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RESEARCH ARTICLE

Toward Educational Equity in the Digital Era: A Quantitative Study on College Students' Perceptions in Sabah, Malaysia

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ABSTRACT

Educational equity in Malaysia ensures that all students receive the specific resources, opportunities, and academic support necessary to succeed, regardless of gender, age ethnicity, or family income, tailoring support to individual needs to achieve fairness and equal outcomes. The main purpose of this study was to investigate college students' perceptions of educational equity in Sabah, Malaysia. Data were collected by administering an online questionnaire to 63 college students recruited from a private university college in Kota Kinabalu, Sabah. SPSS 29.0 was used to analyze data. First, the percentages of agreement on perceived educational equity were calculated. Second, Kruskal-Wallis H test was conducted to determine if there were any significant differences in students' perceptions of the construct in relation to age and job experience. Third, Mann-Whitney U test was run to determine if there were any significant differences in terms of gender. Fourth, Wilcoxon signed rank test was used to determine if any of the educational equity items were significant at a hypothesized value of 3.5. Percentages of agreement showed that only a low to average proportion of college students tend to perceive that they experience education equity. Nonparametric tests revealed no significant differences in perceived educational equity by way of gender, age, and ethnicity. Wilcoxon signed rank test revealed that 19 the educational equity items were significant at $p < .001$, indicating that their medians tend to differ significantly from the hypothesized value of 3.5, with strong disagreement. Only four of the educational equity items were significant at $p < .05$, indicating that their

medians tend to differ significantly from the same hypothesized value, with strong disagreement. In light of the findings, some recommendations were made on ways to increase educational equity among college students in Sabah.

Contribution/Originality: This study addresses the crucial yet underexplored area of educational equity in the context of higher education in Sabah, Malaysia. It is the first research attempt to highlight the urgent need to bridge the disparities in opportunities and outcomes for tertiary students across different geographical, socioeconomic, and ethnic backgrounds.

1. Introduction

With the rapid advancement in digital technology, Malaysia has underscored education equity as the primary pillar of financial, social, and environmental sustainability for individuals, organizations, and the nation. Educational equity is of paramount importance in minimizing socioeconomic disparities, unemployment, and other socioeconomic challenges (Mahmud, 2024; Mardomi & Mardomi, 2022). Nevertheless, Sabah, with its underdeveloped geographical terrain and sociocultural characteristics, faces seemingly unsurmountable obstacles in promoting educational equity, especially in the rural and remote areas, which are characterized by limited social amenities, poor infrastructure, and a lack of socioeconomic development.

Educational equity is important for various reasons (Acer for Education, 2023). It is essential in ensuring that all students achieve the same positive cognitive, affective, and psychomotor outcomes despite their socioeconomic status, gender, ethnicity, special needs, and other demographic attributes. It reflects the significance of considering each student's individual characteristics to promote diversity in learning, which includes a wide range of variables, from disadvantaged and underprivileged conditions to sociocultural and language differences, special education needs, and learning problems. Educational equity requires all learning institutions and other stakeholders to pinpoint the most effective pedagogic strategies based on individual needs to bolster student engagement and motivation. Besides increasing equal opportunities, educational equity is also crucial because it positively impacts the overall learning environment and society. When students feel included regardless of their mental, social, and emotional dispositions, they will become more achievement-oriented and willing to stay in school. Lastly, educational equity empowers all students to maximize their potential and goals, which often widens paths to equal employment opportunities, creates diverse workplaces where they can thrive despite their starting point, and ultimately, helps them successfully find their niche in society.

To increase educational equity, Malaysia has adopted the Malaysia Education Blueprint 2015-2025, which aims to enhance the quality of education and eliminate disparities between urban and remote areas. The Ministry of Education (2013) has implemented several programs, including community-based schools, to accommodate local needs and increase student participation in the rural and remote areas. Nevertheless, to successfully implement educational equity policies, Malaysian schools need to recruit and retain adequately trained teachers in the rural and remote areas. Since remoteness and poor educational infrastructure tend to adversely affect teachers' enthusiasm and job commitment, efforts to improve educational facilities and incentives for teachers are

urgently needed. In addition, sustainable policies geared toward meeting local needs are also crucial in achieving educational equity. Therefore, the government needs to collaborate with various stakeholders, including communities, private businesses, NGOs, and private educational institutions, to create an inclusive and equitable educational environment in line with SDG 4 Quality Education (Mahmud, 2024; Mardomi & Mardomi, 2022).

