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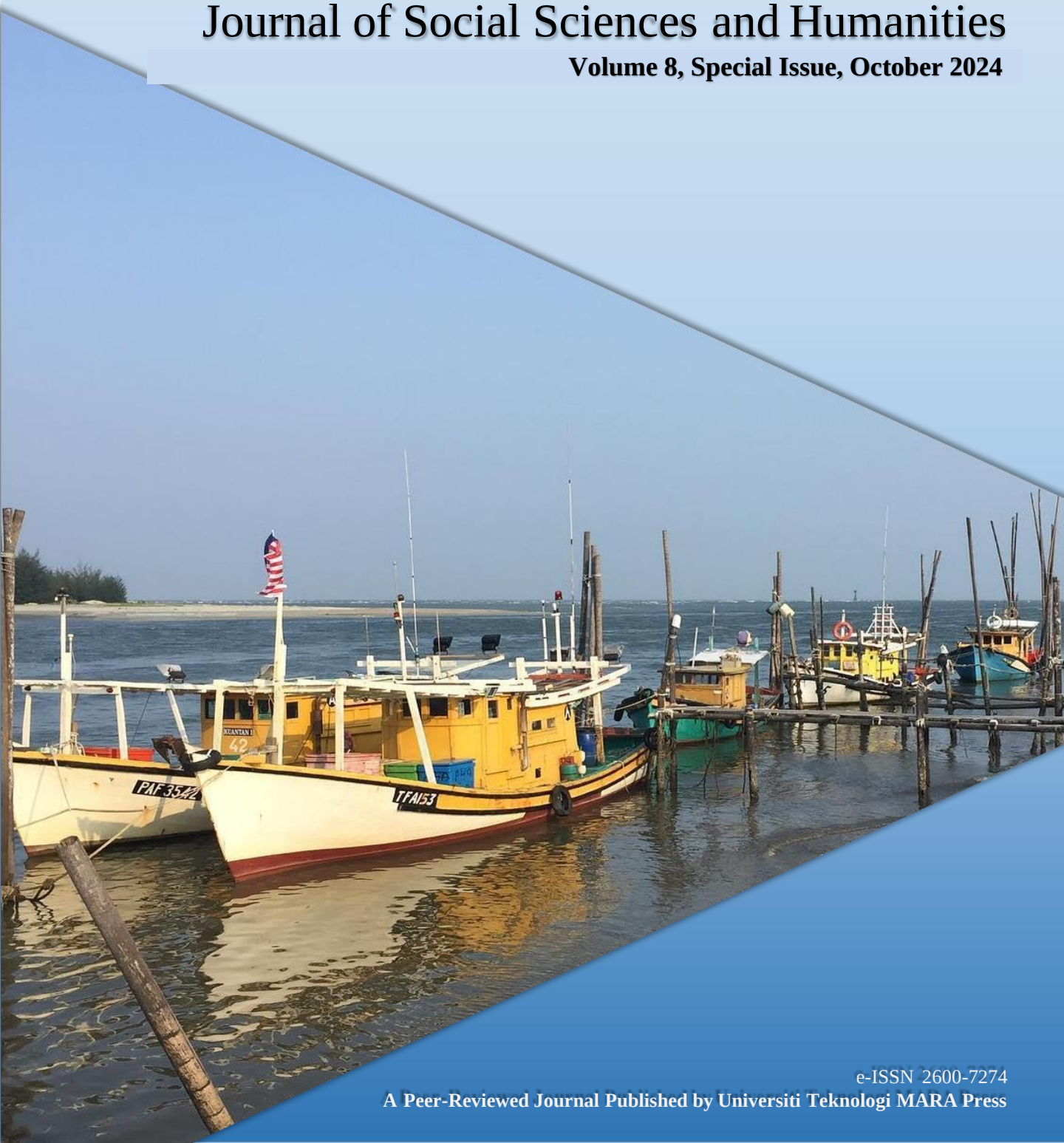
E S T E E M

Journal of Social Sciences and Humanities

Volume 8, Special Issue, October 2024



e-ISSN 2600-7274
A Peer-Reviewed Journal Published by Universiti Teknologi MARA Press

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Journal Description

Introduced in 2017, ESTEEM Journal of Social Sciences and Humanities is an official journal of Universiti Teknologi MARA (UiTM) Cawangan Pulau Pinang with a registered e-ISSN 2600-7274. It is an open-access journal that publishes articles in English and Bahasa Malaysia. Initially, it was published once a year, from January 2017 to December 2020, but changed its publication frequency to twice a year starting in January 2021 to accommodate the increasing number of manuscript submissions. The journal adheres to traditional standards of double-blind peer review with an average acceptance rate of 30%. Currently, the journal does not charge any article processing fees for manuscripts submitted personally or collaboratively by authors.

Aim and Scope

The ESTEEM Journal of Social Sciences and Humanities aims to serve as a platform for scholars, practitioners, and policymakers to exchange new knowledge and ideas in social sciences and humanities areas. The journal provides an avenue for scholars and practitioners to document unpublished, original manuscripts related to emerging issues, developments, and trends that examine how people interact, integrate, behave and influence the world around them. Specifically, the journal aims to provide new knowledge on the relationships between individuals and societies and the operation and progression of organizations in the 21st century.

The Centre of Foundation Studies has conducted 4th virtual International Conference on Research and Practices in Science, Technology and Social Sciences (I-CReST 2023) that was held on 22nd July 2023. With the theme, "Leveraging Technological Advances and Multidisciplinary Research for a Sustainable Future in Education", the conference offered a platform for undergraduates and postgraduate students, academics, researchers, professionals and industry practitioners from various backgrounds to share ideas and research findings from their respective fields.

Frequency of Publication

- January 2021 to present: ONE (1) volume TWO (2) issues per year, published in April and September.
- January 2017 to December 2020: ONE (1) volume ONE (1) issue per year, published in November.
- The publication frequency of the journal does not include special issues.

Duration of Publication Process

The publication process takes approximately 90 – 120 days, based on current practice. All manuscripts are processed accordingly:

- Review Process (within 30 days after the closing date)
- Notification of Acceptance (within 10 days after the review process)
- Revision (within 30 days after the manuscript acceptance)
- Copy Editing (within 10 days after final revision)
- Publication (within 10 days after the copy-editing process)

Peer Review Process

ESTEEM Journal of Social Sciences and Humanities relies on effective peer review processes to uphold the quality and validity of individual articles and the overall integrity of the journal. The journal practices a double-blind peer review consisting of a minimum of two peer reviewers per manuscript to maintain quality. All reviewers with diverse expertise serve voluntarily. Throughout the double-blind review process, the editors hide both reviewer and author identities from one another. To facilitate this, the editors need to ensure that the manuscripts are processed in a way that does not give away the identity of their authors. The editors make sure that the manuscript does not include the names or affiliations of the authors.This ensures the manuscript is judged fairly, keeping bias out of the equation. Both authors and reviewers also benefit from some degree of protection against criticism.

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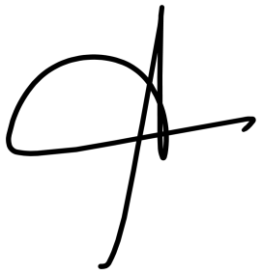
EDITORIAL NOTE

On behalf of the ESTEEM Journal of Social Sciences and Humanities (EJSSH) Editorial Team, I am delighted to present Volume 8, Special Issue, October 2024. After multiple series of the double-blind peer review process, we accepted 11 high-quality manuscripts that met the standard empirical paper requirement and were successfully published.

For the next issue, we are looking forward for more insightful and thought-provoking articles from distinguished authors across various disciplines in social sciences and humanities. We welcome international-based papers across countries, regions, and continents that align with these important global objectives focusing on Sustainable Development Goals. We extend our heartfelt gratitude to the authors, reviewers, and our editorial team members for their invaluable contributions in bringing this edition to fruition. We hope you find this journal issue both informative and inspiring, and we look forward to your continued support and engagement.



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Noor Ashikin Basarudin, Ph.D.
ESTEEM Journal of Social Sciences and Humanities
Universiti Teknologi MARA Cawangan Pulau Pinang

ESTEEM Journal of Social Sciences and Humanities
Vol. 8, Special Issue, October 2024
https://ejssh.uitm.edu.my

Integrating Sensory-based Activity Modules to Enhance Tactile Sensitivity in Braille Learners: A Comparative Study

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ABSTRACT

ARTICLE HISTORY

Received:
12 August 2024
Accepted:
30 September 2024
Published:
11 October 2024

KEYWORDS
Game Stations;
Index and Middle Fingers;
Sensory Play;
Two-Point Discriminator;
Visually Impaired

Visual impairment and blindness are significant global health issues that severely impact the lives of affected individuals and those around them. These individuals encounter unique challenges in their daily routines and learning processes, which sighted people do not experience. Despite these obstacles, visually impaired individuals rely heavily on their tactile and auditory senses to perceive and understand their surroundings. Tactile sensory input is especially beneficial in conveying environmental and visual information to those who are visually impaired or blind. Therefore, a sensory-based activity module was developed to improve tactile sensitivity in learning Braille. This module consisted of four game stations: rice play, sand play, playdough, and finger paint. The participants' tactile sensitivity was tested on their index and middle fingers, which are primarily used in reading Braille, both before and after engaging with the games. Specifically, the right middle finger exhibited an enhancement of up to 83%, the right index finger showed a 60% improvement, the left middle finger demonstrated a 71% increase, and the left index finger displayed a remarkable improvement of 298%. During the analysis of the module's effectiveness, it was discovered that an overwhelming 94% of the participants expressed great interest and found it highly impactful and over 70% of the participants successfully followed the game instructions and indirectly developed soft skills at each station. Additionally, there was a notable improvement in finger sensitivity, as measured by the two-point discriminator test. This interactive and enjoyable game-based learning approach is ideal for both blind and sighted players. It offers visually impaired individuals a practical method for learning Braille, enhancing their tactile sensitivity, and making the learning process more engaging and effective. The sensory play module not only supports the educational needs of visually impaired learners but also fosters an inclusive environment for all players.

e-ISSN 2600-7274

1. INTRODUCTION

Human touch involves the physical interaction between fingers and objects, relying on the biophysical properties of tactile skin. When a finger glides over an object, vibrations are generated and transmitted through the skin, allowing the detection of surface texture properties. (Abdouni et al., 2019). Tactile sensitivity, influenced by factors such as age, gender, and illness, is particularly crucial for visually impaired individuals who depend heavily on their tactile and auditory senses to navigate their environment. Studies have shown that visually impaired individuals often develop superior tactile sensitivity compared to sighted individuals, allowing them to compensate for their lack of vision (Kaco et al., 2021; Qu et al., 2020). In contrast, individuals who have recently lost their vision due to illness or accidents may not possess the same level of acute finger sensitivity as those who were born blind but have developed their tactile senses over time. Consequently, these individuals may need to actively enhance their sensitivity to adapt to their changed daily routines. In such cases, guidance or tools may be necessary to assist them in improving their sensitivity.

Therefore, engaging in sensory exploration and sensory play can greatly assist visually impaired individuals in improving their finger sensitivity. Sensory play encompasses activities that stimulate our senses of touch, sight, hearing, scent, and taste (Ying & Zhagan, 2021). Although sensory play is often employed with children to facilitate their comprehension of cause and effect within their surroundings, its advantages extend to individuals of all age groups. Sensory play encompasses a diverse range of activities, such as engaging in arts and crafts, interacting with sensory toys, participating in outdoor play, and more. Its adaptable nature allows for its application in various contexts and for people of different ages to reap its benefits. Tactile sensory play, also known as touch-based play, presents a vast array of games and activities to engage in, such as sensory bins with rainbow rice, mud kitchens, oatmeal sensory bins, kinetic sand, and more. Participating in these activities offers a multitude of benefits. Tactile sensory play fosters brain development, improves memory, assists with complex tasks and problem-solving, and facilitates the development of motor skills (Patel et al., 2022). Furthermore, as sensory perception improves, the challenges related to communication and social skills become less daunting. Interestingly, sensory play also nurtures creativity and encourages independent thinking, all while providing a soothing effect on emotions (Yang & Wang, 2017). Consequently, this active learning approach promotes flexibility and participation among visually impaired individuals, allowing them to acquire information independently through experiential engagement in the learning process. Furthermore, the use of interactive technologies facilitates differentiated instruction, which enhances their motivation to learn Braille (Halamy et al., 2022; Mahmud et al., 2023).

Hence, conducting a finger sensitivity test is crucial to evaluate the enhancement of tactile sensitivity. Various tools have been previously devised for this purpose, including reflex hammers, tuning forks, and the two-point discrimination (TPD) test. The TPD test is widely employed as a neurosensory assessment in clinical settings. It involves assessing the ability to discriminate the distance between two points of contact, essentially determining the perception of two separate stimuli. This method serves as a means to gauge the recognition capability of tactile touch and determine if an individual can differentiate between two closely spaced stimulation points (Kaco et al., 2021; Lin & Rugama, 2015). This technique has been employed to evaluate the recognition capability of tactile touch with two stimulation points (Dane et al., 2017; Lin & Rugama, 2015; Zimney et al., 2020). Hence, this skill holds significant importance for individuals who are new to learning braille as it enables them to accurately perceive and differentiate braille dots.

Ergo, the primary aim of this study was to explore the effectiveness of utilizing sensory play through a module consisting of game-based activities to enhance finger sensitivity. To accomplish this, a sensory-based activity module was developed, specifically designed to guide individuals, particularly those who are visually impaired and beginners to Braille learning, in improving their finger sensitivity. The participants' finger sensitivity was evaluated using a two-point discriminator at different test points and finger types, measuring improvements throughout the implementation of the module, and assessing the module's effectiveness upon its completion. The findings contribute to the body of knowledge on tactile-based educational interventions and offer valuable insights for educators, therapists, and professionals working with visually impaired individuals, enabling them to design more effective sensory learning activities that cater to the unique needs of their students or clients. Furthermore, by improving finger sensitivity, the study promotes greater accessibility and inclusivity in education, enhancing Braille learning and empowering visually impaired individuals with better literacy and communication abilities. This, in turn, supports their integration into society, fostering independence and improving their overall quality of life.

2. METHODOLOGY

2.1 Research Design

The research employed a quasi-experimental design to explore the effectiveness of a sensory-based activity module in enhancing finger sensitivity among visually impaired individuals, particularly beginners in Braille learning. This design was selected to facilitate the assessment of participants' finger sensitivity before and after the implementation of the sensory play activities, allowing for a comparative analysis of the module's impact. The quasi-experimental approach is particularly suitable for educational interventions where random assignment is impractical.

2.2 Development of Sensory Play Activity Module

A sensory play activity module was created with the goal of assessing and enhancing finger sensitivity, particularly for individuals who are visually impaired due to either congenital blindness or sudden vision loss. This module utilizes tactile activities and integrates various skills, including communication, leadership, teamwork, and creativity to achieve the learning outcomes a) increase finger sensitivity, b) recognize the texture of the materials used and c) increase hand’s strength as shown in Figure 1. The goal was to modify the activity to assess the sensitivity of fingers and enhance the finger sensitivity of individuals with visual impairment. The aim was to facilitate their learning of Braille for reading purposes and improve several skills as shown in Figure 1.

Therefore, a series of activities were organized, with each activity station offering a unique game that utilized different materials, such as sand, rice, fingerpaint, and playdough with different mission. Every prepared activity was centred around a tactile experience that is appropriate for enhancing finger sensitivity as shown in Figure 2. Hence, to gauge the impact and reflection of the module, an assessment model was used upon completion including game assessment for each game station, overall evaluation of module and perception of module among the participants to achieve the learning objectives of the modules. The analysis on finger sensitivity was also included in the module where finger test using two-point discriminator (TPD) was carried out before and after each game station.

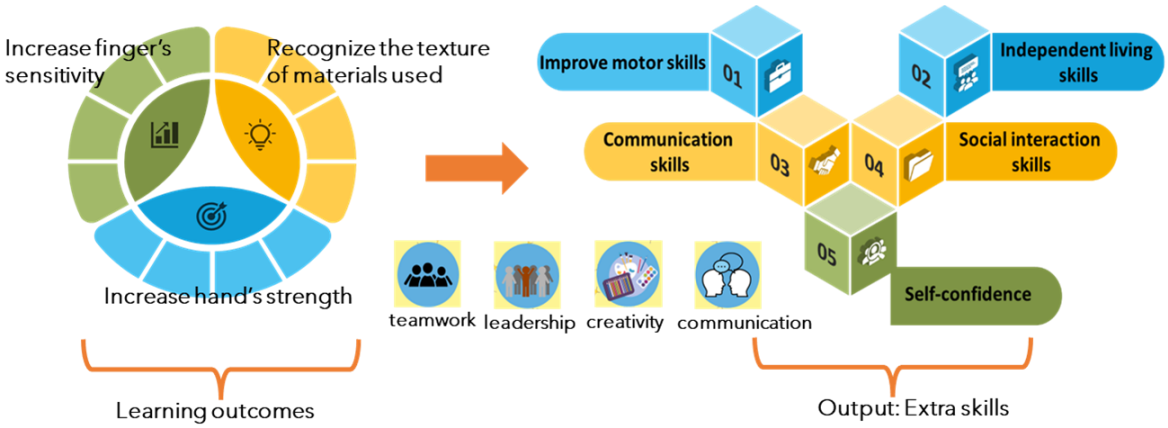


Figure 1: Learning outcomes and extra skills developed from activity module

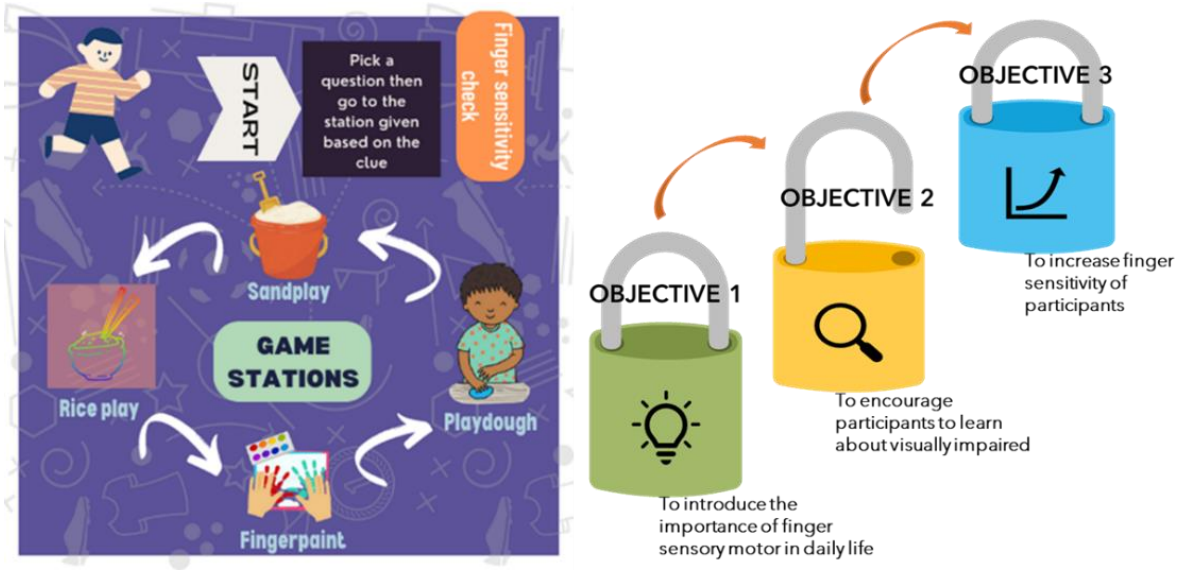


Figure 2: Game stations developed to achieve learning objectives.

2.3 Implementation of Sensory Play Activity Module

2.3.1 Sampling and module execution

A purposive sampling method was utilized to select participants for this study. Seventeen participants (10 females and 7 males) between the ages of 14 and 15 were chosen to represent a demographic likely to benefit from improved finger sensitivity due to their involvement in Braille learning class. To simulate the experience of being visually impaired, the participants performed the module with their eyes closed during finger sensitivity test. During the implementation, each game station process and concepts behind the activity were delivered by the instructor and at the conclusion of the program activity, a survey was administered to evaluate its efficacy.

2.3.2 Tactile sensitivity test

The tactile sensitivity was evaluated through the implementation of a tactile sensitivity test using the baseline two-point discriminator (TPD) as a tool. The test was conducted by placing

the two tips of the device on the test site, with the stimulus intensity adjusted to a level that the subject could perceive as consistent touching or movement without experiencing any discomfort or pain. The TPD test began with an initial distance of 10 mm, which was gradually reduced to 5, 4, 3, and 2 mm. If the subject was unable to perceive the initial distance accurately, a longer distance was employed as the initial distance. A threshold was established using a descending stimulus magnitude, and an intermittent point was introduced during the descending series to prevent the subject from anticipating a continuous decrease in the distance between the two points. If the subject responded correctly to the changes, the distance between the points decreased in 1 mm intervals. This process continued until the subject answered incorrectly, at which point the experimenter returned to the next longer distance, indicating the endpoint of the TPD test (Won et al., 2017; Dane et al., 2017). The subjects had three choices for their responses: "one" if they felt a single point, "two" if they perceived two distinct points, or "I can't discriminate one or two" if they couldn't differentiate between one or two points. Any response outside these options was considered incorrect.

Throughout the implementation of sensory play module, an instructor conducted a finger test on all participants before and after each activity. an instructor conducted a finger test on all participants before and after each activity. The test was carried out in a separate room, kept at room temperature to minimize the influence of temperature on finger sensitivity, as investigated by Won et al. (2017). The subjects were comfortably seated in parallel with the instructor, and care was taken to ensure that there were no obstacles present that could interfere with the test. Throughout the test, the subjects were instructed to keep their eyes closed.

2.4 Assessment and Analysis of Impact of Module Implementation

2.4.1 Satisfaction Survey

After administering a set of questionnaires for sensory play module execution, both qualitative and quantitative analyses were conducted. These analyses were based on criteria that included participant information, activity effectiveness, program effectiveness, and suggestions for improvement. Participants responded to the questions using a Likert scale, and the highest percentage of responses for each question was used to draw inferences and identify relationships between the items. The outcomes of the analysis can help the instructor to enhance the functionality of sensory play module and improve finger sensitivity. In addition, the instructor's evaluation was also included in the analysis to examine participant engagement and performance across each game station, using both qualitative and quantitative methods.

2.4.2 Interview

To anticipate potential inquiries that could provide insightful responses, interviews were conducted with a group of selected participants who shared similar demographics and characteristics at the conclusion of the sensory play module implementation. These interview sessions were recorded and subsequently transcribed.

3. RESULTS AND DISCUSSION

3.1 Insight into Sensory Play Activity Module

The module consists of four (4) game stations prepared for all participants. Each participant must test for their finger sensitivity level before stated each game to investigate the effect of the prepared game on their level of finger sensitivity. This module activity selects sand, paint, playdough and rice as the main item for improving finger sensory. Finger painting is one of the

activities that can train fine motor skills in students because finger painting activities focus on students' hand movements to paint colours on paper freely (Kurniawati et al.2018; Sawitri et al. 2019). Meanwhile, playdough is a sensory play that is especially important for social connection and interpretation surrounding among people who are beginner to improve their finger and hand sensory (Jameel et al., 2019; Majumdar, 2020).

At the sand play station, the materials needed are tray and three different types of sand. Each participant is instructed to search for a hidden treasure that contains three distinct types of sand. The participants are free to use their sand to creatively design and decorate any shape they desire. Meanwhile, at the fingerpaint game station, the instructor will assess teamwork skills through a riddle. the materials needed are drawing sheets and paint colours. Participants will work together in groups to answer the riddle given by the instructor, and the answer must be presented in the form of finger paint using different paint colours. At the playdough station, three types of materials will be provided, namely clay, playdough foam, and playdough. The instructor will select a shape that must be created using the given materials. In the rice play station, three types of rice will be used: basmati rice, white rice, and ponni rice, each with a different texture. The rice will be mixed with vinegar in a ziplock bag, and participants will use their creativity to draw on the rice within a frame. Instructions for each game stations were summarized in Figure 3(a), 3(b), 3(c) and 3(d), respectively.

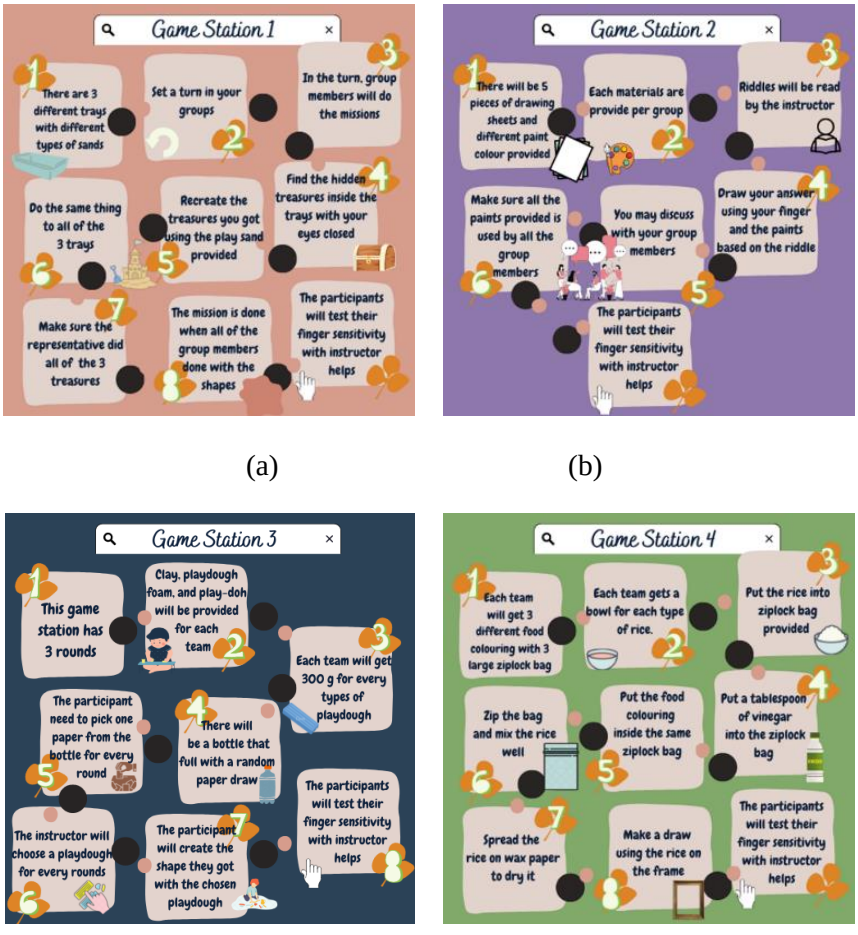
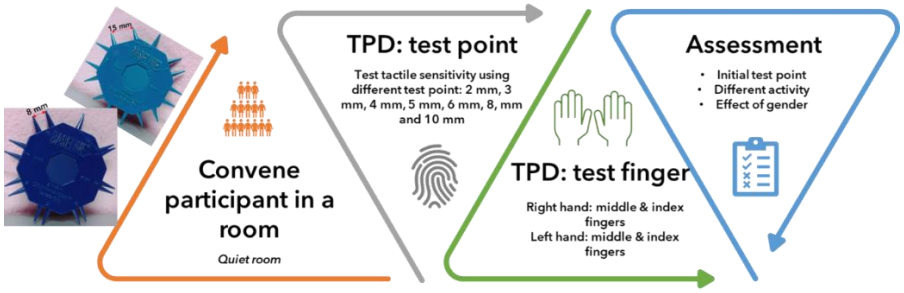


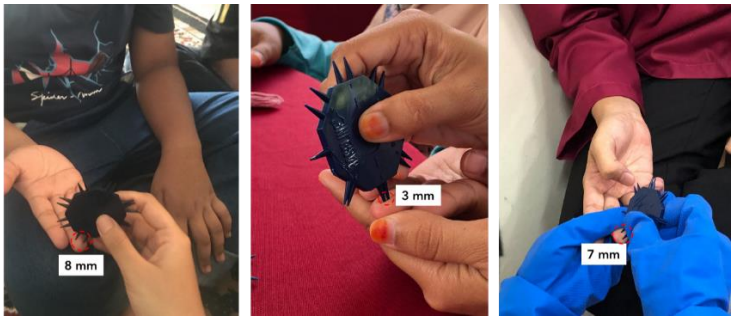
Figure 3: Game instruction for (a) sand play (b) fingerpaint, (c) playdough and (d) rice play in sensory play module

3.2 Tactile Test Implementation

As depicted in Figure 4(a), the TPD consists of two compass points with a maximum distance of 20 mm and a minimum distance of 2 mm. A larger distance between the two adjacent points indicates reduced finger sensitivity. TPD test was implemented towards participants before and after each activity performed. Figure 4(a), the flow process depicts how the test was conducted with the participants' eyes closed. Following each activity, the participants were assembled in a room, and the test was conducted separately for their four different fingers: the index and middle fingers of both the left and right hand, respectively. On the other hand, Figure 4(b) illustrates the test being performed at various test points.



(a)



(b)

Figure 4: Tactile implementation (a) using TPD and its flow and (b) various test point tested using tactile test.

3.3 Finger Sensitivity Test Results

Figure. 5(a), 5(b), 5(c) and 5(d) displays the initial percentage (before sensory play) and the corresponding percentage (after sensory play) of finger sensitivity in the right middle finger (RMF), right index finger (RIF), left middle finger (LMF) and left index finger (LIF) among the participants prior to implementing the sensory play module, respectively. In the context of the finger sensitivity test, a higher test point indicates decreased sensitivity, while a lower test point suggests heightened sensitivity. The data shows a clear rise in the percentage of finger sensitivity at test points 2 and 3 across all test fingers. This finding suggests that as the test points get closer, finger sensitivity increases, indicating an improved ability to perceive the distance between two points. In contrast, the percentage allocation of test points 4 and 5 decreased, with the values being reassigned to the enhanced test points 2 and 3.

Remarkably, participants observed an overall rise in sensitivity in their right middle finger subsequent to engaging with the sensory play activity module. Test point 4 experienced a complete reduction of 100%, while test point 5 exhibited a decrease of 79.9%. In contrast, test points 2 and 3 demonstrated significant increases of 67% and 83.43%, respectively. Similarly, participants' right index finger sensitivity improved after the sensory play activity module. Test

points 4 and 5 decreased by 49.8% and 100%, respectively. Conversely, test point 3 displayed an increase of 60.2.4%. Moving to the left middle finger of the participants, the data indicates a substantial enhancement in finger sensitivity. Test point 2 and test point 3 increased by 25.1% and 71.4%, respectively, while test points 4 and 5 decreased by 100%. Lastly, the sensitivity of the participants' left index finger increased following the sensory play activity module. Test point 2 demonstrated a significant increase of 298.3%, in contrast to test point 4, which experienced a decrease of 298.3%.

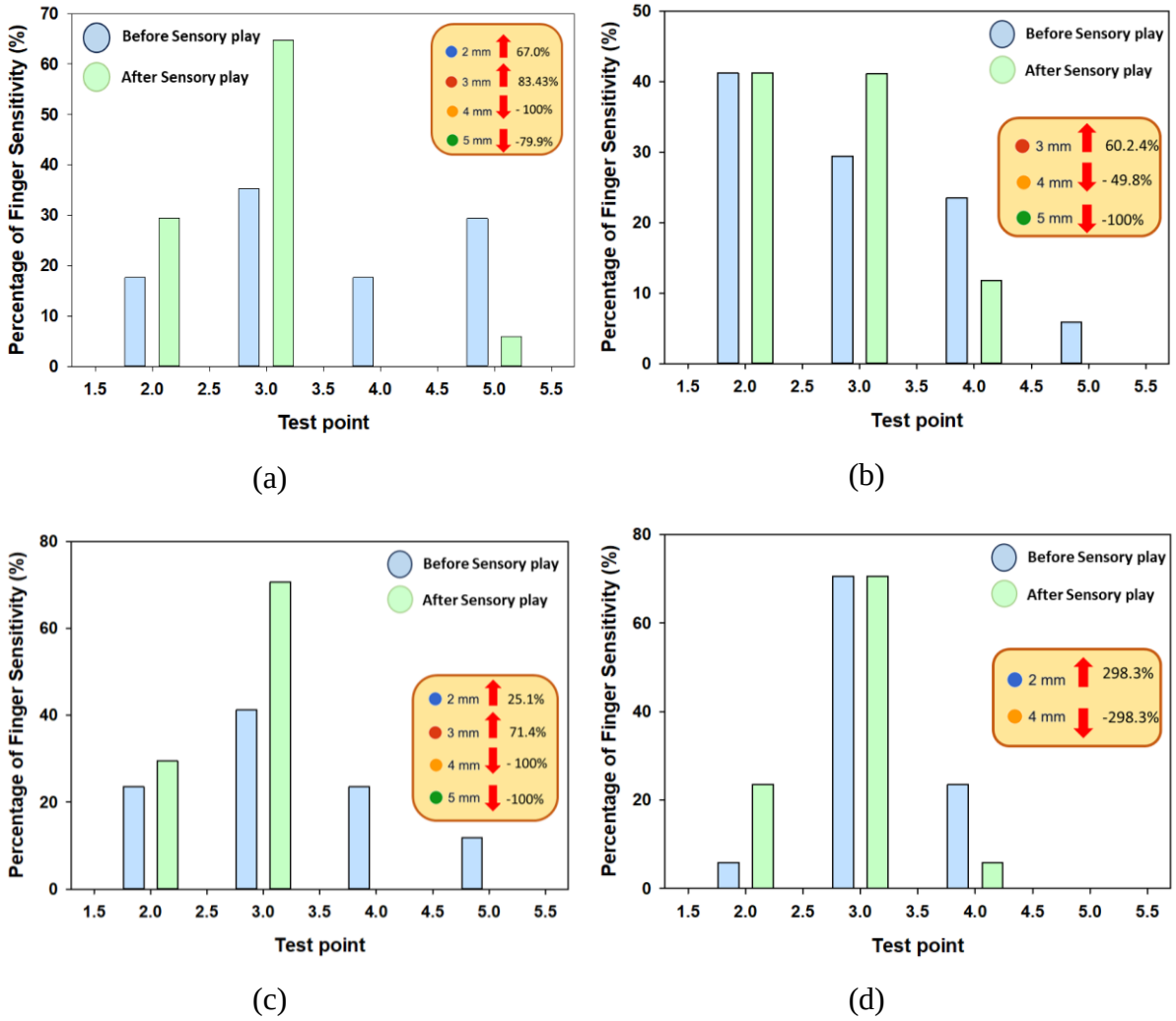
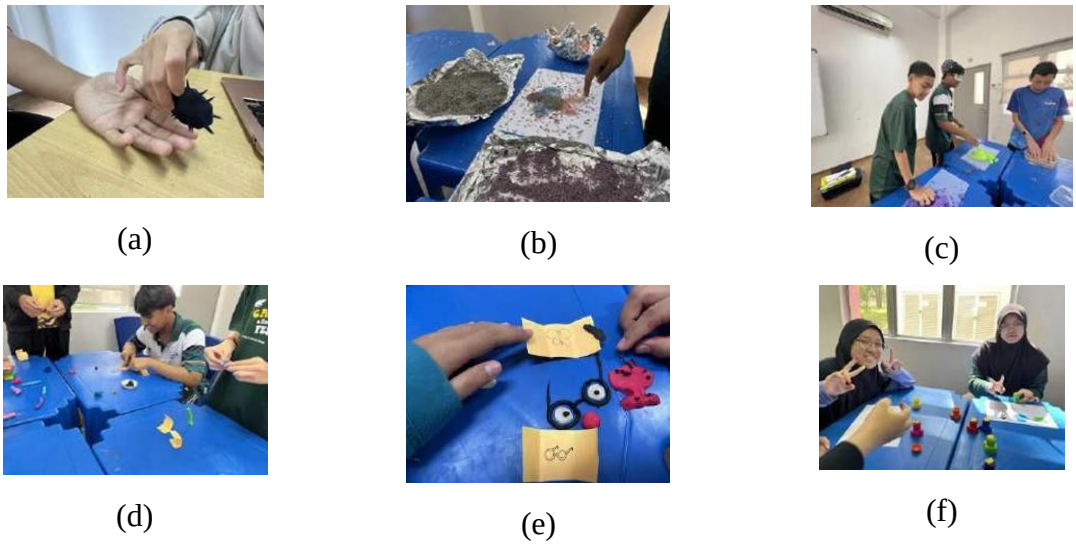


Figure 5: Percentage of finger sensitivity before applying sensory play activities for (a) Right middle finger, (b) Right index finger, (c) Left middle finger and (d) Left index finger at different test point.

3.4 Implementation of Sensory Play

Figure 6 (a) to Figure 6(f) illustrates the execution of sensory activities across four game stations, along with the finger sensitivity test conducted before and after the activities. All participants were able to comprehend and successfully complete each activity through active participation. Additionally, a significant majority of 82% found the instructions provided to be highly accessible and easy to comprehend. These findings highlight the effectiveness of the sensory program in engaging participants and facilitating improved finger sensitivity (Manzano-Leon et al., 2021).



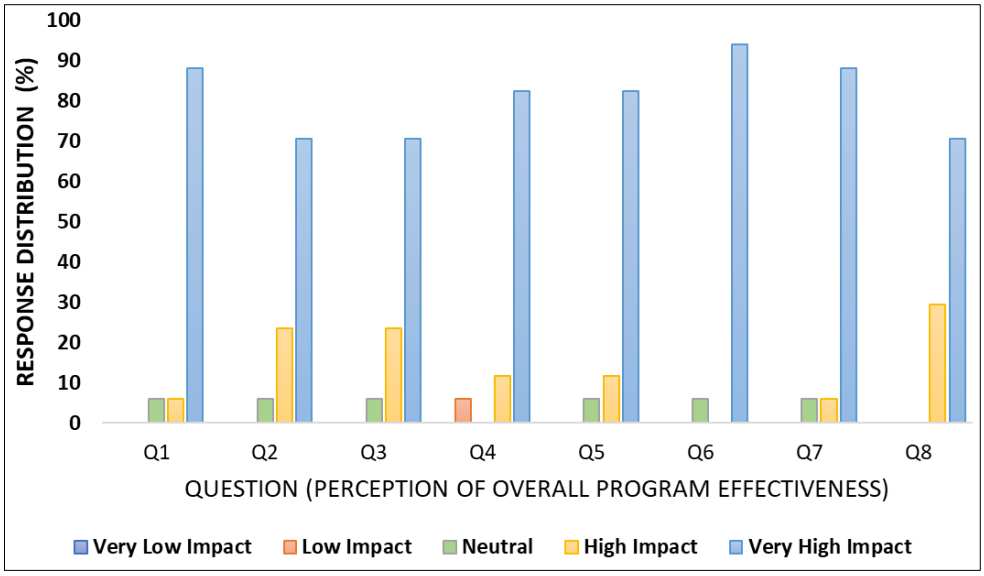
(a) (b) (c)

(d) (e) (f)

Figure 6: Implementation of sensory play activities

3.5 Impact of Sensory Play on Tactile Sensitivity

In Figure 7, the influence of sensory play module on the program's overall effectiveness is demonstrated. Additionally, Figure 7 also displays the questions posed to the participants, revealing that their responses consistently indicated a significant impact across all aspects. More specifically, in question Q6, the majority of participants, with a percentage of 94.12%, selected the "Very High Impact" rating on the scale. During the feedback, participants expressed their belief that this program has the potential to enhance community awareness regarding individuals with visual impairments. Furthermore, the participants demonstrated a high level of satisfaction with the activities, with 88.24% of them selecting the "Very High Impact" rating on the scale. In Q5, a significant proportion of participants, specifically 82.35%, indicated a "Very High Impact" rating on the scale, expressing their belief that this program can effectively enhance finger sensitivity for visually impaired individuals. These findings align with the results of the tactile tests, which demonstrated a measurable improvement in finger sensitivity after implementing sensory play module. Therefore, the successful implementation of sensory play module has not only had a significant impact on the participants but has also demonstrated notable improvements in finger sensitivity due to their ability to stimulate sensory receptors, integrate sensory inputs, promote active participation and exploration, provide sensory feedback, and leverage the brain's neuroplasticity. These factors collectively contribute to improving tactile sensitivity and the participant's ability to interpret and respond to tactile stimuli (Majumdar, 2020).



Q1: I'm satisfied with the activities prepared in Module.
Q2: I hope that this program can be done again in the future.
Q3: I learn something new through this program.
Q4: I'm interested to join this program.
Q5: I think that this program can be used to help visually impaired people to improve their finger sensitivity.
Q6: This program can improve awareness among community on visually impaired people.
Q7: This program has the potential to serve as an alternative approach to teaching.
Q8: Engaging in these activities offers several benefits within the community.

Figure 7: Likert scale distribution percentage on overall program effectiveness

3.6 Interview

Interviews were conducted to evaluate the effectiveness of the program which aimed aimed to gather insights and feedback from participants regarding the program's impact and outcomes. The interviews revealed positive feedback regarding the program's impact on the participants' knowledge, skills, and overall well-being. Participants reported that their finger sensitivity has increased when playing sensory game specifically for visually impaired people. They also highlighted that all games were interesting to them where they able to improve their confidence and communications skills. The findings indicate that the program effectively promotes empowerment and the application of acquired knowledge in real-life scenarios.

