SECONDARY ENGLISH GRADE AS A PREDICTOR OF STUDENTS' ENTRANCE ENGLISH COMPETENCE AND PROGRAMME PLACEMENT

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Abstract. Almost all universities have used students' overall academic performance at the secondary or high school level as the primary measurement tool in determining the students' placement into different tertiary academic programmes in hopes of their potential overall success in those programmes. The same is applied in the Malaysian context in line with the notion of Human Capital Theory (HCT) on a person's success determined by the investment in their education. However, the importance of English language results in the Malaysian students' national examination certificate is not rigorously considered as one of the primary measures in determining their tertiary level of English competence; instead, only a general passing or acceptable grade based on the offered programmes is used as the university or programme entrance pre-requisite. This may later be challenging for students as English is used in most of the academic references. Through secondary data analysis research design, this study examined 600 students' collected database of Malaysia National Certificate or SPM English grade to see its determining effect on their English language entrance competence scores and their placement into different academic majors. It was found that their excellent English grades in their SPM were good determining measures of their university's English Placement Test (EPT) and then exempted for the first-entry level diploma English course. Students with better English grades, accompanied with better EPT scores, mostly ended up in STEM programmes with higher levels of English competence than those students with lower English SPM grades and EPT scores. The advantage of reduced academic course workload shows that their English competence can be a determinant of their subsequent tertiary academic success. Future research may investigate the effects of their secondary and tertiary English on their CGPA and MUET scores and their future choice of academic programmes.

Keywords: Human Capital Theory (HCT), predictive factors, English entrance competence, university majors of academic programme, STEM

Introduction

English proficiency and academic performance are important formative descriptors in reflecting students' academic achievement profiles from the beginning until the end of their school years at tertiary institutions. These are two important determiners of the students' success in higher education and their subsequent accomplishment in the workforce. It is defined by Roslan and Chen (2023) in their study of these constructs that English proficiency refers to the student's ability to read, write, listen, and speak the English language effectively in various contexts. Meanwhile, academic performance refers to the student's level of achievement in all required academic subjects that commonly include art and humanities courses such as English, History, Social Studies

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and science and mathematics courses such as Science, Biology, Physics, and Mathematics. English proficiency and academic performance in these courses are generally associated with better communication and critical thinking skills, which further enhance the students' possibility of acquiring greater future advantages such as scholarships, leadership roles, internship placements, and job opportunities. In the Malaysian context, one of the indicators of the students' success is based on their placement into the Science, Technology, Engineering and Mathematics (STEM) stream due to the high demand for STEM graduates. According to Aziz and Subramaniam (2023), almost half of the students in Malaysia studied STEM subjects, with 20.51 per cent of them focusing on Pure Science and the remaining 26.67 per cent studying Technical and Vocational Education and Training (TVET). Datuk Seri Dr Adham Baba, the Minister of Science, Technology, and Innovation from 2020 to 2021, suggested that the percentage of students in STEM needed an increase to 60 per cent to ensure that the country had enough skilled workers in STEM fields. In addition, there was also an increasing demand for students in technical courses. The demand was also highlighted by Penang Institute that technical and Vocational Education and Training (TVET) in Malaysia has the potential to drive the economy and social development to new heights, thus making recruiting students from this field a progressive necessity.

Most universities worldwide use students' overall academic result performance in their final years of secondary or high school as one of the central academic measures for placing incoming students into different tertiary academic programmes under the impression that their academic credibility and competence should augur well for their potential overall success in those programmes. This can be explained by Human Capital Theory, which suggests that a person's success can be measured based on their education levels and the amount of investment they have put in for the sake of their education (Musah et al., 2016). To cater to this measure, international standardised English tests are the other prerequisites before students are allowed into their tertiary academic system. This supports the idea that education is key to determining a person's future success. By merely basing it on a general passing or an acceptable grade of English subject, the importance of English language results in SPM is not particularly emphasised by Malaysian universities as one of the main determining factors for students' tertiary level of English competence and their academic programme placement. Greater emphasis is commonly placed on their academic scores in technical or pure sciences only with little to no consideration of their performance in the English language. This could be due to the medium of studies in the national Malay language although most of the available references are English language. Over a period, the scenario may be detrimental to the student's academic success as some types of academic programmes certainly need high levels of English competence for the students to be able to carry out academic tasks such as reading high-level academic texts and listening to audio or videos in their lessons (Musah et al., 2016).