1.1. Educational Equity: Private versus Public Schools

According to Teach for Malaysia (2024a), over 50 percent of Malaysian students at the age of 15 lack basic proficiency in reading and writing, indicating just how severely youths have been affected by the lack of educational equity. This predicament is largely due to the immense gap in the educational standards between private and public schools. In Malaysia, many children from low-income families lack access to quality education, thus perpetuating the poverty cycle. While the privileged can attend private schools with clean restrooms, decent meals, adequate furniture, and other fundamental learning resources, many rural and remote schools in Malaysia still lack the basic conditions for teaching and learning. For example, many rural and remote schools lack proper sanitation, adequate ventilation, safe playgrounds, and library resources due to financial and other constraints. Further, about 20,000 students, mostly rural dwellers, drop out of school annually; one in five students do not even complete their secondary education. Therefore, there is an urgent need to increase educational access for all children and to ensure that those from the rural and remote areas get the funds and resources needed to nurture their otherwise untapped, hidden potential.

1.2. Educational Equity: Prominent Barriers

Mahmud (2024) reiterated that many resource-scarce schools in Malaysia often evidence the real-world impacts of educational inequity, whereby many students with immense potential are hindered by limited funds and resources. Inequity in Malaysia's educational system has resulted in countless untapped opportunities and immeasurable losses in potential. Additionally, educational inequity is often associated with socioeconomic disparities, under-resourced schools, students' own special needs, and cultural and linguistic barriers. First, students from low-income families often lack access to basic learning materials, digital technology, and enrichment programs, which pose a vicious cycle that captiously affect potential socioeconomic opportunities. Second, students attending poorly furnished and dilapidated schools, which often have difficulty in attracting and retaining adequately trained teachers and in procuring innovative teaching and learning infrastructure. Inevitably, students in these schools will have restricted choices and extracurricular activities, which further constrain their future academic and career trajectories. Third, many schools lack the basic infrastructure, trained staff, and learning resources to fully support students with physical, cognitive, or learning challenges and special needs, leading to isolation, reduced learning outcomes, and missed opportunities to reach their full potential. Fourth, students from different sociocultural or linguistic backgrounds often lag behind because the standard curricula and conventional teaching methods rarely account for their individual needs, which subsequently leads to feelings of alienation, absenteeism, underachievement, and academic failure.

1.3. Educational Equity versus Educational Access

According to Teach for Malaysia (2024b), Malaysia has made great strides in expanding access to education, with near-universal primary enrollment and above 90 percent secondary enrollment. However, access alone does not guarantee meaningful learning outcomes and educational equity. About 122,000 students in Primary One struggle with basic numeracy and literacy skills, while a high percentage of 15-year-olds fail to meet the minimum requirements in math, reading, and science. While education is oft-regarded as a great equalizer that enhances social mobility that serves as a pathway to gainful employment, the educational system needs to prioritize sustained outcomes and equity to amplify its potential, while ensuring that it reaches all children so that no one is left behind. Resource allocation is another obstacle to promoting educational equity at the school level. High-achieving classes often have better access to more qualified teachers, specialized rooms, labs, and other innovative learning resources, besides greater opportunities for extracurricular activities and enrichment programs. In contrast, low-performing classes, which often need the most support, are often neglected and bypassed. when it comes to resource distribution, budgeting, and apportionment. This quandary is shaped not only by scarce resources, but also by a mindset that prioritizes instant results and proximal consequences rather than protracted equity for all.

1.4. Statement of the Problem

A review of literature showed that quantitative research on college students' perceptions of educational equity is lacking in Malaysia, especially in the island state of Sabah. Therefore, the main purpose of this study was to investigate college students' perceptions of educational equity, which helps fill the research gap and establish a theoretical framework for the study. Further, the authors this study decided to use a sample of Sabahan college students to test the robustness and reliability of the instrument used to measure the construct. Lastly, findings of this study could generate novel knowledge on the prevalence of educational equity in the local educational landscape, besides offering recommendations on how to enhance it in Sabah, Malaysia.

1.5. Research questions

To narrow the research gap and provide a contextual framework for the study, three research questions were formulated to guide the research. Serving as a compass, they keep the authors on track, thus allowing them to concentrate on the relevant areas of investigation. Besides providing a benchmark for the entire research process, they also help in defining the scope of the study, thus ensuring that the research remains focused and viable. The three research questions are as follows:

i. What were the descriptive statistics of students' perceptions of educational equity and their implications?
ii. Were there any significant differences in students' perceptions by way of gender, age, and ethnicity?
iii. Were any of the educational equity items significantly different from the hypothesized value of 3.5?

