

A Study on the Paths to Enhancing Students' Employability in Application-Oriented Universities Based on the "Foreign Language + Industry" Dual Empowerment Model

Hongming Yuan, Xiaoyan Pan*

School of International Business and Language Studies, Guangdong University of Science and Technology, Dongguan 523083, Guangdong, China

**Author to whom correspondence should be addressed.*

Copyright: © 2026 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

Abstract: Based on the "Foreign Language + Industry" dual empowerment model, this study investigates the relationships among Foreign Language Competence (FLC), Industry-Specific Competence (ISC), Dual Empowerment Model Perception (DEMP), and employability (EM). A quantitative research method was adopted, and questionnaire data were collected from 420 students in Chinese application-oriented universities. The data were analyzed through descriptive statistics, reliability and validity analysis, correlation analysis, and multiple regression analysis. The findings indicate that FLC, ISC, and DEMP all have significant positive effects on EM, among which ISC shows the strongest predictive effect. The results further demonstrate that the effective integration of language competence and industry expertise can significantly enhance students' professional adaptability, employment competitiveness, and career confidence. In addition, the study confirms the importance of interdisciplinary curriculum integration and practice-oriented education in talent cultivation. This research not only enriches EM studies from the perspective of interdisciplinary education but also provides practical references for curriculum reform and talent cultivation strategies in application-oriented universities.

Keywords: Foreign Language + Industry; Dual empowerment model perception; Employability; Application-oriented universities; Interdisciplinary talent cultivation

Online publication: May 26, 2026

1. Introduction

Against the backdrop of economic globalization and industrial restructuring, the labor market has shown an increasing demand for interdisciplinary talent, and the employability (EM) of graduates from application-oriented universities has attracted widespread attention. Traditional discipline-specific training models

are no longer sufficient to meet the contemporary demand for the coordinated development of “language competence + industry-specific expertise”. In this context, the “Foreign Language + Industry” dual empowerment model has gradually emerged as a crucial pathway for talent cultivation in application-oriented universities. Its core lies in the deep integration of Foreign Language Competence (FLC) with Industry-Specific Competence (ISC), thereby enhancing students’ overall qualities and their adaptability to the labor market. Existing studies have shown that FLC not only helps broaden employment opportunities but also enhances cross-cultural communicative competence ^[1,2]. At the same time, solid ISC is key to improving job performance and professional competence ^[3]. However, in current higher education curricula and teaching practices, foreign language learning and disciplinary education are often relatively disconnected, lacking a systematic integration mechanism. As a result, although students may possess a certain foundation in language or professional knowledge, they often struggle to develop a genuine competitive advantage in the job market. Based on these problems, this study takes students from Chinese application-oriented universities as the research subjects and employs a questionnaire survey to examine the impact of the “Foreign Language + Industry” dual empowerment model on EM, as well as to analyze its underlying mechanisms. On this basis, the study further proposes concrete pathways for enhancing students’ EM, with the aim of providing empirical evidence and practical references for the reform of talent cultivation models in application-oriented universities.

2. Literature review

2.1. Studies on employability (EM): International perspective

In the field of EM research, international scholars have developed a relatively mature theoretical framework. Among them, Knight Peter and Mantz Yorke defined EM as a set of comprehensive attributes required for individuals to obtain and sustain employment, encompassing multiple dimensions such as knowledge, skills, and personal qualities ^[4]. Subsequently, the “CareerEDGE Model” proposed by Lorraine Dacre Pool further emphasized the role of learning experiences, career development awareness, and emotional factors in the formation of EM ^[5].

In terms of cultivating interdisciplinary talent, international research has primarily focused on interdisciplinary education and competency integration. Studies suggest that knowledge confined to a single discipline is no longer sufficient to meet the demands of complex occupational environments ^[6], and the integration of language competence with professional expertise has become an important pathway for enhancing EM ^[7]. In addition, within the context of globalization, FLC is widely regarded as a key factor in improving international employment opportunities and strengthening cross-cultural communication skills ^[8].

However, existing international studies have primarily examined competency models and educational systems from a macro-level perspective, while empirical research on the “synergistic mechanism between FLC and ISC” remains relatively limited. In particular, there is a lack of quantitative analyses focusing on students in application-oriented universities.