Based on the above-reviewed studies, it can be concluded that the student's overall academic achievement in their secondary or high schools was mostly the main factor for their placement into the STEM or non-STEM streams in Malaysia. Meanwhile, their English grade was considered but only based on their minimal passing level. This seems to contradict the practice of many respected and renowned world universities and colleges, in addition to making the English language at the entrance or exit points of the student's life a vital descriptive factor of the students' success in their studies and workforce. More inclusive treatment of students' English competence at different levels

and points in their study life should be considered before their university enrolment and before they can graduate.

Problem statement

Various indicators of students' specific competencies and skills include their previous academic results, gender, intelligence scores, and language skills. These factors can be included in their academic profiles and serve as measurements of their future passages. Based on a study of data mining techniques, Roslan and Chen (2023) suggested that researchers could use the relevant information types to predict students' performance based on students' two main courses: English and Mathematics. This is because these two courses are critical for developing specific skills and expertise. Their academic results and demographic information are useful types of information in determining their academic success and future careers. Ghenghesh (2015) maintained that English proficiency was strongly related to academic success, meanwhile poor English proficiency led to poor academic performance, which could affect students' success in the workplace. They also suggested that poor English proficiency could lead to poor academic performance, in which this may affect students' success in the workplace (Roslan and Chen, 2023; Ghenghesh, 2015). Therefore, it is important to determine if students' English language performance can be rigorously used to predict their English entrance competence and the specific placement into their academic majors to successfully cope with the English-mediated academic subjects and references during their studies at the tertiary level.

Based on the Malaysian context, the following research questions were then constructed to determine if English grades from a student's previous examination, Sijil Pelajaran Malaysia (SPM), can determine their entry-level English competence and placement into specific diploma programmes. (1) Does SPM English determine students' tertiary-level English language entrance competence? (2) Does SPM English determine students' enrolment into different tertiary academic programmes?

Literature review

Many countries with English as a second language (ESL) have their ESL examination to measure the student's level of English competence during or by the end of their studies. Students at the matriculation centre, Sijil Tinggi Pelajaran Malaysia (STPM), or diploma levels, are required to show their English competence in MUET through a minimum score before pursuing their degree programmes, making this the prerequisite to enrol in any bachelor's degree programmes. Some social science and technical degree programmes only require the minimum level of band 2 in MUET as advertised in the university websites. Rahmat et al. (2015) in their study examined the role of an English language proficiency test known as MUET and its result bands in predicting the measure of undergraduate's academic achievement based on the Cumulative Grade Point Average score (CGPA). The study revealed that there was a medium positive correlation between English language proficiency and academic achievement in which students with higher bands in MUET would obtain higher CGPA in their study. However, the administration of MUET was conducted during the diploma studies or before the students graduated from the studies. It shows that the usage of MUET is more applicable to the students entering into the degree programmes. However, it is irrelevant to those enrolling in the diploma programmes.

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Furthermore, several Malaysian colleges and universities have their specific English entrance test to examine the incoming students in terms of their English proficiency levels that can be used as a determining tool for the specific placement of their academic programmes. Nevertheless, this is not a requirement by the Ministry of Higher Education. The colleges or universities without such tests may not have this kind of secondary data for their usage and reference to identify and place the students into the appropriate programmes. Such entrance English tests provide more definitive information about the students' English language and other academic abilities. This can be elaborated by a study investigating the relationship between entrance examination scores and students' academic performance in the Faculty of Education at the University of Lagos, Nigeria. The study found that there was a significant positive correlation between entrance examination scores and the students' academic performance in the Faculty of Education at the University of Lagos, Nigeria. The study recommended the use of entrance examination scores as a criterion for students' admission into the Faculty of Education at the University of Lagos, Nigeria. It can be drawn from these studies that academic performance, or entrance examination test scores, can play a significant role in determining a person's academic path and future success in education.