1.6. Significance of the Study

Findings from this study are particularly relevant to the context of Sabah, which has historically been underrepresented in digital literacy and infrastructure readiness as one the poorest Malaysian states, where significant disparities exist between urban and rural areas in terms of Internet access, teacher training, and inclusive pedagogical innovations. Therefore, this study underscores the importance of addressing these intra-state problems by promoting tailored educational strategies that can help overcome the unique challenges faced by Sabah's remote and rural communities. For example, remote and underdeveloped districts, such as Kudat (Santos, 2022) and Semporna (Borneo Post Online, 2013), have suffered from limited telecommunications infrastructure even where towers exist, resulting in erratic coverage. Poor Internet connectivity in these areas often hinders teachers' access to digital tools, while limiting students' exposure to digital pedagogies.

Quantitative research on educational equity helps promote awareness and understanding with regard to the opportunities and challenges in providing greater access to basic education in the rural and remote areas. This study aimed to identify the factors influencing perceived educational equity to gain deeper insight into the multifaceted construct, and to provide recommendations for policymakers and other stakeholders to increase educational equity, especially in the rural and remote areas of Sabah. Lastly, this research can contribute to the broader goal of minimizing socioeconomic disparities, while improving the quality of education for all children in line with SDG 4 Quality Education.

2. Review of Literature

A literature review was conducted to establish a foundation for the study by providing a comprehensive overview of existing research, theories, and methodologies relevant to educational equity. Besides, by analyzing the existing literature, the authors are able to pinpoint areas where further investigation is needed, thus justifying the study. Further, the review process also helps clarify and refine the research questions, thus ensuring that they are relevant, focused, and contribute meaningfully to the concept of educational equity in the Malaysian context. Besides, it also helps the authors identify relevant theoretical frameworks that can guide their study and provide a lens for interpreting their findings. Lastly, the literature review indicated that empirical research on educational equity in the context of higher education is still lacking in Malaysia, especially in the Bornean state of Sabah.

2.1. Educational Equity: Private Higher Educational Institutions

In an earlier study, Tham (2011) explored how the mushrooming of private higher educational institutions (PHEIs) in Malaysia has impacted educational access and equity in the country. Many secondary school leavers can now enroll in PHEIs through government subsidies in the form of student loans and scholarships. The government's commitment toward educational equity, especially in higher education, can be seen in the increased share of education in total government development expenditure of 20 to 25 percent from 1996 to 2010. Nevertheless, increasing private tertiary education has raised serious questions as to whether it can broaden the realm of opportunity to include those who are disadvantaged and marginalized. It is a useful to see if the expansion in private higher education has translated into greater inclusion in terms of

equity and equal opportunities for all. Moreover, "equity groups" may involve those are qualified to attend college or university, but are unable to do so, or those who are selected for tertiary places according to merit. Moreover, access and equity in higher education is often interrelated; the pathways offered by PHEIs often indicate the type of access that they provide, besides the types of students whom they cater to.

Besides access to PHEIs, another factor related to educational equity is gender. Enrollment in higher education is skewed toward female students since they tend to perform better at secondary schools compared to their male peers; besides, the dropout rate for male students is also higher at the secondary school level. Better academic performance amongst female students at pre-university has led to higher female enrolment at PHEIs, many of which are costly and offer limited places. Lastly, educational equity is also influenced by Malaysian quality assurance (MQA), which strives to preserve the integrity of all PHEI programs by limiting study loans and scholarships for only accredited programs (Tham, 2011).

2.2. Educational Equity: Preschools

Mardomi and Mardomi (2022) postulated that educational equity should begin as early as preschool to prevent a vicious cycle, while ensuring that children from low-income families have the same educational opportunities early in life similar to their middle or upper-class peers. However, schools in disadvantaged and marginalized communities are often deficient in terms of infrastructure, resources, and qualified staff; moreover, these schools tend to be overcrowded with a meager supply of library books, computers, and lab equipment. Nevertheless, the Malaysian government has continued to emphasize educational equity and quality by improving the academic performance amongst students in the rural and remote areas in order to reduce the performance gap between these areas.

Additionally, educational equity can only be attained by narrowing the socioeconomic urban-rural gaps. However, many children in the rural and remote areas still experience significantly higher non-income deprivation than those in urban areas. Social justice, accessibility, and equity are still critical issues among the remote and rural communities, with many preschools still significantly differ across states by gender, socioeconomic status, and location. Although the Ministry of Education has provided many programs for children with special needs and greater access to alternative educational pathways to ensure better opportunities for students with different abilities, vast demographic and structural problems still persist, which undermine efforts to promoting educational equity. First, 73 percent of under-enrolled schools are located in rural and remote areas, which often require students to walk long distances to attend classes held in dilapidated buildings. Second, these schools often obstruct educational equity because they offer limited co-curricular programs, learning equipment, lab facilities, and interactions with a more diverse group of peers. Finally, many schools in low-income areas also face serious challenges associated with lower socioeconomic status; for example, they tend to experience greater difficulty in student enrollment and retention. Besides, lack of school supplies, uniforms, canteen money, and transportation also discourage many students from continuing classes. Lastly, students from impoverished families are not only less likely to have attended preschool, but they will also enter primary school without the preschool benefits enjoyed by their more affluent peers (Mardomi & Mardomi, 2022).