4. CONCLUSION

In conclusion, the establishment of sensory play module has introduced an exceptional learning approach through sensory play, effectively addressing the challenges faced by individuals with visual impairments. The development of sensory play module, comprising four sensory play activities, has proven successful. By incorporating the finger sensitivity test, the implementation of sensory play module has yielded positive outcomes. Notably, it has significantly enhanced tactile sensitivity among the participants, offering a novel and impactful learning experience. This approach serves as an alternative method to support individuals who have recently experienced vision loss by improving their finger sensitivity, which plays a

pivotal role in their ability to read braille and actively engage in their daily activities. Overall, sensory play module marks a significant milestone in empowering visually impaired individuals and fostering their educational and functional independence.

ACKNOWLEDGEMENT

The author thanks Kolej PERMATA Insan students for their support in the Sensory Play project and acknowledges funding from Universiti Sains Islam Malaysia (PPPI/KGI/0119/051000/16019) and Universiti Kebangsaan Malaysia (KK-2024-008) for completing the study.

AUTHORS' CONTRIBUTION

NNI and KIBKA developed and implemented the module. FMI, NMN, and SMM contributed to the conceptualization and methodology. MSS refined the data analysis and secured funding. HK contributed to the conceptualization, data analysis, and secured funding.

CONFLICT OF INTEREST

None declared

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ESTEEM Journal of Social Sciences and Humanities
Vol. 8, Special Issue, October 2024
https://ejssh.uitm.edu.my

Cashless Civilization, e-Wallets, and Acceptance: Evidence from Low-Income Group in West Malaysia

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ABSTRACT

ARTICLE HISTORY

Received:
12 August 2024
Accepted:
30 September 2024
Published:
11 October 2024

KEYWORDS

Cashless
Fintech
e-Wallet
Low-income
Technology Acceptance Model

The emergence of e-wallets is expected to align with the worldwide shift towards cashless payment solutions in a post-pandemic era characterized by flourishing digital payments and e-commerce transactions. Cashless payments made with e-wallets have additional benefits over traditional payment methods, which encourage consumers to use the technology more frequently. However, despite their rapid development, e-wallets are still not widely accepted by consumers in Malaysia, and their poor (global) diffusion rates run counter to the claimed benefits provided by technology. The objective of this study is to examine the determinants that affect the level of acceptance of electronic wallets among low-income populations in West Malaysia, who play a vital role in facilitating the transition to a society that relies less on cash transactions. The study utilized a theoretical framework that incorporated an expanded version of the Technology Acceptance Model Theory (TAM). This framework included two extra factors, trust and social influence, to investigate their influence on the acceptability of electronic wallets. Data were gathered via an online self-administered survey from 265 low-income earners in West Malaysia. Eligible respondents reported prior experience with e-wallets and a monthly household income of less than RM4,850. Data analysis was conducted using Partial Least Squares Equation Structural Modelling (PLS-SEM). The findings indicate that the concepts of perceived ease of use and trust have a significant impact on the acceptability of e-wallets. However, it is noteworthy that the social influence factor does not seem to have a substantial impact. This implies that e-wallet users may have reservations about the ease of use and effectiveness of e-wallets and may be not ready to accept until they provide a smooth user experience. The study provides significant data that can motivate both e-wallet providers and regulators to enhance the quality of e-wallet services. This study acknowledges its limitations and recommends that future research efforts consider the recommendations made to deepen our understanding of this field.

e-ISSN 2600-7274

1. INTRODUCTION

Technology is always improving and developing. As the revolution occurred, technological innovation revolutionized business. Financial technology, or fintech as it has been known, is attracting a lot of attention because to its unprecedented ability to transform communities and economies. Fintech will make it easier for ordinary citizens to access financial goods while also promoting country economic development. The rise of fintech in Malaysia, such as online banking and electronic payments, has contributed to an increase in Malaysia's technology productivity. For the year 2022, there are 294 Fintech companies in Malaysia including e-wallets, payments, marketplace, proptech, insurtech, Islamic fintech, KYC/regtech, blockchain/cryptocurrency, artificial intelligence data, wealthtech, lending, crowdfunding, and remittance (Fintech News Malaysia, 2022). According to Fintech News Malaysia (Fintech News Malaysia, 2022), the country would have 43 electronic wallets, with the industry accounting for 19% of the country's fintech sector.

In Malaysia, mobile wallets and digital payment are the most popular Fintech apps (Bakri et al., 2023). The e-wallet was chosen since it was one of the most popular fintech payment methods in the country (Alwi et al., 2019). Aside from the resemblance to an actual wallet, an electronic wallet has additional features and benefits such as location awareness, nearly infinite storage, and easy searching of contents. This feature enhances its significance as a viable alternative to the traditional physical wallet. The elimination of business cards and paper receipts, as well as the ability to streamline or eliminate trips, all have environmental benefit. The concept of an e-wallet has aroused the curiosity of many Malaysians due to the substantial impact on the payment system, country's business model, and financial markets (Abdull Rahman et al., 2022). E-wallets are popular among other digital alternatives because of their capacity to accept payments from everywhere (Tikku & Singh, 2023). Furthermore, a cashless civilisation is one in which real cash is no longer the primary or preferred platform of exchange for products and services. The growing use of digital payment systems has drawn significant attention to the transformation to a cashless society. It is projected that Malaysia, including the lower-income group, will have a cashless society by 2050 (Kadar et al., 2019). The widespread use of e-wallets is a critical component of a cashless society.

Malaysia, like most other nations, aims to become a cashless society by 2050 and a regional leader in the digital economy by 2025; however, public acceptance is low, making the goal difficult to achieve. In Malaysia, the use of e-wallets among low-income earners remains low. According to Trotman (2021), only 55 per cent of lower-income families (B40) are the least likely to use e-wallets, followed by the high-earning families (T20) with 67 per cent, and households with a typical average monthly income of RM7,001 to RM10,000 are the most likely to use e-wallets with a 73 per cent adoption rate. Malaysians are divided into three income groups based on their household income: bottom (B40-low income), medium (M40-average income), and top (T20-high income) (Department of Statistics Malaysia, 2021). One reason is that high-income users (T20 and M40) can afford high-quality products purchased online using an e-wallet, and this unequal access to technology leads to varying degrees of anxiety among users, with low-income users experiencing the highest levels of anxiety (Kasirye & Masum, 2021). The lack of acceptance of digital technology is not due to a lack of interest on the part of these low-income groups, but rather to the fact that the revenue earned is just sufficient for survival owing to poverty (J. N. Lee et al., 2021). As a result, more research is needed to identify areas where the country lags, particularly in the e-wallet field, to grasp the significance of a cashless society in the country. Understanding the causes and challenges to adoption will assist all providers in the e-wallet ecosystem in improving service and developing long-term strategy

(Kamis et al., 2023). In this review, the researchers attempt to answer the research question as follow:

RQ: What are the relationships between Perceived Ease-of-Use, Social Influence, Trust and e-Wallet Acceptance among West Malaysian low-income (B40) group?

2. LITERATURE REVIEW

2.1 e-Wallet and Acceptance

Prior to the acceptance, e-wallets enable the safe storage of bank card details on a mobile device. This stored information can be used for a range of activities, including money transfers, bill payments, and shopping. Electronic wallets have been one of the most prevalent and innovative services introduced since 2017 (AlKubaisi & Naser, 2020). The e-wallet is anticipated to replace conventional cash spending in the current era of IR 4.0, making it the primary mode of payment in this digital century (Wamba et al., 2021). The popularity of e-wallets has been steadily increasing, garnering significant public attention due to their security, practicality, and ease in facilitating payments (AlKubaisi & Naser, 2020) particularly during the pandemic to mitigate viral transmission (Ismail et al., 2022). E-wallets are expecting to be most significant medium of payment, and they are suited for a wide range of businesses. They offer a diverse range of payment options to help users access related services regardless of time and from any place (Alshurideh et al., 2021). Governments, researchers, international agencies, and banks are progressively prioritizing the financial services requirements of low-income individuals in developing nations (Ky et al., 2021).

Users' acceptance cannot be established only based on their assertion that the technology is being utilised for an unforeseen purpose by customers. Instead, consumers' approval must be substantiated through the tangible utilisation of the technology (Alwi et al., 2019). Since the mid-nineteenth century, acceptance has been a major academic topic. Acceptance research has been valuable in examining the efficacy or lack thereof of novel products and services. Individual expectations and attitudes have been proven to affect consumer acceptance of technology (Alwi et al., 2019)(Alwi et al., 2019). With respect to this study, acceptance is an essential factor in the new technologies development and determination of financial instruments for making payments (Ariffin et al., 2020). The number of service recipients is increasing daily as they accept and embrace electronic wallets as an alternative way to pay electronically at a location of their choosing, at a time of their choosing, without having to visit the point of sale physically (Dennehy & Sammon, 2015). Interestingly, the level of acceptance of the people is very crucial as it is one of the challenges in applying all advances in digital technology (Soodan & Rana, 2020). Checking the reactions of customers' acceptance and e-wallets usage is a key topic for researchers due to the importance of e-wallets usage globally (AlKubaisi & Naser, 2020; Li et al., 2019; Soomro, 2019; Tran Le Na & Hien, 2021). In addition to the numerous benefits that attract users to e-wallets, it is crucial to prioritize the level of technological reliability to develop trust in the services provided. This factor significantly impacts consumer confidence in the product's usability. The degree of trustworthiness and reliability of a product will undoubtedly impact the frequency with which individuals utilize the service (Alshurideh et al., 2021; Hariguna et al., 2020; Lisana, 2021).

2.2 Technology Acceptance Model (TAM) Theory

The TAM is the very influential technology acceptance model that has been extensively validated in demonstrating the intention to use the new technology for individual (Davis, 1989). TAM has become so well-known that it has been mentioned in most of the research on user acceptance of technology (Y. Lee et al., 2003; Nugroho et al., 2023). The TAM was developed by Fred Davis in 1989 (Davis et al., 1989) as part of his doctoral proposal, as depicted in Fig. 1. The researchers employed the TAM as the foundational theory for this study to establish the theoretical framework. TAM theory, inclusive and validate several specific beliefs: PU, PEOU, ATT, and BI in the framework (Davis, 1989). However another researchers provide the insignificant relationship of perceived usefulness with technology acceptance (Aditia et al., 2018; Qi et al., 2021; Setiawan et al., 2018). A study by Singh et al. (2020) has excluded PU in the study of mobile wallet in India. Similarly to this, Elvi (2021) has used only PEOU, while Priyatna & Novalia (2023) has excluded PU and adopted PEOU in the study of digital learning adoption. Thus, based on earlier research, this adaption of the TAM dissected the perceived usefulness by adding perceived ease of use, trust, and social influence. All these variables will be covered in the next section.

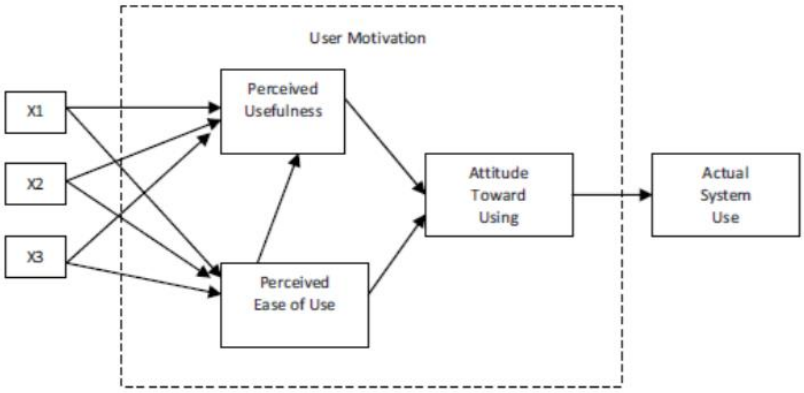

Figure 1: Original TAM [(Davis et al., 1989)]

2.3 Perceived Ease of Use (PEOU) and e-Wallet Acceptance

Perceived ease of use refers to an individual's belief on the level of difficulty in using a particular system would require minimal effort (Davis, 1989). PEOU is a subject of continuing study in technology adoption research. When discussing third-party mobile payment, the concept of ease of use refers to the way customers engage with third-party mobile payment systems, which includes convenient payment stages, clear functionalities, and a user-friendly interface (Pal et al., 2020). Research studies by Lisana (2021) and Yang et al. (2021) that employ the TAM have found that the perception of ease of use has a significant positive impact on the adoption of mobile wallets in Indonesia, as well as the intention to use e-wallets in Malaysia (Mew & Millan, 2021). Comparable findings applying the TAM were observed in Bahrain (AlKubaisi & Naser, 2020), China (Li et al., 2019; Pal et al., 2020), Jordan (Al-Dmour et al., 2021), and Cameroon (Wamba et al., 2021).Therefore, according to the above shreds of evidence, the below hypothesis is constructed:

H1: Perceived Ease of Use has a positive relationship with e-Wallet Acceptance.

2.4 Trust (TR) and e-Wallet Acceptance

Trust can be specified as the consumer's positive anticipation of the service provider which concluded that trust is comprised of three beliefs: ability, integrity, and benevolence (Al-Dmour et al., 2021). In the realm of electronic finance, consumers face heightened risks due to the unpredictable nature of the environment and a feeling of diminished control. Therefore, it is particularly crucial to prioritize safety measures (Patil et al., 2020). Some of these researches discovered trust to be the positive significant factor of behavioural intention, outperforming previously known dominating technological adoption criteria like perceived usefulness (Mew & Millan, 2021; Ooi & Tan, 2016). A study by Hariguna et al. (2020) proven the two-fundamental types of trust which are economic and service trust have a positive significant effect on the customer intention towards the application of mobile money. Yang et al. (2021) indicated that both intents to use and adoption of e-wallets were positively impacted. Additionally, Pal et al. (2020) showed that TR had a significant influence on mobile payment usage. Thus, the hypotheses as follows:

H2: Trust has a positive relationship with e-Wallet Acceptance.

2.5 Social Influence (SI) and e-Wallet Acceptance

Social influence pertains to the transformation of an individual's behaviour in response to the reactions of others towards that behaviour (S. Singh & Srivastava, 2020). In studies on the adoption of financial mobile applications, SI has been found to have a positive correlation with the intention to use e-wallets (Abdullah et al., 2020; Soodan & Rana, 2020; Yang et al., 2021). S. Singh & Srivastava (2020) have demonstrated that SI is a key predictor of the behavioural intention to use mobile banking applications and mobile money (Koomson et al., 2021; Odoom & Kosiba, 2020), m-payment system (Al-Saedi et al., 2020; Ariffin et al., 2020), and electronic money payment (Widayat et al., 2020). Although it can generate emotional and logical viewpoints among customers in developing nations, social influence becomes critical in boosting customers' intentions to use e-wallets (Yang et al., 2021). Therefore, the study postulate:

H3: Social Influence has a positive relationship with e-Wallet Acceptance.

Consequently, considering the above explanation, multiple variables have been gathered. The study utilises perceived ease of use (PEOU), trust (TR), and social influence (SI) as independent variables, while e-wallet acceptance (eWA) serves as the dependent variable. Fig. 2 depicts the research framework that is being proposed for this investigation.

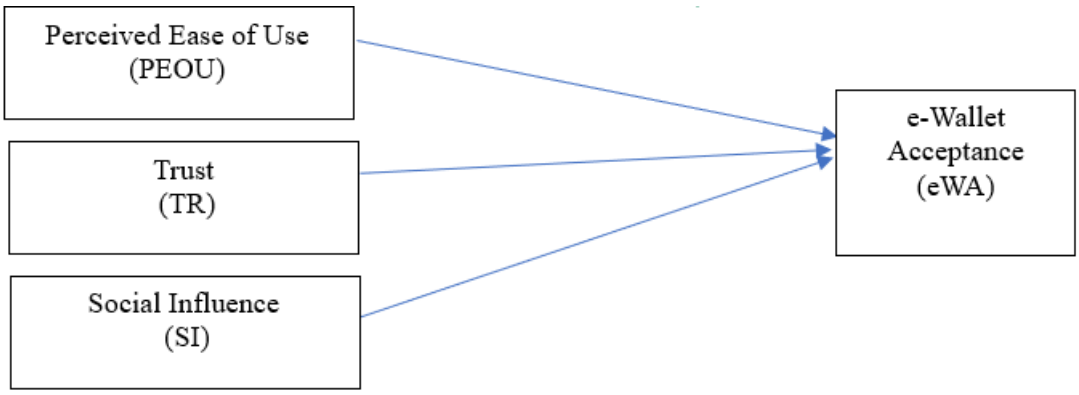

Figure 2: Research Framework

3. METHODOLOGY

The researchers have emphasized that this study investigates the e-wallet acceptance among Malaysian low-income groups (B40). The researchers employed non-probability sampling as there was no available list of potential respondents for this study. Stratified random sampling was selected due to the disproportionate demographic features being studied, which necessitated dividing the population into distinct groups. Rowley (2014) states that social science research commonly relies on non-probability samples due to the lack of a clear understanding of the population and ambiguous limits for inclusion or exclusion. The current evidence strongly suggests that the study group consists of low-income earners from West Malaysia who have previous experience using e-wallets. With the mentioned criteria, therefore the targeted respondent will be West Malaysian who earned monthly household income below RM4,850 and have experience in using the e-wallet. The set of questionnaires has been distributed based on region and divided into four regions in West Malaysia: Northern, Central, Southern, and East Coast Region. For the first level, at least one state represents each region. Secondly, the samples have been divided into a gender which is male and female. The survey was available from November to December and was closed on 20 December 2022 when the target of respondents was reached. A total of 342 replies were received, however, only 265 (77.5% response rate) valid responses remained after 77 respondents were eliminated from the list for failing to meet the criteria set to qualify as respondents. The constructions section of the questionnaire utilized a 5-point Likert-scale to examine respondents' level of agreement with the topics presented. A total of 265 surveys were evaluated using the Statistical Package of Social Science (SPSS) version 28 and Smart Partial Least Squares 4.0 (SmartPLS).

4. RESULT AND DISCUSSION

The data of the study were analysed using SPSS 28 and SmartPLS 4. The data was inputted into SPSS and a descriptive analysis of the respondents' backgrounds was performed. The data was analysed using SmartPLS 4. Table 1 displays the demographic characteristics of the study respondents.

Table 1: Respondent Profile (n = 265)

Demographic Profile	Frequency (*n* = 265)	Valid (%)
Gender		
• Male	103	38.9
• Female	162	61.1
Age		
• Below 20 years old	2	0.8
• 20 – 29 years old	107	40.4
• 30 – 39 years old	92	34.7
• 40- 49 years old	51	19.2
• 50 – 59 years old	10	3.8
• 60 years and above	3	1.1
Race		
• Malay	238	89.8
• Chinese	15	5.7
• India	11	4.2
• Other	1	0.4
Religion		
• Islam	239	90.2

• Buddha	8	3.0
• Hindu	9	3.4
• Christian	8	3.0
• Other	1	0.4
Education level		
• High School	25	9.4
• Diploma	50	18.9
• Bachelor's degree	182	68.7
• Other	8	3.0
Employment Sector		
• Government	75	28.3
• Private	105	39.6
• Own-employed	25	9.4
• Business	9	3.4
• Students	48	18.1
• Other	3	1.1
Residing State		
• Northern (Perlis, Kedah, Pulau Pinang, Perak)	54	20.4
• Central (Wilayah Persekutuan Kuala Lumpur, Wilayah Persekutuan Putrajaya, Selangor)	74	27.9
• Southern (Negeri Sembilan, Melaka, Johor)	86	32.5
• East Coast (Pahang, Terengganu, Kelantan)	51	19.2
Preferred e-wallet (most often used)		
• Touch n Go	117	44.2
• Boost	6	2.3
• Big PAY	2	0.8
• MAE (Maybank)	70	26.4
• GrabPay	14	5.3
• Merchant Pay	4	1.5
• Fave Pay	4	1.5
• ShopeePay	46	17.4
• Other	2	0.8
Frequency used per month		
• Very often (more than 5 transactions per month)	100	37.7
• Often (1 to 4 transactions per month)	75	28.3
• Occasionally (at least one per month)	90	34.0
Reload amount per month		
• RM10 – RM30	67	25.3
• RM31 – RM100	118	44.5
• RM101 and above	80	30.2
Transaction spent per month		
• Toll payment	61	23.0
• Food & beverages	114	43.0
• Groceries	27	10.2
• Remittance	5	1.9
• e-bill payments	43	16.2
• Other	15	5.7

Source: Developed by the researchers for the current study

4.1 Reflective Measurement Model

4.1.1 Indicator Loadings, Composite Reliability (CR) and Average Variance Extracted (AVE)

To evaluate a reflective measurement model, Hair et al. (2019) proposed the utilisation of factor loading score, composite reliability (CR), and average variance extracted (AVEs). Based on the findings of Hair et al. (2019), it is suggested that the recommended loadings should be higher than 0.708 and the CR values should be at least 0.7. These values show that the construct explains more than 5 percent of the indicator's variance, which indicates adequate item reliability. Based on the results in Table 2, it can be observed that most of the loadings exceed 0.708. Although this number is considered acceptable, it indicates that the construct has acquired adequate convergent validity (Byrne, 2016). Further, all the CR are all greater than 0.7.

Further, the test for determining how closely many items is measured using the convergent validity. The average variance explained is the final convergent validity metric (AVE). A construct's ability to capture variance from observable variables or indications are directly proportional to the amount produced by measurement error is referred to as the absolute variance exponent, or AVE (Roldán & Sánchez-Franco, 2012). It shows how much of the deviations may be accounted for by the construct's items. The AVE for each item employed in a given build must be more than 0.5 (Hair et al., 2019). The AVEs are all greater than 0.5 as shown in Table 2. The researchers can therefore draw the conclusion that all measurement model constructs were trustworthy and valid.

Table 2: Results for Loadings, Composite Reliability (CR) and Average Variance Extracted (AVE)

Construct	Items	Loadings	CR	AVE
Perceived Ease of Use	PEOU1	0.876	0.936	0.794
	PEOU2	0.885		
	PEOU4	0.887		
	PEOU5	0.891		
	PEOU6	0.971		
Trust	TR1	0.885	0.959	0.772
	TR2	0.898		
	TR3	0.726		
	TR4	0.931		
	TR5	0.868		
	TR6	0.926		
	TR7	0.890		
	TR8	0.886		
Social Influence	SI1	0.780	0.918	0.706
	SI2	0.812		
	SI3	0.868		
	SI4	0.896		
	SI6	0.804		
	SI7	0.873		
e-Wallet Acceptance	eWA1	0.805	0.917	0.668
	eWA2	0.813		
	eWA3	0.669		
	eWA4	0.862		
	eWA5	0.878		
	eWA6	0.858		

Source: Developed by the researchers for the current study

4.1.2 Discriminant Validity

The HTMT criterion, initially introduced by Henseler et al. (2015) and subsequently refined by Franke & Sarstedt (2019), was employed to assess the discriminant validity. The most lenient standard requires that the HTMT values should be at least 0.90, whereas the more stringent standard requires a minimum value of 0.85. The researchers can deduce that the respondents acknowledged the distinctiveness of the 9 notions as all the HTMT values in Table 3 were below the more stringent threshold of 0.85. These two validity assessments have confirmed the reliability as well as the validity of the measurement items.

Table 3; Discriminant Validity

	PEOU	TR	SI	eWA
PEOU				
TR	0.600			
SI	0.569	0.475		
eWA	0.692	0.649	0.562	

Source: Developed by the researchers for the current study

4.2 Structural Model

Before evaluating structural relationships, it is essential to examine collinearity to prevent any potential distortion of the regression outcomes. As such, based on the result, this study do not has any collinearity issue as the VIF values (see in Table 6) are close to 3 and below (Hair et al., 2019). Since collinearity is not an issue, the next step is to assess the R2 value of the endogenous construct(s). The value of R2 ranges from 0 to 1, where higher values indicate greater explanatory power. Henseler et al. (2015) and Hair et al. (2019) have said that R2 values of 0.75, 0.50, and 0.25 are categorised as substantial, moderate, and weak, respectively. As such, to access the model's explanatory power, the researchers looked at how the three predictors affected eWA, the R^2 value was 0.566 (Q^2 = 0.507), indicating that all three predictors together accounted for 56.6% of the variance in eWA. The R^2 of 0.566 for eWA indicates that the exogenous construct namely, PEOU, TR, and SI explain 56.6% of the variance in eWA. The findings were compiled in Table 4 which gives the results for R^2 and the explanatory power for this relationship, which is moderate.

Table 4: Results for R^2 and Explanatory Power

	R-square	R-square adjusted	Explanatory Power (Hair et al. 2019)
eWA	0.576	0.566	Moderate

Source: Developed by the researchers for the current study

In step 3, the researcher evaluated the model's ability to make accurate predictions using PLSpredict, as recommended by Shmueli et al. (2019). The authors Shmueli et al. (2019) introduced a methodology called PLS predict, which uses a holdout sample and generates predictions at the case level on an item or construct level. This strategy utilizes the PLS-Predict method and a 10-fold procedure to test the predictive relevance. According to **Table 5**, the PLS model's errors were consistently lower than those of the LM model. This indicates that the model possesses a high degree of predictive capability.

Table 5: Results for PLS Predict

Construct	Q^2 predict			
eWA	0.507			
Item	PLS-SEM_RMSE	LM_RMSE	PLS-LM	Result
eWA1	0.885	0.969	-0.084	Majority
eWA2	0.989	1.034	-0.045	
eWA3	1.147	1.188	-0.041	
eWA4	0.775	0.858	-0.083	
eWA5	0.830	0.960	-0.13	
eWA6	0.683	0.736	-0.053	

Source: Developed by the researchers for the current study

Table 6 presents the path coefficient (β), t-values, p-values, and f2 for each hypothesis that was constructed. The study found that there was a positive relationship between perceived ease-of-use ($\beta = 0.172$, $p < 0.01$), trust ($\beta = 0.250$, $p<0.01$), and social influence ($\beta = 0.077$, $p>0.01$). Therefore, H1 and H2 were supported. The coefficient ($\beta = 0.172$, $t = 3.025$) for H1 suggests that there is a positive relationship between the perceived ease-of-use and e-wallet acceptance. The regression coefficient (β) for H2 is 0.250, with a t-value of 2.293. This signifies that there is a positive relationship between trust and e-wallet acceptance. While H3 was not supported. The researchers only reported the effect size (f^2) for the supported hypothesis, where all the two hypotheses (PEOU=0.027, TR=0.045) have a small effect size respectively. While Table 7 provides a concise overview of the assessment of hypotheses.

Table 6: Hypothesis Testing Result

Hypothesis	Relationship	Std Beta (β)	Std Error	t-values	p-values	BCI LL	BCI UL	f^2	VIF
H1	PEOU → eWA	0.172	0.057	3.025	0.001	0.079	0.265	0.027	2.554
H2	TR → eWA	0.250	0.109	2.293	0.011	0.077	0.434	0.045	3.262
H3	SI → eWA	0.077	0.062	1.246	0.106	-0.036	0.168	-	1.695

Table 7: Summary of Hypothesis Testing Result

Hypothesis	**Description**	**Result**
H1	Perceived Ease-of-Use has a positive relationship with e-Wallet Acceptance.	Supported
H2	Trust has a positive relationship with e-Wallet Acceptance.	Supported
H3	Social Influence has a positive relationship with e-Wallet Acceptance.	Not Supported

Source: Developed by the researchers for the current study

5. IMPLICATIONS AND LIMITATIONS OF STUDY

Three hypotheses were presented and subsequently tested with 2 of them being supported and one not supported (see Table 7).

For the first proposed hypothesis (H1) is supported between Perceived Ease of Use and e-Wallet Acceptance suggesting that perceived-ease-of-use has a positive relationship with e-wallet acceptance. This finding demonstrates that a low-income user with high perceived-ease-of-use possesses positive influences on e-wallet acceptance. This corroborates other TAM studies in Malaysia pertaining to the inclination to utilise e-wallets [31]. Similar observations have been made used TAM theory in Indonesia (Lisana, 2021; Nugroho et al., 2023; Yang et al., 2021), Bahrain (AlKubaisi & Naser, 2020), China (Li et al., 2019; Pal et al., 2020), Jordan (Al-Dmour et al., 2021), and Cameroon (Wamba et al., 2021); all of the studies discovered a significant

and positive relationship between perceived ease-of-use and e-wallet acceptance. Next, for the hypothesis (H2) is significant for the relationship between Trust and e-Wallet Acceptance, providing evidence that trust significantly contributes in embracing customers' interest for accepting electronic wallet services. The finding exhibits that a low-income user with high trust possesses positive influences on e-wallet acceptance. This result is in line with Al-Dmour et al. (2021, Alshurideh et al. (2021), Pal et al. (2020) and Yang et al. (2021), who all found a significant and positive relationship between trust and electronic payment usage. However, for the proposed hypothesis (H3) is not significant between Social Influence and e-Wallet Acceptance. Even this finding not consistent with other studies (Abdullah et al., 2020; Al-Saedi et al., 2020; Ariffin et al., 2020) but it substantiate with Soomro (2019). Further, the millennials prefer smartphones to do all transactions and social activities without being influenced by social factors (Tikku & Singh, 2023).

This study's conclusions have significant implications for practice. First, the study highlights consequences for e-wallet service providers and marketers to influence the e-wallet acceptance amongst low-income groups as the results show that PEOU, and TR influence eWA. The findings will help service providers and marketers identify the factors that lead to e-wallets acceptance. Hence, e-wallet marketers and providers should prioritise the development of a user-friendly interface, effort free system, trustworthy, and reliable e-wallets. Second, this study contributes to the policy and management perspective by examining determinants that influence the e-wallet acceptance, thus the goal of becoming a cashless nation can be achieved. The extensive implementation of digital payment methods has created several prospects for the underprivileged and financially excluded individuals in Malaysia to engage in economic activities. The application of appropriate mechanisms at the right time, the government can overcome the shortcomings of the market and facilitate the use of technology to fulfil its public good responsibilities efficiently and effectively.

6. CONCLUSION

This study provides valuable insights that can motivate both e-wallet regulators and providers to improve the quality of e-wallet services, create a memorable user experience, and strengthen consumer brand reputation and loyalty. Additionally, by placing a significant emphasis on acceptance (with e-wallet experience), he objective of this research is to redirect the attention of academic researchers and practitioners from studying the intention to use e-wallets (without prior experience) to studying the acceptance of e-wallets based on experience. The goal is to identify the key variables that influence the adoption of e-wallets.

While the outcomes of this study are advantageous, it is crucial to acknowledge and navigate the limitations that indicate areas for development in future investigations. The study's scope is restricted to the study specifically for e-wallet acceptance within West Malaysia's low-income group. Thus, it can be inferred that the findings can only be comprehended through the perspective of the low-income demographic. It is still to be ascertained whether the findings can be applied to other types of digital payment systems and cannot be extrapolated to the low-income people in Malaysia, as the data does not include the population in East Malaysia (Sabah, Sarawak, Labuan). Nevertheless, it is presumed that these constraints do not lessen the importance of the study's findings, but instead guide future research by emphasizing and endorsing further enhancements in this field. It is imperative to acknowledge that the low-income group in other countries may differ from the population studied. Thus, the results of this study may only apply to the specific context of Malaysia and may not accurately represent the low-income group in other countries. Consequently, replicating and expanding this study to

different circumstances is necessary.

ACKNOWLEDGEMENT

This research was funded by the Ministry of Higher Education Malaysia through Fundamental Research Grant Scheme (FRGS), grant number FRGS/1/2022/SS01/UITM/02/16.

AUTHORS' CONTRIBUTION

RK conducted the introductory and literature review components. RK, SI, and NHAR gathered and processed the data. RK conducted the data analysis utilizing Partial Least Squares Structural Equation Modelling (PLS-SEM). RK contributed to the data methodology section, as well as the discussion and deductive reasoning sections. The final manuscript was reviewed and approved by all the authors.

CONFLICT OF INTEREST

None declared.

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ESTEEM Journal of Social Sciences and Humanities
Vol. 8, Special Issue, October 2024
https://ejssh.uitm.edu.my

Investigating The Relationship Between Language Learning Strategies Used by Undergraduates in Malaysia

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ABSTRACT

ARTICLE HISTORY

Received:
12 August 2024
Accepted:
30 September 2024
Published:
11 October 2024

KEYWORDS

Learning strategies
Language learning strategies
Cognitive
Metacognitive
Resource management

Learning strategies play significant roles in language learning. The strategies can assist learners in acquiring the language thus leading to academic excellence. At the same time, it can also hinder the language learning process. Realising the importance of learning strategies, this study aims to investigate the learning strategies used by language learners. A quantitative survey was administered via online questionnaire to 263 undergraduate students. The questionnaire consisted of four sections namely demographic profile, cognitive strategies, metacognitive strategies, and resource management strategies. The findings show that learners utilised all three domains for learning strategies. Pedagogically, the findings could help both learners and instructors understand the language learning strategies better. Consequently, a better teaching and learning process could be achieved by referring to the three main domains used by learners for their learning strategies.

e-ISSN 2600-7274

1. INTRODUCTION

1.1 Background of the Study

Learning strategies encompass methodologies designed to facilitate the learning process (Chien, 2010), aiding individuals in acquiring knowledge and executing tasks effectively and efficiently. Typically, these strategies are purposeful and directed towards specific goals (Chamot, 2005), often categorised into cognitive, metacognitive, and resource management components. Examples of common learning strategies include rehearsal, self-regulation, and critical thinking.

In the language acquisition process, learning strategies are essential for helping learners acquire new languages. Adan and Hashim (2021) underscored the diverse array of learning strategies employed by language learners, enabling them to autonomously control, monitor, and plan their language learning journey. Consequently, these strategies empower learners to effectively acquire language proficiency.

English holds the status of a second language in Malaysia, necessitating learners to acquire proficiency in it. Despite its importance, learners face numerous challenges in acquiring English proficiency (Rahim & Zuaraimi, 2022; Aziz & Kashinathan, 2021). This has prompted extensive research endeavours to address the obstacles faced by learners. One proposed solution is the understanding and utilisation of learning strategies in language learning.

In the Malaysian context, numerous studies have investigated the learning strategies used by language learners, especially concerning English language acquisition. Research findings indicate that Malaysian students employ various strategies in language learning, such as guessing, reliance on contextual cues (Magasvaran et al., 2022), and strategic planning (Othman et al., 2022). Given the profound impact of learning strategies on language acquisition and the significance of English proficiency among Malaysian learners, investigating the specific learning strategies utilized by Malaysian learners holds considerable importance.

1.2 Statement of Problem

Wenden and Rubin (1987) introduced three broad categories of language strategies namely cognitive, metacognitive, and resource management. Cognitive strategies involve mental processes, while metacognitive strategies entail the emotional and self-regulatory aspects of learning. Resource management strategies, on the other hand, involve utilizing available resources in the learning environment.

Literature indicates that learners employ various strategies in language acquisition, which can either facilitate or impede the learning process (Rahmat, 2018). Therefore, investigating learners' language learning strategies could offer insights into the common approaches utilised in language acquisition.

Despite the many strategies employed, a certain percentage of Malaysian students still fail to learn a language effectively especially when it comes to the English language. Yaccob and Yunus (2019), reported that Malaysian secondary school students still could not achieve satisfactory levels although many learning strategies have been applied. In addition, a systematic literature review conducted by Aziz and Kashinathan (2021) also revealed similar findings where it was highlighted that Malaysian students are having difficulties in language learning especially in speaking. Both Yaccob and Yunus (2019) and Aziz and Kashinathan

(2021) highlight persistent challenges Malaysian students face, especially in speaking. While various strategies, such as collaborative learning and authentic materials, have been employed, their effectiveness remains uncertain.

Based on the aforementioned studies, it is evident that Malaysian learners utilise diverse language learning strategies, some yielding positive outcomes while others may be less effective. Hence, there is a need for further research to explore and understand the language learning strategies preferred by Malaysian learners, particularly within their specific contexts and individual characteristics, as emphasised by Seng et al. (2023). Thus, this study would enrich the existing literature on language learning strategies.

2. RESEARCH OBJECTIVE AND RESEARCH QUESTIONS

The objective of this study is to investigate the language learning strategies used by undergraduates in Malaysia. Three research questions were formulated to achieve the research objectives. The three research questions are:

1. What are learners' perceptions regarding the use of cognitive components in language learning strategy?

2. What are learners' perceptions regarding the use of metacognitive components in language learning strategy?

3. What are learners' perceptions regarding the use of resource management in language learning strategy?

4. Is there a relationship between all language learning strategies?

2.1 Language Learning Strategies

Generally, learning strategies are viewed as processes aimed at acquiring, organising, or transforming information (Alexander et al., 1998). These strategies have been proven pivotal for successful academic endeavours and optimising the learning process. Hence, learners must recognise the most effective learning strategies for themselves. Similarly, these strategies are equally important for teachers to ensure that the teaching process is effective.

The same condition can be observed in the domain of language learning as learners employ several strategies in acquiring the targeted language. Following a well-defined concept of learning strategies by Wenden and Rubin (1987), language learning strategies typically encompass cognitive, metacognitive, and resource management components.

Cognitive strategies enhance students' ability to process information deeply, facilitating its transfer and application to novel contexts, thereby fostering improved retention and comprehension (Winn et al., 2019). Sub-strategies within this domain include repetition, translation, grouping, deduction, contextualization, and transfer (O’Malley & Chamot, 1990 as cited by Mohammadi et al., 2015).

On the other hand, the metacognitive component pertains to knowledge about one's cognitive processes (Rivas et al., 2022). Employing metacognitive strategies, such as directing, monitoring, regulating, organizing, and planning, enhances learning quality by increasing students' awareness of their cognitive processes, thereby facilitating self-regulation. Identifying effective strategies enables learners to transfer their efficacy to various aspects of their lives.

Resource management constitutes a critical facet of successful academic learning. Commonly utilized strategies encompass time management, study environment optimization, effort management, peer learning, and seeking assistance from qualified individuals such as peers or instructors (Ahmed and Khanam, 2014). These strategies empower students with active control over their learning environment and processes.

Together, cognitive, metacognitive, and resource management strategies create a comprehensive approach to language learning. While cognitive strategies help in the direct engagement with the content, metacognitive strategies offer guidance for self-regulation in learning, and resource management strategies ensure that learners have the necessary support and materials. By integrating these strategies, learners can enhance their proficiency and achieve their language learning goals effectively. But, as cautioned by Rahmat (2018), the learning strategies could also hinder learning among learners. Thus, it can be concluded that learning strategies have significant impacts towards learning.

2.2 Past Studies on Language Learning Strategies

Learning strategies serve as indispensable tools employed by learners across diverse domains to facilitate the acquisition of knowledge and skills, particularly in the context of language learning. Numerous studies have been conducted to explore the language learning strategies employed by language learners from various backgrounds. Additionally, the relationship between these strategies is also investigated to get a deeper understanding of this issue. The studies have contributed valuable insights into the utilisation of learning strategies among language learners.

Ahamad Shah et al. (2013) explored the language learning strategies among undergraduate students in a Malaysian university. A total of 312 learners were involved in this study where they provided data via the Strategy Inventory for Language Learning (SILL). The study revealed that learners used different types of language learning strategies. The most prominent strategy used by learners was social strategy followed by compensation and cognitive strategies. The findings also revealed that learners from different backgrounds employed different language learning strategies. This might be due to the different demands and needs of the learners.

Anggarista and Wahyuddin (2022) examine the language learning strategies employed by English as a Foreign Language (EFL) students and their relationship with English proficiency. Using a quantitative approach, the study found that learners used several language learning strategies namely metacognitive cognitive, compensation, memory, affective, and social learning strategies. In addition, the research unveiled the prominent usage of metacognitive strategy among learners, which includes practices such as attentional focus, study planning, and goal setting. It was also found that there was a significant correlation between the use of language learning strategies and students' English proficiency.

In another study by Zaini et al. (2023), the relationship between language learning strategies and their impact on learners was investigated. A total of 129 respondents provided the data for this study via an online questionnaire. The existence of learning strategies was evident and predominantly, learners utilised metacognitive strategy for language learning. It was also revealed that metacognitive learning strategies positively impact learning outcomes by enabling learners to monitor, adjust, and set goals, thereby enhancing their overall study effectiveness.

The studies highlight the significance of language learning strategies among learners. It can be seen that learners employed several learning strategies in learning languages. As mentioned by Ahamad Shah et al. (2013), the strategies employed depend on the needs of the learners. Thus, it can be suggested that different learners utilise different language learning strategies. Additionally, the studies also revealed that the strategies are related to each other where generally, one strategy impacts the other positively.

2.3 Conceptual Framework

The conceptual framework of this study is derived from the work of Wenden and Rubin (1987). The existence of three learning strategies was investigated and later the relationship between all language learning strategies was explored. Figure 1 illustrates the conceptual framework of this study.