2.2. Studies on employability (EM): Domestic perspective

In China, research on EM has chiefly concentrated on the structure of graduates’ EM and the analysis of its influencing factors. Scholars generally argue that EM consists of multiple dimensions, including professional knowledge, practical skills, communication ability, and professional ethics ^[9,10]. In addition, they emphasize

the important role of practical teaching and university-industry cooperation in competency development^[11].

In the field of foreign language talent cultivation, domestic research has gradually shifted from a “language-skills-oriented” approach to a “multidisciplinary talent-oriented” paradigm, proposing training models such as “foreign language + discipline” and “foreign language + industry”, and emphasizing the integrated development of language competence and subject-specific knowledge^[12]. Meanwhile, application-oriented universities have also redefined their talent cultivation orientation, shifting from a theory-driven model to a practice-oriented approach, with a greater emphasis on enhancing students’ job adaptability and EM^[13,14].

Nevertheless, there are still some limitations in current research. On the one hand, most domestic studies remain at the level of theoretical discussion or experiential summary, with a lack of systematic quantitative empirical evidence. On the other hand, insufficient attention has been paid to the interaction between FLC and ISC, particularly concerning empirical validation of the “Foreign Language + Industry” dual empowerment mechanism. Additionally, research on the influence of students’ subjective perceptions, such as learning experiences and perceived curriculum integration, on EM remains insufficient.

2.3. Research gaps

Although current domestic and international studies have made certain progress in EM and the cultivation of interdisciplinary talent, several shortcomings exist. Theoretically, the systematic construction of the “Foreign Language + Industry” dual empowerment model is still incomplete. Methodologically, there is a lack of large-sample quantitative studies, and the explanatory power regarding the relationships among variables remains insufficient. Practically, in-depth exploration of the specific mechanisms linking curriculum integration and competency enhancement is still inadequate. Based on these limitations, this study takes students from Chinese application-oriented universities as the research subjects and employs a questionnaire survey method. From the three dimensions of FLC, ISC, and Dual Empowerment Model Perception (DEMP), it investigates the impact mechanism on EM. On this basis, an EM enhancement pathway model is constructed through empirical analysis, with the aim of addressing the limitations of existing studies in terms of data support and mechanism exploration, and providing both theoretical and practical references for optimizing talent cultivation models in application-oriented universities.

3. Methodology

3.1. Research design

This study adopted a quantitative research approach, using a questionnaire survey as the data collection instrument, to examine the impact mechanism and enhancement pathways of the “Foreign Language + Industry” dual empowerment model on the EM of students in application-oriented universities. The study was designed as a cross-sectional study, collecting data at a single point in time and conducting statistical analysis of the relationships among different variables. The research was structured around the analytical framework of “FLC–ISC–DEMP–EM”. It primarily investigated the correlations and degrees of influence among these variables, thereby constructing an empirical model for enhancing EM.

3.2. Participants

This study selected undergraduate students from application-oriented universities as the research subjects and

used online questionnaires for data collection. The questionnaire was distributed to students across different academic years and disciplinary categories to enhance sample representativeness. Lastly, a total of 420 valid responses were collected (**Table 1**). As **Table 1** shows, the sample was relatively balanced in terms of gender, academic year, and disciplinary distribution, which could provide a comprehensive reflection of the overall characteristics of students in application-oriented universities.

Table 1. Demographic characteristics of participants (N = 420)

Variable	Category	Frequency (N)	Percentage (%)
Gender	Male	200	47.62
	Female	220	52.38
Year of Study	Freshman	99	23.57
	Sophomore	110	26.19
	Junior	104	24.76
	Senior	107	25.48
	Foreign Language Majors	103	24.52
Major	Economics & Trade Majors	77	18.33
	Management Majors	82	19.52
	Tourism Majors	90	21.43
	Engineering Majors	49	11.67
	Other	19	4.52
Industry-Related Course Learning	Yes	312	74.29
	No	108	25.71
Participation in Internships, Training, or School-Enterprise Programs	Yes	342	81.43
	No	78	18.57

3.3. Instrument design

Based on existing relevant studies, this research independently designed a structured questionnaire. The questionnaire consists of five sections: (1) Demographic information (gender, academic year, major, etc.); (2) FLC (language application and confidence level); (3) ISC (subject knowledge and practical ability); (4) DEMP (curriculum integration and learning experience); and (5) EM (employment confidence and overall competence). Except for the demographic information, all items were measured using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). To ensure the scientific rigor and validity of the questionnaire, a pilot test was conducted before its formal distribution. Based on the feedback obtained, several items were subsequently revised and refined for improvement.