2.3. Educational Equity: Digital Transformation Challenges

According to Gong (2023), Malaysia's digital economy is expected to contribute 22.6 percent of the gross domestic product (GDP) by 2025, an increase from 17.8 percent in 2015. Malaysia's digital transformation initiatives have been largely focused on infrastructure- and device-led growth. While progress has been made in terms of increasing access to digital technologies, there is still room for improvement when it comes to the adoption of digital solutions for corporate activities. For example, micro, small, and medium enterprises in Malaysia are still lagging behind when it comes to digital implementation. Compared to countries with similar per capita income. Malaysia has fewer businesses with websites as well as a lower number of secure servers. Moreover, small businesses are hesitant to adopt digital tools due to high startup cost, besides the time and human power required to create innovative business solutions. Lastly, as an ongoing process, digitalization is costly as it requires organizations to restructure their systems, besides ensuring that their data and financial transactions are secure.

3. Methodology

3.1. Research Design and Approach

A quantitative research design was adopted to allow the authors to systematically investigate perceived educational equity through the use of numerical data and statistical analysis to quantify students' perceptions of the construct, with the primary objective of drawing meaningful conclusions and generalizing results to a broader college student population in Sabah. Further, statistical methods were used to calculate percentages of agreement and significant differences by way of age, gender, and ethnicity. The key elements of the current quantitative research design included (1) three succinctly stated research questions, (2) a convenient sample of student (n = 63) as a representative subset, (3) a list of educational equity attributes, (4) an appropriate data collection method, (5) specific statistical methods to analyze data, and (5) ethical considerations (i.e., informed consent and privacy protection).

3.2. Research location

This study was conducted in Kota Kinabalu, Sabah, the capital city of the island state where quantitative research on educational equity is scarce. Kota Kinabalu was chosen because it has at least 10 private colleges, providing a sufficiently representative sample of the college student population in Sabah, and therefore, allowing for a relatively fair assessment of college students' perceptions of educational equity.

3.3. Sample and Justification

The sample of this study comprised 63 college students (n = 63) recruited from a private university college in Kota Kinabalu, Sabah, who have average English proficiency, and are studying a full-time at the institution. After getting permission from the registrar, the survey link was uploaded onto a group WhatsApp, allowing students to respond online at their convenience.

Students come from culturally, linguistically, and ethnically diverse communities in Sabah. The sample size was determined according to theoretical and

statistical considerations. According to the central limit theorem, a minimum of 30 subjects is generally sufficient to ensure statistical power and generalizability for basic survey research (Roscoe, 1975; RUBIKTOP, 2023). Additionally, the sample was deemed representative of college students in Kota Kinabalu; hence, selection bias was minimized. In general, the study was delimited by proximity, accessibility, and the register's willingness to assist in data collection.

The sampling distribution approached normality because n = 63, allowing for acceptable statistical inference. Further, the current sample size ensured a reasonable margin of error and enough power to identify modest effects in nonparametric analyses, such as the Kruskal-Wallis, Mann-Whitney U, and Wilcoxon signed rank tests, which were used to interpret data in the current study.

The sample consisted of 34.9 percent males and 65.1 percent females. Age-wise, 47.6 percent are 18 to 20 years old, 22.2 percent are 21 to 23 years old, 15.9 percent are 24 to 26 years old, and 14.3 percent are above 26 years old. Ethnicity-wise, 63.5percent are Kadazandusuns, 3.2 percent are Malays, 6.3 percent are Rungus, 9.5 percent are Muruts, 4.8 percent are Bajaus, and12.7 percent are of other ethnicities (see Table 1).