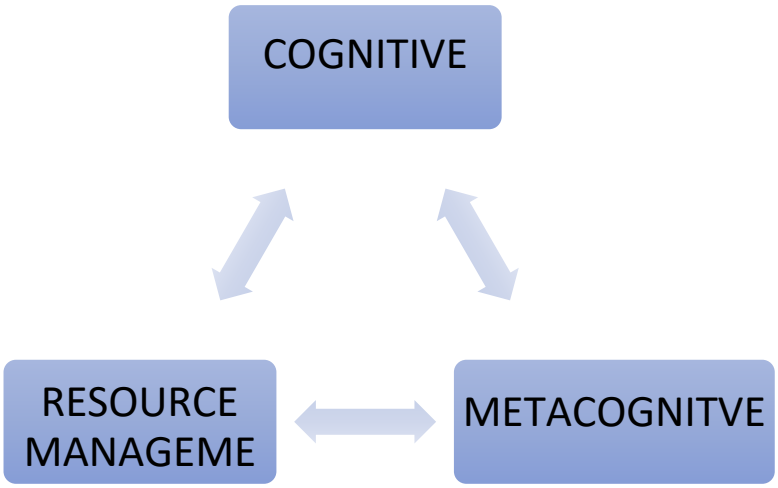

Figure 1: Conceptual Framework of the Study

3. METHODOLOGY

This study employed a quantitative approach in investigating the language learning strategies as well as their relationships. As such, a 5 Likert-scale survey was developed by adapting data from past studies. Firstly, the three learning strategies proposed by Wenden and Rubin (1987) were used as the basis of the survey. Later, the items for each learning strategy were adapted from past studies such as from Wenden and Rubin (1987) and Zaini et al. (2023).

The survey was divided into two sections namely Demographic Profile and Language Learning Strategy. The Demographic Profile section consisted of only 2 items. The purpose of this section was to get brief background information on the respondents. Next, the Language Learning Strategy Section was further refined into three sections: Section A (Cognitive), Section B (Metacognitive), and Section C (Resource Management). Altogether there were 41 items where 19 items were in Section A, 11 items in Section B, and 11 items in Section C.

Table 1 illustrates the reliability of the survey. The analysis shows Section A obtains a score of 0.966 for Cronbach Alpha, Cronbach Alpha of 0.941 for Section B, and Section C scores a Cronbach Alpha of 0.918. These findings reveal a good reliability of the instrument used for this study. Data collected using the survey were then analysed using SPSS to calculate the mean

as well as the relationship between all learning strategies. The findings were then tabulated and discussed.

In collecting the data, a purposive sampling method was employed. Purposive sampling was used to align the sample with the research's aims and objectives, hence enhancing the study's reliability of its data and results (Campbell et al., 2020). The survey was distributed to respondents via an online survey platform. A period of 2 weeks was allocated to collect the data for this study. A total of 263 participants responded to the survey. All respondents were undergraduates from Malaysian tertiary education institutions. Most researchers consider the minimum acceptable sample size for a correlational study to be at least 30. Data obtained from a sample smaller than this may provide an inaccurate estimate of the relationship's degree (Fraenkel & Wallen, 2009: 335). Hence, the data collected for this study was deemed sufficient.

Table 1: Distribution of Items in the Survey

	Strategy (Wenden and Rubin (1987)		Sub-Strategy			Cronbach Alpha
A	Cognitive Components	(a)	Rehearsal	4	19	.966
		(b)	Organization	4		
		(c)	Elaboration	6		
		(d)	Critical Thinking	5		
B	Metacognitive Self-Regulation				11	.941
C	Resource Management	(a)	Environment Management	5	11	.918
		(b)	Effort Management	4		
		(c)	Help-Seeking	2		
			TOTAL		41	.979

4. FINDINGS

4.1 Demographic profile

Table 2 depicts the demographic profile of the respondents. The data reveals a distribution of 43% of males and 57% of females who responded to the questionnaire. As for the discipline, almost half of the respondents, 52% are in social science, while 48% of the respondents are in Science and Technology.

Table 2: Percentage for Demographic Profile

Q1	Gender	Male 43%	Female 57%
Q2	Discipline	Science & Technology 48%	Social Science 52%

4.2 Cognitive Components

This section presents data and findings to answer research question 1- How do learners perceive the use of cognitive components in language learning? Table 3 presents the mean score for rehearsal. Based on the findings, the highest mean is 3.7 for the item ‘I memorise keywords to remind me of important concepts in this class and the lowest mean is 3.3 for the item ‘When I study for the classes, I practice saying the material to myself over and over’. Based on the mean score, it can be suggested that the practice of saying the materials by themselves is not

frequently applied as a learning strategy. Overall, it can be implied that rehearsing is used by learners as a learning strategy.

Table 3: Mean for rehearsal

Item	Mean
LSCCRQ1 When I study for the classes, I practice saying the material to myself over and over.	3.3
LSCCRQ2 When studying for the courses, I read my class notes and the course readings over and over again.	3.4
LSCCRQ3 I memorise keywords to remind me of important concepts in this class.	3.7
LSCCRQ4 I make lists of important items for the courses and memorize the lists.	3.6

Table 4 depicts the mean score for the organization. Based on the 4 questions given in the questionnaire, the highest mean is 3.5 for the items 'When I study for the courses, I go through the readings and my class notes and try to find the most important ideas' and 'When I study for the courses, I go over my class notes and make an outline of the important concepts'. These mean scores imply that taking notes and making an outline out of the notes are practised as strategies among the learners. The item 'I make simple charts, diagrams, or tables to help organise course materials in this program' has the lowest score of 3.2.

Table 4: Mean for Organization

Item	Mean
LSCCOQ1 When I study the readings for the courses in the program, I outline the material to help me organize my thoughts.	3.4
LSCCOQ2 When I study for the courses, I go through the readings and my class notes and try to find the most important ideas.	3.5
LSCCOQ3 I make simple charts, diagrams, or tables to help me organize course materials in this program.	3.2
LSCCOQ4 When I study for the courses, I go over my class notes and make an outline of important concepts.	3.5

Table 5 shows the mean score for elaboration. As for the elaboration learning strategy, all 6 items score somewhat more or less the same as one another. The item 'When reading for the courses, I try to relate the material to what I already know' has the highest mean score (3.5) while the item 'When I study for the courses in this program, I pull together information from different sources, such as lectures, readings, and discussions', 'I try to relate ideas in one subject to those in other courses whenever possible', 'When I study for the courses in the program, I write brief summaries of the main ideas from the readings and my class notes' and 'I try to apply ideas from course readings in other class activities such as lecture and discussion' with the mean score of 3.3.

Table 5: Mean for Elaboration

Item	Mean
LSCCEQ1 When I study for the courses in this program, I pull together information from different sources, such as lectures, readings, and discussions.	3.3
LSCCEQ2 I try to relate ideas in one subject to those in other courses whenever possible	3.3
LSCCEQ3 When reading for the courses, I try to relate the material to what I already know.	3.5

LSCCEQ4 When I study for the courses in this program, I write brief summaries of the main ideas from the readings and my class notes.	3.3
LSCCEQ5 I try to understand the material in the classes by making connections between the readings and the concepts from the lectures.	3.4
LSCCEQ6 I try to apply ideas from course readings in other class activities such as lecture and discussion.	3.3

Lastly, Table 6 shows the mean score for critical thinking. The item 'I try to play around with ideas of my own related to what I am learning in the courses' has the highest mean score of 3.4. The lowest mean score recorded is 3.2 for the item 'When a theory, interpretation, or conclusion is presented in classes or the readings, I try to decide if there is good supporting evidence'.

Table 6: Mean for Critical Thinking

Item	Mean
LSCCCTQ1 I often find myself questioning things I hear or read in the courses to decide if I find them convincing.	3.3
LSCCCTQ2 When a theory, interpretation, or conclusion is presented in classes or in the readings, I try to decide if there is good supporting evidence.	3.2
LSCCCTQ3 I treat the course materials as a starting point and try to develop my own ideas about it.	3.3
LSCCCTQ4 I try to play around with ideas of my own related to what I am learning in the courses.	3.4
LSCCCTQ5 Whenever I read or hear an assertion or conclusion in the classes, I think about possible alternatives.	3.3

4.3 Metacognitive Components

This section presents data to answer research question 2- How do learners perceive the use of metacognitive components in language learning? Table 7 depicts the mean for metacognitive self-regulation. There are 11 items presented to respondents, with just a minor variance in the mean score. Among all these questions, the item "When I become confused about something I am reading for the classes, I go back and try to figure it out" and "I ask myself questions to make sure I understand the material I have been studying in this program" share the highest mean score (3.4). It demonstrates that the respondents have given their best effort in grasping what they learn. The lowest mean score (3.0) is recorded for the item "During class time, I often miss important points because I am thinking of other things".

Table 7: Mean for Metacognitive Self-Regulation

ITEM	MEAN
MSSRQ1 During class time, I often miss important points because I am thinking of other things.	3.0
MSSRQ2 When reading for the courses, I make up questions to help focus my reading.	3.1
MSSRQ3 When I become confused about something I am reading for the classes, I go back and try to figure it out.	3.4
MSSRQ4 If course readings are difficult to understand, I change the way I read the material.	3.3
MSSRQ5 Before I study new course material thoroughly, I often skim it to see how it is organized	3.1
MSSRQ6 I ask myself questions to make sure I understand the material I have been studying in this program.	3.4
MSSRQ7 I try to change the way I study in order to fit any course requirements and the instructors' teaching style.	3.3

MSSRQ8 I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for the courses in this program.	3.2
MSSRQ9 When studying for the courses in this program I try to determine which concepts I do not understand well.	3.3
MSSRQ10 When I study for the courses, I set goals for myself in order to direct my activities in each study period.	3.3
MSSRQ11 If I get confused taking notes in classes, I make sure I sort it out afterwards.	3.3

4.4 Resource Management Components

This section presents data to answer research question 3- How do learners perceive the use of resource management in language learning? Table 8 shows the mean score for environment management. The item "I attend the classes regularly in this program" scored the highest mean score (3.8) indicating that classes of the course would be the main learning environment for students to learn the language. As for the other items, they share the same mean score with an average of 3.4.

Table 8: Mean for Environment Management

Item	Mean
RMCEMQ1 I usually study in a place where I can concentrate on my course work.	3.5
RMCEMQ2 I make good use of my study time for the courses in this program.	3.4
RMCEMQ3 I have a regular place set aside for studying	3.4
RMCEMQ4 I make sure that I keep up with the weekly readings and assignments for the courses.	3.4
RMCEMQ5 I attend the classes regularly in this program.	3.8

Table 9: Mean for Effort Management

Item	Mean
RMCEMQ1 I have a regular place set aside for studying	3.3
RMCEMQ2 I work hard to do well in the classes in this program even if I do not like what we are doing.	3.5
RMCEMQ3 When course work is difficult, I either give up or only study the easy parts.	3.0
RMCEMQ4 Even when course materials are dull and uninteresting, I manage to keep working until I finish.	3.6

Table 9 shows the mean score for Effort Management. The highest mean score is 3.6 for the item "Even when course materials are dull and uninteresting, I manage to keep working until I finish". The lowest mean score (3.0) is recorded for the item "When course work is difficult, I either give up or only study the easy parts". This shows that the respondents will still give their best effort in their studies even when they must face difficult situations in their learning process.

Lastly, Table 10 shows the mean score for Help-Seeking. Both items scored the same mean score of 3.7. This shows that help-seeking is commonly practised among the respondents when they face difficulties in their learning.

Table 10: Mean for Help-Seeking

Item	Mean

RMCHSQ1 When I cannot understand the material in a course, I ask another student in the class for help.	3.7
RMCHSQ2 I try to identify students in the classes whom I can ask for help if necessary.	3.7

4.5 Relationship between all Strategies

To determine if there is a significant association in the mean scores between metacognitive, effort regulation, cognitive, social and affective strategies data is analysed using SPSS for correlations. Results are presented separately in Tables 11,12, and 13 below.

Table 11 shows there is an association between cognitive and metacognitive strategies. Correlation analysis shows that there is a highly significant association between cognitive and metacognitive strategies (r=.881**) and (p=.000). According to Jackson (2015), the coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. A weak positive correlation would be in the range of 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between cognitive and metacognitive strategies.

Table 11:

Correlations

		COGNITIVE	METACOGNITIVE
COGNITIVE	Pearson Correlation	1	.881**
	Sig. (2-tailed)		.000
	N	263	263
METACOGNITIVE	Pearson Correlation	.881**	1
	Sig. (2-tailed)	.000	
	N	263	263

**. Correlation is significant at the 0.01 level (2-tailed).

Correlation between Cognitive and Metacognitive Strategies

Table 12:

Correlations

		METACOGNITIVE	RESOURCEMANAGEMENT
METACOGNITIVE	Pearson Correlation	1	.820**
	Sig. (2-tailed)		.000
	N	263	263
RESOURCEMANAGEMENT	Pearson Correlation	.820**	1
	Sig. (2-tailed)	.000	
	N	263	263

**. Correlation is significant at the 0.01 level (2-tailed).

Correlation between Metacognitive strategies and Resource management

Table 12 above shows there is an association between metacognitive strategies and resource management. Correlation analysis shows that there is a highly significant association between metacognitive strategies and resource management (r=.820**) and (p=.000). According to Jackson (2015), the coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. A weak positive correlation would be in the range of 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between metacognitive strategies and resource management.

Table 13 shows there is an association between resource management and cognitive strategy. Correlation analysis shows that there is a highly significant association between resource management and cognitive strategy (r=.826**) and (p=.000). According to Jackson (2015), the coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. A weak positive correlation would be in the range of 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between resource management and cognitive strategy.

Table 13: Correlation between Resource Management and Cognitive Strategy

Correlations

		RESOURCEMANAGEMENT	COGNITIVE
RESOURCEMANAGEMENT	Pearson Correlation	1	.826**
	Sig. (2-tailed)		.000
	N	263	263
COGNITIVE	Pearson Correlation	.826**	1
	Sig. (2-tailed)	.000	
	N	263	263

**. Correlation is significant at the 0.01 level (2-tailed).

5. CONCLUSION

5.1 Summary of Findings and Discussions

The findings of the studies showed the language learning strategies that the student perceived in 3 main components as well as in the sub-strategies for each main component. Firstly, in the

main domain of Cognitive Components for rehearsal sub-strategy, the students rely on memorisation of keywords as the item scored the highest mean of 3.7. Furthermore, for the organization sub-strategy, the students rely on going through the class notes and trying to find the most important ideas as well as outlining important concepts with both scoring a mean of 3.5 respectively. As for the elaboration sub-strategy, the findings showed that the students try to relate the material with what they already know with a mean of 3.3 in the findings. Lastly, for the critical thinking sub-strategy, the students try to play around with their ideas of their own to what they are learning in the courses as it recorded the highest mean of 3.5

Secondly, for metacognitive components, the students perceived the learning strategies they applied when they became confused about something that they read in classes, they usually go back and try to figure it out and they always ask themselves questions to make sure that they understand the material they have been studying in their respective courses. Both strategies scored a mean of 3.4

Finally, for the resource management component, the students perceived that, for sub-strategy environment management, they try to attend the classes regularly in their courses as the learning strategy which scored a mean of 3.8 On the other hand, for sub-strategy of effort management the students will give their heart out in their study even though they are having difficulties. The sub-strategy scored a mean of 3.6, which is the highest.

The findings highlight the importance of language learning strategies among learners. The existence of three learning strategies as well as the sub-strategies show that language learners use different strategies that they consider effective according to their needs. Hence, the findings add support to the existing literature on language where it is suggested that language learners employ various learning strategies.

In addition to that, the findings of the research also showed that there is a strong positive relationship between cognitive and metacognitive strategies. Furthermore, the findings also indicate that there is a strong positive relationship between metacognitive strategies and resource management. Lastly, there is also a strong positive relationship between resource management and cognitive strategy.

These findings are in line with previous studies (Anggarista & Wahyuddin, 2022; Zaini et al., 2023) where the learning strategies correlate positively with each other. The high positive correlations show that each strategy is important for learners, and they are often used interchangeably in language learning.

5.2 Pedagogical Implications and Suggestions for Future Research

From this research, the lecturer can understand what common strategies are applied by their students to cope with the fast-paced learning in their courses. Thus, the lecturer can accommodate their lesson plan to suit the strategies used by the students. This will help the students to understand their better and easier for their course. In addition to this, future research may investigate more mature students as the sample of the research such as master's or PhD students. Given the different nature of post-graduate studies to undergraduate studies, the research may yield different results. Finally, another suggestion is to carry out future research at different institutions of higher learning as different demographic backgrounds may lead to more significant findings as well as new relationship findings between variables.

ACKNOWLEDGEMENT

The researchers sincerely thank all participants for their valuable contributions to this study. The involvement and insights have been instrumental in advancing the study.

AUTHORS' CONTRIBUTION

MIR wrote the introduction, literature review and methodology sections. SHS co-wrote the literature review section. MFN AND SO collected and refined the data. MHY carried out the data analysis and wrote the discussion and implication sections. All authors provided critical feedback and helped shape the research.

CONFLICT OF INTEREST

None declared.

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ESTEEM Journal of Social Sciences and Humanities
Vol. 8, Special Issue, October 2024
https://ejssh.uitm.edu.my

Exploring the Relationship of Writing Strategies in Academic Writing

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ABSTRACT

ARTICLE HISTORY

Received:
12 August 2024
Accepted:
30 September 2024
Published:
11 October 2024

KEYWORDS

Writing strategies
Metacognitive
Cognitive
Academic writing
ESL learners

Writing is one of the basic skills that is used and fostered in educating students. In order for students to reach the intended writing level, it needs rewriting again and again. Therefore, it is important for students to know and apply certain writing strategies that can help to ease the process to produce a good piece of writing. This quantitative study is conducted to determine the ESL learners' perceptions on the use of five writing strategies namely; metacognitive, cognitive, social, affective and self regulation writing strategies in academic writing as well as to determine the relationship of all the writing strategies. A five-likert scale survey questionnaire consists of six sections with 27 items distributed to 112 ESL learners at the Centre of the foundation Studies, Malaysia to determine their perceptions on writing strategies. Based on the findings of this study, the majority of the ESL learners employed metacognitive strategy when writing followed by cognitive, self regulation, affective and social. This study also revealed that there are strong relationships between all of the writing strategies. The findings will further assist both ESL educators and ESL learners on understanding writing strategies that can further improve learners' performance in writing.

e-ISSN 2600-7274

1. INTRODUCTION

1.1 Background of Study

In learning English, acquiring writing skill is considered as not less challenging than reading skill (Dallagi, 2020) and thus tertiary level learners often display much reluctance when it comes to completing writing tasks (Dallagi, 2020). Tertiary learners are expected to develop certain skills such as critical thinking through a correct synthesis of large amounts of information (Roerden, 1997 as cited in Dallagi, 2020, p. 119). Therefore, in order to develop certain skills, it is important for tertiary learners to employ certain writing strategies in order to complete their writing task. Mu (2005) suggested that writing strategies were classified into five main categories namely; rhetorical, metacognitive, cognitive, social, and effective. However, for the purpose of this study, the researchers are putting a higher interest on metacognitive, cognitive, social, affective as well as effort regulation.

The writing strategy employed may vary from one student to another due to the variety of factors that might impact writing processes. Hsiao and Oxford (2002) mentioned that students will apply various strategies in order to assist them in learning English but most studies in the past have identified the most recurrent strategy used is metacognitive strategies. Metacognitive strategy is a strategy developed based on cognitive skills that creates an awareness of learning as a prerequisite for planning, monitoring, controlling, evaluating as well as self-regulating the learning process (Roeschl-Heils, Schneider, & Van Kraayenoord, 2003). Cer (2019) stated that when learners are employing metacognitive strategy, they are able to realize their cognitive and affective proficiency. Affective proficiency is related to a person's beliefs and attitudes towards writing skills and thus learners become aware of their performance level before, while and after they have completed their writing task. Hence, this explains the reason that a majority of ESL learners employed metacognitive strategy in academic writing.

By conducting this study, it will become an eye-opener for ESL educators in understanding the writing strategies employed by ESL learners when writing their academic essay. Not only that, since strategy applied is different from person to another, therefore this study will assist ESL educators in educating and encouraging ESL learners to apply suitable writing strategies that can further help them in overcoming their difficulties in writing, especially in performing academic writing.

1.2 Statement of Problem

Writing is a multifaceted skill that involves cognitive, linguistic, and socio-cultural dimensions. While tertiary education assumes a certain level of writing proficiency, students often face challenges in adapting to the academic discourse and mastering the intricacies of different writing genres (Faizah, et.al., 2023: Bulqiyah, et. al., 2021; Al Khazraji, 2019). By investigating the writing strategies used by the ESL foundation learners, researchers can identify common hurdles, effective practices, and areas that may require additional support. Despite recognising the importance of writing strategies in academic writing, there remains a gap in understanding the nuanced relationship between various writing strategies and their impact on the quality and effectiveness of academic writing outcomes. Previous research by Johnson, et al. (2021) emphasized the necessity of investigating how specific writing strategies are employed across different academic disciplines to inform pedagogical practices tailored to diverse students' needs.

In addition, Al-Jarrah, et al., (2024) found that learners have positive attitudes towards the implementation of metacognitive as their writing strategies. The findings revealed that students are able to be more autonomous, liberated, and organised in their writing. Similarly, Hanim, et al., (2020) emphasised on the importance of examining the role critical thinking in shaping writing strategies among contemporary students, suggesting a need for updated research methodologies to explore this evolving landscape. This investigation seeks to bridge existing gaps in research and provide practical insights that can enhance writing pedagogy at the tertiary level. Furthermore, a gap identified by Smith and Jones (2023) highlighted the lack of comprehensive studies examining the longitudinal effects of writing strategy interventions on students' academic writing proficiency. Thus, this study seeks to explore and analyse the intricate relationship between writing strategies utilized by students and their academic writing performance, aiming to identify key factors that contribute to successful writing outcomes in academic contexts.

1.3 Objective of the Study and Research Questions

This study is done to explore ESL learners at one of the Centre of Foundation Studies in Malaysia on their use of writing strategies in academic writing. This study is specifically conducted to answer the following questions;

1) How do learners perceive the use of metacognitive strategies in writing?
2) How do learners perceive the use of effort regulation strategies in writing?
3) How do learners perceive the use of cognitive strategies in writing?
4) How do learners perceive the use of social strategies in writing?
5) How do learners perceive the use of affective strategies in writing?
6) Is there a relationship between all writing strategies?

2. LITERATURE REVIEW

2.1 Writing Strategies

The exploration of writing strategies in academic writing has gathered increasing attention in educational research as educators and scholars seek to understand the complex dynamics that underlie effective written communication in academic contexts. Recent studies, Al-Jarrah, et al., (2024), have delved into various aspects of writing strategies, shedding light on their role in shaping the quality, coherence, and persuasiveness of academic writing outcomes. Bulqiyah, et. al., (2021), emphasizes the importance of explicit instruction in writing strategies, arguing that effective academic writers are those who possess a repertoire of techniques and approaches for generating, organizing, and revising their written work. They suggest that students can benefit from instruction in pre-writing techniques such as brainstorming, outlining, and concept mapping, as well as strategies for revising and editing drafts to enhance clarity and coherence. In addition, Hanim et al., (2020), emphasised that writing strategies in academic writing has advanced our understanding of the cognitive processes, genre conventions, and instructional approaches that shape effective written communication in educational contexts. Moving forward, continued research efforts aimed at identifying best practices in writing instruction and assessment will be essential for supporting students' development as proficient and confident academic writers.

Al-Jarrah, et al., (2019), conducted research that highlighted the cognitive processes underlying effective writing strategies. Their findings highlight the importance of metacognitive awareness in guiding students' strategic use of writing processes and techniques. As Faizah, et al., (2023)

claimed that efficacy of explicit instruction in writing strategies vital in improving students' academic writing proficiency, their findings also suggest that students who received systematic instruction in writing strategies demonstrated significant improvements in the organization, coherence, and argumentative structure of their written assignments compared to peers who received standard writing instruction without explicit strategy training.

2.2 Past Studies on Writing Strategies

In understanding the usage of English language among second language learners, writing strategies has been one of the important points of numerous studies. The strategies used by the learners are crucial in determining a successful composition. Valuable insights from these past studies can help the instructors to understand their students better and assist them in planning an effective lesson for their classes.

A study conducted by Chen (2022) highlights the importance of integrating writing strategy training into writing instruction to help the students strategize better and enhance their writing performance. 52 undergraduate students were involved in the study in which all of them have a similar learning background. The instrument used was a mixed method as the respondents were given a questionnaire and were asked to sit for a performance test. The respondents were given a writing strategy instruction before they had their questionnaire and performance test. Before the study, they were perceived as passive recipients of the English language that caused them to have major difficulties in their thinking process making it difficult to generate ideas and structure their writing. Apart from that, the respondents were unaware of the writing problems that they had causing them to perform poorly in their writing task. The findings of Chen's (2022) study revealed that an effective processing of writing has led to positive results. The respondents showed significant increase in the strategies applied which were metacognitive, cognitive and socio/affective. This integration helped them to structure their writing in a more effective way and led to a better performance. This study emphasises on the need for instructors to embed strategy instruction in their lesson especially at the initial stage of writing. The respondents also are suggested to be more aware of metacognitive strategies that can be applied to strengthen their writing performance. Hence, the results of this study has proven the effectiveness of writing strategies instruction in influencing students to produce a quality writing by employing the needed strategies.

Similarly, Raoofi et al. (2017) emphasised that since writing is a vital skill for the students' academic development, it is imperative to focus on the initial stage of writing that will help the students to organise and structure their composition effectively. However, Raoofi et al. (2017) claimed that the majority of studies available on writing strategies only focus on language learning strategies in general rather than writing strategies used by the second language learners. Thus, his study aims at examining the writing strategies of Malaysian undergraduate students and to identify the differences of writing strategies used based on the students level of proficiency. 314 undergraduate students with English as their second language had participated in this mixed method study that required them to answer a questionnaire and to complete two writing tasks. Based on the findings, participants showed positive results on the usage of writing strategies as the majority of the participants were reported to apply effort regulation strategies followed by metacognitive and social strategy. High proficiency participants were found to use more of metacognitive, cognitive, affective and effort regulation strategies as compared to lower proficiency students. This study has brought attention to the importance of developing the right strategies for second language learners and teachers/instructors play an important role in creating more comprehensible lessons that cater to students especially using social networking sites. By having a modern approach, it can help the learners to boost their writing

skill by applying the appropriate writing strategies. Therefore, this study has highlighted the most applied strategies metacognitive writing strategies and it is normally used by high proficiency students.

Based on the past studies conducted, it can be concluded that writing strategies like metacognitive, cognitive and affective among second language learners need to be integrated into the lesson as it plays a crucial role in assisting learners to comprehend the task and produce a proficient outcome. With the right strategies applied, second language learners will be aware of their writing problems and help them to process and generate ideas effectively.

2.3 Conceptual Framework

Figure 1 shows the conceptual framework of this present study on writing strategies in learning writing. Basically, the majority of writers use writing strategies to facilitate their writing process (Rahmat, 2021). Writers will adopt certain strategies during writing and as stated by Raoofi et.al (2017), there are five strategies in writing namely; metacognitive, effort regulation, cognitive, social and affective. Apart from this study seeking to understand the ESL learners' perceptions towards the five strategies in writing, this study also aims to explore the relationship of all the writing strategies.

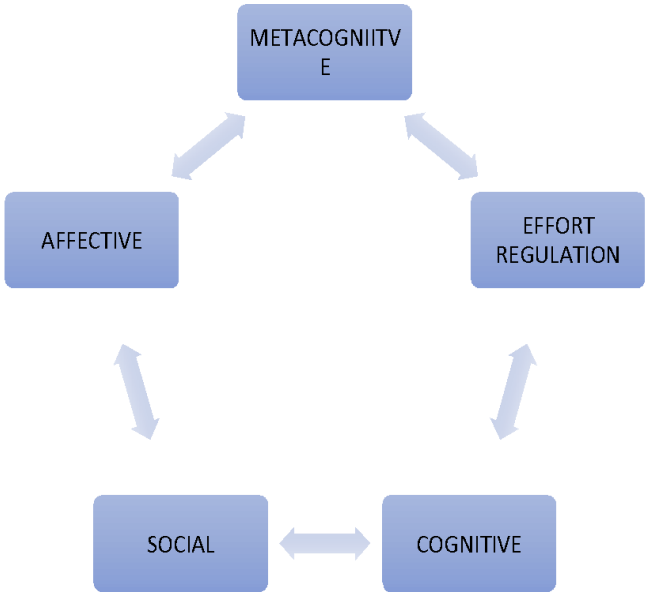

Figure 1- Conceptual Framework of the Study-
The Relationship of Writing Strategies in Learning Writing

3. METHODOLOGY

This quantitative study is conducted to determine the strategies used among ESL learners when performing academic writing tasks. A total of 114 participants chosen using purposive sampling responded to the survey. A 5 Likert-scale survey with 27 items used for the purpose of this study and is rooted from Raoofi, et.al (2017) to reveal the variables in Table 1 below. The survey consists of six sections where Section A has there items on demographic profile. As for Section B, it has ten items on Metacognitive, Effort regulation for Section C with four items, six items on Cognitive for Section D and for Section E (Social) and Section F (Affective) consisting of four and three items respectively.

Table 1: Distribution of Items in the Survey

Section	Writing Strategy	No of Items	Cronbach Alpha
B	Metacognitive	10	.894
C	Effort Regulation	4	.780
D	Cognitive	6	.828
E	Social	4	.843
F	Affective	3	.769
	Total	27	

Table 1 also shows the reliability of the survey used for this study. The analysis shows a Cronbach alpha of .894 for Section B, .780 for Section C, .828 is the Cronbach alpha for Section D and .843 and .769 for Section E and Section F respectively. Thus, this analysis reveals the instrument used for this study is reliable. Further analysis using SPSS is done to present findings to answer the research questions for this study.

4. FINDINGS

4.1 Findings for Demographic Profile

Table 2: Percentage for Demographic Profile

Q1	Gender	Male 30%	Female 70%
Q2	Discipline	Science & Technology 51%	Social Science 49%
Q3	Course	Part 1 96%	Part 1 4.%

Table 2 presents the demographic profile findings, indicating the distribution of participants across gender, discipline, and course level. The table shows that 30% of the participants were male, while 70% were female. In terms of discipline, 51% of participants belonged to Science & Technology, with the remaining 49% from Social Science backgrounds. Additionally, the majority of participants, 96%, were enrolled in Part 1 courses, with a small portion, 4%, in Part 2 courses.

4.2 Findings for Metacognitive

This section presents data to answer research question 1- How do learners perceive the use of metacognitive strategies in writing?

Table 3: Mean for Metacognitive (MWS)

Item	Mean
MWSQ 1 I organize my ideas prior to writing.	4.1
MWSQ 2 I revise my writing to make sure that it includes everything I want to discuss in my writing.	4.3
MWSQ 3 I check my spelling.	4.4
MWSQ 4 I check my writing to make sure it is grammatically correct.	4.3
MWSQ 5 I evaluate and re-evaluate the ideas in my essay.	4.1
MWSQ 6 I monitor and evaluate my progress in writing.	4.1
MWSQ7 I revise and edit an essay two or more times before I hand it in to my teacher.	4.0
MWSQ8 I go through the planning stages in my writing.	4.0
MWSQ9 I go through the drafting stages in my writing.	4.0

MWSQ10 I go through the revising and editing stages in my writing.	4.1

Table 3 presents the mean scores for metacognitive strategies (MWS) as perceived by learners in their writing process. The findings address the research question regarding learners' perceptions of metacognitive strategy utilization in writing. The respondents reported high mean scores across various metacognitive strategies, indicating strong agreement with statements such as organizing ideas prior to writing (MWSQ1: 4.1), revising to ensure comprehensive content coverage (MWSQ2: 4.3), checking spelling (MWSQ3: 4.4), ensuring grammatical correctness (MWSQ4: 4.3), evaluating and re-evaluating ideas (MWSQ5: 4.1), monitoring and evaluating progress (MWSQ6: 4.1), revising and editing multiple times (MWSQ7: 4.0), going through planning (MWSQ8: 4.0), drafting (MWSQ9: 4.0), and revising/editing stages (MWSQ10: 4.1) of the writing process. These findings suggest that learners value and actively engage in metacognitive strategies to enhance their writing proficiency.

4.3 Findings for Effort Regulation

This section presents data to answer research question 2- How do learners perceive the use of effort regulation strategies in writing?

Table 4: Mean for Effort Regulation

Item	Mean
ERSQ1 I write a lot to develop my writing skills.	3.7
ERSQ2 I often work hard to do well in my writing even if I don't like English writing tasks.	3.8
ERSQ3 Even if the writing activities are difficult, I don't give up but try to engage in them.	4.1
ERSQ4 I concentrate as hard as I can when doing a writing task.	4.3

Table 4 displays the mean scores for effort regulation strategies (ERS) as perceived by learners in their writing skills, addressing research question 2 regarding learners' perspectives on effort regulation strategy application in writing. The findings suggest that participants generally embrace effort regulation strategies to enhance their writing proficiency. Participants expressed a moderate agreement with statements such as engaging in extensive writing to refine skills (ERSQ1: 3.7) and exerting effort despite personal preferences for writing tasks (ERSQ2: 3.8). Moreover, participants demonstrated a stronger commitment to persevering through challenging writing activities (ERSQ3: 4.1) and maintaining high levels of concentration during writing tasks (ERSQ4: 4.3). These findings imply that learners recognize the importance of effort regulation in achieving writing goals, even in the face of difficulties, underscoring the value they place on diligent practice and focused attention in their writing skills and strategies.

4.4 Findings for Cognitive

This section presents data to answer research question 3- How do learners perceive the use of cognitive strategies in writing?

Table 5: Mean for Cognitive (CWS)

Item	Mean
CWSQ1 I use memorized grammatical elements such as singular and plural forms, verb tenses, prefixes and suffixes, etc, in my writing	4.0
CWSQ2 I put newly memorized vocabulary in my sentences.	3.9
CWSQ3 In order to generate ideas for my writing, I usually engage myself in brainstorming.	4.3

CWSQ4 I use different words that have the same meaning.	4.0
CWSQ5 I use my experiences and knowledge in my writing.	4.3
CWSQ6 I try to use effective linking words to ensure clear and logical relationship between sentences or paragraphs	4.3

Table 5 illustrates the mean scores for the use of cognitive strategies writing by the students. The analysis indicates that most of the students perceive the use of cognitive skills by using 3 methods which are; engaging themselves in brainstorming, using their experience and knowledge in the writing as well as using effective linking words (M: 4.3). This is followed by students who tend to use memorized grammatical elements and synonyms in their writing (M: 4.0). Lastly, a rather small mean score (M: 3.9) indicates that the students put newly memorized vocabulary in their sentences as the cognitive strategies in writing.

4.5 Findings for Social

This section presents data to answer research question 4- How do learners perceive the use of social strategies in writing?

Table 6: Mean for Social (SWS)

Item	Mean
SWSQ1 In order to generate ideas for my writing, I usually discuss the writing topic with a friend or classmate.	3.7
SWSQ2 After revising and editing my essay thoroughly, I ask a friend or my classmate to read and comment on it.	3.4
SWSQ3 I try to identify friends or classmates whom I can ask for help in my writing.	3.8
SWSQ4 When I have trouble writing my essay, I try to do it with my classmates or friends.	3.6

Table 6 presented the result of the use of social strategies in writing used by the students. Based on the table, the majority of the students perceived the use of social media by identifying their friends or classmates who can help them in writing (M: 3.8). This is followed by ‘usually discuss the writing topic with a friend or classmate in order to generate ideas for their writing (M: 3.7). Apart from that, the results also revealed that the students do the essay with their classmates or friends whenever they have trouble in writing (M: 3.6) and finally, small mean scores (M: 3.4) indicates that ‘they ask friends or classmates to read and comment on their writing after they revised and edited the essay thoroughly.

4.6 Findings for Affective

This section presents data to answer research question 5- How do learners perceive the use of affective strategies in writing?

Table 7: Mean for Affective (AWS)

Item	Mean
AWSQ1 I try to write an essay in class with confidence and ease.	3.8
AWSQ2 I try to relax whenever I feel afraid of writing.	4.0
AWSQ3 I encourage myself to write even when I am afraid of making mistakes	4.4

Table 7 indicates the result on how the learners perceive the use of affective strategies in writing. Majority of the students encourage themselves to keep on writing even though they feel afraid of making mistakes (M: 4.4) while some of them try to be relaxed whenever they

feel afraid of writing (M:4.0). However, only a small number of the students try to write an essay in class with confidence and ease as the affective strategies in writing (M: 3.8).

4.7 Findings for Relationship between all Writing Strategies

This section presents data to answer research question 6-Is there a relationship between all writing strategies? in order to determine if there is a significant association in the mean scores between all writing strategies. The data is analysed using SPSS for correlations. Results are presented separately in table 8 below.

Table 8: Correlation of all Writing Strategies

Correlations

		METACOGNITIVE	EFFORT	COGNITIVE	SOCIAL	AFFECTIVE
METACOGNITIVE	Pearson Correlation	1	.652**	.703**	.470**	.577**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001
	N	114	114	114	114	114
EFFORT	Pearson Correlation	.652**	1	.594**	.555**	.686**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001
	N	114	114	114	114	114
COGNITIVE	Pearson Correlation	.703**	.594**	1	.515**	.564**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001
	N	114	114	114	114	114
SOCIAL	Pearson Correlation	.470**	.555**	.515**	1	.533**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001
	N	114	114	114	114	114
AFFECTIVE	Pearson Correlation	.577**	.686**	.564**	.533**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	
	N	114	114	114	114	114

**. Correlation is significant at the 0.01 level (2-tailed).

According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. Table 8 shows there is an association between;

(a) metacognitive and effort regulation (r=.652**) thus revealing a strong positive correlation.
(b) effort regulation and cognitive components (r=.703**) thus revealing a strong positive correlation.
(c) cognitive and social components (r=.470**) thus revealing a moderate positive correlation.
(d) social and affective components (r=.577**) thus revealing a strong positive correlation.
(e) effective and metacognitive components (r=.577**) thus revealing a strong positive correlation.

5. CONCLUSION

5.1 Summary of Findings and Discussions

The present study aims to determine the writing strategies used by ESL learners at one of the Centre of Foundation studies in Malaysia as well as to investigate the correlation between all of the five writing strategies while performing their academic writing. In general, based on the findings, ESL learners adopt different writing strategies and the most applied strategy is metacognitive followed by cognitive strategy, effort regulation strategy, affective strategy and social strategy when they are writing their academic essay. This finding is similar to a study conducted by Chen (2022) that among writing strategies applied by students were metacognitive, cognitive and socio/affective. These strategies are believed to help students to perform better in their writing since they need to go through the process of writing from the initial stage until the production of the final product.

Apart from that, by utilizing the metacognitive and cognitive writing strategy, students are able to develop their critical thinking-skills. This is due to the fact that they need to be critical during every stage of writing in order to produce a good piece of academic writing (Kazemian et. al., 2021) The ESL learners also applied cognitive strategy by including their experience and knowledge in writing. Applying this strategy particularly has shown significant results in improving their attitudes towards their writing ability. Similar findings in a study conducted by Al-Jarrah et al., (2018) that metacognitive and cognitive strategies in writing are able to assist learners to study and learn writing effectively and make them become better writers.

However, the least strategy applied by ESL learners is social strategy. Similar finding revealed in a study conducted by Tran (2021) that first year English majors at Van Lang University employed social strategy in learning writing at a moderate level although they did ask help from their teachers, friends, or other online sources to overcome the lack of ideas, vocabulary or even preparing an outline for writing. This study also revealed that there is a strong correlation between all of the writing strategies except for cognitive and social strategy that revealed a moderate relation. Hence, it shows that a majority of the ESL learners employed more than one writing strategy.

5.2 Pedagogical Implications and Suggestions for Future Research

Writing is indeed the toughest skill to acquire for ESL learners. Therefore, ESL learners will experience various difficulties in writing and it is crucial for ESL educators to assist them by using the right approach and strategies when writing (Baharudin et al., 2023). The findings of this research may benefit most of the language educators on teaching methods and strategies in the writing classroom. The suitable writing strategies applied by ESL learners will help them to become better writers. Therefore, it is important for ESL educators to train their learners and provide them with opportunities to improve their writing by employing various writing strategies that can improve their writing ability.

Future researchers can consider replicating this study and further elaborating in multiple research contexts such as looking at significant differences between language learning strategies used in terms of genders as well as other factors such as motivation and social background. It is also recommended that the results be verified with other research instruments as well as conducting further investigations into effectiveness of the five writing strategies on students' writing performance.

ACKNOWLEDGEMENT

The authors would like to thank ESL foundation learners at one of the center of foundation studies for their willingness to take part in this study. Also to Centre of Foundation Studies, Universiti Teknologi MARA, Cawangan Selangor, Kampus Dengkil and Assoc Prof Dr Noor Hanim for the endless and undivided support to the authors.

AUTHORS' CONTRIBUTION

FB carried out the literature review and performed some of the data analysis sections. NHLR completed the abstract, introduction, objectives, designed the conceptual framework, discussed the methodology and concluded the study. AHMH wrote and refined the literature review section. Carried out the introduction and literature review sections. SAS refined the data analysis section. All authors involved in the data collection and the analysis of the data. All authors read, edited and approved the final manuscript.

