign language school. Fia et al. (2022) emphasized that successful implementation of curriculum change in higher education depends on leadership decisions, which in turn need to be attuned to both institutional strategy and both educational goals and sustainable practices. Further, Kumar and Rewari (2022) recommended that strategic leadership can create a balance between innovation and stability within Universities by providing flexibility and quality education. This is connected to the first research objective – to explore the adaptations of the interdisciplinary business curriculum to the needs of neurodiverse students, since leadership is central to curriculum development and policy implementation. Further, Abbasi et al. (2025) showed that the effective curricular change demands leadership and support, collaboration among stakeholders, and institutional readiness.

Hypothesis Development

H1: Foreign language integration initiatives have a significant positive impact on supporting neurodivergent learners in higher education

The implementation of language learning strategies may have an added advantage for neurodivergent students because of the diverse means of communication, authentic learning environment, and flexibility in demonstrating comprehension. According to Hanson (2022), foreign-language courses may contribute to increased intercultural communication and readiness for work in international companies, thus opening more opportunities in addition to traditional business studies courses. Sampaio et al. (2021) found that combining disciplinary material with language teaching enhanced professional communication and participation in contextualised learning practices. Ruiz-Madrid and Fortanet-Gómez (2022) developed this idea and demonstrated that successful implementation of the approach is dependent on cooperation between subject teachers and language educators. In addition, Hidayati et al. (2024) demonstrated that trans-linguaging spaces allow the use of various languages for communication.

Inclusive higher education research further demonstrates this link and highlights relevant caveats. Stentiford and Koutsouris (2022) noted that an inclusive curriculum involves flexibility of structure rather than reliance on accommodation, suggesting that foreign language programmes can only benefit neurodiverse learners when accessibility is incorporated into curriculum development. Star et al. (2025) observed that Universal Design for learning approaches involving multiple options for learning, resources, and assessment led to increased participation among neurodiverse learners. On the other hand, Durgungoz and Durgungoz (2025) demonstrated that interactive teaching can become overwhelming when participation is required in abundance, which means that collaborative learning through language might put cognitive and social strain on the participants unless the process remains flexible and

anonymous. In addition, Clouder et al. (2020) pointed out inconsistencies and a lack of institutional preparedness as persisting barriers. Moreover, there is very little evidence derived from the Caribbean or Bahamian higher education context, making H1 empirically testable.

H2: Foreign language integration initiatives have a significant positive impact on interdisciplinary business curricula

Integration programs for foreign languages are gradually becoming an essential tool for enhancing interdisciplinary business curriculum development, as language is taught alongside business and intercultural skills. For instance, Batsila and Shrestha (2022) demonstrated how business English courses designed for the workplace enabled students to apply the language to real business contexts, thereby demonstrating the advantages of incorporating language instruction within the disciplines. The focus was on vocational training and needs in the workplace, however, the authors focused on the integration of curricular content within university education, which at the same time limited the applicability of this research. In turn, Chi and Vu (2024) demonstrated that ESP programs increased graduate employability by connecting language instruction with professional knowledge; however, employability outcomes were measured, not curricular integration itself. Moreover, Kenzhe et al. (2025) proved that foreign language teaching strategies which incorporate language and subject instruction considerably boost students' professional communicative competence. However, the study was carried out in the science field and therefore, it cannot be assured that it can be applied in business field education. In another recent study, for example, Peltokorpi (2023) confirmed that English proficiency is a positive factor affecting career success in multinationals, thus endorsing the fact that foreign languages should be taught in business education. This research, however, was conducted in the work environment and not the classroom environment making it less applicable in other settings.

Moreover, Mortazavi et al. (2021) revealed that mobile-assisted language learning positively

affects students' productive and receptive language abilities, indicating the potential of technology to promote interdisciplinary language learning. However, this study concentrated mainly on language acquisition and did not explore curriculum change. Similar findings were reported by Li (2024), who found that language support positively affected students' engagement and learning experience in a target group consisting of non-native English speakers and not business learners. Rahming (2025) studied career opportunities and students' motivation to learn foreign languages in the context of the Bahamas and discovered that the motivation of the students to learn the foreign language was related to their career opportunities. This study, however, dealt with motivation of the learners and not the effectiveness of the curriculum. Sulashvili et al. (2025) argue that English language learning helps to enhance educational mobility, institutionalization, and competitiveness. However, this research was mostly theoretical and did not empirically assess interdisciplinary curriculum outcomes. All of the above-mentioned studies help to prove H2, as they prove that the inclusion of foreign languages in the business curriculum improves students' professional and intercultural competencies.