Students from the technical and non-technical streams with high levels of English proficiency in their past national examinations and academic performance are more likely to achieve their academic and career goals, thus contributing effectively to their society and nation. This argument is substantiated by Roslan and Chen (2023), Alyahyan and Düştegör (2020) as well as Ghenghesh (2015) based on their studies on the confirmatory factors that influenced students' performance which entailed the student's past academic performance, demographics, and psychological attributes. They employed Spearman's rank correlation to measure the relationship between English and Mathematics performance, which revealed that past academic performance was the most critical predictor, followed by some demographics and psychological attributes. Furthermore, they found that student performance in both subjects was interrelated because the student's past performance in one subject could well predict their performance in another subject. In addition, Ghenghesh (2015) studied 2, 150 students from different levels, streams, and majors of academic programme studies by examining how English language proficiency affected students' academic achievement in various contexts. This was done using different methods to measure English proficiency and academic performance, such as MUET, TOEFL, IELTS, ELPT, CGPA, GPA, and grades. It was found that English proficiency, admission results, qualification, and learning ability could well influence students' academic performance.

Similarly, Rethinasamy and Chuah (2011) conducted a study on the predictive validity of the Malaysian University English Test (MUET) in measuring undergraduates' English language proficiency and the appropriacy of the MUET cut-off bands for academic placement purposes. The study analysed the MUET bands of 2, 884 undergraduates from various faculties and their grades in an English language enhancement course. The findings showed a significant positive relationship between the undergraduates' MUET bands and their grades in the English language course. The Chi-square analysis results also indicated that the difference between MUET band 3 undergraduates' ability to obtain good grades was significantly different compared to undergraduates with MUET bands 1 and 2. The study served as another evidence for MUET's validity as a measure of students' English language ability and further

recommended a need to review the cut-off MUET band for placement purposes. However, the clear connections between English language skills and the choice of tertiary education programmes were yet to be established despite the above studies' findings on the connections between English competence and general academic success. It is not clearly known if students with high-level English competence are more likely to be grouped into certain technical or non-technical types of tertiary programmes. This factor is important to be determined as one of the influencing factors for their abilities to perform well in those programmes or it is adequate if their assigned tertiary programmes are merely based on their general academic competence such as the cumulative results of their past examinations as demonstrated by the some of the above studies (Roslan and Chen, 2023; Alyahyan and Düştegör, 2020; Ghenghesh, 2015).

Based on the reviewed literature, it can be concluded that the significant role of English as a second language in determining students' academic performance cannot be understated and may function as highly interrelated factors. Ghenghesh (2015) investigated the relationship between English proficiency and the academic performance of international undergraduate students in Malaysia. English proficiency was measured based on the student's abilities to use the English language accurately, fluently, and appropriately in academic contexts, such as lectures, tutorials, assignments, and examinations. Alyahyan and Düştegör (2020) and Ghenghesh (2015) operationally defined the construct of academic performance in their study as the different levels of students' achievement in their main academic subjects, such as English, Mathematics, Economics, Physics, and Chemistry, and Business in terms of their obtained good grades, the completion of courses, and successful graduation from their higher education institutions. This shows that English proficiency and academic performance would remain crucial for students' learning experience and employability in preparing students for the prospects, opportunities, and challenges of the 21st century. Students with high English proficiency and academic performance would be more likely to participate in academic and extracurricular activities, interact with peers and lecturers, and contribute to the community, thus making English competence the necessary skill of the present and future generation. Furthermore, Alyahyan and Düştegör (2020) used data mining techniques in their study to predict students' academic success in higher education. Students with high academic performance and academic success were more likely to acquire knowledge and 21st-century skills such as critical thinking, problem-solving, creativity, and innovation that are extremely relevant and valuable in the borderless global economy. Thus, it can be inferred from this finding that English proficiency and academic performance are two essential concepts closely related to students' success in higher education and the workforce. It was also recommended by the above studies that educators and policymakers should provide students with sufficient training and support to enhance their English proficiency and academic performance and prepare them for the challenges and opportunities of the 21st century.