CONFLICT OF INTEREST

None declared

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ESTEEM Journal of Social Sciences and Humanities
Vol. 8, Special Issue, October 2024
https://ejssh.uitm.edu.my

Mathematics Interest, Self-Esteem and Mathematics Achievement Among Physical Module Students at IIUM's Foundation Studies

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ABSTRACT

ARTICLE HISTORY

Received:
12 August 2024
Accepted:
30 September 2024
Published:
11 October 2024

KEYWORDS
Mathematics interest
Self-esteem
Mathematics achievement
Gender differences
Student's Performance

Interest is a significant factor that stimulates learning. Therefore, a student's passion for mathematics is important for inspiring them to do well in any mathematics subject. Self-esteem is an attitude toward oneself. It is another crucial factor for a successful journey in seeking knowledge. This study investigates the interrelationship between gender differences in mathematics interest, self-esteem, and mathematics achievement among the Physical module students. The sampling technique used was purposive sampling. A sample of 238 Physical module students who are taking Mathematics II (MAT0124) in the Centre for Foundation Studies, International Islamic University Malaysia, session 20222023 was taken from them. The instrument used was Academic Interest Scale for Adolescents (AISA) to measure mathematics interest while the Rosenberg Self-Esteem Scale, which measures self-esteem. According to the findings, there was a significant difference between male and female students' mathematics interest. On the other side, the self-esteem between male and female students revealed similarities which meant no significant difference. Correlation coefficient analysis revealed a significant correlation between mathematics interest and self-esteem among students. Further analysis showed that among different genders, there was a positive relationship between mathematics interest and their achievement. Moreover, there was a direct relationship between students' self-esteem and their achievement. For future study, we can apply gamification technique during the next level of mathematics subject and study how the game will influence their interest in mathematics, self-esteem and their achievement.

e-ISSN 2600-7274

1. INTRODUCTION

Mathematics is employed all around the world since it is an important subject in many disciplines such as natural science, medicine, engineering, and social science. For those reasons, learning mathematics is required, starting in primary school and continuing through university. Interest in mathematics has a significant role in determining involvement and performance, which indirectly affects the student's self-esteem. According to Rosenberg (1965), the meaning of self-esteem is one's behaviour towards themselves, either positive or negative. Unfortunately, not all students have a higher interest in mathematics subjects, which will affect their self-esteem. Thus, educators are constantly finding ways to develop learning styles that are participatory and pleasurable to sustain students' interest and involvement (Halamy, Kamarudin, & Mohsin, 2022).

Several studies have been performed to study the effect of mathematics interest on performance, gender, and also self-esteem. Based on Musbahu et al. (2021), mathematics interest has a significant relationship with student achievement and gender. Other than that, Wong & Wong (2019) highlighted the significance of sparking interest in students with lower mathematics performance due to its strong correlation with improved mathematical achievement. Nabila & Widjajanti, 2020) emphasized the importance of self-esteem in mathematics by developing self-esteem through a contextual teaching and learning approach that links mathematical concepts to real-life situations. Meanwhile, according to Nawi et. al. (2023), there is a nearly moderate, direct, and favourable relationship between mathematical curiosity and self-esteem. In addition, the study revealed that males scored better on self-esteem compared to female adolescents, which demonstrates that there are significant gender differences in this area (Mikkelsen et al., 2022).

1.1 Problem Statement

Mathematics is known as one of the most challenging subjects, which undoubtedly impacts students' interest levels and self-esteem. Several studies on students' interest in mathematics have been conducted, comparing interest across genders and gathering data based on students' achievement (Ganley & Vasilyeva, 2011; Musbahu et al., 2021). Also, some research has been done about the relationship between self-esteem and mathematics (Moneva & Valle, 2020; Nabila & Widjajanti, 2020). However, there are few studies on the relationship between gender differences in mathematics interest, self-esteem, and mathematics achievement and their interrelationships.

1.2 Objectives

There are five main objectives, which are:

1. To determine the differences in mathematics interest based on gender.
2. To investigate the differences in self-esteem based on gender.
3. To determine the correlation between mathematical interest and self-esteem across genders.
4. To determine the correlation between mathematics interest and students' achievement across genders.
5. To determine the correlation between self-esteem and students' achievement across genders.

1.3 Research Questions

This research embarks on these research questions:

1. What are the differences in mathematics interests among genders?
2. What are the differences in self-esteem among genders?
3. What is the correlation between mathematics interest and self-esteem among students?
4. What is the correlation between mathematics interest and students' achievement by gender?
5. What is the correlation between self-esteem and students' achievement by gender?

1.4 Research Hypotheses

These hypotheses will be tested at the 0.05 level of significance:

HO_1: There is no significant difference in mathematics interest across genders.
HO_2: There is no significant difference in self-esteem across genders.
HO_3: There is no correlation between mathematics interest and self-esteem among students.
HO_4: There is no correlation between mathematics interest and achievement across genders.
HO_5: There is no correlation between self-esteem and achievement across genders.

2. LITERATURE REVIEW

According to (Zhang & Wang, 2020), mathematics interest, self-esteem and mathematics achievement are all related. According to previous research, mathematics achievement is directly and favorably impacted by a student's enthusiasm in the subject. Based on Summer, 2020), students' lacking interest in mathematics is due to its abstraction and anxiety related to the subject has also led to a dislike of it. It is shown that poor performance is the outcome of a decrease of enthusiasm in learning mathematics. Research has showed a world trend of low mathematics performance in various areas of the world (Kisanga, 2020; Mazana et al., 2020). Students' enthusiasm in studying mathematics is greatly impacted by a pleasant learning environment, which also enhances their performance (Mazana et al., 2018). Different factors may have an impact on students' mathematics interest and achievement. The success of students is influenced by their teachers' performance, which has a big impact on how interested and motivated students become in mathematics (Tambunan et al., 2021).

Self-esteem is essential to be evolved in learning mathematics subject. This study shows that self-esteem is one of the elements that contribute to the students' academic results, (Abdulghani et al., 2020; Kärchner et al., 2021; Noorollahi, 2021; Okoye & Oghenekaro, 2020). The student's performance in mathematics is mainly influenced by their emotional health and self-esteem (Chen, 2022). Furthermore, based on Ugwuanyi et al. (2020), self-efficacy influences the association between mathematics achievement and interest to a certain extent. The students' behavior towards mathematics is strongly correlated with the individual and class-level mathematics achievement. Besides, for the class-level achievement is negatively correlated with the attitudes (Xiao & Sun, 2021).

Some studies show a positive relationship between self-esteem and mathematics learning achievement. Lecturers usually have an important role in helping students to instill their self-esteem through contextual teaching and learning techniques where these are a method of learning that ties the subject matter to everyday life. This is because students are going to consider mathematics seriously if it has an impact on their future careers. On the other hand,

college leadership should maximize its effectiveness by organizing career coaching and counseling for students to understand the value of mathematics in their future careers (Asiedu-Addo et al., 2016).

3. METHODOLOGY

3.1 Population and Sample

The population of the study includes all Physical module students in Centre for Foundation Studies, International Islamic University Malaysia, in Semester 3 for session 2022/2023. Purposive sampling technique was used and a sample of 238 students was chosen from this student's population which consist of 124 male and 114 female students. The chosen sample was then evaluated using the Rosenberg Self-Esteem Scale (Rosenberg, 1965) and Academic Interest Scale for Adolescents (AISA).

3.2 Instrument and Reliability of the Instruments

Academic Interest Scale for Adolescents (AISA) was used to measure the mathematics interest among Physical module students. There are four main constructs used which are emotion (7 items), value (6 items), knowledge (7 items) and engagement (6 items) where total of 26 questions needed to be answered by the respondents. Rosernbeg Self-Esteem Scale was used to measure the self-esteem among Physical module students. It includes a total of 10 items. All items were assessed using a four-point likert scale which are from 1 (strongly disagree), 2 (disagree), 3 (agree) and 4 (strongly agree).

Table 1**:** Reliability of Items for Internal Consistency of the Items in Scale

Scale	N	Number of Items	Cronbach's Alpha
Emotion	238	7	0.895
Value	238	6	0.843
Knowledge	238	7	0.832
Engagement	238	6	0.754
Self-Esteem	238	10	0.853

The internal consistency of the item was tested using Cronbach's alpha for all four constructs under mathematics interest and self-esteem. The results in Table 1 showed that the value of the Cronbach's alpha ranged from 0.754 to 0.895 which indicates the items were reliable and consistent to be applied on the respondents.

3.3 Method of Data Collection

The questionnaire was constructed online using Google Forms and distributed to students via WhatsApp or Telegram by lecturers teaching Mathematics in Semester 3, 20222023. All CFSIIUM Physical module students completed the survey from 26th May 2023 until 1st June 2023 that included questions about students' interest in mathematics and self-esteem. Based on the data collection, using Shapiro-Wilk Normality test it was found that the data of mathematics interest and self-esteem were normally distributed. Moreover, by Kolmogorov-Smirnov Test, it revealed that the mathematics achievement (MAT0124) of the students follows a Normal Distribution.

3.4 Conceptual Framework

Figure 1 shows the framework of this research. Taking the idea from Zhang & Wang (2020), this study independent variables consist of mathematics interest, self-esteem and personal background. In mathematics interests, this study includes four important constructs which are emotion, value, knowledge and engagement. While for self-esteem, it is about studying the reflections of the self-worthiness of students towards themselves either positive or negative. The students' study year, gender and course are three demographic constructs which have a relationship in their mathematics interest, self-esteem and affects their mathematics achievement which is the dependent variable.

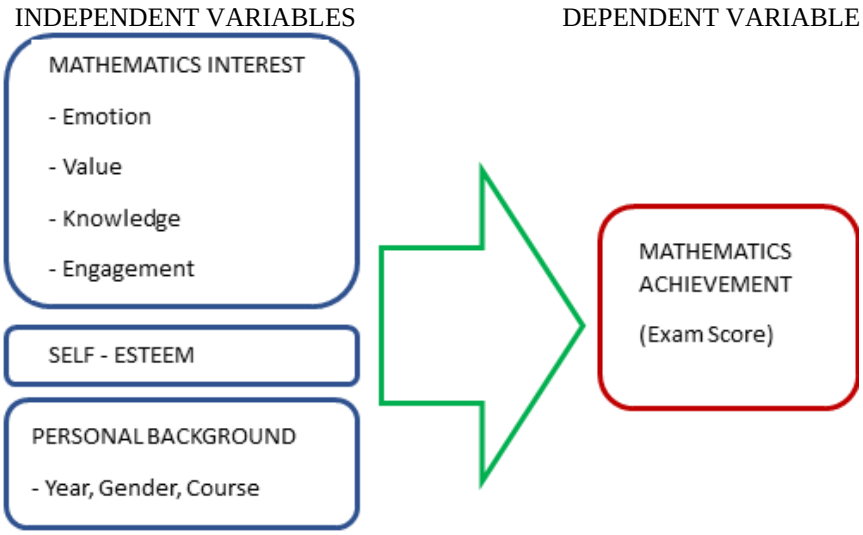

Figure 1: Conceptual Framework for Study on Mathematics Interest, Self-Esteem and Mathematics Achievement

4. RESULTS, DISCUSSIONS AND IMPLICATIONS

4.1 Results and Discussions

HO_1: There is no significant difference in mathematics interest across genders.

Table 2: Descriptive Statistics and T-Test Statistics for Mathematics Interests among Gender

	Gender	N	Mean	Std. Deviation	df	t-test	p
Emotion	Female	114	3.1391	0.53129	236	2.655	0.008*
	Male	124	2.9666	0.47086			
Value	Female	114	3.5775	0.40896	236	1.762	0.079
	Male	124	3.4812	0.43201			
Knowledge	Female	114	2.4762	0.42356	236	2.491	0.013*
	Male	124	2.3353	0.44734			
Engagement	Female	114	2.7135	0.50343	236	0.302	0.763
	Male	124	2.6949	0.44312			
Total Mathematics Interest (MI)	Female	114	2.9766	0.30217	236	2.801	0.006*
	Male	124	2.8695	0.28752			

*Significant at 0.05 level (two-tailed)

Table 2 shows the descriptive statistics for mathematics interest between male and female students. It has been shown that for the construct emotion the mean for female is 3.1391 while mean for male is 2.9666. For the construct value, the mean for female and male is 3.5775 and 3.4812 respectively. Next, the mean for construct knowledge for female is 2.4762 while for male is 2.3353. Lastly, the construct engagement showed that the mean for female is 2.7135 while mean for male is 2.6949. Additionally, gender differences in mathematics interest have low standard deviations, which suggests that the data is tightly clustered.

According to the t-test statistics, it shows that there is a significant difference between male and female students for the construct emotion ($p = 0.008$), construct knowledge ($p = 0.013$), and the total mean of mathematics interest ($p = 0.006$). Since all the p-values are less than 0.05, so it leads the study to reject the null hypothesis.

Otherwise, for the construct value and engagement, there are no significant difference between male and female students. Thus, emotion and knowledge between male and female students are two constructs that contribute to the significant difference in the total of their mathematics interest.

HO_2: There is no significant difference in self-esteem across genders.

Table 3: Descriptive Statistics and T-Test Statistics on Self-Esteem among Gender

	Gender	N	Mean	Std. Deviation	df	t	p
Self-Esteem	Female	114	26.4561	5.92600	236	0.558	0.577
	Male	124	26.0726	4.64718			

Table 3 shows that the descriptive statistics on self-esteem between male and female students. The mean score of female students' self-esteem (26.4561) is higher than the male students' self-esteem (26.0726) towards Mathematics learning. The t-test statistics shows that the p-value is greater than 0.05 which indicates that there is no significant difference on self-esteem between male and female students, which leads the null hypothesis is not to be rejected. This result was supported with the findings done by Subon et al. (2020) which their independent t-test demonstrated absence of significant difference on self-esteem between male and female students among Malaysian university students. Therefore, the level of self-esteem among the students regardless of their gender showed similarities and the factors surrounding them should be focused on in future research.

HO_3: There is no correlation between mathematics interest and self-esteem among students.

Table 4: Pearson's Correlation Coefficient between MI and SE Among Students

	n	Self-esteem	p-value
Mathematics Interest	238	0.155*	0.017

*Correlation is significant at 0.05 level (two-tailed)

Table 4 shows that there is significant correlation at 0.05 level between mathematics interest and self-esteem since the p-value is 0.017 which is less than 0.05. The Pearson's Correlation coefficient, $r = 0.155$ indicates direct, positive and less moderate relationship between mathematics interest and self-esteem among the students. Based on past study by Nabila & Widjajanti (2020), to increase the self-esteem among university students, the contextual teaching and learning approach were implemented among the students. It resulted in enhancement of the students' motivation, thinking skills, students' abilities and their mastery

in mathematics which led to boost their interest in mathematics. Hence, self-esteem is one of the key components which is positive and directly related to mathematics interest.

HO_4: There is no correlation between mathematics interest and achievement across genders.

Table 5: Pearson's Correlation Coefficient between MI and Achievement Across Gender

Correlation Coefficient, r	**Result MAT0124 (Achievement)**	
	Male N = 124	Female N = 114
Mathematics Interest	0.179*	0.207*

*Correlation is significant at the 0.05 level (2-tailed)

Table 5 shows that the correlation between mathematics interest and achievement (result MAT0124) for male and female students is significant at the 0.05 level with 2-tailed test. The Pearson's correlation coefficient for male is r = 0.179 while for female is r = 0.207. The correlation for female students is higher compared to male students which indicates that mathematics interests among female students affected a little bit higher to their achievement compared to male students. Besides, both correlations show that there are direct, positive relationships and less moderate between mathematics interests and their achievement in MAT0124, which leads to reject the null hypothesis. Even though the correlation is quite low, but it shows that mathematics interests still contribute to their achievement. According to Ili et al. (2021), one of the factors is mathematics interest, which has been shown to have a positive impact on mathematics achievement. Therefore, it is a good indication for students to be aware and to increase their mathematics interests to help them in achieving good results in their mathematics subjects.

HO_5: There is no correlation between self-esteem and achievement across genders.

Table 6. Pearson's Correlation Coefficient between SE and Achievement Across Gender

Correlation Coefficient, r	**Result MAT0124 (Achievement)**	
	Male N = 124	Female N = 114
Self-esteem	0.242**	0.278**

**Correlation is significant at the 0.01 level (2-tailed)

Table 6 shows the significant correlations between self-esteem and achievement for male and female students. The Pearson's correlation coefficient for male is r=0.242 while for female is r=0.278. Both correlations are significant at the 0.01 level using 2-tailed test and they have direct, positive and less moderate relationships between self-esteem and achievement. According to Subon et al. (2020), there is significant relationship between self-esteem and students' achievement for both genders. The correlation for female students between self-esteem and achievement is higher compared to male students. This shows that the relationship of self-esteem and their achievement is more meaningful compared to the lower correlation by male students. The positive attitude towards themselves indicates higher self-esteem which will somehow motivate them to achieve success in their mathematics learning.

4.2 Study Implications

This study investigates gender differences in mathematics interest, self-esteem, and mathematics achievement among Physical module students. The findings show significant differences in mathematics interest and achievement based on gender. The positive correlation

between mathematics interest and self-esteem shows the importance of nurturing students' passion in mathematics to positively influence academic outcomes.

5. STUDY LIMITATION AND SUGGESTION FOR FUTURE RESEARCH

5.1 Study Limitation

The study has a few limitations that can be improved for future investigations. The sample size could encompass a more robust and resilient sample, thereby facilitating the attainment of generalizing conclusions. The other variables and factors that are not incorporated in the analysis could potentially influence the relationships and findings.

5.2 Suggestion for Future Research

There are several suggestions for future research which may be implemented to generalize the conclusions on difference populations. Factors that can be considered in the future analysis that could have been impactful in this area are the students' educational background, family background, previous mathematics learning experience which can contribute to students' mathematics interest and self-esteem. In addition, samples taken for further research could be students from Biological module, then the researcher can conduct analysis of comparison between Physical module students and Biological module students. The sample size can be increased and avoid the outliers which may affect the results. Lastly, multiple linear regression involving several independent variables could be done so that the researcher can have a model to propose for the student's development and enhancement unit at the institution to upgrade the capabilities of their students in Mathematics achievement.

6. CONCLUSION

The Rosenberg Self-Esteem Scale was used in this study to assess self-esteem, while the Academic Interest Scale for Adolescents (AISA) was used to assess mathematics interest. The current study's findings for the t-test demonstrate that there is a significant difference in total mathematics interest between male and female at the 5% significance level. Because the p-value is less than 0.05, the null hypothesis is rejected, and two constructs, emotion ($p=0.008$) and knowledge ($p=0.013$), contribute to the significant difference between these genders. However, there is no significant difference between male and female students in terms of construct value and engagement in mathematics interest.

The t-test, on the other hand, shows that there is no significant difference in self-esteem between male and female students at the 0.05 significance level, even though female students' mean score is higher than male students. Furthermore, the p-value of 0.017 indicates that there is a significant correlation between mathematics interest and self-esteem at the 0.05 level. Pearson's Correlation coefficient, $r=0.155$, suggests a positive correlation between student mathematics interest and self-esteem. This study also demonstrates that the correlation between male and female mathematics interest and achievement (result MAT0124) is significant at the 0.05 level, with $r=0.179$ and $r=0.207$, respectively. Both correlations are positive, indicating that mathematics interest continues to contribute to their achievements.

Moreover, this study found important relationships between male ($r=0.242$) and female ($r=0.278$) students' self-esteem and achievement. Both correlations are significant at the 0.01 level when tested with a two-tailed test, indicating that there are direct, positive, and less moderate links between self-esteem and achievement.

As a conclusion, mathematics interest, self-esteem and student achievement are related to each other that significantly contribute toward student success. Students need to develop their interest in learning mathematics that led them to understand better and improve their performance. It will indirectly boost their motivation and self-esteem towards mathematics subject.

ACKNOWLEDGEMENT

All authors would like to thank the Research and Innovation Unit, Centre for Foundation Studies of IIUM for funding this research. Also, we would like to thank all the Physical Module students who spent their time answering our questionnaire which indirectly contributed to the results of this study.

AUTHORS' CONTRIBUTION

MNMN and SH carried out the introduction section. SH and JH found previous research papers for the literature review section. NMS and MNMN collected, refined, and performed the data analysis using SPSS. BH and NFMH wrote the data methodology section. NFMH and NMS wrote the discussion and implication sections. BH and JH are proofreading and offering significant insights to enhance the clarity and coherence of the content. All authors read and approved the final manuscript.

CONFLICT OF INTEREST

None declared.

7. APPENDIX

Survey Instrument (quantitative study)

CONSTRUCT: EMOTION

1. I understand the fun of mathematics
2. Studying mathematics makes me happy
3. I am interested in mathematics.
4. The content I learn from mathematics course is interesting.
5. I enjoy studying mathematics.
6. I really like mathematics course.
7. I enjoy when I study mathematics.

CONSTRUCT: VALUE

1. The knowledge of mathematics is important.
2. A good mark in mathematics course means a lot to me.
3. I think that mathematics is helpful for my career in future.
4. The knowledge of mathematics promotes my growth.
5. The knowledge of mathematics is valuable for my future development.
6. I think that learning mathematics is significant for my growth.

CONSTRUCT: KNOWLEDGE

1. I know all kinds of things about mathematics.
2. I am expert in mathematics
3. I can answer all kinds of questions that teachers ask in the mathematics class.
4. I am familiar with the knowledge and skills required in mathematics.
5. I do well in mathematics.
6. I have a lot of things to say about mathematics topics.
7. I have a lot of knowledge about mathematics.

CONSTRUCT: ENGAGEMENT

1. I want to learn things that are not included in mathematics textbooks or workbooks.
2. I hope to explore things about mathematics.
3. I will read more books about mathematics if I have the chance.
4. I will take part in an extracurricular training class for mathematics if I have the opportunity.
5. I want to find various ways to complete the assignment.
6. I am willing to spend time on the skills or methods learned from mathematics lessons.

SELF-ESTEEM

1. On the whole, I am satisfied with myself
2. At times I think I am no good at all.
3. I feel that I have a number of good qualities.
4. I am able to do things as well as most other people.
5. I feel I do not have much to be proud of.
6. I certainly feel useless at times.
7. I feel that I'm a person of worth.
8. I wish I could have more respect for myself
9. All in all, I am inclined to think that I am a failure.
10. I take a positive attitude toward myself.

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ESTEEM Journal of Social Sciences and Humanities
Vol. 8, Special Issue, October 2024
https://ejssh.uitm.edu.my

The Influence of Conflict in Group Work According to Tuckman's Model

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ABSTRACT

ARTICLE HISTORY

Received:
12 August 2024
Accepted:
30 September 2024
Published:
11 October 2024

KEYWORDS

Group Work
Forming
Storming
Norming
Performing

This study explores the perspectives of foundation studies students in Malaysia regarding the four stages of the Tuckman Model (forming, storming, norming, performing) in the context of group work. Additionally, it examines the correlation between these phases and conflicts within a group. The study, which involved 178 individuals, reveals significant links between different stages of group growth that influence both group dynamics and learning outcomes. The findings highlight the significance of competent leadership in handling the storming phase and emphasise the critical roles of communication and trust in the shaping and norming stages. Furthermore, the results emphasise the importance of connectedness in improving group productivity throughout the performing phase. Proficiently managing disagreements has been demonstrated to improve group dynamics and promote development. This study offers crucial insights into the ways in which organised group interactions might enhance educational settings by analysing both the difficulties and favourable aspects of each phase. Suggestions encompass techniques for enhancing communication and collaboration abilities, along with guidance for maximising teaching approaches by gaining a more profound comprehension of group dynamics.

e-ISSN 2600-7274

1. INTRODUCTION

1.1 Background of Study

Comprehending the mechanics of efficient teamwork and collaboration is essential in educational environments as it immediately impacts the achievement of group projects and the overall educational advancement of students. Johnson and Johnson (2009) state that good teamwork improves group performance by encouraging positive interdependence and promotive interaction. These interactions are crucial for achieving higher levels of performance and efficiency, since they foster a more captivating and nurturing learning environment.

Roseth, Johnson, and Johnson (2008) assert that student collaboration plays a crucial role in attaining academic goals and cultivating vital abilities such as communication, problem-solving, and critical thinking. Their meta-analysis of studies on cooperative learning found that the establishment of positive peer relationships through collaboration accounted for a substantial amount of the variation in academic achievement among early adolescents. In addition, Gillies and Ashman (2003) emphasise that cooperative learning not only enhances academic achievements but also fosters socialisation and the formation of friendships, so helping both social and intellectual growth. Hence, cultivating a cooperative atmosphere in educational environments is crucial for achieving academic excellence and encouraging personal growth.

Group projects are an essential element of education, playing a crucial role in moulding students' perspectives, attitudes, and actions as they interact with their classmates. Comprehending group dynamics is crucial as it has a substantial influence on the effectiveness of these cooperative endeavours. This element is particularly crucial in universities where collaborative assignments are common across different programmes, such as in foundation studies. According to Othman et al. (2023), the effectiveness of these assignments depends on effective group management, which enhances group performance and enhances learning outcomes.

Moreover, successful collaboration cultivates a feeling of camaraderie and inclusion among students, creating an environment where everyone is valued and esteemed, as emphasised by Buchs and Butera (2015). Conflicts are inevitable in any group context, especially during the storming period. During this stage, members of the team have different viewpoints, encounter difficulties, and vie for positions and resources (Tuckman, 1965). The Tuckman model identifies the storming stage as a phase in the development of a group characterised by disputes, power struggles, and divergent viewpoints. During this time, people may experience heightened stress and ambiguity as they establish their roles, establish standards, and address their interests within the group's dynamics (Tuckman, 1965). Although challenging, the storming period presents chances for development and cooperation as team members acquire skills in managing disagreements, establishing trust, and cultivating mutual respect (Tuckman, 1965). By acknowledging that conflict is inevitable during this stage, educators can effectively address difficulties by promoting dialogue and cultivating transparent communication within the group. Through the utilisation of conflict resolution strategies and the promotion of problem-solving approaches, educators can effectively reduce the negative effects of conflicts and establish a supportive team atmosphere that facilitates the attainment of shared objectives.

Furthermore, acquiring proficient cooperation skills enables instructors to effectively lead pupils through the many phases of group development (Morgeson et al., 2010). Understanding the many phases of group growth, including formation, storming, norming, and performing,

enables educators to intervene when necessary to handle conflicts, promote collaboration, and enhance team cohesion (Rahim, 2002).

Thus, a strong understanding of teamwork and collaboration is crucial for creating an educational setting that promotes academic progress and the cultivation of interpersonal abilities. By utilising this comprehension, instructors can optimise group projects to foster learning experiences, critical thinking, and student development.

1.2 Statement of Problem

Although there has been considerable research on group dynamics, there is still a substantial lack of understanding on how learners perceive and traverse the many stages of group collaboration, namely forming, storming, norming, and performing. This discrepancy is crucial because these beliefs have a direct impact on the efficacy of group work, which is fundamental in educational environments. Positive interdependence and promotive contact are crucial for achieving increased productivity and success in a group. Effective collaboration fosters these elements, leading to enhanced group performance (Johnson & Johnson, 2009). Nevertheless, educators may have difficulties in effectively implementing solutions that improve these interactions if they lack an understanding of how learners perceive these stages. The storming stage is notably arduous due to the presence of conflicts and divergent viewpoints. If not effectively addressed, these factors might impede group unity and hinder growth (Tuckman, 1965). Gaining insight into the experiences of learners at this level is essential for creating conflict resolution tactics that reduce disruptions and promote a more unified group atmosphere (Rahim, 2002). Furthermore, collaborative learning has a vital role in attaining academic goals and fostering crucial abilities such as communication, problem-solving, and critical thinking (Roseth, Johnson, & Johnson, 2008). However, without a comprehensive comprehension of student perceptions, the complete advantages of collaborative learning may not be achieved. This study seeks to close this divide by investigating learners' perspectives on the steps of creating, storming, norming, and performing in group work. The issue stems from the absence of comprehensive understanding of various perspectives, which is crucial for devising successful educational interventions. Every stage of a process provides distinct problems that can greatly impact the dynamics and results of a group. During the shaping stage, it is crucial to establish a comprehensive comprehension of responsibilities and goals in order to create a pleasant atmosphere for the entire project. Conversely, if disagreements arise during the storming stage and remain unresolved, they might result in ongoing problems (Belbin, 1981; Hackman, 1987). Hence, the objective of this study is to offer significant insights that can guide educational methods, improve group effectiveness, and deepen our understanding of collaborative learning experiences. In order to effectively help students, educators must have a clear grasp of how learners perceive and navigate different stages. Failure to do so can result in persistent problems in group dynamics, including unresolved disputes, lack of cohesion, and inefficient collaboration (Fittipaldi, 2020; Othman et al., 2023). The study aims to rectify these difficulties in order to boost the overall efficacy of group projects and optimise learning results.

1.3 Research Questions

This study explores learners' perception of their use the stages of group development are forming, storming, norming, and performing. Specifically, this research answers the following questions:

- What is the perception of learners regarding the process of forming phases in group work?

- What is the perception of learners regarding group conflicts during the storming stage of group work?
- What is the perception of learners towards the norming stage in group work?
- What is the perception of learners towards the performing stage in group work?
- Is there a correlation between group conflicts and all other stages of group work?

1.4 Research Objectives

- To investigate learners' perceptions of the forming stages in group work.
- To examine learners' perceptions of group conflicts (storming stage) in group work.
- To explore learners' perceptions of the norming stage in group work.
- To assess learners' perceptions of the performing stage in group work.
- To determine the relationship between group conflicts and all other stages in group work from the learners' perspective.

2. LITERATURE REVIEW

2.1 Group Work and Group Conflicts

Collaborative group work is a widely accepted and effective pedagogical approach that fosters teamwork, problem-solving, and critical thinking skills in students. It is a successful approach that is dependent on several principles, which include members of a group constantly communicating and communicating for a purpose, there is meaning, there is feedback, and appropriate communication channels are used (Toseland & Rivas, 2005). Despite the attractiveness of using group work, students face challenges and conflicts in completing group tasks (Fittipaldi, 2020). These conflicts can arise for various reasons, such as differences in work ethics, communication styles, or unequal participation. Furthermore, conflicting ideas or perspectives within the group can lead to disagreements and hinder the overall progress of the assignment (Hodges, 2018).

Toseland and Rivas (2005) explain that there needs to be a balance between the needs of the individuals within the group, managing roles, and status hierarchies are working to benefit rather than hinder or limit individual members and the whole group. Educators must address these conflicts to help their students have a positive and productive group work experience (Fittipaldi, 2020). One strategy to resolve conflicts in group work is to set clear guidelines for collaboration to reduce the potential risk of others not being held accountable for their lack of participation in the assigned group task. Hodges (2018) identifies the gap in group learning and suggests practical activities for an effective classroom. Whereas Fittipaldi (2020) recommends keeping teams small and acknowledges the use of electronic tools in group work. To conclude, addressing conflicts in group work is essential for the success of collaborative assignments.

2.2 Past Studies on Group Work

Past studies on group work have consistently highlighted both the potential benefits and challenges associated with collaborative efforts. One of the most influential theories in this domain is Tuckman's (1965) stages of group development. Tuckman (1965) highlighted that groups typically progress through five stages: forming, storming, norming, performing, and adjourning. This framework has been widely validated through empirical research, demonstrating that successful navigation through these stages can lead to higher productivity and more cohesive group dynamics. Tuckman's model underscores the importance of group

processes and the need for effective leadership to guide groups through the potentially turbulent storming phase, where conflicts and disagreements are common.

There have been many past studies conducted in terms of group work in language learning among students. Chiriac (2014) conducted a study aimed to enhance current knowledge and insights about the key elements behind successful group work in higher education. This research focuses on students' experiences of group work and learning in groups. A primary objective is to give university students a voice by highlighting their positive and negative perspectives and how they evaluate learning in group settings. Additionally, the study seeks to understand why some group work experiences are positive and lead to successful learning, while others do not. Data were gathered through a study-specific questionnaire that included both multiple-choice and open-ended questions, distributed to students across various study programs at two Swedish universities. This study is based on a reanalysis with a significant emphasis on qualitative analysis. The findings indicate that most students found group work to facilitate learning, particularly in academic knowledge. Three crucial prerequisites for effective group work were identified: learning, study-social function, and organization. These factors were discussed as they either facilitate or hinder students' learning and affect their overall group work experiences.

Next, the study by Min, Mei and Chee (2014) also looked at group work in language learning but specifically on the relationship between different stages of group work. The study mentioned that the various stages of group work are interconnected in a constructive progression, indicating that these stages are not distinct but rather positively linked. The study by Min, Mei and Chee (2014) is done to understand how Malaysian students perceive the different stages of group work and to examine the relationships between these stages. The quantitative study was conducted involving 165 university students enrolled in a Mandarin as a Foreign Language course. This study applied Tuckman's Model to analyze the stages of group development. The findings have highlighted that during the forming stage, students are inclined to assign specific roles to team members and outline the goals and tasks to be completed. In the storming stage, where discussions occur, the results indicate that students believe the team leader should actively contribute to the tasks. The norming stage reveals that students aim to achieve harmony by avoiding conflict and accepting one another as team members. In the performing stage, students agree that they accomplished a significant amount of work and perceive their group interactions as positive and cooperative, fully recognizing each other's strengths and weaknesses. The study also shows that the various stages of group work are positively linked. From the outcomes, it is essential to understand these connections as it can be beneficial to guide effective groups.

Similarly, Siti Fauziana et al. (2023) conducted a study aimed to examine the influence of these four stages on group work and the relationships between them. A quantitative approach was utilized, employing purposive sampling. An online questionnaire with 29 items was distributed to 200 undergraduate students at Universiti Teknologi Mara, Shah Alam, Malaysia. The questionnaire was divided into four sections, each designed to capture respondents' experiences throughout the four stages of Tuckman's Model. The study also found that all stages positively influence students' group work experiences. Additionally, there is a moderate positive relationship between the forming and norming stages, as well as between the forming and performing stages. These findings may imply that educators should monitor these stages as students progress through them during group work and provide guidance to enhance the effectiveness of group work in ESL classrooms.

2.3 Conceptual Framework

Class discussions have many advantages. One obvious benefit of class interaction is improved communication skills (Rahmat, 2020). During class discussions, team members work together to benefit from the communication. However, the interaction during the discussions can also cause conflicts. Figure 1 illustrates the conceptual framework of the research. This study examines the impact of group conflicts. Tuckman (1965) identified the conflict stage as the storming stage. Tuckman (1965) asserts that the initial stage is the formal stage, which is thereafter followed by the storming stage. Subsequently, the norming stage is pursued, culminating in the performing stage.

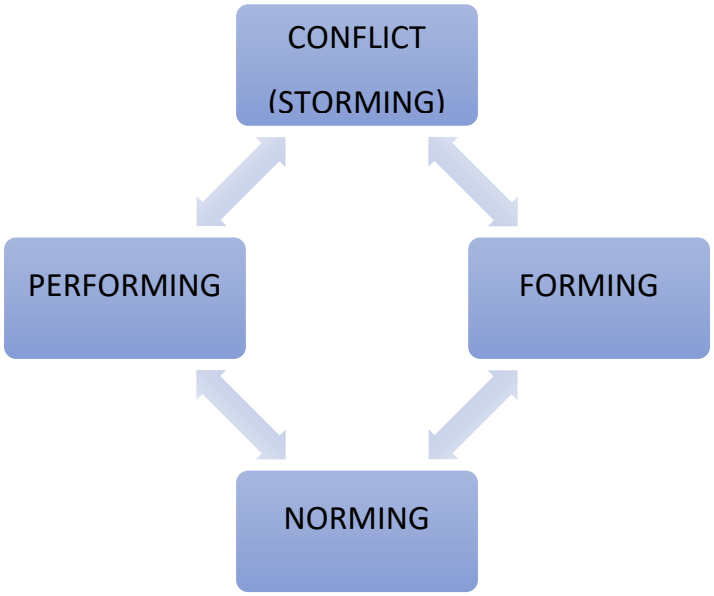

Figure 1- The study's conceptual framework-The Influence of Conflicts in Group Interactions

3.0 METHODOLOGY

This study employs quantitative methods to investigate the elements that motivate undergraduate students to learn. A targeted sample of 178 people completed the survey. The survey instrument employed is a 5-point Likert scale, based on Tuckman's (1965) framework, to identify the variables presented in Table 1. There are four sections in the survey. Section A contains information regarding the demographic profile. Section B consists of a total of seven items throughout the Forming Stage. Section C consists of six things during the Storming Stage. Section D consists of eight things during the Norming Stage, while Section E consists of eight pieces during the Performing Stage.

Table 1- Distribution of Items in the Survey

Section	Stage (Tuckman, 1965)	Items	Cronbach Alpha
B	FORMING	7	0.643
C	STORMING	6	0.725
D	NORMING	8	0.732

E	PERFORMING	8	0.858
		29	0.891

Additionally, Table 1 displays the survey's dependability. The analysis indicates a Cronbach alpha coefficient of 0.891, so demonstrating the instrument's dependability. Additional analysis utilising the Statistical Package for the Social Sciences (SPSS) is conducted in order to present the findings and address the research issues of this study.

4. FINDINGS

4.0 Findings for Demographic Profile

Table 2: Percentage for Demographic Profile

Q1	Gender	Male	Female
		68%	32%
Q2	Discipline	Science & Technology	Social Science
		42%	58%

The gender and discipline distribution of the respondents who participated in the study is provided in Table 2. Females accounted for 32% of the participants, while Males constituted the majority with 68%. This gender breakdown highlights a significant gender disparity, where males are more represented than females in the studied sample. The findings also revealed that, among the respondents, the highest proportion, constituting 58%, identified themselves with the Social Science discipline, while 42% associated with the Science and technology discipline.

4.1 Findings for Forming Stage

This section provides data to address study question 1: What is the perception of learners regarding the process of forming phases in group work?

Table 3: Mean for FORMING STAGE

ITEM	**MEAN**
SECTCaFQ1 At the start, we try to have set procedures or protocols to ensure that things are orderly and run	4.1
SECTCaFQ2 At the start, we assign specific roles to team members	4.5
SECTCaFQ3 At the start, we are trying to define the goal and what tasks need to be accomplished.	4.5
SECTCaFQ4 At the start, team members are afraid or do not like to ask others for help.	3.0
SECTCaFQ5 At the start, team members do not fully trust the other team members and closely monitor others who are working on a specific task.	2.8
SECTCaFQ6 At the start, it seems as if little is being accomplished with the project's goals.	3.8
SECTCaFQ7 At the start, although we are not fully sure of the project's goals and issues, we are excited and proud to be on the team.	3.9

Based on Table 3 above, the highest mean score of 4.5 was recorded for SECTCaFQ2, suggesting unanimous agreement among learners that in the forming stage, specific roles are assigned to team members at the start of the group work. Similarly, SECTCaFQ3 also obtained

a mean score of 4.5, indicating that participants agreed on the importance of defining project goals and tasks early on. SECTCaFQ1 follows closely with a mean score of 4.1, indicating agreement on the significance of having set procedures or protocols to ensure order and smooth operation of the group task. On the other hand, SECTCaFQ5 received the lowest mean score of 2.8, reflecting a shared impression that team members do not fully trust each other from the start of the project and may closely monitor others working on specific tasks. Following this, SECTCaFQ4 obtained the second-lowest mean score of 3.0, indicating that some team members hesitated or feared asking for help during the forming stage. SECTCaFQ6, with a mean score of 3.8, suggests that there may be a perception of minimal progress towards the project's goals initially. However, SECTCaFQ7 received a mean score of 3.9, indicating that despite uncertainties about the project's goals, learners express excitement and pride in being members of the team during the forming stage. These findings highlight both positive and challenging aspects of the forming stage.

4.2 Findings for Group Conflicts (Storming Stage)

This section provides data to address research question 2 - What is the perception of learners regarding group conflicts during the storming stage of group work?

Table 4: Mean for Storming Stage

ITEM	MEAN
SECTCbSQ1 During discussions, we are quick to get on with the task on hand and do not spend too much time in the planning stage.	3.6
SECTCbSQ2 During discussions, the team leader tries to keep order and contributes to the task at hand.	4.2
SECTCbSQ3 During discussions, the tasks are very different from what we imagined and seem very difficult to accomplish.	3.3
SECTCbSQ4 During discussions, we argue a lot even though we agree on the real issues.	2.8
SECTCbSQ5 During discussions, the goals we have established seem unrealistic.	2.6
SECTCbSQ6 During discussions, there is a lot of resisting of the tasks on hand and quality improvement approaches.	3.2

Based on Table 4 above, SECTCbSQ2 achieved the highest average score of 4.2, suggesting that the team leader tries to maintain order in the storming stage and actively contributes to the job during discussions. This underscores the significant impact of competent leadership during the storming phase. SECTCbSQ1 obtained the second-highest mean with an average score of 3.6, indicating that the group prefers to proceed quickly with the task at hand, minimising time spent in the planning stage. Conversely, SECTCbSQ5 and SECTCbSQ4 obtained the lowest average scores of 2.6 and 2.8, respectively. SECTCbSQ5 posits that the established goals may seem unrealistic to learners during discussions. Meanwhile, SECTCbSQ4 indicates disagreements arise during discussions, even when there is agreement on the real issues. Lastly, SECTCbSQ6 and SECTCbSQ3 received mean scores of 3.2 and 3.3, respectively. SECTCbSQ6 reflects some resistance to the tasks at hand and quality improvement approaches during discussions. At the same time, SECTCbSQ3 reveals that the tasks discussed may differ significantly from initial expectations and could be perceived as challenging to accomplish. These findings provide insights into learners' experiences and challenges during the storming stage of group work, underscoring the crucial significance of leadership and drawing attention to possible causes of conflict that could affect collaboration and the attainment of goals during online group work.