H3: Interdisciplinary business curricula have a significantly positive impact on supporting neurodivergent learners in inclusive higher education.

The value of interdisciplinary business courses to supporting neurodivergent learners by fostering collaborative, flexible, and learner-centred education spaces becomes more apparent. According to Ripley and Markauskaite (2025), the interdisciplinary education is also a concept that would help students to connect information from various fields, improve critical thinking and problem-solving skills, and create a learning environment that caters to multiple learning styles. However, their study focused on teachers' conceptions of interdisciplinary education instead of examining the effects on neurodivergent learners. Likewise, Wang and Wei (2025) reported that combining scientific knowledge with interdisciplinary teaching methods improves the quality of learning in

higher education, innovativeness, and student participation. However, the research has concentrated on the overall level of education and did not discuss access for students with a neurodiverse learning profile. Moreover, Chamo and Broza (2025) found that interdisciplinary curriculum development stimulates collaborative learning, creativity, and adaptability, which is achieved by incorporating various subjects. However, their study did not focus on business education as a field of study or inclusive higher education environments, limiting the applicability of the findings to STEM teacher education. Likewise, Hutton (2025) highlighted that the structures of integrated programmes enable collaboration and curriculum coherence, but also that his research was based on degree programme apprenticeships and was not specifically focused on learning outcomes for inclusive education for neurodivergent learners.

Furthermore, O'Neill and Short (2025) stated that the students prefer learning content that is practical, authentic, and relevant, because it has been able to stimulate students' enthusiasm and participation in learning activities. It did not, however, look at whether these benefits differ for learners who are neurodivergent. Discussing curriculum innovation and reflective teaching practices, Harmon et al. (2024) also found that interdisciplinary collaboration among academics enhances curriculum and reflective teaching innovation, but without focusing on learning outcomes for students. Although Desing et al. (2024) showed the value of interdisciplinary collaboration in inclusive teaching, their study did not focus on the experiences of neurodivergent students. These studies suggest that interdisciplinary business degrees have a strong capacity to improve learning for neurodivergent learners through inclusive and flexible learning contexts.

H4: Interdisciplinary business curricula mediate the relationship between foreign language integration initiatives and support for neurodivergent learners in inclusive higher-education.

Foreign language integration programs are beginning to be viewed as a way to effectively generate more inclusive and meaningful learning

experiences in interdisciplinary business curricula. According to Akhtar et al. (2024), curriculum integration is a beneficial approach to making better use of the educational value of language initiatives by using disciplinary knowledge alongside transferable competencies, as interdisciplinary curriculum alignment is believed to improve graduate employability. However, it was not about inclusive education, and it did not involve any evaluation of how interdisciplinary education affects learning experiences for neurodivergent students. Ndaipa et al (2023) demonstrated how curriculum internationalisation can facilitate intercultural learning and across curriculum links, but did not examine if it was inclusive of learners with different cognitive abilities, nor did it explore the inclusiveness of curriculum delivery. To argue this, Kandiko Howson and Kingsbury (2023) stated that curriculum transformation is not just a matter of providing new content, but also requires a shift in learning design, assessment, and teaching practices, with interdisciplinary curricula offering the structural mechanism for effective innovation. However, their studies concentrated on institutional curriculum reform and not on the effect of this change on learners with various educational needs. Meanwhile, Wang (2024) concluded that the application of design thinking can help to integrate the interconnections of content areas into the curriculum, but the study was limited to curriculum innovation and not considered the accessibility and inclusion of students.

Furthermore, Lim et al. (2024) suggested that interdisciplinary learning enhances students' participation, cooperation and knowledge integration, but they used a general student population, therefore, the findings are not generalizable. Likewise, O'Neill and Short (2025) identified curricula that were hands-on, real world and connected to authentic contexts, without considering inclusive outcomes for students with diverse learning profiles. Moreover, Harmon et al. (2024) showed that collaboration and interdisciplinary teaching between academics can help to improve reflective teaching and enhance curriculum innovation, while Chamo and Broza (2025) concluded that interdisciplinary

curriculum development can stimulate creativity, adaptability, and collaborative learning for the problem of disciplinary isolation and institutional limitations. Lastly, Hutton (2025) showed that the greater the programme integration, the more collaborative and innovative it was in the educational sense, but this was only in the context of apprenticeship programmes, reducing its transferability to university business education. In summary, all of these studies indicate that support for diverse learners can be improved by foreign language integration efforts through interdisciplinary business curricula.