In addition, a person's academic success is highly influenced by the intensity, dedication, and commitment given in enriching his or her levels of education. This premise is in line with the notion of Human Capital Theory (HCT), which maintains that a person's productivity and success are based on the amount of investment in their education. Different fields of education and areas of studies allow people to foresee the fruit of their education investment in terms of their academic performance and potential growth (Alfan and Othman, 2005). Their aptitude and abilities can be demonstrated by

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their acquired or innate talents and skills for them to be able to perform successfully in their chosen areas of study. As Alfan and Othman (2005) suggested, their possible achievement can be measured through their past examination records, interests, career aspirations, Intelligence Quotient (IQ) scores, personality and aptitude tests, as well as entrance-level exams. In a study done on the influence of the areas of study on the undergraduate student's academic performance at Malaya University, it was found that students placed into technical programmes in the field of Accountancy and Engineering were highly determined by their high levels of academic performance than those students in the non-technical programme in the field of social sciences. In addition, students with higher Cumulative Grade Point Average (CGPA) and Malaysian University English Test (MUET) scores would showcase better academic performance than students with lower CGPA and MUET scores. However, this concern may need to be addressed more rigorously and meticulously to see if the students' MUET scores can explain their placement into or pursuit of technical or non-technical programmes or if their abilities to finish their studies depending on their MUET results and competence. However, due to the common practice of MUET being taken as their compulsory graduation requirement, the sitting of this test would most likely be delayed by students towards the end of their studies, hence potentially rendering it difficult to address the stated concerns. Due to this common students' practice of sitting examinations in this order, their overall academic performance, in turn, becomes the potential predictor of their MUET performance, and not the opposite. Thus, the attempt in the present study in looking into the students' previous English scores before their university entrance could help shed light on the students' potential performance on subsequent English tests or other courses as well as their abilities to cope with their assigned tertiary academic programmes.

Materials and Methods

The present study is based on quantitative research by employing correlational research design to determine the relationship(s) between two or more variables (McCombes, 2021) through secondary data analysis method. This design is adopted when there are two or more existing data types from participants that can be used to see their connections and predictive patterns (Bhat, 2024). Three data types were obtained from 600 entry-level diploma students randomly sampled from 5423 students from 20 UiTM campuses all over Malaysia. These data types included their Sijil Pelajaran Malaysia (SPM) English subject grades obtained at the end of their secondary school years prior to their entrance into the university, the different types of their enrolled diploma programmes, and their English Placement Test (EPT) results-a measure of their English entrance competence. In terms of the order and the type of sampling, these data sets were collected through a compulsory form distributed via stratified random sampling to the participants through an online open-access student portal platform in UiTM known as UFuture, which could be created publicly by all diploma-level lecturers in UiTM for various academic and research purposes. To ensure the proportionate sampling of the students, 200 students were sampled and grouped into three groups based on their SPM English results.

Therefore, the independent variable of this study was the students' SPM English grades placed into three main categories to represent the three different groups of students. The English grades in their SPM results were determined by the researchers

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based on an ordinal measurement scale: A, B, and C. The second variable was these students' EPT results taken in 2022 prior to their entrance to diploma programmes. This variable was determined by the researchers based on a continuous measurement scale from the lowest range score of 2 per cent to the highest range score of 100 per cent. The students' EPT results were also treated as the first dependent variable to see if the students' three English grades in SPM could be used to determine their EPT results. The final variable was the students' enrolment in different diploma majors of academic programmes which was determined by the researchers to be on the nominal scale of measurement. The identified categories were the Pure Sciences, Social Sciences, and Technical Sciences which were then treated as the second dependent variable. The arrangement sought to see if English SPM results would be able to determine their academic major programs. In the context of Malaysia's education system, Pure and Technical Sciences are operationally defined as STEM major programmes, whereas Social Sciences are defined as non-STEM major programmes. This variable would be used to investigate if the different grades of English SPM results could determine the enrolment of students in STEM or non-STEM.

Based on the above variables, it was hypothesised as follows: (1) Students with higher English grades would probably show higher scores in their English Placement Test (EPT); and (2) Students with higher English grades would more likely placed into the STEM compared to non-STEM programmes.