4.3 Findings for Norming Stage

This section provides data to address research question 3- What is the perception of learners towards the norming stage in group work?

Table 5: Mean for Norming Stage

ITEM	MEAN
SECTCcNQ1 In the group, we have thorough procedures for agreeing on our objectives and planning the way we will perform our tasks.	4.1
SECTCcNQ2 In the group, we take our team's goals and objectives literally, and assume a shared understanding.	4.2
SECTCcNQ3 In the group, the team leader ensures that we follow the procedures, do not argue, do not interrupt, and keep to the point.	4.0
SECTCcNQ4 In the group, we have accepted each other as members of the team.	4.4
SECTCcNQ5 In the group, we try to achieve harmony by avoiding conflict.	4.5
SECTCcNQ6 In the group, the team is often tempted to go above the original scope of the project.	3.4
SECTCcNQ7 In the group, we express criticism of others constructively	3.2
SECTCcNQ8 In the group, we often share personal problems with each other.	2.8

Table 5 reveals that the highest mean (M = 4.5) is generated for item SECTCcNQ5. The item suggests a strong inclination towards harmony by avoiding conflict. In addition, the item SECTCcNQ4 is evident as the second-highest mean score (M = 4.4). This indicates that group members have accepted each other as an integral part of the team in group work. The data also demonstrated the high mean scores for SECTCcNQ1 (4.1) and SECTCcNQ2 (4.2). This shows that group work strongly emphasises establishing thorough procedures for objectives and shares a common understanding of team goals. However, the lowest score was generated for item SECTCcNQ8, with a mean score of 2.8. The group may need to be more open in sharing personal problems with the group members.

4.4 Findings for Performing Stage

This section provides data to address research question 4- What is the perception of learners towards the performing stage in group work?

Table 6: Mean for Performing Stage

ITEM	MEAN
SECTCdPQ1 In the end, our team feels that we are all in it together and shares responsibilities for the team's success or failure	4.4
SECTCdPQ2 In the end, we do not have fixed procedures, we make them up as the task or project progresses.	3.6
SECTCdPQ3 In the end, we enjoy working together; we have a fun and productive time.	4.3
SECTCdPQ4 In the end, the team leader is democratic and collaborative.	4.2
SECTCdPQ5 In the end, we fully accept each other's strengths and weakness.	4.4
SECTCdPQ6 In the end, we are able to work through group problems.	4.4
SECTCdPQ7 In the end, there is a close attachment to the team.	4.0
SECTCdPQ8 In the end, we get a lot of work done.	4.6

The data presented in Table 6 indicates that item SECTCdPQ8 has the highest mean score (M = 4.6). The group work is highly productive, and much work is done during the performing stage. The high mean score was also revealed for the items SECTCdPQ1, SECTCdPQ5, and SECTCdPQ6, with a mean score of 4.4. Item SECTCdPQ1 (4.4) indicates that, during the performing stage, group members feel that they are all together and that members share responsibilities for both success and failure. As for the item SECTCdPQ5, the group members fully accept each other's strengths and weaknesses. Item SECTCdPQ6 demonstrates that they could work through group problems in group work. On the contrary, the lowest mean score is for SECTCdPQ2. It suggests that the team does not strictly adhere to fixed procedures during the performing stage, preferring a more adaptive approach by making procedures as the task or project progresses.

4.5 Findings for Relationship Between Group Conflicts and All Stages in Group Work.

This section presents data to answer research question 5- Is there a correlation between group conflicts and all other stages of group work? The data was analysed using SPSS for correlations to determine if there was a significant association between the mean scores. According to Jackson (2015), the coefficient is significant at the .05 level, and a positive correlation is measured on a 0.1 to 1.0 scale. A weak positive correlation ranges between 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a strong positive correlation from 0.5 to 1.0. The following analysis explores the relationships between the stages of group work according to Tuckman (1965), focusing on how conflicts within groups correlate with the forming, storming, norming, and performing stages.

Table 7: Correlation between Forming and Storming

Correlations

		FORMING	STORMING
FORMING	Pearson Correlation	1	.527**
	Sig. (2-tailed)		<.001
	N	178	178
STORMING	Pearson Correlation	.527**	1
	Sig. (2-tailed)	<.001	
	N	178	178

**. Correlation is significant at the 0.01 level (2-tailed).

Table 7 demonstrates a correlation between the forming and storming stages. The correlation study reveals a strong and statistically significant relationship between forming and storming (r=.527**). Additionally, the p-value is found to be .000, indicating a very significant association. Consequently, there exists a robust correlation between the processes of forming and storming.

Table 8: Correlation between Forming and Norming

Correlations

		FORMING	NORMING
FORMING	Pearson Correlation	1	.562**
	Sig. (2-tailed)		<.001
	N	178	178
NORMING	Pearson Correlation	.562**	1
	Sig. (2-tailed)	<.001	
	N	178	178

**. Correlation is significant at the 0.01 level (2-tailed).

Table 8 shows there is an association between forming and norming stages. Correlation analysis shows that there is a highly significant association between forming and norming (r=.562**) Moreover, (p=.000). This means that there is also a strong positive relationship between forming and norming.

Table 9: Correlation between Performing and Norming

Correlations

		PERFORMING	NORMING
PERFORMING	Pearson Correlation	1	.680**
	Sig. (2-tailed)		<.001
	N	178	178
NORMING	Pearson Correlation	.680**	1
	Sig. (2-tailed)	<.001	
	N	178	178

**. Correlation is significant at the 0.01 level (2-tailed).

Table 9 shows there is an association between performing and norming stage. Correlation analysis shows that there is a high significant association between performing and norming stage (r=.680**) Moreover, (p=.000). This means that there is also a strong positive relationship between the performing and norming stages.

Table 10: Correlation between Performing and Storming

Correlations

		PERFORMING	STORMING
PERFORMING	Pearson Correlation	1	.289**
	Sig. (2-tailed)		<.001
	N	178	178
STORMING	Pearson Correlation	.289**	1
	Sig. (2-tailed)	<.001	
	N	178	178

**. Correlation is significant at the 0.01 level (2-tailed).

Table 10 shows there is an association between the performing and storming stages. Correlation analysis shows that there is a low significant association between performing and storming stage (r=.289**) Moreover, (p=.000). This means that there is also a weak positive relationship between the performing and storming stages.

5. CONCLUSION

5.1 Summary of Findings and Discussions

This study sought to investigate the way in which learners perceive the dynamics of group work at different levels, and how these views impact educational environments. The study examined learners' perceptions of the stages of group work: forming, storming, norming, and performing.

During the initial stage, the participants highlighted the need of establishing explicit protocols, identifying objectives, and assigning responsibilities, which is consistent with previous studies conducted by Belbin (1981) and Cohen (1994). During the storming phase, it became evident that effective leadership had a major role in resolving conflicts, which aligns with the conclusions drawn by Hackman (1990).

The norming stage emphasised the significance of developing group norms and procedures while promoting inclusive communication, reflecting Tannenbaum's (2022) research on group cohesion. During the performing stage, participants saw a significant increase in productivity and happiness when working together, placing a strong emphasis on teamwork and accepting each other's skills and weaknesses. These findings align with Hackman's (1987) research.

Furthermore, this study investigated the correlation between group conflicts and cognitive-emotional traits throughout these phases, utilising the insights offered by Jackson (2015).

5.2 Implications for Teaching and Suggestions for Future Research in Education

This study offers special insights into the dynamics of group work, providing implications for instructional approaches and prospects for further research. When it comes to teaching methods, it is essential to set explicit guidelines and support mechanisms when forming groups. This helps explain the responsibilities and objectives, making it easier for the group members to collaborate effectively.

Acquiring proficient leadership and conflict resolution abilities is crucial when managing the storming phase. Enhancing group norms and inclusivity improves unity and productivity during the norming stage. Commending accomplishments throughout the execution phase strengthens the collective dynamics and morale.

Essential areas for future research include investigating variations in group dynamics, examining the influence of technology on collaboration, and undertaking longitudinal studies. These initiatives will offer customised interventions to increase the results of collaborative learning and boost teaching methods in educational environments.

ACKNOWLEDGEMENT

We express our gratitude to all individuals who contributed to this research. We are pleased to have successfully concluded this research with the assistance of numerous individuals. We express our gratitude to our team members whose diligent efforts are highly valued.

AUTHORS' CONTRIBUTION

NH carried out the introduction and conclusion section. WS and NS collected and refined the data and performed the data analysis using SPSS. NK and MD also wrote the literature review

section. NH also wrote the discussion and implication sections. All authors read and approved the final manuscript.

CONFLICT OF INTEREST

None declared

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ESTEEM Journal of Social Sciences and Humanities
Vol. 8, Special Issue, October 2024
https://ejssh.uitm.edu.my

Exploring Rumelhart's Model for Academic Reading Among Undergraduates

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ABSTRACT

ARTICLE HISTORY

Received:
12 August 2024
Accepted:
30 September 2024
Published:
11 October 2024

KEYWORDS

Reading strategies
Bottom-up strategy
Top-down strategy
Global strategy
Problem-solving strategy

Reading strategies are deemed important in academic reading among English as a second language (ESL) students because these strategies can help them to grasp a better understanding of academic texts. By incorporating the top-down and bottom-up strategies via Rumelhart's Interactive Theory, this study explored undergraduates' use of strategies for academic reading. For this purpose, 207 undergraduates were selected using purposive sampling method, while the quantitative research approach was utilised to gauge the necessary data. In specific, a 5-Likert scale questionnaire survey comprising 48 items distributed across 5 sections was administered among the participants. Results indicated that the top-down and bottom-up strategies are significantly correlated in the aspect of academic reading. Important findings from the study are crucial to guide instructors in creating language and classroom interventions with the focus on incorporating effective reading skills that are specifically tailored for better comprehension of academic texts among L2 learners.

e-ISSN 2600-7274

1. INTRODUCTION

1.1 Background of Study

Reading materials in English is often considered a difficult task by many tertiary-level students in Malaysia, especially since English is the nation's second language. This underscores the importance of addressing difficulties in reading by imparting effective strategies among L2 undergraduates to increase their comprehension level in academic texts. Reading strategies refer to particular methods used to tackle a problem with strategically planned operation where information is managed in certain ways to achieve a desired outcome (Brown, 2007). In dealing with reading difficulties, Garner (1987) explained that effective readers utilise strategies deliberately and consciously to address cognitive failure. There are various useful strategies to help improve comprehension in academic reading. The current study was conducted to explore the top-down (global reading strategies), bottom-up (problem-solving strategies), and interactive reading strategies adopted by ESL tertiary-level students in comprehending texts of academic nature. In this paper, the terms top-down and global reading strategies as well as bottom-up and problem-solving strategies are used interchangeably.

Rumelhart (1977) proposes the interactive model which combines elements of the top-down and bottom-up models for reading because neither model individually explains the reading process in specific. The interactive model integrates the top-down and bottom-up processing, in which simultaneous processing of sensory and non-sensory data takes place. In the interactive model, readers undergo both the processes in interpreting information and comprehending a text.

As neither the model is solely accounted for in explaining the reading process, the interactive model is therefore deemed as the most thorough way to describe it. For example, active readers may start with the bottom-up strategy to understand a text, and switch to the top-down strategy upon stumbling difficult words to decode the meanings before resuming the task.

The importance of determining the most effective reading strategy and how they could be practised to improve readers' comprehension of an academic text has led to more research work in this area. Similarly, a considerable amount of studies need to be carried out to establish the correlation between top-down and bottom-up strategies that enable ESL undergraduates to read well and increase their understanding of academic texts.

1.2 Statement of Problem

Developing competency when reading academic texts is extremely crucial for tertiary-level ESL students. However, reading in the L2 can be a daunting task, especially for less proficient users of the language. Thus, it is imperative to adopt suitable and effective strategies for a better understanding of academic texts. According to Afflerbach and Cho (2009), readers must use the most strategies as mental tools for monitoring, repairing, or comprehending reading texts. These strategies, which include the top-down and bottom-up processes, or a blend of both (the interactive model), can be consciously and semi-consciously applied in achieving better comprehension.

Rumelhart (1989, as cited in Liu, 2010) explains that in the interactive model, the reader begins with accessing the "visual information store" in her mind where details of the words and their associated spelling and meaning are stored. Next, the reader identifies and extracts specific features of those words, as well as categorises them in the pattern synthesiser by making use of

his syntactic, semantic, orthographic, and lexical knowledge to finally understand their meanings. Meanwhile, Stanovich (1980) introduces the interactive-compensatory model, in which the bottom-up approach compensates for the top-down approach's weaknesses with its own strengths, and vice versa.

Relevant past research has focused on identifying the strengths and weaknesses of the top-down and bottom-up strategies as separate entities. However, studies that are specifically carried out to elaborate on the effectiveness of the combination of the two approaches when used in sync are still limited. Henceforth, the main purpose of this study is to establish the correlation between the top-down and bottom-up strategies when used by ESL undergraduates in their academic reading.

1.3 Research Objectives and Questions

This research was conducted to examine how L2 students perceive their use of reading strategies. In particular, the current work was done with the following questions:

1. How do students perceive their use of top-down strategies in academic reading?
2. How do students perceive their use of bottom-up reading strategies in academic reading?
3. How do students perceive their use of interactive reading strategies in academic reading?
4. Is there a relationship across all the reading strategies?

2. LITERATURE REVIEW

2.1 Rumelhart's Reading Strategies

Reading strategies have been the topics of interest among many scholars in academic reading research. Reading generally refers to decoding the underlying meaning of messages in written texts. Meanwhile, reading strategies are the approaches consciously chosen by readers in comprehending what they read. Rumelhart (1980), who used cognitive mechanisms in explaining comprehension, describes reading as an active and interactive cognitive processes that readers undergo when engaging with a text. These processes, categorised into top-down and bottom-up, are used either in isolation or simultaneously to attain comprehension. The bottom-up reading process starts with the basic step of word recognition leading up to the formation of comprehension, while in the top-down process, readers activate their schemata or background knowledge by drawing upon and relating it to their own experiences of the topic being read. In other words, readers' comprehension is developed by making meaningful association between what is being read and what they already know about it.

Opposing the notion that reading is a mere linear processing when explaining the top-down strategies, Rumelhart (1977, p. 573) stated that readers use knowledge of the language "syntactic, semantic, lexical, and orthographic information" to form "their perception of print" that renders them the ability to interpret written texts more effectively. To date, various research on reading strategies for academic materials has been based on Rumelhart's (1980) model of reading, showcasing the interaction and influence of the bottom-up and top-down processes in understanding a reading text. Thus, investigation into L2 readers' use of reading strategies in understanding academic materials is essential to guide them in using the right ones, particularly when their academic performance is largely determined by their ability to understand materials in English.

2.2 Past Studies on Academic Reading Strategies

There have several previous studies on academic reading strategies. The ability to read, particularly in the context of academic reading, is crucial for students pursuing their studies in institutions of higher learning. Yapp et al. (2021) conducted a study on the use of strategies by 801 L2 undergraduates at a vocational institution and highlighted two pertinent issues, namely (a) the increasing use of reading materials in English, and (b) less experience in L2 academic reading. Highlighting the direct association between the two issues and their effects on L2 readers' comprehension of academic texts, the researchers suggested an explicit instruction as an intervention to teach them effective academic reading strategies.

In a qualitative research involving two categories, namely SCT (strategies for comprehending reading texts) and SETC (strategies for enhancing textual comprehension), derived from a list of 39 reading strategies, Saengpakdeejit and Intaraprasert (2014) identified undergraduates' strategies in comprehending and coping with difficulties when dealing with academic materials. Although the undergraduates were reported to heavily depend on support strategies like referring to a dictionary for meaning, the findings revealed that they could monitor their use of reading strategies (e.g., contextual clues, background knowledge, etc., or their combination) according to the extent of their comprehension of the reading texts and the difficulty level. Research aiming to investigate the bottom-up and top-down models in academic texts was done by Suraprajit (2019) among 270 Thai undergraduates. The study showed that the undergraduates predominantly relied on the top-down strategies when reading academic and business texts, with the bottom-up strategies being least frequently used for both types. Therefore, it is clear that readers may use a combination of reading strategies, or interchangeably, or utilise them in isolation to understand reading texts.

Meanwhile, Oliver and Young conducted a study to determine how the top-down and bottom-up models affect tertiary students' reading fluency and comprehension. They found that bottom-up training negatively influenced fluency and comprehension, whereas the top-down training positively improved fluency but did not affect comprehension. Studies on the effects of top-down and bottom-up models have also been carried out to determine the association between reading comprehension and cognitive style. Fatemi et al. (2014) discovered that the more self-motivated field independent learners excelled in the bottom-up processes compared to field dependent learners. Conversely, a better performance was observed for field dependent learners in the top-down process reading compared to their counterparts. This finding highlights the importance of both the strategies in improving the reading abilities.

2.3 Conceptual Framework

The conceptual framework of this study is illustrated in Figure 1 below. Reading, especially in the academic context, is initially presumed by students as challenging based on the past difficulties (Rahmat et al., 2020) that they encountered in learning the English language. Unfortunately, these perceived difficulties might become a repetitive cycle for them as academic readers, which could subsequently lead to other issues in reading. The current study is based on the research work by Abeeleh and Al-Sobh (2021) on reading difficulties, as well as the investigation on the utilisation of reading strategies by Amer et al. (2010). In specific, Abeeleh and Al-Sobh (2021) highlighted some reading difficulties faced by students in terms of the content and the way it is written, words used in written texts, and the problems pertaining to their language. Meanwhile, Amer et al. (2021) reported that students relied on certain reading strategies, starting with the top-down process as portrayed by their use of the global reading strategies to extract a general idea of written text, followed by their use of the problem-solving

strategies (bottom-up process) to fully comprehend it. At times, students may go through sections in the text again to re-read, refer to a dictionary to search for meanings of certain words, while getting assistance from their peers for support.

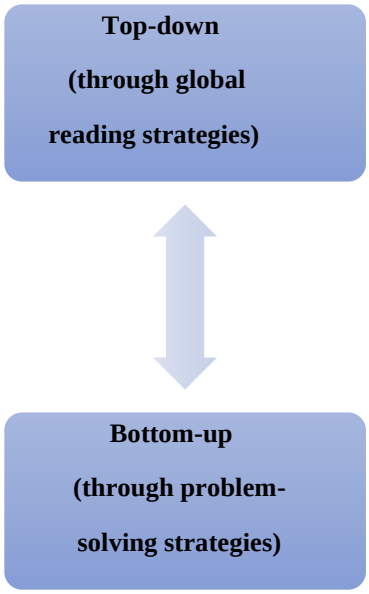

Figure 1: Conceptual Framework of the Study - Relationship between top-down (global strategies) and bottom-up (problem-solving strategies) processes in reading

3. METHODOLOGY

This quantitative study is conducted to investigate the perception of undergraduates on their use of various reading strategies; namely the top-down, bottom-up, or interactive models. A purposive sample of 207 respondents was involved in the survey. The instrument used is a 5 Likert-scale survey derived from Abeeleh and Al-Sobh (2021) on reading comprehension problems and also Amer, Al Barwani, and Ibrahim (2010) on the readers' perceived use of reading strategies to reveal the variables shown in Table 1 below. The survey consists of 4 sections. Section A has items on respondents' demographic profile, while Section B contains 14 items on reading difficulties. Section C has 17 items on the global strategies, and Section D has 8 items on problem-solving strategies.

Table 1: Distribution of Items in the Survey

Section	Strategy	
B	Global	17
C	Problem-Solving	8
D	Support	9
TOTAL		34

Table 2: Reliability of the Survey

Reliability Statistics

Cronbach's Alpha	N of Items
.892	25

Table 2 shows the reliability of the survey. The analysis yielded a Cronbach alpha of .892, thus, revealing a good reliability of the instrument chosen/used. Further analysis using SPSS was done to present findings to answer the research questions in this study.

4. DATA ANALYSIS AND RESULTS

4.1 Findings for Demographic Profile

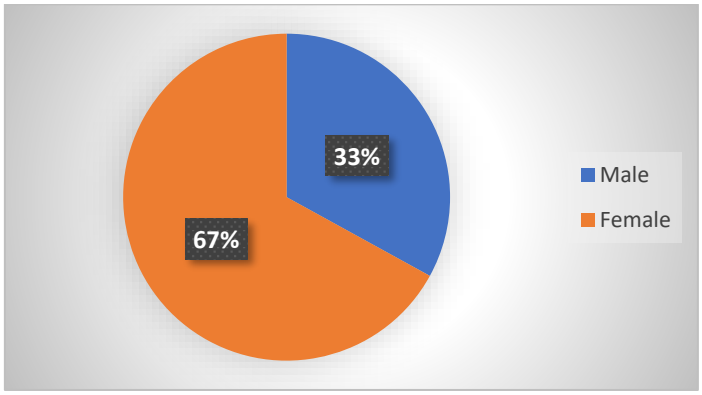

Figure 1: Percentage for Gender

Figure 1: shows that out of the total of 207 respondents, 33 percent are males, and 67 percent are females.

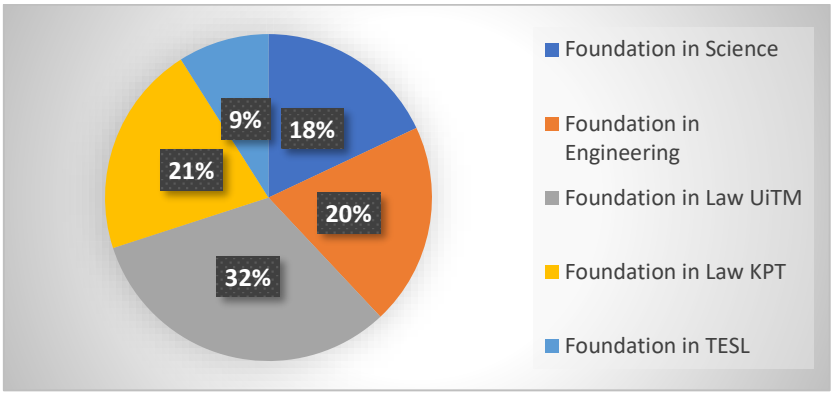

Figure 2: Percentage for Programme

Figure 2 shows the percentage of participants in the different programmes. The respondents were from the foundation-level courses in Law UiTM (32%), Law KPT (21%), Engineering (20%), Science (18%) and Teaching of English as a Second Language (9%).

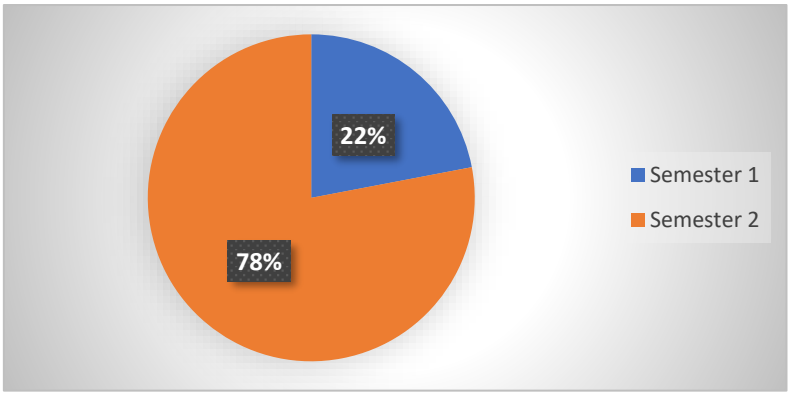

Figure 3: Percentage for Semester

Figure 3 displays the percentage of respondents based on their semester. Majority of the respondents were in their Semester 2 (78%), while others (22%) were in Semester 1 at the point of this study.

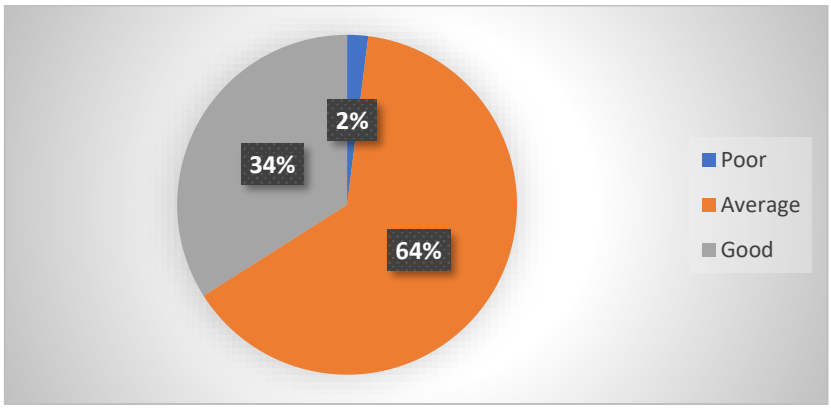

Figure 4 - Percentage for Self-Rating English proficiency

Figure 4 illustrates the percentage for self-rating English language proficiency. In specific, the majority of the respondents (64%) regarded themselves to possess an average level of the English language proficiency, followed by those who rated themselves as having a good level of proficiency (34%) and only 2 percent regarded themselves to have a poor level of proficiency.

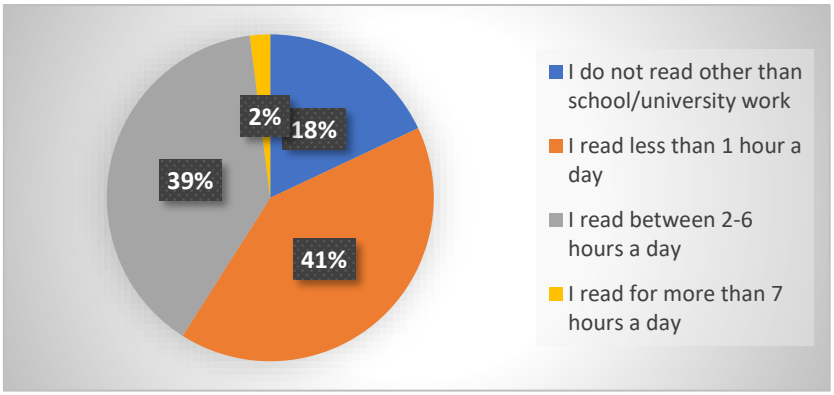

Figure 5 - Percentage for reading as a Free Time Activity

Figure 5 presents the percentage of reading as a free time activity among the respondents. Most of the respondents (41%) reported to read for less than 1 hour a day, followed by those who read between 2-6 hours (39%), and the respondents who do not read other than their school or university work (18%). Only 2 percent of them had reading as a free time activity.

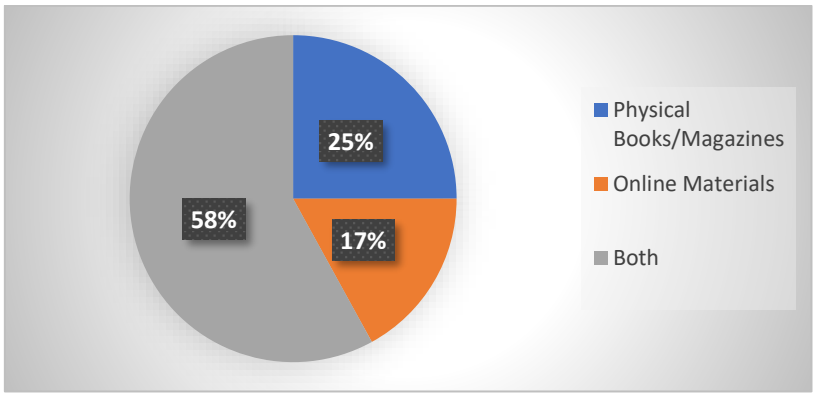

Figure 6 - Percentage for Reading Preference

Figure 6 illustrates the percentage for the respondents' reading preferences. As shown, 58 percent of the respondents claimed that they chose reading both physical books/magazine and online materials, while 25 percent particularly preferred reading printed copies in comparison to only 17 percent who made full use of online materials for reading.

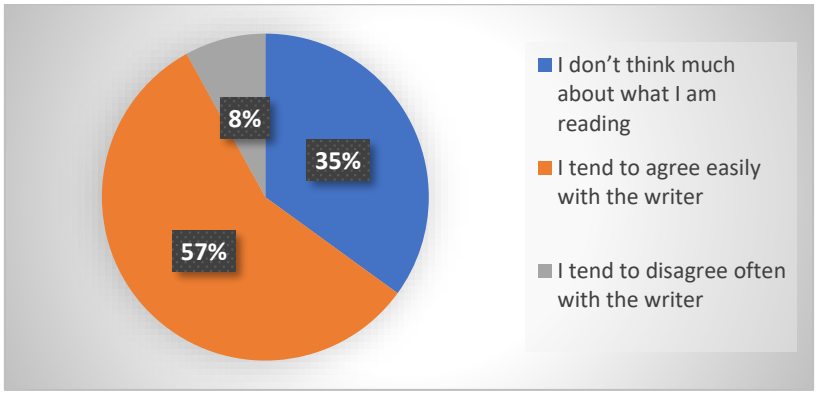

Figure 7 - Percentage for Reading Habit

Figure 7 depicts the percentage for the respondents' reading habit. The majority of respondents (57%) stated that they have the tendency to agree easily with the writer, followed by those who do not think much about what they read (35%), and only 8 percent of them tend to disagree often with the writer.

4.2 Findings for Global Reading Strategies (Top-Down)

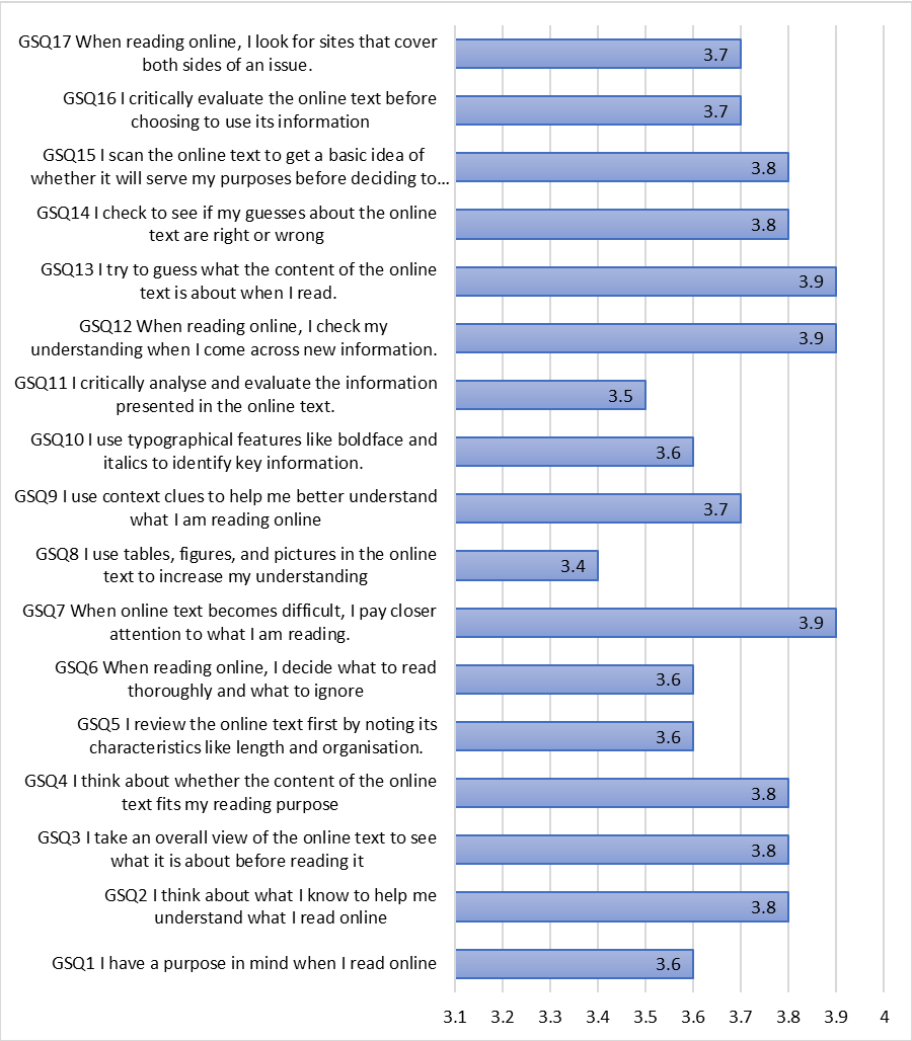

Figure 8: Mean for Global Strategies

Data required to answer research question 1, i.e. How do learners perceive the use of top-down reading strategies in reading? are presented in this section. In this study, the top-down strategies were determined based on the respondents' utilisation of the global reading strategies. Data on the means derived for the global reading strategies are shown in Figure 8 above. Interestingly, 3 items had the highest means of 3.9, namely "When reading online, I check my understanding when I come across new information", "I try to guess what the content of the online text is about when I read", and "When online text becomes difficult, I pay closer attention to what I am reading". The second highest mean score of 3.8 was indicated in 5 items, "I think about whether the content of the online text fits my reading purpose", "I scan the online text to get a basic idea of whether it will serve my purposes before deciding to read it", "I think about what I know

to help me understand what I read online", "I check to see if my guesses about the online text are right or wrong" and "I take an overall view of the online text to see what it is about before reading it". Meanwhile, 3 items had the mean score of 3.7, i.e. "I critically evaluate the online text before choosing to use its information", "When reading online, I look for sites that cover both sides of an issue" and "I use context clues to help me better understand what I am reading online".

4.3 Findings for Problem-Solving Reading Strategies (Bottom-down)

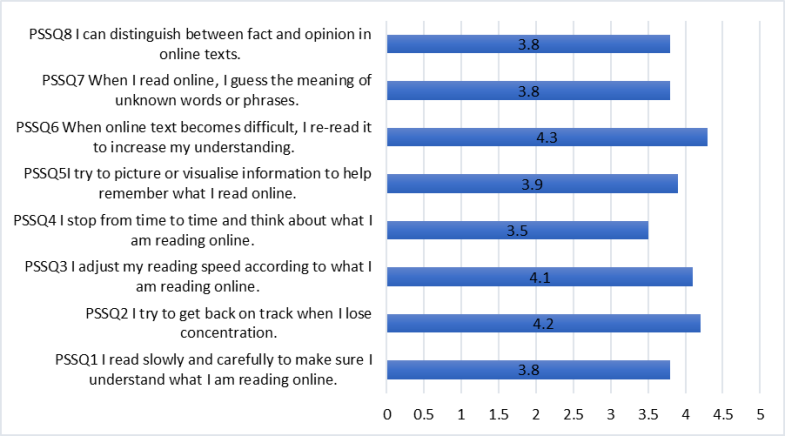

Figure 9: Mean for Problem-Solving Strategies

This section presents data to answer research question 2, i.e. How do learners perceive the use of bottom-up reading strategies in online reading? In the context of this study, bottom-down strategies are measured by the respondents' use of the problem-solving strategies. As illustrated in Figure 9, the highest mean at 4.3 is represented by ""When online text becomes difficult, I re-read it to increase my understanding". Furthermore, the second highest mean of 4.2 is denoted by "I try to get back on track when I lose concentration", while the third highest mean of 4.1 is signified by "I adjust my reading speed according to what I am reading online".

4.4 Findings for the relationships across all reading strategies.

This section presents data to answer research question 4, i.e. Is there a relationship across all online reading strategies? Therefore, to determine if there is a significant association in the mean scores between all reading strategies, data were analysed using SPSS for correlations. The correlation is shown in Table 3 below.

Table 3: Relationship between Top-Down and Bottom-Up Reading Strategies

Correlations

		TOPDOWN	BOTTOMUP
TOPDOWN	Pearson Correlation	1	.660**
	Sig. (2-tailed)		.000
	N	207	207
BOTTOMUP	Pearson Correlation	.660**	1
	Sig. (2-tailed)	.000	
	N	207	207

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3 shows there is an association between the top-down and bottom-up reading strategies. The correlation analysis revealed a highly significant association between top-down and bottom-up (r=.660**) and (p=.000). According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Meanwhile, a weak positive correlation would be in the range of 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a strong positive correlation from 0.5 to 1.0. This means that there is also a strong and positive relationship between the top-down and bottom-up strategies.

5. DISCUSSION

Based on the research questions, the results can be summarised as follows:

How do students perceive their use of top-down strategies in academic reading?
Data indicates that the respondents apply the global-reading strategy mainly to check for understanding and that it is imperative for them to guess the meaning of difficult words that they come across while reading. This correlates with the study conducted by Nilforoushan, Rashtchi, and Abbasian (2023) where they discovered that the top-down reading strategy is utilised when they refer to academic texts.

How do students perceive their use of bottom-up reading strategies in academic reading?
In relation to the bottom-up reading strategy, the respondents claim to find it beneficial especially when they find certain words or contexts difficult to comprehend. As active readers, they would re-read a particular text over and over again to enhance their understanding, which indirectly shows that they are very much involved in what they are reading. This finding is in line with the study carried out by Kamarulzaman and Abdullah (2019) which indicates that problem-solving strategies are typically applied to check for understanding, adjust reading speed, and engage in metacognition to ensure text comprehension.

Is there a relationship across all the reading strategies?
From the findings obtained, it can be clearly seen that there exists a strong correlation between the top-down and bottom-up strategies which indicates the readers' ability to apply reading strategies at a higher level. This finding coincides with the explanation given by Carrell, Devine and Eskey (1998) in which they have stated that the good readers should be able to continually leap from one type of model to the other type according to what and how they read. Therefore, by integrating both the top-down and bottom-up strategies during reading, the respondents are able to recognise various words and simultaneously relate them with the prior knowledge to approve the assumption of meaning.

6. STUDY IMPLICATIONS

Based on the findings of this research, it is imperative that academicians take note of their students' ability to apply both the top-down and bottom-up strategies in academic reading. Having the awareness to combine both strategies is vital to improve their students' overall academic success. Educators can also utilise the findings of this study to design activities that will help their students identify, utilise and master appropriate reading strategies to be able to read well, improve comprehension, and attain academic success. Lastly and most importantly, pre-university ESL learners should apply a combination of reading strategies to prepare for more demanding academic requirements and tasks to be successful in their learning.

7. STUDY LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

Several recommendations can be suggested for those interested in carrying out similar work in this area in the future. Firstly, a research that makes comparisons between respondents of different programmes at tertiary level would add more data into the existing literature. Since there were only 207 respondents, it is felt that this study would have conceded much more reliable results with a larger number of participants. Secondly, having respondents that come from different educational settings in Malaysia and beyond would also be beneficial in providing a better picture of the reading strategies of academic materials. Thirdly, an in-depth study should look at specific demographic and linguistic factors influencing L2 readers' use of reading strategies. Finally, more research should be done to include more variables to yield preference and use of reading strategies.

ACKNOWLEDGEMENT

The researchers would like to convey their utmost gratitude to the Centre of Foundation Studies, Universiti Teknologi MARA (UiTM), Dengkil campus for the opportunity given to complete this research.

AUTHORS' CONTRIBUTION

NBAH co-wrote the paper with all authors especially in the introduction as well as the discussion and implication sections. SS assisted with data analysis and results while DD helped construct the literature review and methodology sections. All authors came up with the original idea and concept of the study, provided valuable feedback, and helped shape the research and manuscript.

CONFLICT OF INTEREST

None declared.

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ESTEEM Journal of Social Sciences and Humanities
Vol. 8, Special Issue, October 2024
https://ejssh.uitm.edu.my

Investigating ESL Pre-University Students' Perceptions on Motivation and Burnout: A Correlational Study

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ABSTRACT

ARTICLE HISTORY

Received:
12 August 2024
Accepted:
30 September 2024
Published:
11 October 2024

KEYWORDS

Motivation
Burnout
Pre-University ESL Students
Self-efficacy
Higher Learning

Motivation acts as a force for students that maintains learning. Educators must emphasise the need to help nurture students' motivation, as it is believed that motivation can make students more resilient and less likely to experience burnout during their studies. Since motivation is indeed one of the crucial factors in determining students' success in learning, thus this quantitative study was conducted to explore Pre-University students' perceptions of motivation, burnout, and the correlation between these two elements. A survey questionnaire, consisting of eight sections with 40 items, was distributed to 227 students at a selected Foundation Centre in Malaysia. Findings revealed that extrinsic motivation and self-efficacy are the main factors that motivate students to learn more. Although the majority of the students possess high motivation in learning, they do experience burnout. Even though there is no strong correlation between motivation and burnout, this study helps both students and educators to determine the factors motivating students to learn and the causes of burnout among them.

e-ISSN 2600-7274

1. INTRODUCTION

1.1 Background of Study

Motivation and burnout, particularly in educational settings, are common topics of interest among researchers. The earlier is referred to as the intrinsic and extrinsic drives that make learners willingly work hard and take charge of their learning by investing more effort and time for academic success. The latter is associated with learners' mental, physical, and emotional exhaustion, resulting from various sources including stress and demanding academic tasks. The self-determination theory describes motivation in a spectrum with self-determination (intrinsic motivation) on one end, extrinsic motivation, and amotivation on the opposite end (Kusukar et al., 2011, as cited in Felaza et al., 2017). Intrinsically driven learners resort to a deep learning approach positively linked to better academic performance and higher intention to learn, whereas external motivation drives them through rewards, compulsion, and punishment (Tohidi & Jabbari, 2012). Meanwhile, study-related burnout, which demotivates learners, is described by Gan et al. (2007) as their psychological response to serious and prolonged stress resulting from high academic loads. In the Malaysian educational context, pre-university learners are fresh school leavers undertaking foundation courses that prepare them for higher education. Exploring the dynamic interplay between motivation and burnout is crucial as it significantly impacts learners' well-being, academic performance, and overall academic experiences. In this work, study-related motivation is investigated based on students' perspectives on their intrinsic and extrinsic goal orientation, task value beliefs, perception of self-efficacy, and control belief for learning, while study-related burnout includes exhaustion and disengagement.