Literature Gap

The themes of foreign language integration, interdisciplinary curriculum development, and inclusive higher education have been addressed in the literature in isolation. Most of the previous research has focused on graduate employability, professional communication, intercultural competence and language proficiency in the context of foreign language integration (Hanson, 2022; Chi & Vu, 2024; Peltokorpi, 2023), or on interdisciplinary business curricula, specifically on curriculum innovation, internationalisation and preparedness for the workforce (Akhtar et al., 2024; Ndaipa et al., 2023). Similarly, studies of the teaching methods and supports required for neurodivergent learners have paid closer attention to inclusive teaching and institutional support (Stentiford & Koutsouris, 2022; Star et al., 2025) and Universal Design for Learning (UDoL).

Additionally, most studies have been based in Europe, North America, and some parts of Asia, with few based in Small Island Developing States and Caribbean higher education. Previous research has focused on language integration, curriculum reform, and neurodiversity individually and ignored the possibility of a mediating effect of interdisciplinary business curricula in fostering inclusive classroom learning. Moreover, numerous studies have used qualitative techniques, conceptual discussions, or systematic reviews, providing little quantitative evidence to show causal relationships between these variables. Empirical studies on the influence of foreign language integration on

support for neurodivergent students and the intermediary role of interdisciplinary business curricula are almost nonexistent. Therefore, this study aims to provide an integrated conceptual framework that is developed and empirically tested to show how foreign language integration

initiatives can impact the support of the needs of neurodivergent learners and how this impact can be mediated by the role of interdisciplinary business curricula in the under-researched setting of higher education in The Bahamas.

Conceptual Framework

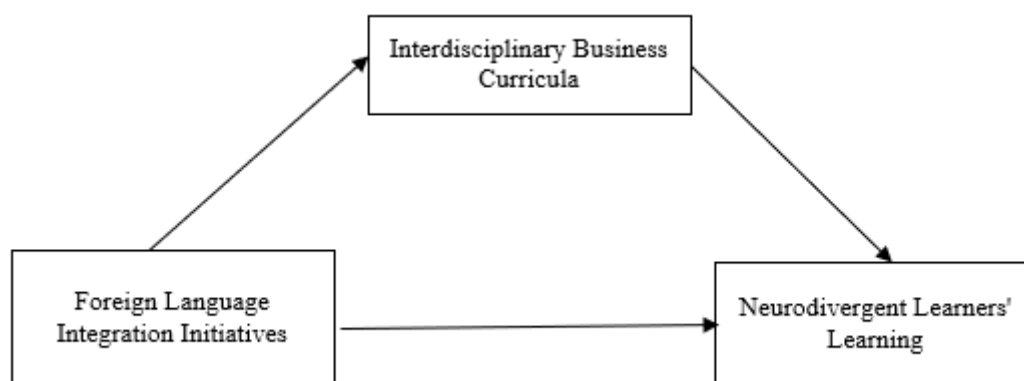


Figure 1 Conceptual Framework

The conceptual framework of this research hypothesises that foreign language integration initiatives, acting as the independent variable, have a positive effect on neurodivergent learners' learning, as the dependent variable, via the mediation of interdisciplinary business curricula. According to this hypothesis, integrating foreign language learning into business studies is believed to foster communication, intercultural competency, and collaborative learning. All these elements are thought to be reinforced by the use of flexible, inclusive, and learner-centred approaches to teaching within interdisciplinary business curricula that take into account the diverse cognitive abilities of students. Thus, interdisciplinary business curricula function as a mechanism for the positive impact of foreign language integration initiatives on neurodivergent learners' learning processes.

Methods

Research Design

This study adopted a quantitative research design to test the effect of foreign language integration programs on aiding neurodivergent students through the mediation of interdisciplinary business curricula in educational institutions in

The Bahamas. Quantitative methodology was suitable for this research because it involved measuring the relationship between a number of predetermined variables using numerical data gathered from a relatively large sample size of respondents (Mohajan, 2020). According to Lim (2025), this method allows researchers to analyse patterns, quantify relationships, and test hypotheses using various statistical methods that enable the production of reliable and generalisable findings. Additionally, in quantitative research, consistency is ensured in the process of data collection because it involves the use of standardised instruments for measuring the variables, which means that all the respondents answer the same set of questions in the same manner.