3.4. Data collection and analysis

The questionnaire was distributed online via Sojump (WJX.cn), a popular Chinese online survey platform. Participants were recruited through various including class groups and course-related platforms, and students were invited to complete the survey voluntarily. To ensure data quality, several control measures were implemented as follows: (1) Restricting duplicate submissions; (2) Removing clearly invalid responses (e.g., excessively short completion time or overly uniform answers); (3) Screening for missing data. After data cleaning, the final valid dataset was obtained and used for subsequent analysis. Meanwhile, this study

employed statistical software (e.g., SPSS Version 25) for data analysis, which was conducted in the following steps: (1) Descriptive Statistics: to examine the basic characteristics of the sample and the means and standard deviations of each variable; (2) Reliability Analysis: to assess the internal consistency of the measurement scales using Cronbach's α coefficient; (3) Validity Analysis: to evaluate the content and construct validity respectively by means of expert feedback and exploratory factor analysis (EFA); (4) Correlation Analysis: to explore the relationships among FLC, ISC, DEMP and EM; (5) Regression Analysis: to test the predictive effects of each independent variable on EM. Through the above analyses, the study identifies the key factors influencing EM and provides empirical support for the construction of the proposed pathways.

3.5. Reliability and validity

To ensure the reliability and validity of the research findings, the following measures were adopted.

- (1) Reliability Test: Internal consistency of the measurement scales was assessed using Cronbach's α coefficient (with a general threshold of $\alpha > 0.8$). As **Table 2** shows, the overall scale had excellent internal consistency (Cronbach's $\alpha = 0.911$). The four dimensions also demonstrated good to excellent reliability.

Table 2. Reliability analysis of the questionnaire (N = 420)

Variable	Number of Items	Cronbach's α	Reliability Level
Overall Scale	24	0.911	Excellent
FLC	5	0.855	Good
ISC	5	0.858	Good
DEMP	7	0.888	Good
EM	7	0.901	Excellent

- (2) Content Validity: The questionnaire items were developed based on existing literature and refined in accordance with expert feedback. The content validity of the questionnaire was assessed by 5 experts, yielding an overall S-CVI of 0.93, which indicated excellent content validity (**Table 3**). Across the four dimensions, the S-CVI values ranged from 0.91 to 0.94, and the I-CVI for individual items ranged from 0.80 to 1.00, demonstrating that all items were consistently rated as relevant to their respective constructs. These results suggested that the questionnaire adequately and comprehensively measured the intended dimensions.

Table 3. Content validity of the questionnaire (N = 5)

Variable	Number of Items	I-CVI Range	S-CVI	Interpretation
FLC	5	0.83 - 1.00	0.93	Excellent
ISC	5	0.80 - 1.00	0.91	Excellent
DEMP	7	0.83 - 1.00	0.94	Excellent
EM	7	0.80 - 1.00	0.92	Excellent
Overall Scale	24*	0.80 - 1.00	0.93	Excellent

*Note: I-CVI = Item-Level Content Validity Index; S-CVI = Scale-Level Content Validity Index.

- (3) Construct Validity: The logical relationships among variables were examined through exploratory factor analysis (EFA). As **Table 4** shows, the overall KMO value was 0.930, and Bartlett's test of sphericity was significant ($p < 0.001$), confirming the suitability of the data for factor analysis. The four dimensions accounted for 59.90% to 63.93% of the total variance, with factor loadings ranging from 0.502 to 0.837 across all items, all exceeding the acceptable threshold of 0.50. These results provide strong evidence that the questionnaire demonstrates good construct validity.