Table 1: Demographic Information of Respondents (n = 63)

Variable	Description	Frequency	Percentage
Gender	Male	22	34.9
	Female	41	65.1
Ethnicity	Kadazandusun	40	63.5
	Malay	2	3.2
	Rungus	4	6.3
	Murut	6	9.5
	Bajau	3	4.8
	Others	8	12.7
Age	18-20	30	47.6
	21-23	14	22.2
	24-26	10	15.9
	Above 26	9	14.3

3.4 Instrument

The Student Educational Equity Development Survey (SEEDS) developed by the Oregon Department of Education (2024) was adapted to measure college students' attitudes toward educational equity. It consists of 23 Likert-scale items, ranging from strongly disagree = 1 to strongly agree = 5. To determine the reliability of the questionnaire, a pilot study was conducted on 20 college students, and data were analyzed by using SPSS 29.0. Cronbach analysis was used to assess its reliability; results indicated that the Cronbach's alpha of the SEEDS is 0.911. The high alpha value indicates that the items within the questionnaire are internally consistent, thus measuring the same underlying construct. The high coefficient also means that the items are closely correlated, and are therefore, measuring the same concept.

3.5. Data Collection and Analysis

College students were required to complete the questionnaire on Google Forms according to ethical principles. Before responding, they were fully informed about the

purpose of the survey and how the data would be used. Participation was entirely voluntary, with students having the right to withdraw at any time without penalty. Further, protecting student privacy was practiced by emphasizing both anonymity and confidentiality. Lastly, data integrity and reporting was maintained by avoiding leading questions, minimizing design bias, and reporting findings honestly, including disclosing limitations.

Data were transferred onto a spreadsheet and subsequently analyzed using SPSS 29.0. First, the percentages of agreement on perceived educational equity were calculated. Second, Kruskal-Wallis H test was conducted to determine if there were any significant differences in students' perceptions of the construct in relation to age and job experience. Third, Mann-Whitney U test was run to determine if there were any significant differences in terms of gender. Fourth, Wilcoxon signed rank test was used to determine if any of the educational equity items were significant at a hypothesized value of 3.5.

4. Findings

4.1. Percentages of Agreement

Percentages of strongly agree and agree were collapsed to gain an overview of college students' attitudes toward education equity. Findings showed that only a low proportion (39.7 to 49.2 percent) of college students strongly agreed/agreed that they (1) participated in extracurricular activities/clubs at college, (2) had adults at college who cared about them, (3) they had interacted with educational/business/industry professionals at college, (4) they were represented in their assignments or readings, (5) always had a quiet place to do academic work, (6) they felt welcome at their college, (7) they read for at least an hour each day outside of college and homework, (8) they felt very sure that they could round RM4,333.19 to the nearest ringgit, (9) they had opportunities to be involved in extracurricular activities or clubs at college, and (10) they had been required to connect what they were learning at college to potential careers.

Further, a low-average proportion (52 to 55.6 percent) of college students strongly agreed/agreed that they (1) they had the chance to practice safety skills to navigate college and community spaces (e.g., crossing the street, interpreting signs), (2) they had learned about their culture at college, (3) they always had Internet connection or Wi-Fi, and (4) they always had books or magazines to read for fun.

Lastly, an average proportion (60.3 to 69.8 percent) strongly agreed/agreed that (1) they had access to subjects/courses that would help them achieve their future goals, (2) they had access to subjects/courses that aligned with their interests, (3) they were definitely considering employment after graduating college, (4) they felt very sure that they could describe different ways to heat or cool water, (5) they felt very confident that they could recognize the difference between fact and opinion, (6) they often used journal articles to support their assignments, (7) they often got help in their assignments when they needed it, (8) they always had enough stationery (paper, pencils, pens), and (8) they always used a desktop computer, laptop, or tablet (see Table 2).