Data Collection and Sample Size

A structured self-administered questionnaire was used to gather primary data and was distributed electronically to academic staff in higher-education institutions in The Bahamas. The respondents were lecturers, programme coordinators, curriculum developers, department heads, academic managers, and other faculty members who had sufficient knowledge of

curriculum development, foreign language education, interdisciplinary teaching, and inclusive education.

A purposive sampling technique was used as the research required respondents who were directly involved in curriculum planning, teaching, academic leadership, or the implementation of educational policy. Purposive sampling is appropriate when participants have specialised information relevant to the study aims (Campbell et al. 2020). There were 275 valid responses for the final statistical analysis, as it has been implied that the sample size is larger than the minimum requirement for an appropriate analysis and is adequate for examining mediation relationships (Hair et al., 2022).

The questionnaire comprised two sections. The first part gathered demographic information of the respondents, such as gender, age, and educational qualifications. In the second section, the study constructs were measured using measurement items that had been previously validated and adapted from the existing literature. The questionnaire used a 5-point Likert scale ranging from 0 = Strongly Agree to 4 = Strongly Disagree. Measures were determined for the constructs of Foreign Language Integration Initiatives, Interdisciplinary Business Curricula, and Support for Neurodivergent Learners. Before the actual survey, the questionnaire was examined for clarity, content validity, and relevance to ensure that it fully reflected the proposed constructs.

Procedure

This study was conducted after obtaining the required ethical approval from the appropriate academic institution. The questionnaire was designed after conducting a thorough literature review and based on the conceptual framework of the study. The questionnaire was reviewed prior to distribution to determine its clarity, logical consistency, and relevance to the target respondents. The data collection process was conducted electronically using an online survey form. The participants were invited to participate in the research study via email messages explaining the objective of the study and sending the online survey form. Participation in the study

was completely voluntary, and it was clearly communicated to the participants that their responses would be anonymous and confidential. The participants were also provided with an informed consent sheet which clearly mentioned their right to withdraw from the study without any adverse consequences. The online survey was made available until a sufficient number of responses were collected. After completing the data collection process, all the questionnaires were reviewed to detect incomplete responses, duplicates, and missing data. The sample size was reduced to 275 after screening the questionnaires for completeness.

Data Analysis

The data collected were analysed using IBM SPSS Statistics to assess the relationships between the study variables and test the formulated hypotheses. Before carrying out any statistical analysis, the dataset was screened for any missing values, incomplete responses, and any form of data entry error to ensure that the dataset was free from errors and of high quality. Descriptive statistics were used to summarise the demographic information of the respondents and provide a description of the study variables in terms of frequency, percentage, mean, and standard deviation. The internal consistency of the measurement scales was assessed using Cronbach's alpha reliability analysis. Additionally, Pearson's correlation analysis was conducted to determine the nature and magnitude of the relationship between the variables. Multiple regression analysis was subsequently performed to analyse the direct effects of the independent variable and mediator on the dependent variable. Mediation analysis was performed using the PROCESS macro (model 4) in SPSS with 5,000 bootstraps to estimate the indirect effect.

Common Method Bias

Common method bias could be considered a methodological concern because all variables were assessed using the same questionnaire and captured from the same sample at the same time. To minimise this risk, respondents were assured of their anonymity and confidentiality, items on the questionnaires were adapted from previously

validated scales, and careful wording was used to reduce any ambiguity. Furthermore, common method bias was examined based on statistics using Harman's single-factor test. The findings showed that none of the measurement items

Results

Demographic Profiling

Table 1: Demographics

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	134	48.7
	Female	141	51.3
	Total	275	100.0
Age Group	602-619 years	60	21.8
	25–34 years	64	23.3
	35–44 years	74	26.9
	45 and above	77	28.0
	Total	275	100.0

As per Table 1 demographics, it can be seen that there were 275 respondents, out of which 51.3% were females while 48.7% were males. Therefore, it can be observed that the majority of the respondents were women, while the involvement of both men and women in the research will allow for diverse opinions on the implementation of foreign language integration, interdisciplinary business programs, and neurodivergent support in higher education institutions.

The table further shows the age demographics, where the maximum number of respondents

belonged to the 45 and above year-old category, and the second highest number of respondents was of the age 602-619 years. This shows that the study involved the opinions of mature people who were actively part of higher education institutions. Hence, the sample used in the research allows for studying present-day educational trends and determining how foreign language integration and interdisciplinary business programs can help neurodivergent students in higher-education institutions in The Bahamas.