1.2 Statement of Problem

Various related studies have reported motivation as an essential factor determining academic success and burnout as a crucial element that leads to the opposite outcome. In a study by Malau et al. (2022), intrinsically and extrinsically driven motivation drives successful learners to adopt self-regulated learning strategies, including goal setting, environmental management, self-consciousness, and self-evaluation. In addition, motivation has also been identified as the cause for good results, greater determination in learning, and the ability to complete tasks (Borah, 2021). According to Amani et al. (2020), procrastination and low drive for academic achievement are the detrimental impacts affecting learners with low motivation, which consequently causes them not to apply self-regulated learning strategies effectively. In addition, greater demands due to adjustment and coping with higher academic requirements and more challenging tasks could cause burnout among pre-university students, particularly those with low motivation. Tungol and Thuruthel (2021) highlighted that burnout, as a direct consequence of future developmental stress, self-identity stress, interpersonal stress, and familial stress, must be dealt with urgently and effectively as it greatly affects students' emotional, physical, and mental well-being. In short, the issues of low motivation and burnout among students can accumulatively impact their overall academic performance in particular and institutions of higher learning in general.

Acknowledging the correlation between motivation and burnout among first-year Indonesian undergraduate medical students, Felaza et al. (2017) proposed to look at how changes in motivation throughout education relate to components of burnout, as well as the effects of adaptation on these study-related elements. Xu et al. (2021), who reported on low motivation among selected Malaysian college students, which had caused them to have a higher tendency to feel burnout and lower self-efficacy, suggested more work to explore motivational and burnout factors to help them deal with learning burnout and improve learning enthusiasm. However, research on the relationship between the elements underlying motivation and burnout particularly among pre-university students is still scarce. Thus, it is crucial to tap into the

association between study-related motivation and burnout among students preparing for their university education in Malaysia based on their perspectives on intrinsic and extrinsic goal orientations, task value beliefs, perception of self-efficacy, and control beliefs for learning, as well as study-related burnout that includes exhaustion and disengagement.

1.3 Objective of the Study and Research Questions

This study investigated the perception of ESL Pre-University students' motivation and burnout. Specifically, this study answers the following questions:

a) How do ESL Pre-University students perceive motivation in learning?
b) How do ESL Pre-University students perceive their cause of burnout in learning?
c) Is there a relationship between motivation and burnout among ESL Pre-University students?

2. LITERATURE REVIEW

2.1 Motivation for Learning

Motivation is the inner desire that acts as one of the fundamental reasons why individuals engage in learning. According to Ryan and Deci (2000), motivation, which includes vigor, orientation, perseverance, and the idea that different paths can lead to similar outcomes, pushes learners to partake in specific actions or strive towards certain objectives. All these are essential aspects learners must master to succeed. Meanwhile, Harati et al. (2021) mentioned that teachers have a crucial role in enhancing the learners' engagement within the educational realm, highlighting their significance in delivering timely, high-quality feedback and offering essential assistance and support to learners for them to be successful. Additionally, Lazowski and Hulleman (2016) reiterated that motivation is linked to increased participation in the educational journey, while a lack of motivation leads to adverse outcomes such as reduced attendance and subpar academic achievement. Therefore, it is imperative to explore and examine the factors that most significantly influence the enhancement of student motivation. Motivation can shape the efficacy of learning and the inclination to sustain class attendance and homework completion, influencing the caliber of work produced and the attainment levels reached (Hartnett, 2016; Sezer, 2016).

2.2 Causes of Burnout

Burnout is a state of emotional, physical, and mental exhaustion that stems from prolonged stress. This condition is particularly an alarming concern amongst students due to its significant consequences on individuals and institutions. An individual afflicted by burnout undergoes physical, emotional, and mental fatigue, along with waning enthusiasm, as a result of enduring stress and feelings of frustration. Earlier studies have identified that future developmental stress, self-identity stress, interpersonal stress, and familial stress have been the causes of stress that lead to burnout (Tungol & Thuruthel, 2021). Moreover, learners often face uncertainty regarding the choices they make during their studies and the improbability of securing a good job after graduation. In addition, they also grapple with the feelings of inadequacy linked to self-identity and interpersonal development issues. Familial expectations of the student's academic performance or other family-related issues such as financial problems could further add to the piling stress which can lead to burnout. Consequently, juggling these burdens not only impedes personal achievement but also deepens feelings of exhaustion and cynicism, which are some of the early indicators of long-term academic burnout (Liu et al., 2023).

2.3 Past Studies on Motivation and Burnout

Past studies have focused on how motivation and burnout are related, particularly their impact on students' learning experiences, overall academic performance, and general well-being throughout their pursuit of education. For instance, Felaza et al. (2017) conducted a cross-sectional study to investigate the relationship between motivation type and burnout among 1,036 Indonesian students. The components of burnout were measured using the Maslach Burnout Inventory in terms of students' feelings of exhaustion, cynicism, and personal accomplishment, while the types of motivation were identified using academic motivation scale issues. The study revealed a negative association between the two elements, highlighting the need to acknowledge students' motivation to prevent burnout. The researchers suggested that efforts should be made to strengthen intrinsic motivation to improve students' perceptions and personal accomplishments to minimise burnout.

Similarly, Xu et al. (2021) analysed the impact of motivation on burnout among Chinese and Malaysian college students majoring in sports using a survey questionnaire. They found an indirect correlation between learning motivation and learning burnout, indicating that higher motivation corresponds to lower feelings of burnout, and vice versa. The researchers also recommended reducing learning burnout by correcting and stimulating learning motivation to increase students' learning self-efficacy.

Additionally, several other studies have also been conducted on burnout among students in institutions of higher learning. Burnout is regarded as one of the major causes of academic problems among undergraduates. Among others, Jagodics and Szabó (2023) utilised the University-Resource Questionnaire (UDRQ) to examine the connection between the subscales and symptoms of burnout among 743 Hungarian undergraduates. Their study reported that burnout is positively related to the subscales of demands but negatively linked to resources, suggesting that burnout among university students can be predicted using the suggested demand-resource theory framework.

2.4 Conceptual Framework

Figure 1 shows the conceptual framework of the study. Rahmat et al. (2021) stated that learning motivation comes from learners' confidence. However, the lack of either component of motivation can cause stress among learners. This study explores motivation among learners (Pintrich & Degroot, 1990) and the causes of burnout (Campos et al., 2011). Three contributing factors that lead to students' motivation in learning are based on their perception of self-efficacy and control beliefs for learning. Students' motivation can further lead to burnout, and according to Campos et al. (2011), the two identified causes of burnout are burnout exhaustion and burnout disengagement.

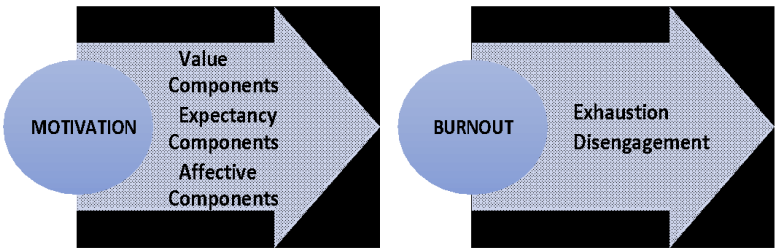

Figure 1: Conceptual Framework of Motivation and Burnout among University Learners

3. METHODOLOGY

This quantitative study explores motivation and burnout factors for learning among pre-university students. The survey garnered responses from a purposive sample comprising 227 respondents. The utilised instrument is a 5-point Likert scale adopted from Pintrich and DeGroot (1990) and Campos et al. (2011) and distributed to the respondents via email. The variables are presented in Table 1. The survey comprises four sections. Section A has three items on the respondents' demographic profile, while Section B has 12 items on Motivational Scale, seven items on Expectancy Component, and five items on Affective Components, Section C has eight items on Burnout-Exhaustion, and eight items on Burnout-Disengagement. In total, there are 40 items in the questionnaire. Data gathered from the questionnaires were analysed using SPSS version 29 and the mean for each item were determined through a descriptive analysis.

Table 1: Distribution of Items in the Survey

Sect	Construct	Main category		Sub-category		Total items	Cronbach alpha
B	Motivation Pintrich & DeGroot (1990)	Value component	(i)	Intrinsic Goal Orientation	4	12	0.692
			(ii)	Extrinsic Goal Orientation	3		0.809
			(iii)	Task Value Beliefs	5		0.849
		Expectancy component	(i)	Students' Perception of Self- Efficacy	5	7	0.890
			(ii)	Control Beliefs for Learning	2		0.825
		Affective components			5	5	0.836
C	Burnout Campos et al. (2011)	Burnout-exhaustion			8	8	0.520
		Burnout-disengagement			8	8	0.584
				Total no of items		40	

Reliability Statistics

Cronbach's Alpha	N of Items
.863	40

Generally, Section B's Cronbach Alpha result for most items is within the range of 0.809 to 0.890, indicating a high internal consistency or reliability level, which falls within the "good" to "excellent" range. This indicates that the items in the scale are highly correlated, suggesting that they are consistent, providing confidence that the scale is reliable and produces consistent results. This ensures that any conclusions or inferences drawn from this study using this scale are based on a solid and dependable measurement foundation. Only for intrinsic goal orientation, the Cronbach alpha score is 0.692, indicating a moderate level of reliability. This suggests that the items relate, but the consistency is not strong.

Both items in Section C, Burnout-Exhaustion and Burnout-Disengagement, scored 0.520 and 0.584, respectively, indicating a low to moderate level of internal consistency, placing them in

the "poor" to "questionable" range. This suggests that the items might not be very well correlated with each other and not consistently measure the same underlying construct. These findings indicate room for improvement and refining the measurement instrument to enhance its reliability for future research applications.

As for the reliability of the survey, with the analysis revealing a Cronbach's Alpha coefficient of 0.863 for the questionnaire. This figure signifies a high internal consistency and reliability level within the survey results, demonstrating the instrument's reliability. Such a degree of reliability affirms the survey's credibility as a research tool, ensuring that the variations in responses genuinely represent differences in participant perspectives rather than any discrepancies attributable to the survey design. To further analyse the findings and address the study's research questions, an in-depth analysis was conducted using SPSS.

4. FINDINGS AND DISCUSSIONS

This study aims to investigate the perception of ESL Pre-University students' motivation and burnout. Findings from the survey questionnaire are reported in the following sections.

4.1 Findings for Demographic Profile

Table 2: Percentage for Demographic Profile

Q1	Gender	Male	Female	
		21.1%	78.9%	
Q2	Semester	1	2	
		99.6%	0.4%	
Q3	Course	Sciences & Engineering	Law	TESL
		38.8%	33%	28.2%

Using the percentage formula, the profile of the respondents was determined. The demographic profile of the respondents, including gender, course programmes, and semester, is displayed in Table 2 above as a percentage distribution. There were 21.1% male and 78.9% female among the respondents. These are pre-university students studying Science & Engineering (38.6%), Law (33%), and Teaching English as a Second Language (TESL) (28.2%) courses which are in their first (99.6%) and second (0.4%) semesters of study.

4.2 Findings for Motivation

This section presents data to answer Research Question 1, ‘How do ESL Pre-University students perceive motivation in learning?’. The researchers identified the mean score for the questionnaire on motivation, which will be explained in Tables 3 - 8.

As for the Motivational Scale Value Component (MSVC), it comprised 12 out of 40 items to determine the value component. The responses from the questionnaire were achieved by adding the three sub-categories of motivation, namely, intrinsic goal orientation, extrinsic goal orientation, and task value beliefs, to determine the overall level of motivation of the respondents. Table 3 shows the responses from the respondents to four items to determine their intrinsic goal orientation.

Table 3: Mean for Intrinsic Goal Orientation

Item	Mean
MSVCQ1 In this program, I prefer class work that is challenging so I can learn new things.	3.5

MSVCQ2 In the courses of a program like this, I prefer course materials that arouse my curiosity even if they are difficult to learn.	3.8
MSVCQ3 The most satisfying thing for me in this program is trying to understand the content of the courses.	4.1
MSVCQ4 When I have the opportunity in this class, I choose course assignments that I can learn from, even if they do not guarantee a good grade.	3.6

According to the quantitative data analysis, a statistically negligible difference exists between the mean scores of the four MSVC items. The MSVCQ1 mean was 3.5, indicating students wanted difficult assignments to broaden their knowledge. Even though they had trouble learning, they chose course materials that piqued their curiosity, with theMSVCQ2 mean score of 3.8. The MSVCQ3 mean (M = 4.1) was the highest, showing that the participants felt satisfied with their understanding of the course materials. MSVCQ4 shows a mean score of 3.6 as the students chose to complete their assignments, even when they were not guaranteed high marks.

Table 4: Mean for Extrinsic Goal Orientation

Item	Mean
MSEGQ1 Getting a good grade in the classes is the most satisfying thing for me right now.	4.6
MSEGQ2 The most important thing for me right now is improving my overall grade point average, so my main concern in this program is getting a good grade.	4.7
MSEGQ3 I want to do well in the classes because it is important to show my ability to my family, friends, or others.	4.5

The extrinsic goal orientation of the students is explained in Table 4, consisting of three items designed to elicit responses. According to the mean of MSEGQ1, which was 4.6, it would be ideal for students to receive good grades. With a mean score of 4.7 for MSEGQ2, their main intention was to raise their Grade Point Average (GPA). The third MSEG item had a mean score of 4.5, suggesting that the students wanted to perform well to show to their peers and family.

Table 5: Mean for Task Value Beliefs

Item	Mean
MSTVQ1 I think I will be able to transfer what I learn from one course to other courses in this program.	3.7
MSTVQ2 It is important for me to learn the course materials in the courses.	4.3
MSTVQ3 I think the course material in the courses of this program is useful for me to learn.	4.3
MSTVQ4 I like the subject matter of the courses.	4.2
MSTVQ5 Understanding the subject matter of the courses is very important to me.	4.5

Table 5 presents five items that the respondents were asked to answer, examining their task value beliefs in relation to learning motivation. They thought it was most important to comprehend the subject matter of their subject, showing the highest mean score of 4.5. Followed by the same score (M = 4.3), saying that learning the course materials for their course was likewise crucial and beneficial. According to MSTVQ4's M = 4.2 result, the respondents were satisfied with the course material. On the other hand, their lowest score of 3.7 indicated that they would be able to apply what they had learned in one course to another.

Table 6: Mean for Pre-University Learners' Perceptions of Self-Efficacy

Item	Mean
ECSEQ1 I believe I will receive excellent grades in the classes.	3.6
ECSEQ2 I am confident I can understand the most complex materials presented by the instructors in the courses.	3.4
ECSEQ3 I am confident I can do an excellent job on the assignments and tests in this program.	3.7
ECSEQ4 I am certain I can master the skills being taught in the classes.	3.6
ECSEQ5 Considering the difficulty of the courses, the teachers, and my skills, I think I will do well in the classes.	3.7

The five-question section examined the students' perceptions of self-efficacy, as indicated in Table 6. With a mean score of 3.7, the respondents indicated that, despite the course's complexity, the lecturers' expertise, and their abilities, they were confident in their ability to do well on their assignments and assessments and perform well overall. With a mean score of 3.6, respondents said they were confident they would thrive academically and could grasp the material taught in class. Nonetheless, they felt certain they could comprehend even the most difficult topics taught in class (M = 3.6).

Table 7: Mean for Control Beliefs for Learning

Item	Mean
ECCBQ1 If I study in appropriate ways, then I will be able to learn the material in the courses of this program	4.4
ECCBQ2 If I try hard enough, then I will understand the course materials.	4.5

The results of the respondents' control beliefs about learning are shown in Table 7. They were to respond to two items, and the ECCBQ1 mean score of 4.5 indicated they could learn the course material if they studied appropriately. On the other hand, the respondents could comprehend the course materials if they put in more effort (M = 4.5).

Table 8: Mean for Affective Component

Item	Mean
ACQ1 When I take a test, I think about how poorly I am doing compared with other students.	3.0
ACQ2 When I take a test, I think about items on other parts of the test I cannot answer	2.6
ACQ3 When I take tests, I think of the consequences of failing.	2.3
ACQ4 I have an uneasy, upset feeling when I take an exam.	2.6
ACQ5 I feel my heart beating fast when I take an exam.	2.5

Five inquiries were made to determine the affective component, as shown in Table 8. With a mean score of 3.0, the responders would always think about how badly they would perform compared to the other learners when they took examinations. They felt anxious and disturbed when taking examinations, as evidenced by M = 2.6, and they would think of questions they would not be able to answer. The respondents also reported feeling nervous (M = 2.5) and considering the repercussions of failing the tests (M = 2.5).

4.3 Findings for Burnout

This section presents data to answer research question 2- How do ESL Pre-University students perceive their cause of burnout in learning?

Table 9: Mean for Burnout (Exhaustion)

Item	Mean
EQ1 There are days when I feel tired before the day begins	4.0
EQ2 After classes, I tend to need more time than in the past in order to relax and feel better	3.9
EQ3 I can tolerate the pressure of my studies very well	3.4
EQ4 During classes, I often feel emotionally drained	3.2
EQ5 After classes, I have enough energy for my leisure activities	3.0
EQ6 After classes, I usually feel energized	2.7
EQ7 After my classes, I usually feel worn out and weary	3.4
EQ8 Usually, I can manage the amount of my work well	3.6

Table 9 shows the mean scores for 8 items on burnout among pre-university students. The items are about how often learners feel tired, drained, and able to cope with their workload. The mean score for all 8 questions is 3.4, which is in the middle of the possible range of scores (1 to 5). There is some variation in the scores, with some learners scoring higher than the mean and others scoring lower. This suggests that some students may be experiencing more burnout than others. Some specific findings highlight that students score highest on the question "There are days when I feel tired before the day begins" (mean score of 4.0). This suggests that many learners feel tired before they start their day. Students score lowest on the statement, "After classes, I usually feel energized" (mean score of 2.7). This suggests that students are physically and mentally drained after lessons. Generally, students score higher on the questions about feeling tired and drained (EQ1, EQ2, EQ4, and EQ7) than on the questions about feeling able to cope and feeling positive after lessons (EQ3, EQ5, EQ6, and EQ8). This suggests that students may feel more overwhelmed by their workload than confident in their ability to manage it.

Table 10: Mean for Disengagement

Item	Mean
DQ1 I always find new and interesting aspects in my study	3.9
DQ2 It happens more and more often that I talk about my studies in a negative way	2.8
DQ3 Lately, I tend to think less during classes and attend classes almost mechanically	3.0
DQ4 I find my studies to be positively challenging	4.0
DQ5 Over time, learners can become disconnected from this type of routine	3.6
DQ6 This is only thing (studying) that I can imagine myself doing now	3.7
DQ7 I feel more and more engaged in my studies	3.6
DQ8 Sometimes I feel sickened by my study tasks	3.4

Table 10 shows the mean scores for 8 items on disengagement among pre-university students. The items are about how often students find their studies new and interesting and how connected they feel to their studies. The mean score for all 8 items is 3.6, which is slightly above the middle of the possible range of scores (1 to 5). Overall, the data suggests that the learners have a generally positive attitude toward their studies but experience occasional challenges and negative feelings. The students have a positive attitude towards their studies. This is indicated by their high scores on DQ1 (3.9, indicating they find new and interesting aspects in their studies), DQ4 (4.0, finding their studies positively challenging), DQ6 (3.7, can only imagine themselves studying at the moment), and DQ7 (3.6, feeling more engaged in their studies). However, the learners also experience occasional negative feelings. This is evident from their scores on DQ2 (2.8, sometimes they talk about their studies in a negative way) and DQ8 (3.4, sometimes I feel sickened by study tasks). The students feel neutral or somewhat disengaged during classes. This is indicated by their score of 3.0 on DQ3 (feeling they think

less during classes and attend mechanically). The students agree that they can become disconnected from routine over time but to a moderate extent. This is shown by their score of 3.6 on DQ5.

4.4 Findings for Relationship between Motivation and Burnout

This section presents data to answer research question 3- Is there a relationship between motivation and burnout among ESL Pre-University students? Data is analysed using SPSS for correlations to determine if there is a significant association in the mean scores between metacognitive, effort regulation, cognitive, social, and affective strategies. Results are presented separately in Table 11 below.

Table 11: Correlation between Motivation and Burnout

Correlations

		MOTIVATION	BURNOUT
MOTIVATION	Pearson Correlation	1	.393**
	Sig. (2-tailed)		<.001
	N	227	227
BURNOUT	Pearson Correlation	.393**	1
	Sig. (2-tailed)	<.001	
	N	227	227

**. Correlation is significant at the 0.01 level (2-tailed).

Table 11 shows an association between motivation and burnout. Correlation analysis shows that there is a moderately significant association between motivation and burnout (r=.393**) and (p=.000). According to Jackson (2015), the coefficient is significant at the 0.05 level, and a positive correlation is measured on a 0.1 to 1.0 scale. A weak positive correlation would be between 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a strong positive correlation from 0.5 to 1.0. This means there is a moderate positive relationship between motivation and burnout, where there is no exact correspondence between motivation and burnout. Some people will be highly motivated but also experience burnout, and vice versa.

4.5 Discussions

Based on the findings of this study, value competency, extrinsic goal motivation, and learners' belief in performing tasks have potentiating effects on their motivation learning compared to intrinsic goal motivation. Borah (2021) stated that students with good results are more motivated in learning, and the ability to complete a task greatly impacts their motivation to learn since they feel related and belong to a classroom. Hence, as suggested by Honicke et al. (2020), teaching programmes should support learning environments that reward effort and perseverance in the classroom. In this case, educators should also consider how course delivery and feedback can improve learners' academic self-efficacy and be more independent of their chosen goal orientation. When students believe in themselves, they are more motivated and take full responsibility for their learning.

Ugwuanyi et al. (2020) stated that student's performance positively correlated with motivation and self-efficacy. A similar finding was reported in a study conducted by Ayllon et al. (2019), which found that learners with high feelings of competence (self-efficacy) are more motivated and successful in their academic performance. Whereby, students with low levels of motivation

and self-efficacy would do poorly in academics. Hence, this shows that self-efficacy plays a predicting and mediating role in relation to students' achievement, motivation, and learning. This confirms the finding of this study that affective components are not the main contributing factor to students' motivation since the learners have a high degree of self-efficacy.

However, despite that students have high motivation in learning, they also experienced burnout during the learning process. It is no doubt that negative emotions were evident in learning environments, and there was a positive correlation between academic goals and metacognitive methods in the face-to-face situation. This demonstrates how emotions play a part in how successful students feel themselves to be (Acosta-Gonzaga & Ramirez-Arellano, 2021). The finding from a study conducted by Salgado and Manuel (2021) showed similar finding where, students in one of the public universities in Portuguese, the demand of their course/study is one of the highest contributing factors to negative emotions and burnout among other factors such as academic involvement, intrinsic motivation, coping strategies and social support, emotional intelligence, and resilience. Nevertheless, this current study proves that, although the students' experienced burnout, they still engaged with their learning.

This study also revealed the finding of the relationship between motivation and burnout. Most students in this study believed that they experienced no strong significant correlation between motivation and burnout. This contradicts with a finding from a study by Sharififard et al. (2020) that, motivation and self-efficacy are strong contributing factors to burnout among learners. Hence, these findings from this recent study shows that burnout factors can vary from student to student. Thus, it is important for learning institutions to identify the main factors that can lead to student burnout.

Finally, the findings from this study also suggest that intrinsic motivation, and self-efficacy were identified as the most important moderating factors for students to possess high motivation in learning. Intrinsically motivated students would be less likely to have a low perception of their performance, which means they would have better self-efficacy and achieve better performance. Felaza et al. (2020) suggested that self-efficacy is undeniably important for students, but self-efficacy becomes less important for those with high intrinsic motivation. Kotera et al. (2023) concluded that, engagement was positively correlated with both intrinsic and extrinsic motivation, and engagement, in turn, predicted intrinsic motivation. The path from external to intrinsic motivation was regulated by self-criticism and self-compassion; stronger self-criticism decreased the pathway, while higher self-compassion enhanced it. Additionally, they emphasised the significance of involvement in fostering learners' intrinsic drive for learning. Moreover, transferring extrinsic to intrinsic motivation might be facilitated by increasing self-compassion and decreasing self-criticism.

5. CONCLUSION

In conclusion, educators should be able to create positive and meaningful learning environments where students are motivated to learn and believe in their academic success. A supportive learning environment also can encourage students to increase their motivations and sense of self-efficacy. It is also important to identify preventative measures that can help to reduce burnout among students, accompanied by monitoring students' motivation to better cater to their motivation and burnout situations. Further work on motivation and burnout among learners from different educational levels should be conducted since it might become an eye-opener for educators, management and related stakeholders to understand the difficulties faced by students that can cause burnout. Secondly, this study is restricted only to the small sample range of students at pre-university level. Thus, the findings do not represent pre-university students in Malaysia as a whole. Finally, it is suggested that for future research to triangulate

the results obtained, a hybrid analysis approach utilizing two or more approaches could be more accurate in determining the main factor for motivation and the cause of burnout experienced by the learners.

ACKNOWLEDGEMENT

The authors wish to extend sincere appreciation to their respondents for their participation in this study. Gratitude is also extended to the Centre of Foundation Studies, Universiti Teknologi MARA, Cawangan Selangor, Kampus Dengkil, and to Associate Professor Dr. Noor Hanim Rahmat for the unwavering support and guidance.

AUTHORS' CONTRIBUTION

DD wrote the introduction and literature review sections. NHLR determined the objectives, designed the conceptual framework, and concluded the study. VCSLA wrote the literature review and the methodology sections. JAFA and ALKC reported on the findings of the study. DD and NHLR collected and refined the data, and conducted the analysis using SPSS. All the authors read and approved the final manuscript.

CONFLICT OF INTEREST

None declared.

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ESTEEM Journal of Social Sciences and Humanities
Vol. 8, Special Issue, October 2024
https://ejssh.uitm.edu.my

Exploring The Relationship between Teaching Methods and Styles among Educators

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ABSTRACT

ARTICLE HISTORY

Received:
12 August 2024
Accepted:
30 September 2024
Published:
11 October 2024

KEYWORDS

Teaching Styles
Instructional methods
Malaysian Education
Quantitative Study
Student Engagement

The role of an educator in the contemporary educational landscape extends beyond information transmission, encompassing diverse teaching styles that shape student learning experiences. This study explores five distinct teaching styles: expert, authority, model, facilitator, and delegator, each with distinctive philosophies and methods. The background of the study emphasises the importance of understanding teaching styles in the Malaysian educational context due to diverse student backgrounds and the need for adaptable instructional methods. This quantitative study investigates the impact of direct, discuss, and delegate teaching methods on the teaching and learning processes while exploring potential relationships between these methods and teaching styles. The study participants include 100 educators, mostly females with advanced degrees in science and technology. The instrument in the study is a 5-point Likert scale survey with four sections to investigate the correlation between teaching methods and styles. The study identifies significant positive relationships between various teaching methods and styles, highlighting the interconnection of instructional strategies and educator behaviours. The findings emphasise the importance of flexible teaching strategies customized to meet the learners' diverse needs. The implications of the study include improving teaching practices, encouraging student engagement, and promoting effective learning environments.

e-ISSN 2600-7274

1. INTRODUCTION

1.1 Background of The Study

The study of teaching styles among educators is essential for understanding how teachers handle their responsibilities in the classroom and how their techniques influence student learning. Teaching styles refer to the various strategies and methods teachers use to facilitate learning in classrooms (Grasha, 1996). They comprise many strategies and techniques educators employ to facilitate learning. These methods might vary from traditional lecture-based approaches to more interactive and student-centred approaches.

In Malaysia, as in many other countries, there is a wide range of issues about teaching styles and instructional approaches in the education field. A growing concern is the need to cater to the various educational requirements and preferences of students. Malaysian students come from diverse cultural, language, and socioeconomic backgrounds, which can influence their most effective instructional methods. In addition, students may have varying learning styles, requiring educators to employ innumerable teaching techniques to engage all learners. A recent academic study highlights the significance of addressing these problems to improve the quality and relevance of education in Malaysia. Research conducted by George et al. (2022) and Abdullah et al. (2023) provides insights into the difficulties that Malaysian educators face while dealing with various teaching styles within the cultural and institutional framework. They highlighted the importance of educational systems that emphasize the ability to adapt, adjust, and cater to students' diverse needs.

Another issue relates to the widespread use of traditional, lecture-based instructional approaches in Malaysian classrooms. Although these strategies may have been successful previously, studies indicate that employing more interactive and student-centred approaches improves student engagement and learning results (Dunn & Dunn, 1993). However, educators might face difficulties when implementing these approaches into practice due to large class sizes, limited resources, and compulsory standardized assessments.

It is necessary to prepare students for the challenges of the 21st Century by thinking critically, solving problems, and teamwork. Teaching styles that focus on guiding and empowering students assist in developing their skills, making them more prepared for success today. Therefore, it is significant to recognize how teaching methods affect student learning to improve education generally. Educators can improve the learning experience by addressing diverse learning requirements, using more interactive teaching methods, and preparing students for future challenges.

1.2 Statement of Problem

Despite the array of teaching styles employed, learners often face challenges that impede academic success. Issues such as the absence of expertise, authority, facilitation, delegation, and personal modelling in teaching contribute to these struggles. Hence, they impact student comprehension and motivation. Recognizing how these instructional aspects interact is crucial for educators and institutions aiming to enhance learning outcomes. Smith et al. (2021) asserted that effective teaching encompasses content delivery, strategic use of expertise, authority, and facilitation to create an engaging learning environment. Additionally, Brown et al. (2018) highlighted the significance of delegation and personal modelling in fostering student autonomy and skill development. By collectively exploring these aspects, this study aims to provide insights essential for refining teaching strategies, addressing learner challenges, and eventually

improving the overall educational experience. Therefore, to achieve these goals, the study outlines two primary objectives. First, to investigate the impact of various teaching methods (direct, discuss, and delegate) on the teaching and learning process. The second is to explore the potential relationship between these teaching methods and the teaching styles among educators. It will contribute to a better understanding of instructional practices in education.

Inayat and Ali (2020) investigated perceived teaching styles within school and university classrooms, delving into the dynamic relationship between various teaching styles and their impact on student engagement, curiosity, and exploration in diverse educational programs. The research provides valuable insights into specific instructional approaches that enhance or hinder students' active participation and interest in learning. Similarly, research by Hadjar and Backes (2023) explored nuanced differences in teaching styles between male and female students. The findings prove that gender may influence instructional practices and classroom composition. Understanding these gendered dimensions is crucial for fostering inclusive and equitable teaching environments. The study contributes to a broader understanding of effective teaching styles and the need for tailored approaches considering diverse student populations.

Xiao (2006) pointed out that the mismatch in teaching and learning styles between Irish English teachers and Chinese students stems from culture-based differences in perceptions and expectations. Thus, it underscores the necessity for more in-depth investigations into the "cultures of learning" associated with teaching styles and their direct influence on diverse learning outcomes. The research highlights the crucial role of comprehensive communication between Chinese students and teachers in Western contexts to design effective instructional strategies. Similarly, a study by Gilakjani (2012) acknowledged potential variations in teaching styles across diverse educational settings, advocating for research that explores how cultural, institutional, and contextual factors influence the effectiveness of various teaching approaches. The research delves into the explanation of learning styles, the match or mismatch between learning and teaching styles, and the visual, auditory, and kinesthetic learning styles among Iranian learners, providing pedagogical implications for the EFL/ESL classroom. Despite significant strides in understanding the impact of teaching styles on student outcomes, a notable gap remains in examining the combined influence of expertise, authority, facilitation, delegation, and personal modeling on learning experiences. Previous researchers, including Xiao (2006) and Gilakjani (2012), have addressed these elements individually, indicating a need for integrated studies that comprehensively explore how these factors interact to shape effective teaching practices and improve the overall educational experience. Future research should strive to bridge this gap by providing a holistic understanding of the intricate relationships between different aspects of teaching styles and their collective impact on student engagement, autonomy, and success.

1.3 Objectives of the Study and Research Questions

The study investigates educators' perceptions of the strategies utilized for teaching and learning. Specifically, it seeks to address the following research questions:

i. How does the direct method influence teaching and learning?
ii. How does the discussion method influence teaching and learning?
iii. How does the delegation method influence teaching and learning?
iv. Is there a significant relationship between teaching methods (direct, discuss, and delegate) in educational settings?

2. LITERATURE REVIEW

2.1 Teaching Method and Teaching Style

Teaching methods and styles are essential elements of the educational process. They have significant impacts on the classroom environment and shape students' learning experiences. Thornton (2013) provided insights into various teaching methods, including direct, discussion, and delegation, highlighting their impact on student learning experiences. Grasha (1994) investigated several teaching styles, such as expert, authority, facilitator, and delegator, emphasizing the diverse philosophies and approaches that educators employ in the classroom. Recent studies have shown how various teaching methods align with or influence different teaching styles, highlighting the complex relationship between instructional strategies and educator behaviours. For instance, Smith et al. (2021) explored how the direct method, which focuses on delivering content, corresponds with expert and formal authority teaching styles. It sheds light on the instructional method that improves knowledge acquisition and student engagement. Similarly, Inayat and Ali (2020) scrutinized the impact of the discussion technique on teaching styles, specifically how personal modelling and facilitation approaches encourage active involvement and interest among students. Many researchers continue to observe the complex interactions between teaching methods and teaching styles by integrating the findings from previous and recent studies. They provide valuable views for improving instructional effectiveness and promoting student success in numerous educational settings.

2.2 Past Studies on Teaching Style

The literature review synthesizes the studies to explore the impact of various teaching styles on student engagement, achievement, and satisfaction. McKenney (2018) identified five distinctive teaching styles—individual model, facilitator, formal power, expert, and delegator—each with unique effects on classroom dynamics and student success. Idhaufi & Ashari (2017) emphasized that adapting teaching methods to students' preferred learning styles significantly enhances educational effectiveness, promoting profound understanding and knowledge retention.

For educational standards, Glenn (2016) underscored the importance of instructors employing diverse instructional approaches tailored to specific learning objectives and student populations. The finding highlights the crucial role of educators in being adaptable to achieve optimal educational outcomes. Dickinson et al. (2021) agreed with this perspective, asserting that students' progress relies heavily on the quality of teacher-student relationships and the individualization of feedback they receive.

Öznacar et al. (2017) introduced technology as a catalyst for increased student engagement and personalized learning experiences in the classroom. They pointed out the usefulness of digital collaboration tools and interactive whiteboards as examples of technology leveraged to create more dynamic and tailored educational environments.

Building on the theme of fostering connections, Darling-Hammond et al. (2020) advocated for creating inclusive and supportive learning environments that facilitate students' understanding and connection with others. This perspective aligns with the evolving educational paradigm, which supports a holistic approach to student development. Rahmat (2021) explores the evolution of lecturer roles and lays out a model for characterizations and adjustments necessary to reflect the different roles required in contemporary educational contexts. The article argues that it is necessary to adjust the teaching according to the different needs of students, which

generally supports or complements existing research on the relationships between a variety of instructional activities and their academic benefits.

In summary, these studies suggest a paradigm shift in education towards more sophisticated and adaptable strategies, emphasizing student involvement, flexibility, and holistic growth. The literature review supports a move towards student-centred, interactive instructional approaches that foster critical thinking, creativity, and skill development essential for continuous learning. This evolving educational paradigm reflects a commitment to creating dynamic and inclusive learning environments that cater to the diverse needs of students and promote lifelong learning.

2.3 Conceptual Framework

Based on reviewed previous literature, a conceptual framework is proposed to explore teaching methods and styles among educators in higher education institutions. Figure 1 shows the proposed conceptual framework of the study. The framework suggests teaching methods (Thornton, 2013) and teaching styles (Grasha, 1994) as the foundation of the current study. The study applies the direct method through expert and formal authority teaching styles, the discussed method through personal model and facilitator's teaching style, and the delegator teaching style to explore various educator teaching styles.

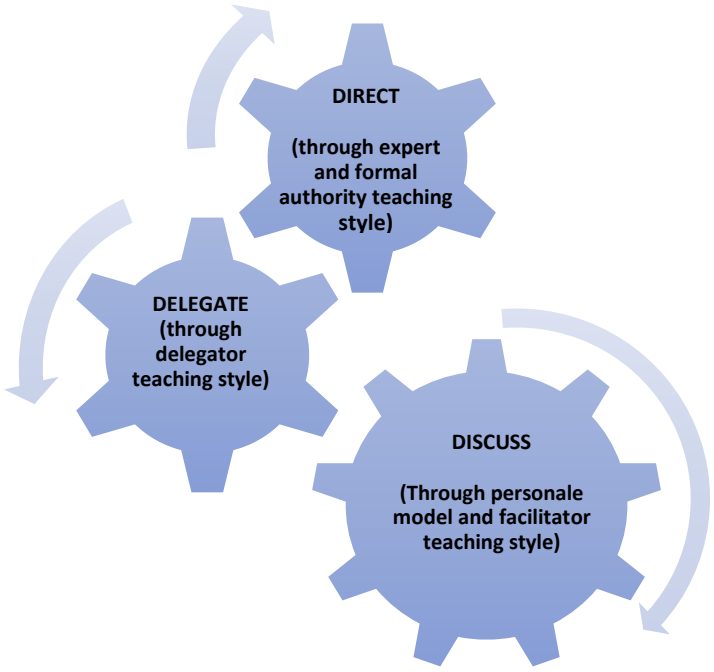

Figure 1: Conceptual Framework of the Study-Teaching Method and Teaching Style

3. METHODOLOGY

The current study applied a quantitative method to explore educators' perceptions of the strategies employed for teaching and learning. A purposive sampling was selected, and 100 respondents responded to the survey. The instrument uses a 5-point Likert-scale survey adapted and adopted from Thornton (2013) and Grasha (1994). The survey details, distributed in four separate sections, are in Table 1 below. Section A contains four items to obtain information about the demographic profile. Meanwhile, Section B consists of 16 items to gauge

respondents' perception of the direct method, and Section C comprises 16 items to determine the discuss method used in teaching. Lastly, Section D entails eight items to examine the perception of the delegate method employed.

Table 1: Distribution of Items in the Survey

Section	Teaching Method	Teaching Style	Items	Total Items	Cronbach Alpha Values
B	Direct	(i)Expert Teaching Style	8	16	0.793
		(ii)Formal Authority Teaching Style	8		
C	Discuss	(i)Personal Model Teaching Style	8	16	0.825
		(ii)Facilitator Teaching Style	8		
D	Delegate	Delegator Teaching Style	8	8	0.854
			Total	40	0.918

Table 1 also proves survey reliability as Cronbach alpha value for Section B is 0.793, Section C is 0.825, and Section D is 0.854. The instrument is presumed reliable if Cronbach alpha value is r=0.7 or greater (Nunnally and Bernstein, 1994). SPSS was utilized to analyse the responses to answer the research questions for the study.

4. FINDINGS

This section presents the findings of the research, including the demographic profile of participants, the influence of direct, discuss, and delegate teaching methods on teaching and learning, and the relationships between these teaching methods.

4.1 Findings for Demographic Profile

Table 2: Results from Section A - Demographic Profile

Gender	Male 21%	Female 79%	
Education Qualification	Diploma 1%	Degree 16%	Master or PhD 82%
Years of Teaching Experience	Less than 5 years 17%	6 to 10 years 12%	11 years and above 71%
Teaching Area	Science Social 20%	Science and Technology 72%	Others 8%

Table 2 shows the results gained from Section A about the demographic profiles of the respondents. The results reveal a predominantly female respondent group, comprising 79%, while males are 21%. Most participants hold advanced degrees, with 82% having master's or doctorate degrees, 16% with bachelor's degrees, and 1% with diplomas. As for teaching experience, most participants (71%) have 11 or more years of experience, followed by 12% with 6 to 10 years and 17% with less than five years. The results also indicate that 72% of respondents teach science and technology, 20% teach social, and 8% teach others.

4.2 Findings for Direct Method

This section presents the results obtained from Section B -The Direct Method to answer the first research question 1: How does the direct method influence teaching and learning? In the study context, respondents' perception of the direct method was analysed based on part (i) expert and part (ii) formal authority teaching styles.

Table 3: Mean for Expert Teaching Style

Items	Mean Score
ETSQ1 Facts, concepts, and principles are the most important knowledge that students should acquire.	4.74
ETSQ2 I set high standards for students in this class.	3.68
ETSQ3 What I say and do model appropriate ways for students to think about issues in the content.	4.18
ETSQ4 My teaching goals and methods address a variety of student learning styles.	4.13
ETSQ5 Students typically work on course projects alone with little supervision from me.	3.03
ETSQ6 Sharing my knowledge and expertise with students is very important to me.	4.71
ETSQ7 I give students negative feedback when their performance is unsatisfactory.	2.59
ETSQ8 Activities in this class encourage students to develop their own ideas about content issues.	4.24

Table 3 displays the results of expert teaching style. Notably, respondents highly prioritized the acquisition of facts, concepts, and principles (ETSQ1) with a mean score of 4.74 and believed in modelling appropriate thinking about content issues through their words and actions (ETSQ3) with a mean score of 4.18. While they expressed a moderate inclination to set high standards for students (ETSQ2) with a mean score of 3.68 and addressed diverse learning styles (ETSQ4) with a mean score of 4.13. There was a relatively lower agreement on students working independently on projects with little supervision (ETSQ5) with a mean score of 3.03. The respondents strongly emphasized the importance of sharing knowledge with students (ETSQ6) with a mean score of 4.71 and encouraging students to develop their ideas about content issues (ETSQ8) with a mean score of 4.24. However, there is a lower inclination to give negative feedback for unsatisfactory performance (ETSQ7) with a mean score of 2.59. Overall, the mean scores offer insights into the respondents' teaching styles, highlighting their emphasis on knowledge sharing, varied teaching approaches, and encouraging independent thinking among students.