Table 2: Percentages of Agreement on Perceived Educational Equity

Item	1	2	3	4	5	4+5 (Collapsed)
I always have a quiet place to do academic work	6.3	9.5	36.5	19	28.6	47.6
I always have books or magazines to read for fun	6.3	6.3	33.3	22.2	31.7	53.9
I always use a desktop computer/laptop/tablet	4.8	7.9	25.4	25.4	36.5	61.9
I always have Internet connection or Wi-Fi	3.2	12.7	30.2	22.2	31.7	53.9
I always have enough stationery (paper, pencils, pens)	0	6.3	23.8	31.7	38.1	69.8
People like me are represented in my assignments or readings	0	9.5	46	25.4	19	44.4
There are adults at college who care about me	4.8	9.5	42.9	19	23.8	42.8
I feel welcome at my college	3.2	6.3	41.3	27	22.2	49.2
I read for at least an hour each day outside of college and homework	1.6	14.3	42.9	25.4	15.9	41.3
I often get help in my assignments when I need it	1.6	6.3	27	39.7	25.4	65.1
I often use journal articles to support my assignments	0	4.8	28.6	34.9	31.7	66.6
I have learned about my culture at college	3.2	9.5	31.7	28.6	27	55.6
I feel very confident that I can recognize the difference between fact and opinion	1.6	3.2	34.9	22.2	38.1	60.3
I feel very sure that I can round RM4,333.19 to the nearest ringgit	4.8	17.5	28.6	22.2	27	49.2
I feel very sure that I can describe different ways to heat or cool water	1.6	3.2	34.9	23.8	36.5	60.3
I have the chance to practice safety skills to navigate college and community spaces (e.g., crossing the street, interpreting signs)	4.8	7.9	34.9	30.2	22.2	52.4
After graduating college, I am definitely considering employment	4.8	7.9	25.4	23.8	38.1	61.9
I have opportunities to be involved in extracurricular activities/clubs at college	9.5	9.5	33.3	27	20.6	47.6
I participate in extracurricular activities/clubs at college	7.9	14.3	38.1	22.2	17.5	39.7
I have been required to connect what I am learning at college to potential careers	4.8	4.8	41.3	22.2	27	49.2
I have interacted with educational/business/industry professionals at college	6.3	6.3	41.3	20.6	25.4	46.0
I have access to subjects/courses that will help me achieve my future goals	1.6	7.9	30.2	27	33.3	60.3
I have access to subjects/courses that align with my interests	1.6	7.9	28.6	28.6	33.3	61.9

Strongly disagree = 1, Disagree = 2, Neutral =3, Agree = 4, Strongly agree = 5

4.2. Nonparametric Test Results

Nonparametric tests showed that there were no significant differences in perceived educational equity by way of gender, age, and ethnicity (see Table 3).

Table 3: Mann-Whitney U and Kruskal-Wallis H Results

Educational equity	Nonparametric test	*p*-value
Gender	Mann-Whitney U test	0.315
Age	Kruskal-Wallis H test	0.844
Ethnicity	Kruskal-Wallis H test	0.236

4.3. Wilcoxon Signed Rank Test Results

Wilcoxon signed rank test revealed that 19 of the educational equity items were significant at $p < .001$, indicating that their medians tend to differ significantly from the hypothesized value of 3.5, and indicating strong disagreement. Only four of the items were significant at $p < .05$, indicating that their medians tend to differ significantly from the same hypothesized value, and indicating strong disagreement (see Table 4).

Table 4: Wilcoxon Signed Rank Test Results

Item	*p*-value	Conclusion
I always have a quiet place to do academic work	<0.001**	Median significantly differed from the test value indicating strong disagreement
I always have books or magazines to read for fun	<0.011*	Median significantly differed from the test value indicating strong disagreement
I always use a desktop computer/laptop/tablet	<0.001**	Median significantly differed from the test value indicating strong disagreement
I always have Internet connection or Wi-Fi	<0.001**	Median significantly differed from the test value indicating strong disagreement
I always have enough stationery (paper, pencils, pens)	<0.001**	Median significantly differed from the test value indicating strong disagreement
People like me are represented in my assignments or readings	<0.021*	Median significantly differed from the test value indicating strong disagreement
There are adults at college who care about me	<0.001**	Median significantly differed from the test value indicating strong disagreement
I feel welcome at my college	<0.001**	Median significantly differed from the test value indicating strong

		disagreement
I read for at least an hour each day outside of college and homework	<0.001**	Median significantly differed from the test value indicating strong disagreement
I often get help in my assignments when I need it	<0.001**	Median significantly differed from the test value indicating strong disagreement
I often use journal articles to support my assignments	<0.032*	Median significantly differed from the test value indicating strong disagreement
I have learned about my culture at school	<0.001**	Median significantly differed from the test value indicating strong disagreement
I feel very confident that I can recognize the difference between fact and opinion	<0.001**	Median significantly differed from the test value indicating strong disagreement
I feel very sure that I can round RM4,333.19 to the nearest ringgit	<0.001**	Median significantly differed from the test value indicating strong disagreement
I feel very sure that I can describe different ways to heat or cool water	<0.001**	Median significantly differed from the test value indicating strong disagreement
I have the chance to practice safety skills to navigate college and community spaces (e.g., crossing the street, interpreting signs)	<0.001**	Median significantly differed from the test value indicating strong disagreement
After graduating college, I am definitely considering employment	<0.001**	Median significantly differed from the test value indicating strong disagreement
I have opportunities to be involved in extracurricular activities/clubs at college	<0.001**	Median significantly differed from the test value indicating strong disagreement
I participate in extracurricular activities/clubs at college	<0.001**	Median significantly differed from the test value indicating strong disagreement
I have been required to connect what I am learning at college to potential careers	<0.001**	Median significantly differed from the test value indicating strong disagreement
I have interacted with educational/business/industry professionals at college	<0.001**	Median significantly differed from the test value indicating strong disagreement
I have access to subjects/courses that will help me	<0.022*	Median significantly

achieve my future goals		differed from the test value indicating strong disagreement
I have access to subjects/courses that align with my interests	<0.001**	Median significantly differed from the test value indicating strong disagreement