Descriptive Statistics

Table 2: Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Standard Deviation
Foreign Language Integration Initiatives	275	0.00	3.75	1.707	0.737
Neurodivergent Learners' Learning	275	0.00	4.00	1.547	0.994
Interdisciplinary Business Curricula	275	0.00	3.50	1.003	0.845

Based on Table 2, the descriptive statistics provide an average perception of what the respondents think of the three constructs considered in this study. For the variables, Foreign Language Integration Initiatives was rated the highest in terms of its mean score ($M=1.707$), meaning that respondents moderately agreed with statements regarding the implementation of Foreign Language Integration Initiatives in higher education institutions. This

indicates that respondents emphasised foreign language integration initiatives more than the other constructs used in this study. Coming in second place after Foreign Language Integration Initiatives is Neurodivergent Learners' Learning which recorded the second-highest mean score ($M=1.547$). This means that the respondents moderately agreed with statements regarding the learning process of neurodivergent learners. Although this construct received a slightly lower

mean score than the former, it still indicates that respondents are aware of practices for neurodivergent learners.

Interdisciplinary Business Curricula show the lowest mean score ($M=1.003$), suggesting that the participants moderately feel that there has been integration of interdisciplinary business curricula in higher education institutions. This could be

because interdisciplinary business curricula have been introduced. From the mean scores, it can be seen that Foreign Language Integration Programs received the most positive response, followed by Neurodivergent Learners' Learning, and the least average score was that of Interdisciplinary Business Curricula.

Reliability Analysis

Table 3: Reliability Analysis

Construct	Number of Items	Cronbach's Alpha
Foreign Language Integration Initiatives	4	0.748
Neurodivergent Learners' Learning	4	0.886
Interdisciplinary Business Curricula	4	0.791

Reliability analysis was conducted using Cronbach's alpha (Table 3) to determine whether the measurement scales used in this study had acceptable levels of internal consistency. From the obtained results, it can be clearly seen that all three constructs under investigation have Cronbach's alpha higher than 0.70, which is the acceptable reliability level for conducting further inferential statistical analysis. The reliability of the Foreign Language Integration Initiatives has a Cronbach's alpha of 0.748, indicating that the construct has an acceptable level of internal consistency regarding the four measurement items. Neurodivergent Learners' Learning is the

construct that has the highest reliability coefficient of 0.886, which implies that the construct has a high level of internal consistency and that the items used for its measurement were reliable. This result is very similar to the reliability of the Interdisciplinary Business Curricula, which has a Cronbach's alpha of 0.791 and good internal consistency among its four items. Thus, it can be stated that reliability analysis indicates that all measurement scales had the required reliability in regard to measuring their respective constructs and therefore could be used for inferential analysis.

Correlation Analysis

Table 4: Correlation Analysis

Variables	Foreign Language Integration Initiatives	Neurodivergent Learners' Learning	Interdisciplinary Business Curricula
Foreign Language Integration Initiatives	1		
Neurodivergent Learners' Learning	0.720**	1	
Interdisciplinary Business Curricula	0.732**	0.898**	1

Note. ** $p < 0.01$ (2-tailed)

Correlation analysis is demonstrated in Table 4, in which the relationship between Foreign Language Integration Initiatives, Neurodivergent Learners' learning, and Interdisciplinary Business Curricula was analysed. All the variables were highly significantly and positively correlated with each other at the 0.01 level, indicating that

changes in one variable are associated with changes in another. According to the analysis of FLI, Higher FLI is highly positively correlated with neurodivergent learners' learning ($r = 0.720$; $p < 0.01$), which indicates that the higher the level of FLI implementation, the greater the level of learning support for neurodivergent learners.

Simultaneously, Foreign Language Integration Initiatives and Interdisciplinary Business Curricula are also strongly positively correlated ($r = 0.732$; $p < 0.01$).

The most significant correlation was between Interdisciplinary Business Curricula and Neurodivergent Learners' Learning ($r = 0.898$, $p < 0.01$). This implies that the two constructs are positively correlated with each other and that there is a very strong association between the two

constructs. The results imply that when the integration of business curriculum is at its highest, there will also be high integration and learning among neurodivergent learners. The existence of positive and statistically significant correlations indicates that there is a reasonable relationship between the constructs under investigation and that they operate in the same direction.