Table 4: Mean for Formal Authority Teaching Style

Items	Mean Score
FATSQ1 I spend time consulting students on how to improve their work on individual and/or group projects	4.21
FATSQ2 Activities in this class encourage students to develop their ideas about content issues	4.24
FATSQ3 What I have to say about a topic is important for students to acquire a broader perspective on the issues in that area	4.3
FATSQ4 Students would describe my standards and expectations as somewhat strict and rigid	3.4
FATSQ5 I typically show students how and what to do in order to master course content	4.3
FATSQ6 Small group discussions are employed to help students develop their ability to think critically	4.3
FATSQ7 Students design one of more self-directed learning experiences	3.9
FATSQ8 I want students to leave this course well-prepared for further work in this area	4.5

Table 4 illustrates the results of the formal authority teaching style. Notably, the respondents demonstrated a commitment to engaging with students on project improvement (FATSQ1) with a mean score of 4.21 and fostering an environment that encourages the development of students' ideas on content issues (FATSQ2) with a mean score of 4.24. They emphasized the importance of their perspectives in providing a broader understanding of topics (FATSQ3) with a mean score of 4.3 and expressed a balanced approach to setting standards with somewhat strict and rigid expectations (FATSQ4) with a mean score of 3.4. Additionally, the respondents actively guided the students in mastering course content (FATSQ5) and employed small group discussions to enhance critical thinking skills (FATSQ6) sharing the same mean score of 4.3. While there is a notable emphasis on preparing students for further work in the area (FATSQ8) with a mean score of 4.5, self-directed learning experiences have a slightly lower emphasis (FATSQ7) with a mean score of 3.9. These mean scores collectively offer insights into the respondents' formal authority teaching style, emphasizing the guidance and encouragement of independent thinking within a structured framework.

4.3 Findings for Discuss Method

This section presents the results gained from Section C-The Discuss Method addressing research question 2: How does the discussion methods influence learning and teaching? In the study context, the respondents' perception of the discuss method was evaluated based on part (i) the personal model and part (ii) the facilitator's teaching style.

Table 5: Mean for Personal Model Teaching Style

Items	Mean Score
PMTSQ1 It is my responsibility to define what students must learn and how they should learn it.	4.09
PMTSQ2 Examples from my personal experiences often are used to illustrate points about the material.	4.19
PMTSQ3 I guide students' work on course projects by asking questions, exploring options, and suggesting alternative ways to complete tasks.	4.39
PMTSQ4 Developing the ability of students to think and work independently is an important goal	4.44
PMTSQ5 Lecturing is a significant part of how I teach each of the class sessions.	4.36
PMTSQ6 I provide very clear guidelines for how I want tasks completed in this course.	4.48
PMTSQ7 I often show students how they can use various principles and concepts	4.34
PMTSQ8 Course activities encourage students to take initiative and responsibility for their learning	4.41

Table 5 tabulates the results of the personal model teaching style. The highest mean score is for providing guidelines to students on how tasks should be completed in the course (PMTSQ6) at 4.48. Developing students' ability to think and work independently (PMTSQ4) and encouraging students to take initiative and responsibility for their learning via meticulously designed course activities (PMTSQ8) have mean scores of 4.44 and 4.41. The respondents believed they guided the students by asking questions, exploring options, and suggesting alternative methods to complete tasks (PMTSQ3) at a mean score of 4.39. Meanwhile, lecturing is a predominant part of their instructional approach (PMTSQ5) at 4.36. The respondents consistently demonstrated the application of principles and concepts to students (PMTSQ7) with a mean score of 4.34, and they often used personal examples to explain the lessons (PMTSQ2) with a mean score of 4.19. Lastly, the lowest mean score is for the respondents who perceived that they are responsible for deciding what and how students learn (PMTSQ1) at 4.09.

Table 6: Mean for Facilitator Teaching Style

Items	Mean Score
FTSQ1 Students take responsibility for teaching part of the class sessions	3.31
FTSQ2 My expertise is typically used to resolve disagreements about content issues	3.85
FTSQ3 This course has very specific goals and objectives that I want to accomplish	4.41
FTSQ4 Students receive frequent verbal and/or written comments on their performance	4.15
FTSQ5 I solicit student advice about how and what to teach in this course	3.71
FTSQ6 Students set their own pace for completing independent and/or group projects	3.52
FTSQ7 Students might describe me as a "storehouse of knowledge" who dispenses the facts, principles, and concepts they need	3.84
FTSQ8 My expectations for what I want students to do in this class are clearly defined in the syllabus	4.3

Table 6 depicts the results of the facilitator's teaching style. The highest mean score is for the educator who has clear goals for the course (FTSQ3) at 4.41. The second highest mean score is for the educator's expectations for student conduct and performance in the course are explicitly outlined in the syllabus (FTSQ8) at 4.3, followed by students getting regular feedback on their work (FTSQ4) at 4.15. The respondents perceived that they use their expertise to settle content disputes (FTSQ2) at a mean score of 3.85, and students may view the educator as a knowledgeable resource (FTSQ7) with a mean score of 3.84. Meanwhile, the educator allows students to teach some topics in class which has a mean score of 3.31, and the educator asks students for input on how to teach has a mean score of 3.71. Finally, the lowest mean score is for students who can work at their speed on projects at 3.52.

4.3 Findings for Delegate Method

This section unveils the results gained from Section D about the delegate method to answer research question 3: How does the delegation method influence teaching and learning? Usually, educators with a delegator style give students control over learning tasks. Students choose and manage their projects, often working in groups. This approach helps students learn both subject content and teamwork skills.

Table 7: Results from Section D - Delegator Teaching Style

Items	Mean Score
DTSQ1 Eventually, many students begin to think like me about course content	3.48
DTSQ2 Students can make choices among activities to complete course requirements	3.36
DTSQ3 My approach to teaching is similar to a manager of a workgroup who delegates tasks and responsibilities to subordinates	3.59
DTSQ4 There is more material in this course than I have time available to cover it	3.55
DTSQ5 My standards and expectations help students develop the discipline they need to learn	4.17
DTSQ6 Students might describe me as a "coach" who works closely with someone to correct problems in how they think and behave	3.94
DTSQ7 I give students a lot of personal support and encouragement to do well in this course	4.24
DTSQ8 I assume the role of a resource person who is available to students whenever they need help	4.32

Table 7 conveys the results about the delegator teaching style. The highest mean score is for educators acting as always-available resources to students (DTSQ8) at 4.32. Next, the second and third highest mean scores are the educator provides personal support for students to succeed

at 4.24, and the educator's high standards help students stay disciplined in learning at 4.17. Then, students always see the educator as a supportive "coach," which has a mean score of 3.94, and the educator acts as a manager who assigns tasks and has a mean score of 3.59. Meanwhile, the mean score for too much content for the educator to cover in time is 3.55. Followed by the second lowest mean score is students often start thinking similarly to the educator about the course content at 3.48. The lowest mean score is for allowing students to choose activities to meet course requirements at 3.36.

4.5 Findings for the Relationship between All Teaching Methods

This section presents the analysis of the overall results to address research question 4, which examines the relationship between all teaching methods. Based on the conceptual framework, the following hypothesis is proposed:

H_0: There is no significant relationship between teaching methods in educational settings.

H_1: There is a significant relationship between teaching methods in educational settings.

To determine whether there are significant correlations in the mean scores among these variables, the data were analysed using SPSS for correlations. The results are presented separately in Tables 8, 9, and 10 below.

Table 8: Correlation between the Direct and Discuss Methods

		Direct	Discuss
Direct	Pearson Correlation	1	0.756***
	Sig. (2-tailed)		<0.001
	N	100	100
Discuss	Pearson Correlation	0.756***	1
	Sig. (2-tailed)	<0.001	
	N	100	100

**. Correlation is significant at the 0.01 level (2-tailed)

Table 8 demonstrates an association between direct and discuss methods. Correlation analysis shows that there is a highly significant association between the two methods (r=.756**) and (p=.000). According to (Jackson, 2015), the significant coefficient is at the .05 level, and a positive correlation is measured on a 0.1 to 1.0 scale. A weak positive correlation would be between 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a strong positive correlation from 0.5 to 1.0. Thus, there is a strong positive relationship between direct and indirect communication.

Table 9: Correlation between the Direct and Delegate Methods

		Direct	Delegate
Direct	Pearson Correlation	1	0.663***
	Sig. (2-tailed)		<0.001
	N	100	100
Delegate	Pearson Correlation	0.663***	1
	Sig. (2-tailed)	<0.001	
	N	100	100

**. Correlation is significant at the 0.01 level (2-tailed)

Table 9 shows there is an association between direct and delegate methods. Correlation analysis indicates that there is a highly significant association between both methods (r=.663**) and (p=.000). The significant coefficient is recognized at the .05 level, a positive correlation is

measured on a 0.1 to 1.0 scale, a weak positive correlation is between 0.1 to 0.3, a moderate positive correlation is from 0.3 to 0.5, and a strong positive correlation is from 0.5 to 1.0 (Jackson, 2015). Hence, there is a strong positive relationship between direct and delegate methods.

Table 10: Correlation between the Delegate and Discuss Methods

		Delegate	Discuss
Delegate	Pearson Correlation	1	0.654***
	Sig. (2-tailed)		<0.001
	N	100	100
Discuss	Pearson Correlation	0.654***	1
	Sig. (2-tailed)	<0.001	
	N	100	100

**. Correlation is significant at the 0.01 level (2-tailed)

Table 10 reveals an association between delegate and discuss methods. Correlation analysis shows that there is a highly significant association between the two methods (r=.654**) and (p=.000). Revisiting Jackson's (2015) suggestion, the coefficient is significant at the .05 level, a positive correlation is measured between 0.1 to 1.0, a weak positive correlation between 0.1 to 0.3, a moderate positive correlation between 0.3 to 0.5, and a strong positive correlation between 0.5 to 1.0. Therefore, there is a strong positive relationship between delegate and discuss methods.

5. CONCLUSION

5.1 Summary of The Results and Discussions

This study explores how different teaching methods; direct, discuss, and delegate affect the teaching and learning processes. Additionally, it also investigates the relationships between teaching methods and styles among teachers.

In addressing Research Question 1, the study found that the direct method includes expert and formal authority teaching styles that focus on students gaining knowledge, setting high standards, and promoting independent thinking. The finding is in line with previous research by Smith et al. (2021) as well as Inayat & Ali (2020), which argued for engaging students through direct instruction while developing their critical thinking abilities. Research question 2 explores the role of discuss methods, such as the personal model and facilitator teaching style, in promoting student participation, critical thinking, and active involvement. Findings from McKenney (2018) and Idhaufi & Ashari (2017) support this idea of creating collaborative learning environments where pedagogical strategies are tailored according to the diverse preferences of learners. Meanwhile, Research Question 3 explores the delegate method, characterized by a delegator teaching style. The method allows them to provide their authority about collaborative learning experiences, thereby empowering them. This method empowers students by This method empowers students by delegating leadership over collaborative learning experiences. This finding is consistent with previous research by Öznacar et al. (2017) and Darling-Hammond et al. (2020). These studies highlight the importance of technology for diverse teaching methods in stimulating students' interest and overall progress. Finally, Research Question 4 explores the correlation between all teaching methods, highlighting key aspects such as the direct-to-discuss, direct-to-delegate, and delegate-to-discuss methods, which demonstrate a positive relationship between them. These findings support that some specific teaching styles are suitable for different teaching methods, this means that teachers

should be able to make changes and adapt their lessons as needed to accommodate different students who learn things differently from one another, as presented by Glenn (2016) and Dickinson et al. (2021).

5.2 Pedagogical Implications and Suggestions for Future Research

The findings of the study have several implications for educational practice and future research. Firstly, educators need to decide that different teaching methods are necessary to create effective learning environments. Future studies should also examine the instructional practices and approaches used concerning student outcomes, such as the development of critical thinking, creativity, and problem-solving skills. The examination of contextual factors, such as cultural and institutional differences, in teaching methods and student experiences can likely lead to some possible outcomes for personalized instruction.

Future researchers should consider conducting continuous studies of the long-term effects on students' learning outcomes and academic achievement. Furthermore, future researchers should investigate how the use of technology can facilitate the advancement of diverse teaching methods, thereby enhancing student engagement and learning (Rogowsky et al.). This study could potentially stimulate additional research on the efficacy of development programs that aim to enhance teachers' instructional skills or reflective teaching methods. This, in turn, could positively impact teacher quality and student achievement in various educational environments.

Researchers consistently assert that varied pedagogic methods are necessary to support the diversity of learning styles across both newer and older generations. Previous studies have highlighted the importance of direct instruction, discussion-based learning, and delegation in promoting student engagement, critical thinking, and overall academic achievement (Smith et al., 2021; McKenney, 2018; Öznacar et al., 2017). Similarly, the present study supports such findings and correlates various strategies with different styles of teaching, such as expert, facilitator, or delegator.

Furthermore, this study addresses the significant relationships between teaching methods and styles, highlighting the significant positive correlations between the direct method and the discussion style, as well as the ability to delegate teaching in both indirect and discussion-oriented ways. The study's findings underscore the necessity for teachers to adjust and be adaptable in their teaching methods to meet student’s diverse needs, including the potential impact of surrounding factors on teaching and learning experiences.

In summary, the current study contributes to the body of literature by highlighting significant relationships between various teaching methods and styles from earlier studies, although additional evidence is still required. The results provide an understanding of their relationships and implications for learning. Moreover, the practical implications related to this study are that educators and policymakers should consider multi-flexible teaching techniques or styles in order to create an inclusive learning environment where students can learn effectively.

6. LIMITATIONS

While this study provides valuable insights into the relationships between teaching methods and teaching styles, several limitations should be considered. First, the sample size sample predominantly comprised educators with advanced degrees in science and technology, mostly female, which may restrict the generalizability of the findings to other demographic groups and educational contexts. Second, the use of cross-sectional design and self-reported surveys with

Likert scales could lead to response biases and make it harder to get a full picture of how teaching methods affect student outcomes. Additionally, the study did not fully explore external factors such as school policies, community influences, and the socio-economic backgrounds of students, which could significantly impact educational outcomes. Future research could address these limitations by employing larger and more diverse samples and looking into more contextual factors to make the results more reliable in varied educational settings.

ACKNOWLEDGEMENT

The authors sincerely thank all who assisted in this research, with special acknowledgment to Pusat Asasi UiTM Cawangan Selangor, Kampus Dengkil, for their constant encouragement and support.

AUTHORS' CONTRIBUTION

ZSO and NAM conducted the introduction and literature review sections. ZSO and SSM gathered, refined, and analysed the data using SPSS. **SS** authored the methodology, discussion, and implications sections. All authors reviewed and approved the final manuscript.

CONFLICT OF INTEREST

None declared

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ESTEEM Journal of Social Sciences and Humanities
Vol. 8, Special Issue, October 2024
https://ejssh.uitm.edu.my

Intercultural Challenges: A Case Study of ESL Assistant Language Teachers in Japan

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ABSTRACT

ARTICLE HISTORY

Received:
12 August 2024
Accepted:
30 September 2024
Published:
11 October 2024

KEYWORDS

Intercultural Competence
Cultural Adjustments
Interaction Difficulties
Teaching Internship
Assistant Language Teachers

Assistant Language Teachers (ALTs) often encounter challenges in negotiating institutional relationships during their internship, particularly in foreign language settings. Such negotiation process requires excellent intercultural skills of ALTs, especially those teaching English as a Second Language (ESL). Despite this multifaceted nature of the internship requiring shifting between multiple roles as ALTs, little has been investigated about the interactional difficulties that could be obstacles for ESL ALTs due to the unfamiliarity with the new cultural setting. Hence, this study was conducted to identify the participants' interactional difficulties and cultural adjustments they make in their internship as part of professional growth through cultural reflections of experiences. This qualitative case study examines two Malaysian ESL ALTs operating in selected English language private centres based in Kyoto and Tokyo, Japan respectively. Findings indicate that the ALTs have fairly contributed to their development of intercultural competence and professional growth by addressing their interactional difficulties and cultural adjustments made throughout a course of 23 weeks teaching internship from reflections they have made. The study found that the ALTs face difficulties in building institutional relationships and also building interaction within classrooms. To manage these difficulties, the study found that ALTs have made some cultural adjustments, including adapting to cultural dynamics at work and immersing oneself in a new culture. However, limitations include the small sample size and the focus on two contexts, suggesting the need for further studies across diverse educational settings. The study concludes that building intercultural competence is essential for ALTs' professional growth and recommends incorporating both qualitative and quantitative approaches in future research, as well as longitudinal studies to assess the long-term impact of such programs on teacher development.

e-ISSN 2600-7274

1. INTRODUCTION

In an intercultural setting, both teachers and learners have the chance to learn from each other and gain insight into the diverse ideas and philosophies of different groups. The concept of 'borderless education' promotes this intercultural interaction by redefining teaching and learning dynamics, making education more accessible, and eliminating geographical barriers (Andrin et al., 2024). 'Borderless education' signifies the removal of boundaries, including those related to geography, time, disciplines, and concepts. This has enabled educational institutions to form partnerships with external entities (Kosmützky & Putty, 2015). Such partnerships encourage teacher collaboration, which is vital for enhancing workplace conditions, including cultural and political environments, thereby significantly contributing to student learning, teacher development, and overall school improvement (Jones & Smith, 2023). The international recognition that educational institutions gain through these partnerships significantly enhances intercultural competence. This, in turn, assists educators in creating culturally inclusive learning environments and fosters collaboration with other international institutions to integrate intercultural competence globally (Malik et al., 2024).

The importance of this study is highlighted by its focus on cultural competence, a critical aspect as the field of foreign language education strives to implement standards effectively. This study may support non-native language teachers in better preparing to integrate these standards into their teaching of cultural competence. It aims to benefit a wide range of stakeholders, including educational policymakers, institutions offering foreign language courses, educators, governmental bodies investigating the impact of teachers' intercultural competence, pre- and in-service teacher education programs, and learners of English. The findings provide valuable insights for all these groups. Additionally, the study's applicability to other language programs offers useful information for teaching intercultural skills in various cultural settings.

1.1 Statement of Problem

In recent years, there has been an increasing demand for English as a Second Language (ESL) Assistant Language Teachers (ALTs) from diverse cultural backgrounds. While this trend promotes cross-cultural understanding, it also highlights challenges in negotiating institutional relationships among ESL ALTs. The arrival of ESL ALTs does not automatically result in intercultural contact, as they often face significant difficulties due to language barriers and cultural distance (God & Zhang, 2018). To navigate these challenges effectively, ALTs need cultural competence to understand and appreciate cultural differences.

Many studies focus on Assistant Language Teachers trained in developed, Western, or English-speaking countries. Although interest in practical issues related to teaching and transmitting culture has grown over the past few decades, there is a notable lack of research on the experiences of ESL Assistant Language Teachers trained in Asian contexts (such as Malaysia) or in environments where English functions as a second or foreign language. These teachers, who are sent abroad for teaching internships, play a crucial role in ensuring the transmission and appreciation of the target culture. Therefore, this paper aims to address this research gap by examining the experiences of ESL ALTs, who are also non-native English speakers, participating in a teacher education language program in Japan.

1.2 Objective of the Study and Research Questions

The case study seeks to examine the changing nature of the experiences of ESL Assistant Language Teachers who are graduates from a Malaysian public university, where they embarked on a language teacher education programme in Japan. This study was furthermore designed to identify the participants' interactional difficulties and cultural adjustments they make in their internship as part of professional growth through cultural reflections of experiences.

This research seeks to address the following questions:

1. What challenges did the ESL Assistant Language Teachers initially face in the internship of a language teacher education programme in Japan?
2. What cultural adjustments did the ESL Assistant Language Teachers make during the internship?

2. LITERATURE REVIEW

2.1 Understanding Intercultural Competence

Intercultural competence is crucial for fostering intercultural understanding (Castro et al., 2018), (Crushner, 2018). In educational research and education, it is often defined as the "ability to successfully and appropriately interact in an intercultural state or setting" (Perry & Southwell, 2011). Various approaches have been utilised to conceptualise intercultural competence (Bennett, 2021), (Byram, 2020), (Lustig & Koester, 2010), generally encompassing skills, attitudes, and knowledge. It involves critical understanding and abilities enabling individuals to navigate diverse cultural contexts successfully (Crushner, 2018). As culture is ever-changing, intercultural competence is continually evolving. The term "competencies" in its plural form highlights a dynamic approach, emphasising interaction with individuals who have diverse identities within specific contexts, rather than a static understanding of a "cultural other." This indicates that intercultural competence is variable and context-dependent, rather than universally consistent (Leal Filho et al., 2021). Hence, the process of developing intercultural competencies is ongoing, relative, and spontaneous (Dervin & Dervin, 2016).

An individual's level of intercultural competence, or their ability to reflect and act in culturally appropriate ways, is closely tied to their intercultural sensitivity. Intercultural sensitivity is defined as "the ability to discriminate and experience relevant cultural differences" (Hammer et al., 2003, as cited in Tarchi & Surian, 2022). Considering the points mentioned, it can be inferred that intercultural experiences significantly influence how individuals perceive and understand both other cultures and their own, ultimately achieving intercultural competence.

2.2 Theoretical Perspective

The theoretical foundation of this research is based on Nussbaum's Capabilities Approach (2009). This theory posits that intercultural capacity can be understood through three capabilities: the ability to critically evaluate oneself and one's traditions; the capacity for relationships, described as "living with and toward others" (Nussbaum, 2001); and the capacity to extend our narrative imagination to empathise with others' perspectives, thinking outside of our usual frameworks (Crosbie, 2014). Nussbaum emphasises the role of literature in fostering

empathetic intercultural perspectives. Developing an "empathetic imagination" enables us to perceive cultural others not as completely alien, but as individuals sharing different challenges and opportunities with us (Nussbaum, 1998). Engaging consistently and forming relationships with people from diverse backgrounds are among the ways to interact with various intercultural viewpoints (Hepple, 2014), (Tsai & Houghton, 2014).

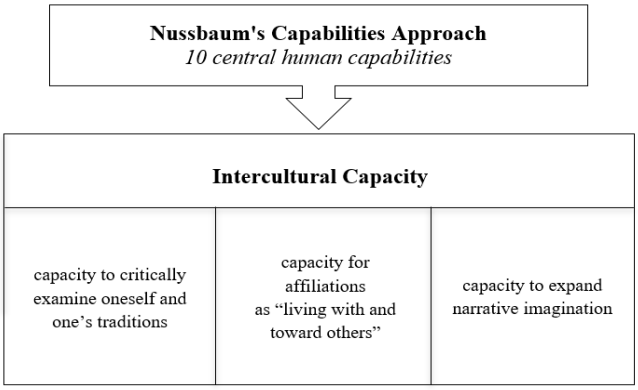

Figure 1: Nussbaum (2009) Capabilities Approach

Nussbaum's framework offers a perspective on intercultural understanding through three interrelated primary attributes, as reflected in the Malaysian Education Blueprint 2013-2025 (Shan et al., 2016). The first attribute, national identity, promotes a strong sense of inclusiveness among students by encouraging them to understand and accept differences. This aligns with Nussbaum's concept of critically examining oneself and one's traditions. The second attribute, ethics and spirituality, which encompasses shared values among Malaysians, resonates with Nussbaum's idea of engaging in relationships and "living with and toward others" (Nussbaum, 2001). The third attribute, thinking skills, aims to cultivate students' abilities for inquiry and lifelong learning. This aligns with Nussbaum's notion of descriptive imagination, which helps individuals "view the world from the perspective of other persons, particularly those whom their society might marginalise" (Nussbaum, 2010). These attributes support the application of Nussbaum's Capabilities Approach as a framework for understanding and evaluating intercultural competence in educational settings.

Furthermore, there is a notable connection between the development of intercultural competence and Mezirow's Transformative Learning Theory, which is integral to the professional growth of student-teachers (Mezirow, 2000). Mezirow's theory is divided into two primary components: instrumental learning and communicative learning. Instrumental learning deals with task-oriented problem-solving and understanding cause-and-effect relationships, while communicative learning focuses on how individuals express their needs, feelings, and desires. Mezirow's Transformative Learning Theory illustrates how new experiences and cultural reflections lead to personal growth and increased intercultural sensitivity. This theoretical framework supports the notion that reflecting on and challenging dominant stereotypes is crucial for fostering teachers' intercultural competence, as explored in this study's examination of cultural adjustments in the professional development of Assistant Language Teachers (ALTs).

Mezirow's Transformative Learning Theory plays a significant role in the development of intercultural competence, especially in the context of student-teachers' professional growth (Mezirow, 2000). The theory's two core aspects—instrumental learning, which addresses

practical problem-solving and evaluation of cause-and-effect scenarios, and communicative learning, which explores how individuals articulate their needs and feelings—are foundational to understanding intercultural experiences. Transformative Learning Theory provides a framework for analysing how new cultural experiences and reflections contribute to personal growth and intercultural sensitivity. This theory supports the study's goal of understanding how the process of reflecting on and challenging prevailing stereotypes can advance teachers' intercultural competence, particularly in examining the cultural adjustments experienced by ALTs.

2.3 Assistant Language Teacher Programme

The emergence of the ALT Programme began with Japan's initiative to adhere towards the growing demand for English worldwide. The ALT Programme initially started with the purpose of building a bridge between Japan and other countries through mutual understanding. Thus, the programme is hoped to develop international exchange and simultaneously focusing on internationalisation among citizens and local communities in Japan. ALTs' roles are therefore particularly vital in inculcating practical English communication skills as they are not just linguistic resources, but also cultural informants (Pearce, 2021). ALTs need to work together with host schools including preparing lesson materials, facilitating the students and assisting Japanese English teachers to boost their English competence.

The shifting roles of ALTs throughout the years have impacted not only the Japanese public but private institutions too. Much evidence has drawn upon the difficulties ALTs encounter when it comes to cooperating with Japanese English teachers in the classroom. Many ALTs expressed their difficulties particularly in team-teaching. ALTs are only perceived as "assistants" which downsize their roles to truly facilitate students' learning of the English language. ALTs reported that there is a lack of a standard and understanding of what is expected in their roles (Castro et al., 2018). They also reported dissatisfaction on their roles as to constantly preparing and running games as well as being a human "tape recorder" (Tjipto, 2022). The study analyses the progress of ALTs' cultural adjustments with a specific emphasis on building intercultural competence within teacher education and encountering multiplicities, particularly in negotiating institutional relationships.

2.4 Intercultural Challenges

Previous research has explored a range of issues associated with educational diversity in multi-ethnic and intercultural settings. The term 'intercultural' is used here not as a counterpoint to 'multicultural', as both terms are complex and often dichotomized in scholarly discussions. For example, the Malaysian government has committed to developing educational frameworks that foster human capital and support intercultural values. This commitment is reflected in the Ministry of Education's goal to use education as a means of unifying a nation with diverse ethnic groups. In Malaysia, the concept of 'tolerance' has been central to promoting national unity within its socio-political context. The principle of "everybody matters" underscores the role of human rights in ensuring the dignity and survival of all individuals (Kirchschlaeger, 2020). Furthermore, this focus on unity is evident in educational policies from historical documents such as the 1956 Razak Report and the Rahman Talib Report, which have emphasised subjects like Moral Education and Civics to foster integration, tolerance, and intercultural understanding. These educational goals are designed to develop intercultural competence among students and teachers alike (Matveev & Milter, 2004). Despite these efforts,

there remain challenges related to teachers' abilities and preparedness to be interculturally competent.

2.5 Critical Reflections in Negotiating Institutional Relationships

In international practicum and professional development, critical reflections involve assessing, evaluating, and resolving issues encountered by pre-service teachers during their experiences (Miftah et al., 2023). These reflective practices are essential for teachers' growth and professional development. To be effective, this learning must be adapted to highlight both the strengths and weaknesses of teaching methods to improve pedagogical skills.

However, not all ALTs can fully benefit from international teaching experiences due to various constraints such as financial limitations, time restrictions, and demanding course requirements. Additionally, there are instances where these international experiences do not meet their intended objectives and may even lead to adverse outcomes. For example, Dutch teachers in Indonesia encountered challenges related to students, school environments, and regulations, which hindered their performance during the international experience (Setyaningsih et al., 2023). Similarly, Southeast Asian student teachers faced issues such as communication barriers, culture shock, and insufficient preparation for cultural adjustment (Megawati et al., 2023). The diverse cultural backgrounds of ESL ALTs further complicate the process of negotiating institutional relationships, underscoring the importance of developing intercultural competence among these teachers, a point that will be explored in the following study.

3. METHODOLOGY

This study was of a qualitative case study design, which aims to explore a single case which is specific, unique and within a bounded system (Stake, 1995). The case study approach is particularly useful in studying the interactional difficulties the ALTs faced, as it is able to delve deeply in the cultural adjustments they make throughout the internship. The participants of the study were selected through purposive sampling based on specific criteria aligned to the research objectives. Participants were deliberately chosen among ESL ALTs who are working in Japan, ensuring they have firsthand experience and can provide rich, detailed insights into the intercultural challenges faced in their roles. The target sample is two selected female Master of English Education as a Second Language students from University of Malaya. The two participants had completed their local teaching practicum during their bachelor degree in Teaching English as a Second Language and have never been to Japan. Thus, embarking the ALT journey in a foreign country will be a whole new cultural experience for them. Prior to confidentiality of the data, pseudonyms are used. Case 1, Siti, is based in Kyoto whereas Case 2, Amirah is based in Tokyo.

Different tools were used to collect rich data of participants' experiences in Japan. The tools include weekly reflective journal, monthly journal report, summary of interns' tasks and of e-mail communications over the course of 23 weeks of the internship. Two types of journaling format were used in this study. While the participants were in Japan, they wrote a reflective journal once per week. The format of the reflective journal involved open-ended questions concerning any cross-cultural misunderstanding in and outside of the classroom, their most rewarding experience of the week, challenging encounters, cultural adjustments, coping mechanisms and their professional growth. The monthly journal report follows a template of their daily life, school and work matters and welfare in Japan. Secondary data sources such as summary of ALTs' tasks were used to corroborate and complement the primary data sources.

Due to the emerging nature of qualitative studies, data sources are recognized continuously during the study and data collection methods are altered as required. The data sources and collection methodologies which is known as "the chain-source sampling approach" (Merriam, 1998) have been used to inform the data as it was obtained and analysed as well as to be sensitive to contextual aspects and adapt to conditions as they have happened over the course of the year to seek data that best shed light to research questions.

For this study, an inductive thematic analysis approach was utilised to uncover patterns and develop preliminary theories regarding the phenomena under investigation. Inductive analysis, (Patton, 2002), involves the identification of patterns, themes, and categories from the data itself rather than applying pre-established frameworks. This method allows for the discovery of insights through a process of data examination and interpretation, which is central to understanding the complexities of the research topic.

4. FINDINGS

4.1 Research Question 1: What challenges did the ESL Assistant Language Teachers initially face in the internship of a language teacher education programme in Japan?

4.1.1 Building Institutional Relationships

Within Siti's and Amirah's first week, they were introduced to LEPTON with guidance of the company's personnel. They seemed to be overwhelmed with LEPTON's unique system and curriculum. This growing concern is subdued when Amirah felt rather relieved when she attended a briefing with Sana-san from the marketing and sales department to listen to the number of tasks she was expected to complete for the week. In an attempt to build institutional relationships, the ALTs would occasionally join lunch and meet ups held by the company to familiarise themselves with their colleagues. Such gatherings are indeed beneficial as bonds could be established in a more relaxed and friendly manner. Another example of the growing institutional relationships was a presentation Amirah did to members of the sales, public relation and marketing department. The 40-minute presentation including Q&A session at headquarters office allowed her to formally introduce her home country and cultural background. Her second presentation titled "English Education" covers English Education in Malaysia, differences of ESL and EFL education in Japan and her previous educational background.

On the other hand, Siti was invited to attend the Advanced series seminar where she first felt truly welcomed as a foreigner in understanding teachers' roles and giving a clearer demonstration of how teachers should perform their "checking". Both ALTs mentioned that they were not assigned to any specific mentor teacher. It is assumed, with their agreement, that the classroom manager or headmistress primarily carried out this role in supervising and delegating their tasks throughout the internship. Whether or not, the account of having one fixed mentor teacher assigned to the ALTs in giving actual feedback of their performance, is yet to be discovered during the initial phase of the internship. However, Siti was optimistic and acknowledged other teachers who worked with her in the classroom and believed, in the sense of reflecting her experiences, "it would be wise to consider other teachers as mentors too" (Siti, October MJR, 2018).

There were occasions when the ALTs did not specifically have anything to do as there were days where there were no tasks assigned to them. To avoid being judged as rather unproductive,

Amirah would just ask her classroom manager. Somehow by addressing their concerns instantly, it would ease their mind and reduce their anxiety while working. The trust between mentor teachers and ALTs began to establish when Nami san started letting Siti perform 'checking' two sections of students' work. This continual relationship was heightened when Siti was responsible to perform a full checking by the end of November. For Amirah, the starting point of growing an institutional relationship with her mentor was when she received new tasks such as posting updates of students at LEPTON's official Facebook page. This was further continued by another task of counting stock count of the "Day Check" worksheet and students2 "Final Check". Everything was smooth sailing as both interns received fairly similar tasks until Siti had a hiccup with her classroom manager.

She was upset with the situation as she did not intend to cause a scene and wanted to confront her classroom manager about the incident. After sharing her concerns with Amirah and another personnel in Tokyo named Sana-san, Siti collected her courage and faced the issue head on. Siti took responsibility for the incident and Nami-san finally understood that it was unintentional. Although it seems small, Siti felt an obligation to apologise due to the treatment she received from Nami-san.

4.1.2 Interaction within Classroom

It is evident that there is a gap in language barrier which was a major hindrance towards engaging with students. The ALTs found it challenging in making meaning in the classroom. Acknowledging that the students only have a very basic grasp of the targeted language, Siti and Amirah would encounter situations whereby students misinterpret them. The ALTs perceived that without teachers' push to use the language, the students are mostly shy and reluctant to speak in English.

Kyoto centre hired a few foreign part-timers too. Siti had other native English teachers; Emily (American) and Emma (Scottish) who have worked over 5 months. The teachers share their struggle to do checking at first due to the language barrier. Now that both are taking up Japanese together in a nearby private school, they are progressing well in class. On the other hand, Esther (Hungarian) has lived in Japan for 4 years and talking to the Japanese is not much of a problem for her. Siti became insecure of her language Japanese skills and aimed to improve herself. Other interactional challenges include students' use of their mother tongue and thus neglecting the purpose of learning English. Over the course of the internship, students would misbehave when they could not attend to their learning. To overcome the language barrier, a positive learning environment needs to be established by teachers. Amirah eventually learnt the reason as to why Sayu-sensei liked to put on English songs during class.

On the contrary, Amirah also noticed that the students talk a lot, but in Japanese. Her classroom manager reminded them to not talk too much and focus on work instead and that they were only allowed to "talk too much" if they are using English. By the second month, students were beginning to show an improvement in terms of responding to the ALTs. This reflects that their presence in class does give an impact in making room for language opportunities. Trained as English as a second language in local universities, the ALTs face interactional difficulties when it comes to engaging with students and delivering meaningful lessons. They seemed to be caught up with the system that limits them to be creative in their teachings due to several internal constraints. Nevertheless, they were aware of the students' English language proficiency before coming to Japan.

The ALTs began to question the classroom's practices and learning culture which contradicts their local teaching experiences. They soon realised that they needed to act to the situation. The ALTs began contemplating their teachings and interpersonal skills. Addressing the issue, Siti and Amirah began working on their basic-classroom-Japanese in order to connect with students before pondering over the materials and methods needed for their teachings. Another contrasting foreign to local teaching experience was when Amirah drafted a presentation script about 'My Country' where she produced two versions of worksheets to cater to different levels of students. She revealed that the task was very difficult since she was used to drafting a more complex handout and worksheet for her students in Malaysia.

Nonetheless, from their observations, they noticed the students memorised a lot of English phrases. This habit seems to diminish the real aim of language learning, which is to create real-life communication between oneself and the interlocutor. The structured textbooks where students stay focused listening to audio recording while answering to questions, although may enhance independent learning, makes it harder for them to engage speaking verbally with the students. The ALTs wish to introduce a more communicative approach to the students in tackling this issue. Whenever necessary, the ALTs would listen to the audio tapes to accustom themselves with the textbooks, but both were not in favour of the learning style. In regulating their roles as ALTs, the teachers facilitate students' learning through correcting pronunciation of words, spelling errors and grammar.

Apart from their roles as ALTs, they were also involved in festivities and seasonal events which gave them the opportunity to connect with students. The second week in Japan happened to be Halloween. The ALTs already had their hands full with preparation of games, activities and class decoration to immerse with the festive vibe. Amirah was psyched with how the party turned out when students completely understood her instructions and questions. In addition, the success of the party went beyond Siti's expectation when Nami-san complimented her work.

In being interculturally sensitive occasions such as the students bringing candies to the class and shared with the ALTs depicts their level of toleration with their surroundings. Due to the fact that the students could not fully understand the concept of halal, the ALTs accepted anyways as to not offend them. The act was reciprocated when one of her student's parents who returned from Malaysia brought Malaysian biscuits and chocolates for her. The students were also aware of Siti's missing for 15 minutes during each first lesson because it was time for her Maghrib prayers. The cross-cultural differences were even more evident when Sana-san (Tokyo personnel) asked Amirah whether Siti is a stricter Muslim. Students were also particularly curious about the ALTs' nationality. The clash of culture triggered students' interest in them particularly in regards to their identity as Muslims. The ALTs took it as an opportunity by giving a good portrayal as Malaysians and Muslims.

In bridging the gap between Malaysian and Japanese cultures, the ALTs began introducing their Malaysian quiz to expose students with Malaysian culture. Although different classes in general react differently to their presentation, the ALTs were more than glad that students do respond by asking questions and giving attention. This motivated them to share more as the experience allows them to open up and make small conversations with students. Moreover, the foreign identity sparked students' curiosity and hence engaged them to speak up if they wanted to know more. Amirah soon realised that Japanese do not speak English with tone, emphasis, stress and rhythm and the learning of inflection and tone when learning a language is important too.

The ALTs' tasks shifted as Amirah then focused on Speaking Lessons while Siti continued with her weekly cultural quizzes. Both are on par with focusing on fluency rather than accuracy as they are more concerned on encouraging students to speak up and converse in English. As a whole, their identity as a foreigner projects international mindedness into the classroom, bringing in cultures from different countries and giving a more sense of geographical aspects into overall learning. Initially, the ALTs took their time to interact outside working hours. On weekdays, they were already drained from daily routines at the centre. Interaction beyond the workplace gradually occurs as they adapt to living in Japan. The interns mostly interact with their housemates. Amirah was flattered when her housemates made an effort to practise their English with her since they complemented her accurate and comprehensible choice of words.

4.2 Research Question 2: What cultural adjustments did the ESL Assistant Language Teachers make during the internship?

4.2.1 Adapting to Cultural Dynamics at Work

Amirah admitted she practised a lot of nodding and bowing to show respect to her high ups. To illustrate the cultural adjustments the ALTs made, the habit of simply nod and bow was picked up by Siti too particularly after a memorable incident at her workplace. Amirah also shared an experience when her office had a fire drill. She mentioned that everyone had to climb eight flights of stairs. It taught her to be ready for events like earthquakes where quick thinking is important to ensure safety precautions are taken. Another example was when they noticed that their colleagues would bring lunch boxes to work. They shared a common desire to do the same and started bringing their own lunch box too.

As part of being ALT, Siti was entrusted to be in charge of cleaning the classroom. She admitted by showing to the students her involvement in ensuring the cleanliness of the classroom, she could demonstrate and project positive behaviour to them. This is accompanied by *osouji* (the big year end cleaning ritual) where everyone in the company cleans the office together. These cultural adjustments taught the ALTs a sense of togetherness which is lacking in today's world. The Japanese celebrated *bonenkai* where the ALTs experienced having dinner with all kinds of alcoholic drinks. As for the ALTs, it was a test of faith and self-control whether they adjust themselves to the dynamics of their colleagues outside of the workplace. Moreover, *bonenkai* is particularly important as bosses congratulated their employees' work throughout the year and new staff casually introduced themselves again as a newcomer to the company. The ALTs acknowledged the challenge in drafting students' work as they were initially not used to preparing materials for very beginner students. One way or the other, they need to conform and figure out students' needs. In addition, the ALTs had to adjust to the Japanese marking style that differs significantly compared to the usual marking they did back in their home country.