**$p < .001$, *$p < .05$

5. Discussion

5.1. Implications

Findings imply that only a low to average proportion of college students tend to perceive that they experience education equity, which were supported by previous research. Çınar (n. d.) summarized that educational equity in Malaysia is adversely affected by poverty, low competence standards, poor teacher quality, and curriculum rigidity. First, the official poverty line in July 2020 indicated that 5.6 percent of Malaysian households now live in absolute poverty, exacerbated by the pandemic that has directly affected adolescents, children, and women in several ways. Second, education quality is a huge concern in Malaysia, with almost 60 percent of 15-year-olds failing to meet minimum competence standards. Although improvements have been made during the last few years, Malaysian students are still underperforming in relation to international averages. Third, poor teacher quality is another barrier to quality and learning outcomes whereby 93 percent of those applying for a Bachelor of Education, while 70 percent of those offered a place in the field lacked the necessary qualifications. Fourth, the Malaysian curriculum is highly centralized and rigid, which tends to hamper the efficient production and distribution of education services.

Çınar (n. d.) added that educational equity in Malaysia is further affected by undesirable school characteristics, low socioeconomic status, poor Internet infrastructure, inappropriate school syllabi, and lack of access to resources and funds. Although government expenditure on education is rather high, rural and remote schools with fewer students often receive less financial support compared to those in the urban areas. Besides, most parents in rural areas have lower incomes; therefore, their children often lack the basic facilities and resources required for academic success. Further, they rural-urban divide is often associated with the lack of Internet connectivity, which poses significant problems in adopting innovative teaching and learning in underdeveloped and technology-scarce areas. Lastly, educational equity in the country is adversely affected by the primary and secondary school syllabi, which tend to be too difficult and inappropriate for students in the remote and rural areas.

On the other hand, Abd Manaf (n. d.) asserted that it is diffulcult to fully achieve educational equity in Malaysia for several reasons. First, a degree of educational inequality tends to exist even within the existing public school system. Although many boarding schools and financial aid are available for students who are disadvantaged or with special needs, many children and youths from the remote and rural areas are unable to enroll in boarding schools due to financial, social, and geographical constraints. Besides, the mushrooming of private schools offering national and international syllabi further widens this inequity in terms of resources and opportunities. Since different socioeconomic factors tend to be perpetual, many children from lower-income households will continue to experience the pervasive

impact of educational inequity in terms of resources and opportunities, which are often grounded on socioeconomic status. Moreover, some low-income families prefer their children to join the blue-collar sector straightaway after secondary school rather than pursuing higher education. They tend to perceive that working as blue-collar employees is more pragmatic rather than facing the risk of unemployment and inability to repay their study loans.

Finally, Nordin (2011) reiterated that educational equity in Malaysia is dominantly influenced by several factors. First, despite offering all children the standard curriculum, educational equity is unattainable because of the existence of individual differences among students, which cannot simply be equalized through academic engineering. Besides, the nation's compulsory schooling rigidly subjects all students to the same studies; it not only fails to achieve its egalitarian goal, but also denies many students any real opportunity to have an equitable education. Second, socioeconomic status often acts as a potent force in the community, which always tries to maintain its dominance through education. For example, children from affluent backgrounds usually attend the best or private schools that offer innovative teaching and learning facilities, besides teaching staff who are specifically employed to cater to the brightest youngsters, whose enrollment is supported by socioeconomic status and achievement potential. Lastly, educational planning and implementation of the equity policy tends to be influenced by the notion of meritocracy. Students from remote and rural areas often lack a social system in which individuals can get educational success or power primarily due to academic abilities; many are also unable to pursue quality education due to poverty and other debilitating factors.

5.2. Recommendations

According to Maloney and Moorthy (2021), to promote educational equity, the teaching profession should be respected, together with corporate social responsibility (CSR). The status of teachers in society should be raised by acknowledging the leadership role that they play, especially in times of upheaval or emergency situations, such as the pandemic. Respect for the teaching profession must become central to how society treats educators every day, not just on Teachers' Day each year. Besides, CSR should be explicitly aligned to STEM, technology, and digital equity according to the UN SDG framework, which will augment greater global focus, action, innovation, and impact toward the 2030 objectives. The government, educational bodies, and other stakeholders should design action-driven and solution-focused strategies that map their objectives and success against the SDG thematic indicators and goals.