Regression Analysis for the Mediation Model

Table 5: Regression Models Used in the Mediation Analysis

Outcome	Predictor	B	SE	t	p	95% CI
IBC	Constant	-.430	.088	-4.90	< .001	[-.603, -.258]
	FLII	.839	.047	17.77	< .001	[.746, .932]
NLL	Constant	.294	.068	4.31	< .001	[.160, .428]
	FLII	.182	.052	3.52	< .001	[.080, .283]
	IBC	.941	.045	20.90	< .001	[.852, 1.030]

Note. The unstandardised coefficients are reported. For the IBC model, $R = .732$, $R^2 = .537$, $MSE = .332$, $F(1, 273) = 315.95$, $p < .001$. For the NLL model, $R = .903$, $R^2 = .815$, $MSE = .184$, $F(2, 272) = 600.38$, $p < .001$. CI = confidence interval; FLII = Foreign Language Integration Initiatives; IBC = Interdisciplinary Business Curricula; NLL = Neurodivergent Learners' Learning.

The regression analysis examined the relationships among Foreign Language Integration Initiatives (FLII), Interdisciplinary Business Curricula (IBC), and Neurodivergent Learners' Learning (NLL) in the mediation model. The first regression was used to test the effect of the Foreign Language Integration Initiatives on Interdisciplinary Business Curricula. The results indicate that the Foreign Language Integration Initiatives significantly and positively impacted the Interdisciplinary Business Curricula ($B = 0.839$, $p < .001$). The 95% confidence interval of (0.746–0.932) did not include zero, indicating a significant relationship. Moreover, the model explained 53.7% ($R^2 = 0.537$) of the variance in Interdisciplinary Business Curricula which means that foreign

language integration initiatives predict the creation of interdisciplinary curricula.

Moreover, the effect of foreign language integration initiatives and interdisciplinary business curricula on neurodivergent learners' learning was studied. The variable of Foreign Language Integration Initiatives (FLIIs) was still found to have a positive relationship with the dependent variable Neurodivergent Learners' Learning ($B = 0.182$, $p < .001$), which means that the more FLIIs were implemented, the better the learning result was achieved by the neurodivergent students. Additionally, the Interdisciplinary Business Curricula were seen to have even more positive effects on neurodivergent learners' learning ($B = 0.941$, $p < .001$).

The regression analysis explained 81.5% ($R^2 = 0.815$) of the variability in neurodivergent learners' learning, meaning that both predictors and mediators can be considered as those that greatly influence variability. The largest regression coefficient between the two predictors, which indicates that it has the biggest impact on assisting neurodivergent learners, is related to the Interdisciplinary Business Curricula. Based on the outcomes of the analysis,

one may conclude that both FLII and IBC act as predictors of neurodivergent learners' learning.

Mediation Analysis

Table 6: Direct and Indirect Effects in the Mediation Model

Effect/path	Estimate	SE/Boot SE	t	p	LLCI	ULCI
FLII to IBC	.839	.047	17.77	< .001	.746	.932
IBC to NLL (controlling FLII)	.941	.045	20.90	< .001	.852	1.030
FLII to NLL (direct effect)	.182	.052	3.52	< .001	.080	.283
FLII to IBC to NLL (indirect effect)	.790	.054	--	--	.687	.902

Mediation analysis was applied to determine whether a mediation effect exists between Foreign Language Integration Initiatives (FLII) and Neurodivergent Learners' Learning (NLL) within Interdisciplinary Business Curricula (IBC). The findings show that language integration initiatives were positively significant predictors and were significantly related to interdisciplinary business curricula ($B = 0.839$, $p < .001$). For the p-value, the 95% confidence interval did not include 0 (LLCI = 0.746, ULCI = 0.932), hence making this relationship statistically significant. From the above findings, one can infer that the more developed foreign language integration initiatives are, the more interdisciplinary business curricula will be implemented in higher educational institutions. The significance of the pathway indicates that the independent variable is a significant predictor of the mediator.

Additionally, the analysis showed that IBC partially mediates the effect of Foreign Language Integration Initiatives (FLII) ($B = -0.744$, $p < .001$) on neurodivergent learners' learning ($B = 0.941$, $p < .001$). The confidence interval (LLCI = 0.852, ULCI = 1.030) did not include zero, further supporting the significance of this relationship. Furthermore, the direct effect of Foreign Language Integration Initiatives on Neurodivergent Learners' Learning was still positive and statistically significant ($B = 0.182$, $p < .001$, 95% CI: 0.080 – 0.283). The results suggest that foreign language integration programs still directly affect the learning of neurodivergent learners with control of interdisciplinary business curriculum mediation.