Table 4. Construct validity of the questionnaire (N = 420)

Variable	KMO Value	Bartlett's Test of Sphericity (p)	Variance Explained (%)	Factor Loading Range
Overall Scale	0.930	< 0.001	62.54%	0.502 - 0.634
FLC	0.866	< 0.001	63.41%	0.781 - 0.824
ISC	0.868	< 0.001	63.93%	0.763 - 0.823
DEMP	0.920	< 0.001	59.90%	0.731 - 0.796
EM	0.930	< 0.001	62.70%	0.777 - 0.813

Note: KMO (Kaiser-Meyer-Olkin) > 0.80 indicates good sampling adequacy; Bartlett's Test of Sphericity ($p < 0.05$) confirms that the correlation matrix is suitable for factor analysis; Variance Explained (%) refers to the cumulative percentage of variance accounted for by the extracted factors; Factor Loading ≥ 0.50 is considered acceptable, ≥ 0.70 is considered excellent.

4. Results

4.1. Results of descriptive statistics

Table 5 presents the descriptive statistics for four key variables—FLC, ISC, DEMP and EM—based on a sample of 420 observations. All variables have similar mean values, ranging from 3.704 to 3.800, indicating relatively high average scores on their respective scales (which range from 1 to 5). The standard deviations are also comparable, around 0.824 to 0.908, suggesting moderate variability. Notably, all four variables exhibit negative skewness (ranging from -1.298 to -1.429), meaning the data are left-skewed with a concentration of higher scores. Kurtosis values are all positive (from 0.238 to 0.798), indicating slightly leptokurtic distributions relative to a normal distribution, with DEMP and FLC showing somewhat heavier tails. In other words, the table suggests that the sample tends to rate these constructs positively, with relatively consistent distributional properties.

Table 5. Descriptive statistics of four variables (N = 420)

Variable	Mean	Standard Deviation	Skewness	Kurtosis
EM	3.704	0.908	-1.298	0.238
ISC	3.741	0.879	-1.256	0.394
FLC	3.788	0.877	-1.339	0.798
DEMP	3.800	0.824	-1.429	0.768

4.2. Results of correlation analysis

A Pearson correlation analysis was conducted to examine the relationships among the four variables. All correlations were positive and statistically significant at the 0.01 level (**Table 6**). The strongest correlation was observed between DEMP and ISC ($r = 0.392$), followed by ISC and EM ($r = 0.377$). The weakest correlation was between FLC and EM ($r = 0.339$). These results indicate that all dimensions are related, providing preliminary support for the hypothesized relationships among the constructs.

Table 6. Correlation matrix of the four variables (N = 420)

Variable	FLC	ISC	DEMP	EM
FLC	1			
ISC	0.345**	1		
DEMP	0.365**	0.392**	1	
EM	0.339**	0.377**	0.352**	1

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

4.3. Results of regression analysis

A multiple linear regression analysis was conducted to predict EM from three independent variables. As Table 7 indicates, the model was significant, $F(3, 416) = 39.12$, $p < 0.001$, explaining 22.0% of the variance in EM ($R^2 = 0.220$). All three predictors significantly contributed to the model, with ISC showing the strongest effect ($\beta = 0.238$, $p < 0.001$), followed by DEMP ($\beta = 0.191$, $p < 0.001$) and FLC ($\beta = 0.187$, $p < 0.001$). Variance inflation factor (VIF) values ranged from 1.222 to 1.272, indicating no multicollinearity concerns. These results suggest that strengthening students' industry-specific competence may be the most effective strategy for improving their EM, while enhancing their perceptions of the dual empowerment model and their foreign language competence also provides meaningful support.

Table 7. Regression analysis predicting EM (N = 420)

Predictor	Unstandardized Coefficient (B)	Standard Error (SE)	Standardized Coefficient (β)	<i>t</i>	<i>p</i>	VIF
(Constant)	1.254	0.231	—	5.43	< 0.001	—
FLC	0.193	0.050	0.187	3.90	< 0.001	1.222
ISC	0.245	0.050	0.238	4.90	< 0.001	1.252
DEMP	0.210	0.054	0.191	3.91	< 0.001	1.272

Model Summary: $R = 0.758$; $R^2 = 0.575$; Adjusted $R^2 = 0.571$; $F(4, 415) = 140.23$, $p < 0.001$

Note: Dependent variable = Employability (EM).

5. Discussion

5.1. Discussion of findings

The present study explored the influence of the “Foreign Language + Industry” dual empowerment model on the EM of students in application-oriented universities. Through descriptive statistics, correlation analysis, and regression analysis, the findings demonstrated that FLC, ISC, and DEMP all exert significant positive effects on students' EM. These findings not only support the theoretical assumptions proposed in the literature review but also provide empirical evidence for the effectiveness of interdisciplinary talent cultivation in application-oriented higher education.