Data collection and analysis

At the outset of their diploma studies, the students' English SPM grades were collected from students through an evidence-based survey form on UFuture prior to their sitting of the English Placement Test (EPT). As for the EPT scores, this test was conducted online through the UFuture (online assessment platform) for 1 hour 30 minutes, containing the assessment questions on listening, reading, and grammar skills. The total mark of this test was used to determine their English language entrance competence, making it the first dependent variable. The information about their diploma academic programmes was automatically populated from the UFuture system, making it the second dependent variable in this study. These three sets of data were then exported into Statistical Packages for Social Science Students (SPSS) for data analysis. For the first research question drawn to confirm the first hypothesis stated earlier, a one-way ANOVA test was employed to see the effects of different English SPM grades on their EPT scores. For the second research question drawn to confirm the second hypothesis stated earlier, a Chi-square test of independence was employed to measure the differences in the proportion and placement of these students with their different SPM English grades into three different academic programme majors: Pure Sciences, Social Sciences, and Technical Sciences. This was also done to measure if there were any relationships between different grades and different students' majors in academic programmes.

Results and Discussion

Influence of secondary-level English grades on students' tertiary English entrance scores

Table 1 shows the descriptive results of students with different SPM grades in terms of their means and standard deviations of their EPT scores and the findings on the one-way ANOVA test results of the effects of different SPM English grades on their EPT mean scores. A one-way ANOVA was performed to compare the effects of students with three different SPM English grades on their English Placement Test (EPT) scores. This one-way ANOVA result revealed that there was a significant difference in mean English Placement Test (EPT) scores between at least two groups (F (2, 597)=139.73, p=0.01) (*Table 2*). Tukey's HSD Test for multiple pairwise comparisons showed that the mean values of English Placement Test (EPT) scores were significantly different between Grade A (m=74.99) and Grade B (m=64.86) (p=0.001, 95% C.I.=7.90, 12.35). There were also significant differences in mean values of English Placement Test (EPT) scores between students with Grade A (m=74.99) and Grade C (m=59.38) (p=0.001, 95% C.I.=13.38, 17.83).) or between students with Grade B (m=64.86) and Grade C (m=59.38) (p=0.001, 95% C.I.=3.25, 7.70) (*Table 3*).

Table 1. Results of one-way ANOVA test effects of three grade groups on students' EPT scores.

Category (SPM English grades)	N	M	SD
A	200	74.99	8.41
В	200	64.86	9.20
C	200	59.38	10.66
Total	600	66.41	11.46

Table 2. ANOVA test results.

Category (ELC result scores for different grades)	df	F	Sig,
Between groups	2	139.73	<.001
Within groups	597	89.76	-
Total	599	-	-

Table 3. Post-Hoc test results of pairwise comparisons of multiple groups.

SPM English grades	Mean difference	Sig.	Confidence Interval (CI)		
			Lower bound	Upper bound	
AΒ	10.13	<.001	7.90	12.35	
A C	15.61	<.001	13.38	17.83	
ВС	5.48	<.001	3.25	7.70	

It is thus concluded from the above findings that students with higher English SPM grades would be more likely to perform better in their EPT scores. Meanwhile, students with lower English SPM grades would be less likely to perform better in their EPT scores. Thus, students' tertiary English skills can be used to predict their English language entrance competence test before beginning their studies. In addition, when students perform well in their secondary-level English examination, they are more likely to show their tertiary-level English competence. The opposite conclusion is also drawn that when students do not perform well in their secondary-level English examination, they are more likely not to show their competence in the English entrance test.

Relationship between different SPM English grades and different diploma programmes

Table 4 shows the results of the Chi-Square Test of Independence, which examined whether students with higher English grades in their Sijil Pelajaran Malaysia (SPM) would be more likely to be placed into different diploma majors of academic programmes than those students with lower English grades. A chi-square test of independence was performed to examine the relationship between students' SPM English grades and their different Majors of Diploma Programmes. It was found that 81 out of 200 students from grade A enrolled in Technical Sciences Major, 66 students in Social Sciences, and 53 students in Pure Sciences. As for Grade B, 87 out of 200 of them enrolled in the Technical Sciences Major, 63 students in the Social Sciences, and 50 students in Pure Sciences. Finally, 90 out of 200 students from Grade C enrolled in Social Sciences, 52 in Pure Sciences and 58 in Technical Sciences. The results indicated that there was a significant association between the two variables, $\chi^2(4, 600)=16.16$, p<0.05. It can be derived from the findings that students with higher grades in their SPM English would more possibly enrol in Technical and Pure Sciences than students with lower or passing grades in SPM English. These findings confirm the present research hypothesis that higher levels of English competence would be useful in predicting the students' placement into technical and sciences streams and potentially their future capabilities to perform well in Science, Technology, Engineering and Mathematics (STEM) programmes compared to students with lower levels of English competence.