As shown in the mediation analysis results, IBC partially mediated the influence of FLII on the NLL. This is because the indirect effect was significant ($B = 0.790$). The 95% bootstrap confidence interval for this effect ranged from 0.687 to 0.902, implying that there was no zero value within the confidence interval. Therefore, the mediating effect was confirmed to be significant. In addition, the direct effect of FLII on NLL was statistically significant, implying that partial mediation occurred. Based on these results, it can be inferred that foreign language integration initiatives increased neurodivergent learners' learning both directly and indirectly through the formation of interdisciplinary business curricula. This means that the proposed theoretical model was supported and that interdisciplinary business curricula were one of the key mechanisms through which foreign language integration initiatives enhanced inclusive learning experiences. Overall, it can be concluded that interdisciplinary business curriculum design plays a significant role in maximising the positive impact of foreign language integration initiatives on neurodivergent learners in The Bahamas.

Discussion

This study investigates the impact of Foreign Language Integration Initiatives on neurodivergent learners' learning in higher education institutions in The Bahamas through the intermediary effect of Interdisciplinary Business Curricula. The results provide solid empirical evidence for the proposed theoretical model because all hypotheses (H1, H2, H3, and

H4) were approved. It was proven that the Foreign Language Integration Initiatives have a positive effect on neurodivergent learners' learning, thus accepting H1. This means that introducing foreign language learning in higher education fosters the development of more inclusive learning environments by encouraging communication, cultural awareness, and flexibility in learning for students with various cognitive characteristics. The findings confirm the ideas put forward by Hanson (2022) about the benefits of foreign language integration on the engagement of learners and their international competencies and Sampaio et al. (2021) about the advantages of language-integrated teaching. Similarly, Ruiz-Madrid and Fortanet-Gómez (2022) stated that the combination of languages and disciplinary content leads to coherent and better educational experiences, while Star et al. (2025) showed that inclusive teaching methods considerably increase the quality of learning experiences for neurodivergent students. It is also worth noting that H2 received significant confirmation through research, which proved that Foreign Language Integration Initiatives have a considerable positive impact on Interdisciplinary Business Curricula. This idea is consistent with Batsila and Shrestha (2022), Chi and Vu (2024), and Kenzhe et al. (2025), who argued that combining language education and disciplinary content increases curriculum quality, professional competencies, and graduate readiness.

The results also proved Hypothesis H3, revealing the flexibility, cooperation, and learner-centredness of interdisciplinary curriculum structures as effective ways to accommodate learners with different learning needs. These findings coincide with Ripley and Markauskaite's (2025) arguments that an interdisciplinary approach allows for the integration of knowledge and the development of critical skills while accommodating the diversity of learning approaches. In addition, Lim et al. (2024) revealed the benefits of interdisciplinary learning in increasing engagement and collaborative problem-solving among students, whereas O'Neill and Short (2025) claimed the benefits of authentic and practical curricula in increasing

motivation and participation in learning processes. The findings also proved hypothesis H4, confirming the partial mediating effect of Interdisciplinary Business Curricula on the connection between Foreign Language Integration Initiatives and Neurodivergent Learners' Learning. This means that foreign language initiatives improve learning outcomes directly and indirectly by improving interdisciplinary curriculum practices. The results coincide with the arguments of Akhtar et al. (2024) about the importance of interdisciplinary curriculum alignment for maximising educational outcomes and the arguments of Ndaipa et al. (2023) about the role of curriculum internationalisation in creating collaborative and inclusive learning environments. Kandiko Howson and Kingsbury (2023) stressed the importance of integrated teaching and assessment methods for a transformative curriculum. Overall, the results support the Strategic Leadership Theory, according to which educational transformation should be driven by the presence of leadership within institutions, strategic planning, and curriculum development. Given the established positive associations, it can be concluded that institutional leaders, through the strategic integration of foreign language education with interdisciplinary curriculum development, can promote inclusivity within higher education institutions that will benefit neurodiverse students.