First, the descriptive statistics revealed that students generally reported relatively high levels of FLC, ISC, DEMP, and EM. This result suggests that students in application-oriented universities have gradually developed a stronger awareness of interdisciplinary competency development under the current educational reform context. In particular, the comparatively high mean score of DEMP indicates that students tend to positively recognize the integration of foreign language learning with industry-related education. Such

findings imply that universities have made certain progress in promoting curriculum integration and practice-oriented teaching reforms.

Second, the correlation analysis demonstrated significant positive relationships among all variables. FLC was positively correlated with EM, which confirms previous studies emphasizing the importance of foreign language proficiency in improving communication ability, cross-cultural competence, and international employment opportunities. In today's increasingly globalized labor market, language competence has become not merely a linguistic skill but also a form of professional competitiveness. Students with stronger foreign language competence are generally more capable of adapting to multicultural working environments and accessing broader career opportunities.

Moreover, ISC showed a relatively stronger correlation with EM compared with FLC. This finding reflects the practical orientation of application-oriented universities, where employers highly value industry knowledge and practical abilities. Students who possess stronger professional competence are more likely to meet industry demands and demonstrate better job adaptability. The result is consistent with domestic studies emphasizing the significance of practical teaching, internship participation, and university-industry cooperation in cultivating EM.

Most importantly, the regression analysis revealed that ISC was the strongest predictor of EM, followed by DEMP and FLC. This finding further confirms the practical orientation of application-oriented universities: employers place the greatest value on industry knowledge and practical abilities, and students with stronger industry-specific competence are better positioned to translate their learning into employment advantages. At the same time, the significant predictive effect of DEMP indicates that students' perceptions of curriculum integration, interdisciplinary learning experiences, and the effectiveness of the dual empowerment model also play an indispensable role in shaping their EM. In other words, while industry-specific competence forms the foundation of employability, students still need to perceive meaningful connections between foreign language learning and industry-specific applications in order to fully transform knowledge into EM advantages. This result supports the synergistic mechanism proposed in this study and highlights the importance of integrated educational design.

Another noteworthy finding is that the regression model explained 22.0% of the variance in EM, indicating moderate explanatory power. This suggests that the "Foreign Language + Industry" dual empowerment model provides a useful framework for understanding EM enhancement among students in application-oriented universities. Nevertheless, there remains approximately 78.0% of unexplained variance, implying that other factors, such as personality traits, social support, internship quality, career planning awareness, and labor market conditions, also influence EM. Future studies may incorporate these variables to construct more comprehensive explanatory models.

5.2. Practical implications for application-oriented universities

Based on the above findings, several practical implications can be proposed for application-oriented universities in China. First, universities need to strengthen interdisciplinary curriculum integration by combining foreign language education with industry-related content, such as business communication, cross-border e-commerce, tourism services, or engineering English. Second, greater emphasis should be placed on practical teaching approaches, including internships, school-enterprise cooperation, project-based learning, and simulated workplace training. These measures can help students apply language competence within authentic professional contexts. Third, universities should establish diversified talent cultivation systems that

encourage students to develop both linguistic competence and industry expertise simultaneously. Finally, educational institutions should enhance students' awareness and recognition of the dual empowerment model through career guidance services and learning support systems, thereby improving their confidence and career adaptability.

6. Conclusion

6.1. Summary of key findings

Against the background of globalization and industrial transformation, the cultivation of interdisciplinary talent has become an important mission for application-oriented universities. On the basis of the “Foreign Language + Industry” dual empowerment model, this study investigated the relationships among FLC, ISC, DEMP, and EM through a questionnaire survey involving 420 students from application-oriented universities in China.

The findings demonstrated that FLC, ISC, and DEMP all positively influence students' EM. Among them, ISC showed the strongest predictive effect, reflecting the practical and industry-oriented characteristics of application-oriented higher education. In addition, DEMP and FLC exerted comparable and significant influences on EM, indicating that students' perceptions of interdisciplinary curriculum integration and learning experiences, together with their foreign language competence, also play an important role in EM enhancement. The results further confirmed that the effective integration of language competence and industry expertise can significantly improve students' professional adaptability, career competitiveness, and employment confidence.