Maloney and Moorthy (2021) added that educational equity can also be promoted through partnerships and multi-lateral initiatives. Public and private partnerships should be established to maximize the value of government funding, private sector investment, and non-profit programs to ensure sustainable responses to future digital demands. Innovative programs that bring teachers into government and corporate settings can expand their expertise in terms of digital transformations, cloud computing, artificial intelligence (AI), and augmented and virtual reality. They can also increase their fluency in machine learning, robotics-based manufacturing, and other industrial frontiers, which further raises the possibilities of educational equity. Strategic partnerships and programs provide the respective resources to train, equip, and empower teachers with advanced digital skills to ensure that no student is behind in alignment with SDG 4 Quality Education. Besides, engagement with multi-lateral

initiatives that advance SDG 4 can increase educational equity by ensuring that all children have access to education school and by preparing and supporting teachers. For example, the Covid-19 Global Education Recovery Tracker is currently used to monitor school reopening and recovery planning efforts in more than 200 countries and territories.

On the other hand, Muftahu, Annmali, and Hu (2023) postulated that higher education should be accessible to students from disadvantaged and marginalized communities to promote educational equity. Student diversity can be fostered by having different intake channels that provide learning opportunities for individuals with different academic and work experience. To offer more opportunities to disadvantaged groups, tuition waivers should be offered since financial support is vital to assist and support underprivileged students to complete their studies. Further, students can also gain greater access to higher education through digital technology, which allows them to complete their coursework and assessments at home or the office. Higher education institutions should advocate for the knowledge that they provide to students from different groups and backgrounds to ensure that they can adequately acquire knowledge and skills at their own convenience.

Besides, Muftahu, Annmali, and Hu (2023) added that students with special needs and from disadvantaged communities need more support during their academic journey to traverse the gap between their entry and exit points. Being accepted at the entry point due to reservation policies and relaxed admission criteria, they often require additional academic support to achieve academic success. While striving to increase student diversity, higher educational institutions should establish structures and processes that promote equity and inclusivity. To balance between increasing educational access and a transformative educational experience for all students, higher educational institutions should ensure that expansion translates into equitable access for students from all walks of life, while upholding quality and excellence.

According to Mahmud (2024), educational equity can be promoted by expanding financial support, investing in remote and rural schools, promoting true inclusion, embracing diversity, and capitalizing on technology. First, scholarships, grants, and other forms of financial aid should be provided to students from disadvantaged socioeconomic backgrounds by involving partnerships between government, educational institutions, and the private sector to establish sustainable funding models. Second, remote and rural schools deserve more funding and other resources to improve their infrastructure, procure innovative learning materials, and increase teacher recruitment and training. Third, comprehensive policies and practices should be implemented to support the full integration of students with special needs into mainstream educational settings by increasing physical accessibility, specialized training for teachers, and adaptive technologies to support learning. Fourth, schools and teachers should adapt their curricula and teaching methods to become more culturally responsive and linguistically inclusive by incorporating diverse perspectives in course materials, offering multilingual education options, and providing cultural competency training for staff. Lastly, digital tools and platforms should be used to bridge resource gaps, connect remote and rural schools with broader educational networks and provide personalized learning experiences for students with diverse needs.

5.3. Conclusion

To conclude, this study has yielded useful findings on perceived educational equity among college students in Sabah. However, generalizability of findings tends to be limited because of using a convenience sample and questionnaire. Due to the potential for bias, findings from a convenience sample may not be generalizable to the wider population. Besides, the lack of random selection and potential for bias can further compromise data accuracy. Participants in the convenience sample may share similar characteristics, thus resulting in a lack of diversity in perspectives and experiences. Additionally, the questionnaire may contain some limitations, including the potential for biased responses due to social desirability or ambiguous wording, fixed response options, and low response rates. Besides lacking flexibility, it may not adequately capture nuanced opinions, besides being affected by respondent fatigue. Therefore, future research on educational equity should adopt more comprehensive data collection methods, interpret results more cautiously, and consider alternative or complementary data collection methods.

Ethics Approval and Consent to Participate

This study has strictly adhered to all ethical procedures involving the use of human subjects. Informed consent was obtained from all respondents who were ascertained of their anonymity, with their responses kept strictly private and confidential. Moreover, the data would be de-identified and securely stored in a strong room. Lastly, respondents were also informed that the study was of low risk and that they could stop participating any time without any repercussions.

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Conflict of Interest

The authors report no potential conflict of interest regarding this study in terms of the research, authorship, or publication of this article.

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