The implications of the results include, first, that foreign language integration should be included as an element of reform strategies involving interdisciplinary business curricula in university curricula. Curriculum designers need to focus on flexible and inclusive curriculum design that will meet the needs of neurodivergent students while simultaneously fostering the intercultural competency and employability of graduates. Third, university leaders should support the professional development of academic staff and cross-disciplinary and inclusive pedagogy to ensure that curriculum innovation leads to a better learning experience for all students. All these implications are directly related to the purpose of this study, which was to investigate ways in which foreign language integration and

interdisciplinary business curricula can improve the inclusion of neurodivergent students through inclusive higher education. In terms of theory, the results contribute to the implementation of Strategic Leadership Theory by showing how leadership-led innovation in the curriculum may foster educational inclusion and organizational change. Empirically, this study contributes to the scarce literature from The Bahamas and, more broadly, the Caribbean, offering quantitative evidence of the interrelatedness of foreign language integration, interdisciplinary curriculum development, and inclusive education.

Conclusion

This study analysed the effect of foreign language integration initiatives on enhancing the learning process of neurodivergent learners in higher education institutions in The Bahamas and explored the mediation effect of interdisciplinary business curricula. In particular, all the proposed hypotheses were confirmed, and significant relationships were observed between the study variables. It was proven that foreign language integration initiatives not only positively affected the learning outcomes of neurodivergent learners but also positively influenced the development of interdisciplinary business curricula, which, in turn, made it possible to provide more inclusive learning processes. Simultaneously, interdisciplinary business curricula partially mediated the relationship between foreign language integration initiatives and neurodivergent learners' learning, playing a crucial role in transforming innovative curricula into better educational results. Moreover, the study expanded the use of Strategic Leadership Theory, as it demonstrated that curriculum development and change driven by leaders helped create an inclusive educational environment. In general, the research provided important empirical findings in relation to the little researched Bahamian higher education system.

Limitations

The survey was carried out exclusively on respondents who attended higher-education institutions in The Bahamas, making it difficult to

generalise the results to other Caribbean countries or international contexts. On the other hand, the study used a cross-sectional quantitative research design, where the views of the respondents were measured at one point in time; hence, the future dynamics of foreign language integration policies, interdisciplinary teaching and learning, as well as support of neurodivergent students, could not be analysed. Additionally, the use of questionnaires made it impossible to probe deeper into the participants' experiences. Several methodological and statistical corrections were performed; however, it is recognised that common method bias cannot be ruled out, as the study used self-reported information from one data collection moment from the same respondents. This can be addressed in future research by using several data sources, longitudinal research designs, or objective institutional indicators.

Future Implications

The results point to crucial considerations for the future development of higher education in The Bahamas. Higher education establishments should continue to improve foreign language integration in their business curricula by implementing inclusive curriculum development strategies tailored to the learning requirements of neurodiverse students. The following research agenda would be focused on the development of interdisciplinary curricula, training of the academic staff on inclusive teaching, and the coordination of efforts of language experts, business teachers, disability services, and policy makers. Considering the rising role of tourism, international business, and employment in The Bahamas, future changes in the higher education curriculum should consider the national economic priorities and equal educational opportunities for all students. Future studies should cover a wider range of higher-education establishments in The Bahamas and other Caribbean countries to obtain more evidence. These studies will help policymakers adopt evidence-based educational policies aimed at developing inclusive, internationally oriented, and sustainable higher-education systems that can accommodate neurodiverse learners.

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Appendix: Survey Questionnaire

1. Please specify your age:
 - i) Up to 25 years
 - ii) 26–30 years
 - iii) 31–35 years
 - iv) 36–40 years
 - v) 40+ years
2. Please specify your Gender:
 - i) Male
 - ii) Female

Based on your knowledge and experience, select any one of the options given below each of the following statements.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Foreign Language Integration Initiatives					
Foreign language learning opportunities enhance students' overall learning experience.					
Foreign language teaching methods support the active participation of students in classroom activities.					
Multilingual learning resources improve students' understanding of course content.					
Foreign language integration contributes to a more inclusive learning environment within the institution.					

Neurodivergent Learners' Learning					
Neurodivergent learners actively participate in learning activities within their courses.					
Neurodivergent learners demonstrate confidence in achieving their academic learning outcomes.					
The learning needs of neurodivergent learners are adequately supported within the courses offered by the institution.					
Neurodivergent learners experience satisfactory overall learning outcomes within the institution.					
Interdisciplinary Business Curricula					
Integrating business and foreign language subjects enhances students' overall learning experience.					
Interdisciplinary business curricula are relevant to students' academic development.					
Interdisciplinary business curricula encourage active student engagement in learning.					
Interdisciplinary business curricula effectively accommodate the diverse learning needs of neurodivergent learners.					