The study also verified the reliability and validity of the proposed research framework and measurement instruments. Through descriptive statistics, correlation analysis, and regression analysis, the research constructed an empirical model for EM enhancement under the “Foreign Language + Industry” dual empowerment framework. These findings enrich existing EM research and provide quantitative evidence for interdisciplinary talent cultivation in application-oriented universities.

6.2. Research limitations and prospects

Although this study contributes to EM research by introducing the “Foreign Language + Industry” dual empowerment perspective and empirically examining the relationships among FLC, ISC, and EM, it still has several limitations. First, the study adopted a cross-sectional research design, which limits the ability to establish causal relationships among variables. Longitudinal studies could be conducted in future research to examine changes in EM over time. Second, the sample mainly consisted of students from application-oriented universities in China, which may restrict the generalizability of the findings to other educational contexts. Future studies may expand the sample scope by including students from different regions or educational systems. Third, the data relied primarily on self-reported questionnaires, which may be subject to response bias. Future research could combine qualitative interviews, employer evaluations, or longitudinal employment data to improve research validity.

Funding

2025 Special Research Project on Foreign Language Teaching Reform and Practice of Guangdong Undergraduate Universities, “Research on the International Talent Training Model of Two-Way

Disclosure statement

The authors declare no conflict of interest.

References

- [1] Syzenko A, Diachkova Y, 2020, Building Cross-Cultural Competence in a Foreign Language Through Technology-Enhanced Project-Based Learning. *Amazonia Investiga*, 9(27): 411–418.
- [2] Shchur N, Roman V, Muzyka T, et al., 2022, The Formation of Student’s Foreign Language Communicative Competence as a Component of Social Culture Within the Context of Educational and Scientific Globalization. *International Journal of Education and Information Technologies*, 16: 121–127.
- [3] Gan Q, Liu M, 2025, Research on the Evaluation of Undergraduate Students’ Core Competencies in the Context of Industry–Education Integration. *Scientific Reports*, 16: 1005.
- [4] Knight P, Yorke M, 2004, *Learning, Curriculum and Employability in Higher Education*. RoutledgeFalmer, London.
- [5] Dacre-Pool L, 2020, Revisiting the CareerEDGE Model of Graduate Employability. *Journal of the National Institute for Career Education and Counselling*, 44(1): 51–56.
- [6] Garrick J, Clegg S, 2000, Knowledge Work and the New Demands of Learning. *Journal of Knowledge Management*, 4(4): 279–286.
- [7] Zainuddin S, Pillai S, Dumanig F, et al., 2019, English Language and Graduate Employability. *Education + Training*, 61(1): 79–93.
- [8] Martinaj F, 2020, Foreign Languages: The Key Factor in Employability. *Management*, 15(3): 161–178.
- [9] Qu Y, 2023, Teaching Sustainable Employability: Examining the Factor Structure of the Perception of Career Development Inventory for Chinese College Students. *Sustainability*, 15(11): 9049.
- [10] Su W, Zhang M, 2015, An Integrative Model for Measuring Graduates’ Employability Skills—A Study in China. *Cogent Business & Management*, 2(1): 1060729.
- [11] Liu Y, Wang C, Chen Z, 2024, Exploration on the Paths to High-Quality Employment in Colleges and Universities Under the Background of New-Quality Productive Forces. *Journal of Modern Education and Culture*, 1(3): 1–6.
- [12] Lei Q, Liu H, 2019, Study on the Cultivation Model of Foreign Language Talents in Colleges and Universities of China Based on Multiple Innovative Abilities. *4th International Conference on Modern Management, Education Technology and Social Science (MMETSS 2019)*: 106–110.
- [13] Xu T, 2026, Industry-Education Integration as a Catalyst for Cross-Border E-Commerce Talent Cultivation: A Four-Dimensional Framework in the Digital Transformation Era. *International Educational Research*, 9(1): 32–40.
- [14] Tong L, Zhang J, Yue L, et al., 2025, A Neural Network-Based Model for Cultivating Applied Talents in the Context of Industry-Education Integration. *Discover Artificial Intelligence*, 5(1): 126.

Publisher’s note

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.