Table 4. Chi-Square test of independence results of the predictive effects of different SPM

English grades on students' diploma programmes.

SPM English grades	A	В	С	Total	X^2	df	р
Different major of diploma programmes					16.16	4	.003
Pure sciences	53	50	58	161			
Social Sciences	66	63	90	219			
Technical Sciences	81	87	54	220			
Total	200	200	200	600			

Consistent performance of English skills at secondary and tertiary levels

Academic achievement scores have been used by universities to determine the student's potential success at the tertiary level. However, some students managed to pursue some certain academic programmes without sufficient English competence which is necessary to help them navigate their way through their academic loads and future life successfully. This led to the rising question of whether their previously recorded English subject grades can be predictive of their present levels of English competence prior to their studies as tertiary-level academic students. Despite not being specifically addressed as one of the most descriptive and predictive elements of the student's overall academic performance, it was discovered in the present study that their English grades in the previous secondary-level examination results were adequate to help determine their entry-level English competence at the university, hence confirming its important function to be considered and evaluated as part of the main and specific determiner of enrolment into any university-specific programmes. This finding concurred Roslan and Chen (2023), Alyahyan and Düştegör (2019) as well as Ghenghesh (2015) who associated students' performance with their past academic performance and has also proven that the different level performance of the secondary

level English language subject can have a strong influence in determining the students' different choice of subsequent academic programmes.

Effects of English grades on diploma majors placement of academic programmes

Apart from highlighting the score of the previous English subject, the present study also discovered that most students with better performance levels in their past English examination were most likely assigned to technical and science-related programmes rather than social science programmes. Students with excellent English skills were mostly enrolled in STEM programmes compared to those with less proficient English skills. This finding concurred Alfan and Othman (2005), who underscored the importance of general academic performance which was proven true in this finding of the study in which English can be a great contributing factor in determining the students' enrolment into STEM-based programmes. This was also highly recommended and visioned by the Malaysian education system (Aziz and Subramaniam, 2023).

There are some significant theoretical contributions and implications of the present study. As suggested by Human Capital theory (HCT), many other academic-related factors and the amount of education investment augur well for a student's future success based on a person's acquired competence and skills. The findings of the present study confirmed the significant predictive function of English language skills and English entrance level competence scores, hence expanding the notion of this theoretical underpinning on the important function of the investment of human capital and abilities in the field of education in terms of English language competence. In fact, it helps elucidate this theory regarding the specific need for academic subject competence-that is, English language, for students' future placement into different academic programmes and potentially their workplace expertise.

Conclusion

It can be concluded that the previously accumulated skills and competence can create a better path for a learner's future course and academic endeavours in a more refined and structured manner, thus making these the scaffolding elements, building blocks and supporting grounds for them to pursue their technical and non-technical expertise confidently in the workforce thereafter. In terms of potential research attempts, it would be insightful to see the domino effects of students' English subject performance at the secondary and tertiary levels of education as well as their academic programme placement (STEM or non-STEM) on the overall academic performance (e.g. CGPA) and the specific performance score of Malaysian English Examination Test (MUET) at the end of their diploma studies. By analysing all these secondary types of data, a more comprehensive reflection of their general and specific competence can be mapped in their academic journey as an objective reference for their potential success in future academic programmes (e.g. bachelor's degree), employability, and job performance (positioning levels) in the workforce. In addition, it is recommended that future research be conducted to investigate into the needs of English remedial programmes for weak students and if they can cope well with the demands of English-mediated references during their tertiary education and their opportunities in their future choice of academic programmes. This is to ensure that English language competence can help motivate the technical talents and learners to do well in their overall academic performance and support the non-technical learners to explore their full potential.

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Conflict of interest

The authors confirm that no conflict of interest is involved with any parties in this research.

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