Pertaining to the language barrier issue the ALTs initially had, they made the initiative to also equip themselves with the Japanese language towards a more effective teaching and learning. The ALTs indicated their satisfaction and that students' improvement in making use of English in the classroom is a rewarding experience. Students' willingness to participate and voluntarily did checking with the ALTs made them feel truly a part of LEPTON. These acts of acceptance enhance learning throughout the internship. The ALTs adjusted to their working culture in the sense of taking more proactive actions in dealing with any doubts at work. The institutional relationships they have created were then followed by many other occasions. Towards the end of the internship, both ALTs' classroom managers gave good rapport with students' initiative to speak more English in class. The ALTs in general, had their ups and down in understanding

the Japanese working culture. Although they were ready to immerse themselves with the distinctive working dynamics, unpredictable occurrences do happen in actual life.

4.2.2 Immersing Oneself in New Culture

Living in Kyoto, Siti felt lucky and grateful for the chance to fully immerse herself with traditional aspects of Japan. Her shared house is located strategically near local shrines and temples as well as popular tourist spots in Kyoto. Unlike Siti, Amirah had more obvious cross-cultural misunderstandings in Tokyo. She finds it hard to make eye contact and notices random pedestrians would just look away when she looks at them on the streets. She emphasised she did try to look and smile but to her disappointment, their eyes were always looking at some other ways. She later learnt and assumed such behaviour is a social norm whereby Japanese in general are shy in nature, but also agreed "this cannot be generalised, though" (Amirah, Week 1 WRJ, 2018). Siti, on the other hand, did not encounter such happenings as "perhaps the locals are used to seeing foreigners and tourists in the area" (Siti, October MJR, 2018). Siti experienced another new cultural difference during teaching on the Japanese reading culture. She was taken aback as her young student literally wanted a book for her birthday compared to receiving toys and such. Another example that illustrates the cultural adjustments is the Japanese culture of being completely quiet and silent.

5. CONCLUSION

5.1 Summary of Findings and Conclusion

5.1.1 Research Question 1: What challenges did the ESL Assistant Language Teachers initially face in the internship of a language teacher education programme in Japan?

ALTS' Awareness of Aspects of Language and Language Teaching-Learning

The teaching internship has significantly enhanced ALTs' awareness of various aspects of language and language teaching-learning, influenced by the culture and society of the host nation. This awareness is crucial as it boosts ALTs' confidence, thinking skills, and shapes their attitudes and values. Sponseller (2016) found that ALTs generally understand and agree on how lesson planning works, including their involvement in creating lesson materials. Walter and Sponseller (2020) suggested that ALTs should be deeply involved in the teaching process, including lesson planning and course instruction. A participant in a study conducted by Walter and Sponseller (2020) commented, "I'd like the ALT to be the main and Japanese Teachers of English (JTE) to assist. It is good for the ALTs to largely take lead in the lesson and lesson planning and for the JTE to offer ideas, input and additional content."

The ALTs' language development and awareness are linked to their experiences during the teaching internship and the meaningful social and formal contexts provided in Tokyo and Kyoto private English language centres. These contexts involve the purposeful use of English for authentic communication in teaching and learning, as well as in interactions within local communities outside LEPTON. Although societal factors may not directly impact language learning, elements such as daily chores, engagements, interactions, and national events can have "strong and traceable indirect effects" on ALTs' language development and learning. This aligns with Mezirow's conceptualization of teachers' transformative learning theory, as the two Malaysian ESL ALTs recognized their professional growth, increased language awareness, and confidence levels through changes in experiences and cultural reflection during and after the

language teacher education program. This suggests that meaningful professional development opportunities enable teachers to perceive and function as professionals who can continuously develop and grow.

Professional Development Experiences Through Process of Observational Learning

The findings indicate that two ESL ALTs have gained professional development experiences through observational learning in the Japanese private school environment. The mentor teachers and the established school systems serve as influential models for these pre-service teachers. This observational learning helps them internalise new knowledge by: (1) identifying meaningful experiences and discarding those that do not contribute to their development (Drage, 2010); (2) learning from various student interactions and contexts, particularly unfamiliar ones like the Japanese context (Kennedy, 1999); and (3) negotiating their experiences between Malaysia and Japan, adopting the best practices from both educational systems (Moin et al., 2011).

The ALTs practise vicarious reinforcement, carefully considering other factors before fully emulating or selectively adopting the models they observe. This has bolstered their confidence in their teaching skills, as they closely identify with the models, thereby enhancing their teaching efficacy. It is important to note that the pedagogical practices in Japanese private centres differ significantly from those in the Malaysian educational system, which is highly centralised and curriculum-focused. The ALTs, having no prior teaching experience outside the Malaysian system, found teaching in Japanese English language private centres to be a new and enlightening experience. Critical reflection on these practicum experiences helps to develop and enhance the pedagogical competence of pre-service teachers, preparing them for future teaching careers (Miftah et al., 2023). The mentorship and support from other teachers allow the ALTs to access various resources and pedagogical perspectives within this community of practice. Such engagements during their internship develop and enhance the ALTs' competencies through practical application, problem-solving, and creative decision-making (Farnsworth et al., 2016).

Thus, the ALTs' internship experiences in different educational environments with diverse students have been pivotal in developing their skills and confidence. They can interpret and create knowledge from their teaching experiences in both Malaysian and Japanese schools. Their exposure to different educational contexts has enriched their practice, helping them identify effective and successful educational methods. The ALTs view the international teaching internship as a powerful experience that has rejuvenated their passion for teaching and learning, in addition to building their skills and confidence.

5.1.2 Research Question 2: What cultural adjustments did the ESL Assistant Language Teachers make during the internship?

Developing Intercultural Skills

The findings show that the community of practice enables members to pursue knowledge through interaction. This engagement helps members (the ALTs) create, share, and evaluate tools, standards, and learning designs, deepening their knowledge and skills (Farnsworth et al., 2016). This borderless learning in Japan involves critically investigating oneself and one's traditions while associating with others (Nussbaum, 2010). Frequent interactions with teachers, staff, and students of diverse backgrounds have enriched the pre-service teachers' interpersonal

skills. The egalitarian relationships between the ALTs and the working community are marked by mutual respect, learning from each other, understanding cultural differences, and adapting to various educational perspectives and beliefs. These elements have contributed to the ALTs' personal and professional development.

New World Views of Education and Culture

Exposure to new worldviews, ideas, and educational perspectives has allowed the ALTs to discern different educational philosophies in Malaysia and Japan. Comparing these philosophies has enriched their knowledge and contributed to their growth as future English language teachers. However, at times, ALTs and JTEs faced communication challenges, affecting their working relationships (Walter & Sponseller, 2020). Despite this, the ALTs thrived on their experiences in different educational systems, becoming aware of the advantages and disadvantages of each and how they can influence respective educational settings. This experience has helped them become "cultural informants" (Pearce, 2021), well-prepared to acclimatise to local cultures, syllabi, and conditions quickly. The international teaching experience has reinforced the realisation that teaching methods are unique and embedded within the ideologies and philosophies of specific educational contexts. Consequently, the ALTs can connect their teaching concerns, students' learning experiences, and the overarching educational process in Japan through descriptive imagination.

Adapting to New Working Culture

Huang et al. (2020) mentioned that education reforms advocate for schools to create conditions that promote teaching and learning. The working culture in Japan has allowed the ALTs to focus on teaching and learning, contributing to their professional development. In contrast, Malaysian teachers often emphasise examinations within a rigid timeframe, neglecting their professional development due to the focus on students' summative performance. The working conditions in Japan have challenged the ALTs to improve as English language teachers without compromising their teaching philosophies and beliefs. The new working culture has driven them to adapt and strengthen their existing beliefs about teaching and learning. Critical reflection is crucial for teacher educators, emphasising the importance of continuous growth and professional development (Miftah et al., 2023 & Ventista et al., 2023). Leal Filho et al. (2021) further stated that teaching in Japanese private centres requires collaboration with teachers from diverse international backgrounds, enhancing intercultural competence. This genuine academic collaboration across borders contributes to the authentic learning and development of the ALTs (Vauras et al., 2019). Without teaching in Japan, the ALTs would not have experienced such international collaboration and authentic learning.

5.2 Implications and Suggestions for Future Research

The results of this study highlight that developing relationships with teachers and colleagues plays a vital role in the successful integration of ALTs into their communities and environments within language teacher education programs. Such interactions are crucial for ALTs' personal and professional growth, helping them overcome interactional challenges and gain insights into different working cultures. These findings offer a foundation for future program evaluations and contribute to documenting the significance of cultural competence in language education. They also provide guidance for improving the preparation of non-native language teachers, aiming to meet cultural competence standards. This study was intended to serve a broad audience, including educational policymakers, language education institutions, educators, and

governmental agencies involved in teacher intercultural competence. The insights gained from this research can benefit these stakeholders and may also offer useful information for similar programs in other languages that aim to develop intercultural skills in new cultural settings.

Future research should incorporate both quantitative and qualitative methods to comprehensively assess and document cultural teaching practices. Longitudinal studies are particularly valuable for tracking how non-native ALTs develop cultural competence from the beginning of their programs to their professional roles. Such studies could reveal changes in teaching practices related to cultural competence over time. Further research might include case studies that follow students through their teacher education programs and monitor their development in teaching elementary courses over extended periods. These studies could explore how ALTs' approaches to culturally oriented teaching evolve as they gain experience. Additionally, examining how cultural content in ALT programs influences teaching practices could offer new insights. Exploring how teachers' backgrounds and training affect their cultural knowledge transfer and classroom practices would also be valuable. Finally, a detailed content analysis of English language instruction in foreign settings could shed light on its effectiveness in developing cultural competence and its alignment with ALT program goals.

ACKNOWLEDGEMENT
We are grateful to all with whom we have had the pleasure to work during this research. Each of us as co-authors has provided extensive personal and professional guidance.

AUTHORS' CONTRIBUTION
The study was carried out by SNYSS, NNEAR and SFMAB. All authors carried out the introduction and literature review sections. SNYSS collected and refined the data and performed the data analysis. SNYSS also wrote the data methodology section. SNYSS, NNEAR and SFMAB wrote the discussion and implication sections. All authors read and approved the final manuscript.

CONFLICT OF INTEREST
None declared

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ESTEEM Journal of Social Sciences and Humanities
Vol. 7, No. 2, September, 2023
https://ejssh.uitm.edu.my

Investigating the Relationship Between Motivation and Self-regulated Learning Towards Physics Subject Among Foundation Students

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ABSTRACT

ARTICLE HISTORY

Received:
12 August 2024
Accepted:
30 September 2024
Published:
11 October 2024

KEYWORDS

Foundation students
Motivation
Performance
Physics subject
Self-regulated learning

Physics is evaluated as one of the most challenging subjects among students in the science field during their high school years and becomes more difficult in college or foundation level. Due to various factors incorporated in this study, which investigates the relationship between foundation students' motivation and self-regulated learning toward physics subjects, certain students are unable to receive exceptional results or perform poorly. The study's target group encompassed all foundation students enrolled in physics courses from two Malaysian institutions. The survey adapted from Tuckman's model was used as the instrument for data collection and was created via Google Forms using a 3-Likert scale. This study focuses on students' perspectives, motivation, and self-regulated learning practices for physics subjects. A total data of 262 respondents was successfully obtained and transferred to IBM Statistics (Statistical Package for the Social Sciences) Version 28 for analysis. A conclusive and agreeable result of students' perspectives from the survey is that students themselves must give their best effort to comprehend physics with a very high mean of 2.8740. The greatest mean of 2.6870 for students' motivation indicated that the lecturer's support was a driving force behind their desire to learn. However, the greatest mean value of 2.6794 was found for self-regulated learning suggesting that even if students dislike the subject of physics, they still need to put in a lot of effort to get decent grades. The final findings showed a strong positive correlation, (r = .634) and (p = .000) between students' perspectives and cognitive strategy used among students towards physics subjects. Moderate positive correlations were obtained for both correlations between motivation and cognitive strategy used (r = .464*) and (p = .000).*

e-ISSN 2600-7274

1. INTRODUCTION

The relationship between motivation and self-regulated learning is crucial in education, as it influences academic achievement, skill acquisition, and personal development. Motivating students to start and continue with their academic pursuits can come from either internal or external sources. It interacts with self-regulated learning, establishing a mutually beneficial relationship between the inclination to learn and the methodical completion of tasks. A focused intervention, educational policy, or instructional methodology may be developed due to this understanding, which can also help researchers, educators, and policymakers identify barriers to and support successful learning practices. This study aims to delve into these interrelationships among foundation students in Malaysian educational institutions. By investigating how motivation influences self-regulated learning behaviours and subsequently impacts students' performance in physics, this research seeks to identify factors that facilitate or hinder academic achievement. Ultimately, the findings will contribute to informing educational practices and interventions designed to support foundation students in optimising their learning experiences and outcomes in physics education. Such insights are crucial for educators and policymakers striving to enhance science education and foster a more supportive learning environment for students pursuing careers in science and technology fields.

1.1 Background of Study

In the dynamic changing landscape of education, academic research has recently concentrated on the investigation of the elements that lead to successful learning. Among the factors, self-regulated learning and motivation have been identified as key variables impacting academic achievement (Yan, 2019). The complex relationship between the capacity to manage and steer one's learning processes (self-regulated learning), and the engine that propels learning (motivation), has substantial implications for students, teachers, and educational researchers. Although self-regulated learning and motivation have been researched separately, it is impossible to ignore how closely related they are. Motivation is the driving force behind self-regulated learning processes (Finn, 2020), impacting the choice and implementation of learning techniques. On the other hand, proficient self-regulated learners frequently demonstrate increased motivation fuelled by a feeling of competence, autonomy, and a mastery-oriented approach to problems.

Physics education poses unique challenges for students, especially those at the foundation level, where foundational concepts are introduced and mastery of these principles is critical for future academic success in science and engineering disciplines. Foundation students, typically transitioning from high school to higher education, face a steep learning curve as they grapple with abstract concepts and mathematical applications inherent in physics. This phase often marks a critical juncture where students' motivation and ability to self-regulate their learning behaviours significantly influence their academic performance.

Motivation plays a central role in shaping students' engagement and persistence in learning physics. Intrinsic motivation, fueled by personal interest and perceived competence, is crucial for sustaining long-term interest and effort in challenging subjects like physics. Extrinsic motivation, such as encouragement from peers or instructors, also plays a role in shaping students' attitudes and efforts towards their studies. Understanding how different motivational factors interact with students' perceptions and experiences in physics can provide valuable insights into enhancing instructional strategies and support systems within educational institutions.

Meanwhile, self-regulated learning (SRL) encompasses a set of cognitive, metacognitive, and behavioural strategies that enable students to actively monitor, control, and regulate their learning processes. Effective SRL practices involve setting goals, planning, monitoring progress, and adjusting strategies as needed. In the context of physics education, where conceptual understanding and problem-solving skills are paramount, fostering SRL skills is essential for students to navigate and succeed in their academic endeavours.

The relationship between motivation and self-regulated learning in the context of physics education is complex and multifaceted. Motivation can influence the adoption and implementation of SRL strategies, as students who are intrinsically motivated may exhibit greater initiative and persistence in employing effective learning strategies. Conversely, students with low motivation may struggle to engage in self-regulated learning practices, impacting their ability to comprehend and apply physics principles effectively.

1.2 Statement of Problem

Self-regulated learning is an active process in which students design, monitor, and regulate their self-learning using learning tools and self-established goals. Research has demonstrated a positive correlation between academic achievement and self-regulated learning. This relationship holds valid for students of all ages, from preschool to university, and suggests that learning strategies play a major role in achieving academic success (Alvi & Gillies, 2021). Researchers have highlighted the significance of motivation in daily life for self-regulated learning (SRL) (Jia et al., 2023). According to Reeves and Stich (2011), the integrity, consistency, and closeness of self-monitoring are necessary for self-regulated learning and necessitate motivation as a constant driver (Reeves & Stich, 2010). Previous research has demonstrated the favourable relationship between motivational components and cognitive engagement (Shi et al., 2021), such as self-regulation techniques, which can assist people in maintaining concentration on their intended objectives. Despite the recognised significance of motivation and SRL in academic achievement, a critical gap remains in understanding their specific interplay among foundation students in Malaysian educational institutions. This study aims to address this gap by investigating how varying levels of student motivation influence their adoption of SRL practices in physics education. Through exploration of these dynamics, the research seeks to identify factors that either facilitate or hinder academic performance, thereby informing educational practices and interventions aimed at optimising learning experiences and outcomes in physics education for foundation students. Such insights are essential for educators and policymakers striving to enhance science education and foster a supportive learning environment conducive to the aspirations of students pursuing careers in science and technology fields.

1.3 Objectives of The Study and Research Questions

This study investigates the relationship between motivation and self-regulated learning towards physics subjects among foundation students. Specifically, this study is done to answer the following questions:

(i) How do students' perspectives on physics affect self-regulated learning?
(ii) How do students' motivations affect self-regulated learning?
(iii) How do learners perceive their self-regulated learning strategies in learning?
(iv) Is there a relationship between motivation and self-regulated learning strategies?

2. LITERATURE REVIEW

2.1 Motivation to Learn

Motivation is a critical aspect of the learning process among undergraduates, influencing their engagement, persistence, and overall academic success (Singh et al., 2002). There are various factors influencing motivation for learning among undergraduate students, encompassing both intrinsic and extrinsic elements. Intrinsic motivation, rooted in personal interest and enjoyment, is a fundamental driver for undergraduate learning (Olmedo-Moreno et al., 2021). Deci and Ryan's (1985) self-determination theory posits that individuals are intrinsically motivated when they perceive activities as inherently satisfying and aligned with their values. Within the academic context, undergraduates are more likely to be motivated when they find the subject matter personally meaningful and when they can see its relevance to their future goals (Legault, 2017). therefore, fostering a sense of autonomy in choosing courses or research topics can enhance intrinsic motivation. Other than that, the social aspect of learning is also an influential factor in intrinsic motivation. Bandura's Social Cognitive Theory emphasises the role of social interaction in shaping motivation. Peer interactions, collaborative projects, and a supportive learning environment contribute to a sense of relatedness, making the learning process more enjoyable and engaging for undergraduate learners (Schunk & DiBenedetto, 2020). Moreover, positive relationships with instructors and mentors can provide social support, guidance, and encouragement, fostering a sense of competence.

On the other hand, extrinsic factors also play a significant role in motivating undergraduates. External rewards, such as grades, recognition, and career prospects, can drive performance and engagement. However, the type of extrinsic motivation matters (Senior et al., 2018). While extrinsic rewards may provide an initial incentive, an overemphasis on grades and external recognition may result in a decline in intrinsic motivation over time (Jovanovic & Matejevic, 2014). It is important to strike a balance and create an environment where extrinsic rewards complement, not replace intrinsic motivation. The learning environment and teaching methods also affect motivation. Different and interactive teaching strategies, including hands-on activities, discussions, and technology integration, can increase engagement. In addition, a well-structured curriculum that aligns with students' developmental levels and interests contributes to lasting motivation (Haleem et al., 2022). Challenges and obstacles are inevitable in the learning process. Growth Mindset Theory by Dweck (2006) suggests that fostering a belief in the accessibility of intelligence and the value of effort can positively influence motivation (Kapasi & Pei, 2021). Therefore, encouraging undergraduates to see challenges as opportunities for growth rather than insurmountable obstacles can increase their resilience and motivation (Kapasi & Pei, 2021).

2.2 Self-Regulated Learning

Self-regulated learning (SRL) is a critical aspect of students' academic success, involving the ability to independently monitor, control, and regulate one's learning processes. Zimmerman's cyclical model of self-regulation emphasises three phases: forethought, performance, and reflection. This model provides a framework for understanding how students engage in metacognitive processes, set goals, and adapt strategies to enhance their learning experience (Zimmerman, 2000).

In the context of physics education, self-regulated learning plays a vital role in students' mastery of complex scientific concepts. Physics students are often confronted with abstract theories and challenging problem-solving tasks. Research suggests that students who effectively employ

self-regulation strategies tend to perform better academically in physics courses (Cho & Jonassen, 2009). The forethought phase involves goal-setting and planning, where students set specific learning objectives and develop strategies to achieve them. During the performance phase, students engage in learning activities while monitoring their progress, and adjusting strategies as needed. Finally, the reflection phase encourages students to evaluate their performance, identify areas for improvement, and modify their approaches in future learning situations.

The role of self-regulated learning is particularly crucial in physics, as the subject requires a deep understanding of fundamental principles and the ability to apply them to solve complex problems. By fostering self-regulation skills, educators can empower physics students to take ownership of their learning, leading to improved comprehension, problem-solving proficiency, and long-term retention of physics concepts (Winne & Perry, 2000).

2.3 Foundation Students and Physics Education

Foundation students, enrolled in preparatory or bridging programmes, represent a diverse cohort with varying academic backgrounds and readiness level for higher education. These programmes are designed to enhance students' academic skills and knowledge, preparing them for the rigours of university. Foundation programmes are built in the intention to play an important role in improving students' preparedness and fostering intrinsic motivation. However, many foundation students face initial difficulties in setting clear learning goals, monitoring progress and applying effective strategies in the learning. Moreover, navigating the transition from high school to university-level education can be daunting, hence, damaging their confidence and motivation (Teo & Arkoudis, 2019). This is particularly a challenge for foundation students taking the Physics subject. Physics education demands mastery of complex concepts and rigorous problem-solving skills, which can present significant challenges for students in terms of motivation and self-regulated learning. Research highlights that students often struggle with maintaining motivation when faced with challenging problem-solving tasks (Theobald, 2021). Moreover, many physics students lack awareness of effective self-regulated learning strategies, such as goal-setting, monitoring their understanding, and adapting study techniques based on their progress (Wangchuk et al., 2023). These difficulties can hinder their academic achievement and conceptual understanding of physics principles. Therefore, effective pedagogical strategies that promote motivation and enhance self-regulated learning skills are essential in fostering a deeper engagement and mastery of physics concepts among foundation students.

2.4 Past Studies on Motivation to Learn

There have been many past studies on how learning motivation plays a crucial role in determining the level of success in learning achievement. The study by Puspasari and Muyassaroh (2023) is done to investigate the effects of learning motivation and learning discipline on student achievement. This study aims to find the effect of learning motivation and learning discipline on 98 students ' achievement in class XII OTKP in Automation of Public Relations and Protocol at SMK PGRI 2 Sidoarjo. Total sampling is used in this research because the total number of respondents is less than 100. The data collection techniques used were questionnaires, interview sessions, and documentation. Meanwhile, data analysis techniques used the normal test, t-test, F-test, homogeneity, and coefficient of determination (R2). A few indicators for learning motivation and discipline being used in this study show that only 40% of students are focused on class activities, and the rest of the students show a lack of interest in learning, fail to submit the assignment based on the due date, and also like to copy and paste

friends' work, pay less attention to the teacher during class, and skip the class. Some of them are still confused about their future, and the learning environment is less conducive because each class has too many students.

Based on the result, there is a positive correlation between learning achievement and the presence of strong learning motivation. Similar research was also conducted by Leobisa and Namah (2022) who strongly agreed that learning achievement is influenced by student motivation and discipline. This study also looked at the influence of learning motivation and discipline on the learning achievement of Christian Religious Education for 60 students in class VIII State 4 Kupang First Secondary School. The technique of purposive sampling is used in this study. Meanwhile, data collection for research instruments like questionnaires and data analysis used descriptive quantitative techniques. Based on a study, it was identified that the students have low performance due to a lack of self-discipline, often intentionally coming late to follow learning activities in class, and less encouragement from teachers during class sessions.

According to Kristiani and Pahlevi (2021), the purpose of this study is to identify the effect of learning motivation and student discipline on learning achievement simultaneously. This study involved a total of 72 students from classes XI OTKP 3 and 4 at SMK Negeri 10 Surabaya. The research method used in this study is quantitative, as well as the explanatory survey approach for data collection using a Likert scale questionnaire. Meanwhile, the data analysis methods used are the classical assumption test and multiple regression analysis with the help of SPSS 25 for Windows. The independent variables were set as learning motivation (X1), student discipline (X2), and learning achievement (Y) as the dependent variable. The product-moment correlation technique is used in this study, where when the coefficient value is rtabel< rcount, then the questions are valid and able to be used as a data collection technique. In this study, student motivation and discipline significantly positively affect student achievement in class. In addition, Khairinal et al., (2020) also agreed that student learning outcomes can be influenced by learning motivation, learning discipline, and peer environment. This study aims for 72 students as respondents in class XI IPS SMAN Titian Teras economics for the academic year 2019/2020. The research method used a data collection technique using a questionnaire and descriptive-quantitative research through a survey. This study shows that learning motivation influences 38.5%, study discipline 28.3%, and peer environment 26.5%. The data indicates that learning motivation has a more significant impact on influencing student learning outcomes compared to learning discipline and the peer environment. According to Robbi, Gusnardi and Sumarno, (2020) state that learning motivation stands as a pivotal element in the process of acquiring knowledge.

The findings from the studies carry implications for both students and teachers. Establishing an effective learning environment requires collaboration between students and teachers. Students need to approach their studies with a clear purpose, fostering a mindset geared towards acquiring knowledge before engaging in lectures to sustain momentum. Simultaneously, educators can leverage these insights as a foundation to prioritise the learning needs of students attending their classes.

However, a study by Safna and Wulandari (2022) strongly disagreed that learning achievement was influenced by learning motivation or learning discipline. This contradicts prior research findings, which asserted that motivation and learning discipline significantly influence student achievement.

Research by Susilawati and Supriyatno (2020) to investigate the online learning process during the era and post-pandemic Covid-19 can affect their learning motivation. The population for this research is 30 students from the MPI Department of the State Islamic University of Maulana Malik Ibrahim Malang. Data collection through a questionnaire and data analysis technique used a paired T-test with an error rate of 5%. The result of this research can be concluded that the online learning process by using WhatsApp can increase the learning motivation among the students. However, research by Meşe and Sevilen (2021) argues that online education has a good impact on their learning motivation. This research samples 12 students from an intact class, and data collection was done through writing samples and semi-structured interviews among the students. A few indicators are used in this research, such as teachers, classmates, organisational problems, and situational problems. The conclusion of this study aims to show that the feedback from students is mostly negative in terms of online learning, which can help increase their motivation.

The implications of the studies for the decline in learning motivation during online education can be attributed to the monotonous nature of its implementation, a lack of guidance and supervision, the challenges of studying from home, and limited teacher innovation.

Research by Tokan and Imakulata (2019) investigates the direct effect of intrinsic and extrinsic learning motivation and learning behaviours among 229 students from the Biology Education Department, Faculty of Teacher Training and Education, University of Nusa Cendana in the academic year 2014/2015. The independent variables consist of intrinsic motivation (X1), extrinsic motivation (X2), learning behaviour (X3) and learning achievement (Y) as the dependent variables. Meanwhile, data collection used questionnaires in the form of the Likert scale, and data analysis was analysed with descriptive and inferential statistics. The findings indicate a direct influence of intrinsic motivation on learning behaviour, with both factors significantly impacting learning achievement. The interplay between intrinsic and extrinsic motivation, along with learning behaviour, collectively shapes the academic success of students in the biology education department. In addition, research by Dewangga and Nasaruddin, (2020) seeks to investigate the hypothesis regarding the impact of students' motivation and behaviour on the learning environment in English language learning. The population was 320 students in class VIII of SMP Pancakarya Tangerang batch 2018–2019, and the sample was 177 students taken randomly by using a sampling technique. This research employed a causal survey approach through path analysis. The data were analysed using LISREL to conduct structural equation analysis. The findings strongly agree that learning motivation and learning behaviours significantly impact learning achievement in the English language.

Both studies above hold implications for teachers, providing a foundation for identifying priorities and guiding actions for students engaged in the learning process at the institution. Provide encouragement and motivation to students to enhance their learning achievements and assist students facing learning challenges with genuine sincerity.

2.4 Past Studies on Self-Regulated Learning Strategies

In recent years, there has been extensive exploration into the significance of self-regulation for academic success. According to Ilishkina et. Al (2022), the purpose of this research is to explore self-regulated learning from a motivational perspective. The sample consisted of 716 students from two Russian universities, according to study programme and year of study. Questionnaires were used as part of the data collection methods, and Mplus 8 and SPSS version 24 were used for the statistical analyses.

According to research, motivational factors are interdependent and are manageable through motivational management strategies. This will be better equipped to scaffold students' self-regulation of their motivation to learn. The implications of this research are to identify new strategies for each of the motivational elements and develop self-regulation guidelines and rules of thumb for students with different motivational orientations. Research done by Pelikan, et al. (2021), investigated the role of self-regulated learning, motivation, and procrastination in perceived competence. The sample involved 2652 Austrian secondary school students. An online questionnaire was used in this research, and quantitative analysis using SPSS version 25 and thematic analysis was employed to analyse qualitative data obtained from open-ended questions. The coding process was facilitated using MAXQDA 2020 software. The results indicated a correlation between students' high perceived competence and increased intrinsic motivation, as well as a more frequent utilisation of self-regulated learning methods such as time management, goal setting, planning, and metacognitive strategies, compared to their counterparts with lower perceived competence. Thus, it is important to prioritise self-regulated learning both in traditional classroom settings and online learning environments. There are several ways to facilitate SRL with students. For example, a teacher may assist them in creating timetables and goals or encourage them to monitor by asking insightful questions. Teachers also can assist students in establishing and achieving realistic goals that increase their sense of perceived competence, which in turn increases their intrinsic drive and academic achievement.

The research El-Adl and Alkharusi, (2020) focused on investigating the connections between self-regulated learning strategies and students' motivation for learning, as well as their academic accomplishments in mathematics. The sample was 238 ninth-grade students in the Sultanate of Oman between 14 and 16 years old. The Motivated Strategies for Learning Questionnaire was used in this research to measure students' self-regulated strategies and motivation. Twenty-two items evaluated self-regulated learning strategies across two dimensions: utilisation of cognitive strategies and self-regulation. Participants responded on a 6-point Likert scale, ranging from 1 (never) to 5 (always). Findings showed that self-regulated learning was positively correlated with academic accomplishment, task value, control of learning beliefs, extrinsic motivation, self-efficacy, and intrinsic motivation in statistically significant ways. Test anxiety, on the other hand, was negatively correlated with self-regulated learning. Similarly, research done by Sukowati et al., (2020) aimed to explore the extent of self-regulated learning and the impact of SRL on the development of learning independence in elementary school students. The study comprised a population of 387 students, from which a sample of 194 students was randomly selected using Slovin's formula. This research consisted of 24 questions graded on a 4-point Likert scale, and the statistical analysis was carried out using SPSS version 24. The research findings indicated that the self-regulated learning and learning independence of elementary school students fell within the medium category. Consequently, it can be inferred that there is a noteworthy correlation between SRL and the learning independence of elementary school students.

The implications from the studies showed that high achievers appear to be adept at using self-regulated and cognitive learning mechanisms. As such, teachers must attend to the needs of pupils who are not meeting expectations by offering instruction in these tactics. Creating learning environments where students are allowed to freely express and discuss their thoughts and emotions about the learning objectives could be an effective strategy. The suggested tactics include encouraging reciprocal contacts with high achievers, establishing progressive goals, accepting accountability for their education, and participating in self-evaluation. Students' development of their cognitive and self-regulation skills may benefit from these activities.

2.6 Conceptual Framework

Figure 1 shows the conceptual framework of the study. According to Rahmat, et.al. (2021), motivation to learn comes derived from confidence from learners. This confidence is then shown in the way learners can become self-regulated learners in the classroom. This study explores the influence of motivation on self-regulated learning strategies such as cognitive strategy uses and self-regulation.

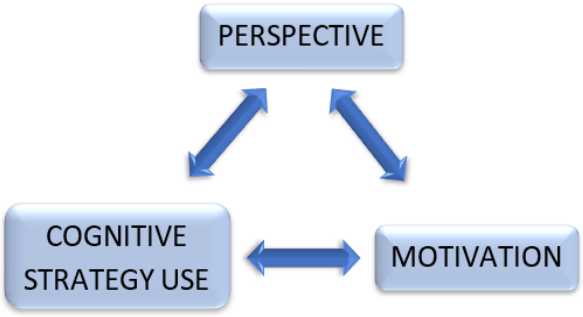

Figure 1: Conceptual Framework of the Study-Relationship between Motivation and Self-regulated Learning

3. METHODOLOGY

This quantitative study explores motivational factors for learning among foundation students. A purposive sample of 262 participants responded to the survey. The instrument used is a 3-Likert-scale survey and is rooted in Pintrich & DeGroot (1990) to reveal the variables in Table 1 below. The survey has three sections. Section A has items on the demographic profile. Section Two has 22 items on motivational beliefs. Section Three has items on self-regulated learning strategies.

Table 1 also shows the reliability of the survey. The analysis shows a Cronbach alpha of 0.772 for section B, a Cronbach alpha of 0.846 for section C, and a Cronbach alpha of 0.812 for section D. Furthermore, the overall Cronbach alpha of this survey is 0.894. This thus reveals the good reliability of the instrument chosen or used. Further analysis using SPSS is done to present findings to answer the research questions for this study.

Table 1: Distribution of Items in the Survey

SECTION	STRATEGY		SCALE	Number of Items	Total Items	Cronbach alpha
ONE	Demographic Profile					
TWO	Motivational Beliefs	B	Students Perspective	14		0.772
		C	Students Motivation	8	22	0.846
THREE	Self-Regulated Learning Strategies	D	Cognitive Strategy Use	10	10	0.812
			Total Number of Items		32	0.894

4. FINDINGS

4.1 Findings for Demographic Profile

There were 262 respondents, with 186 females (71%) and 76 males (29%). The respondents in this research are foundation-level physics students from two academic institutions. Respondents are from the Centre of Foundation Studies at UiTM Kampus Dengkil with 124 respondents (47%) and the Centre of Foundation Studies at Universiti Sains Islam Malaysia with 138 respondents (52%).

Table 2: Percentage for Demographic Profile

Q1	**Gender**	Male	Female
		29%	71%
Q2	**Institution**	Centre of Foundation Studies, UiTM Dengkil	Centre of Foundation Studies, USIM
		47%	53%

4.2 Findings for Perspective

This section presents data to answer research question 1- How do students' perspectives on physics affect self-regulated learning?

Table 3 shows the mean levels of agreement among students' perspectives towards the physics subject. The result demonstrates that students have the ability to understand physics if they put sufficient effort into their studies (BQ4, mean: 2.8740). As stated by Santyasa et. Al (2019), students who have an insufficient grasp of concepts and are overly reliant on their instructors will be incapable of solving contextual problems. Mbonyiryivuze et. Al (2021) revealed that 95% of the participating students agreed that almost everyone can understand physics if they put in sufficient effort and study. However, students give their perspective that they will give up and leave the physics problem when they are not able to solve the problem within 10 minutes (BQ6, mean: 1.7405). Mbonyiryivuze et. Al (2021) also revealed that 56% of their respondents stated that they continue attempting to solve a problem if they find themselves unable to accomplish it within 10 minutes, whereas 39% of respondents give up trying to solve the problem.

Table 3: Mean from Students' Perspective

Item	**Mean**
BQ1 Learning physics is fun	2.6069
BQ2 I am good at physics	2.0153
BQ3 Knowledge of physics is useful for everyone	2.7901
BQ4 I can understand Physics if I study hard enough	2.8740
BQ5 Instead of memorising essential knowledge in physics the way it is presented, I relate it to what I already know	2.6336
BQ6 If I cannot solve a Physics' problem within 10 minutes, then I give up and leave it	1.7405
BQ7 I do Physics revision after class has finished	1.9962
BQ8 I spend lots of time to practise physics in assignment	2.3206
BQ9 I have a specific time to study physics	2.1603
BQ10 I think I will receive a good grade in physics subject	2.1603
BQ11 Physics gives me such satisfaction	2.3282
BQ12 I am confident when solving physics problem	2.0115
BQ13 Even when I do poorly on a physics test, I try to learn from my mistakes	2.8053
BQ14 It is important for me to learn what is being taught in physics class	2.7939

4.3 Findings for Motivation

This section presents data to answer research question 2: How do students' motivations affect self-regulated learning?

Table 4 displays the mean levels of agreement among students regarding motivation for learning. Students express that encouragement from the lecturer serves as a motivating factor for studying (CQ6, mean: 2.6870). In line with Susilowati's perspective (2020), teachers are expected to consistently employ engaging teaching methods that foster ongoing student interest in learning. However, university or co-curricular activities seem to have minimal impact on motivating students to study (CQ1, mean: 2.4046). This is because co-curricular activities are perceived to be more influential in fostering the development of soft skills, as highlighted by Siddiky et. Al. (2020), and these skills, in turn, enhance students' communication abilities.

Table 4: Mean for Student Motivation

Item	Mean
CQ1 Participating in any university activities or co-curricular motivate me to study	2.4046
CQ2 Financial circumstances motivate me to study	2.5382
CQ3 Encouragement from parents motivate me to study	2.8092
CQ4 Encouragement from siblings motivate me to study	2.6298
CQ5 Peers relationship motivate me to study	2.7863
CQ6 Encouragement from my lecturer motivate me to study	2.8282
CQ7 The university environment motivate me to study	2.7176
CQ8 The university facilities and infrastructure motivate me to study	2.6870

4.4 Findings for Self-regulated Learners

This section presents data to answer research question 3 – How do learners perceive their self-regulated learning strategies in learning?

The mean levels of agreement among students regarding self-regulated learning strategies are shown in Table 5. A notably high mean value is observed for DQ10, with a mean value of 2.6794. Despite their potential dislike for physics, students recognise the necessity of putting in hard work to secure good grades, not only in the specific subject but across all their courses (Gultom & Oktaviani, 2022). This collective effort aims to safeguard their grade point average (GPA). On the other hand, the low mean value of 2.1908 for DQ3 indicates that not every student effectively manages their study time. This challenge extends beyond physics learners, as students in various subjects face similar difficulties in time management. A study by Alyami et al. (2021) reveals that less than half of the students in the diagnostic radiology technology department agreed that they could effectively manage their time.

Table 5: Mean for Self-Regulation

Item	Mean
DQ1 I acquire the capability to independently access physics topic	2.2595
DQ2 I acquire the capability to summarise physics topics after the class.	2.2290
DQ3 I have the ability to effectively manage my time for studying physics.	2.1908
DQ4 I acquire the capability to explore physics in different approaches (Other than slide notes and reference book)	2.3321
DQ5 When I study, I put important ideas into my own words.	2.5763
DQ6 When studying, I copy my notes over to help me remember material.	2.3817
DQ7 When I am studying a topic, I try to make everything fit together.	2.6412
DQ8 Even when study materials are dull and uninteresting, I keep working until I finish.	2.4656
DQ9 Before I begin studying, I think about the things I will need to do to learn.	2.5649
DQ10 I work hard to get a good grade even when I don't like a class.	2.6794

4.5 Findings for Relationship between motivation and self-regulated learning strategies

This section presents data to answer research question 4 - Is there a relationship between motivation and self-regulated learning strategies?

To determine if there is a significant association in the mean scores between metacognitive, effort regulation, cognitive, social, and affective strategies, data is analysed using SPSS for correlations. According to Jackson (2015), the coefficient is significant at .05 level and a positive correlation is measured on a 0.1 to 1.0 scale. A weak positive correlation would be in the range of 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a strong positive correlation from 0.5 to 1.0. The results of correlations are presented separately in Tables 6, 7, and 8 below.

Table 6 shows there is an association between perspective and motivation. Correlation analysis shows that there is a moderately significant association between perspective and motivation (r = .444**) and (p = .000). This means that there is a moderately positive relationship between perspective and motivation.

Table 6: Correlation between Perspective and Motivation

		Perspective	**Motivation**
Perspective	Pearson Correlation	1	.444**
	Sig. (2-tailed)		<.001
	N	262	262
Motivation	Pearson Correlation	.444**	1
	Sig. (2-tailed)	<.001	
	N	262	262

**. Correlation is significant at the 0.01 level (2-tailed)

Table 7 shows there is an association between perspective and cognitive strategy use. Correlation analysis shows that there is a highly significant association between perspective and cognitive strategy use. (r = .634**) and (p = .000). This means that there is a strongly positive relationship between perspective and cognitive strategy use.

Table 7: Correlation between Perspective and Cognitive Strategy Use

		Perspective	**Strategies**
Perspective	Pearson Correlation	1	.634**
	Sig. (2-tailed)		<.001
	N	262	262
Motivation	Pearson Correlation	.634**	1
	Sig. (2-tailed)	<.001	
	N	262	262

**. Correlation is significant at the 0.01 level (2-tailed)

Table 8 shows there is an association between motivation and cognitive strategy use. Correlation analysis shows that there is a moderately significant association between motivation and cognitive strategy use (r = .484**) and (p =.000). This means that there is a moderately positive relationship between motivation and cognitive strategy use.

Table 8: Correlation between Motivation and Cognitive Strategy Use

		Motivation	Strategies
Perspective	Pearson Correlation	1	.484**
	Sig. (2-tailed)		<.001
	N	262	262
Motivation	Pearson Correlation	.484**	1
	Sig. (2-tailed)	<.001	
	N	262	262

**. Correlation is significant at the 0.01 level (2-tailed)

5. CONCLUSIONS

5.1 Summary of Findings and Discussions

Students' perspectives about physics subjects can sometimes relate to their performance. This study revealed that 95.8% of students agreed they could understand physics better if they studied hard enough. About 93.5% believe that any failure they have from a physics test will make them learn from their mistakes. A noteworthy quantity of students has negative attitudes towards physics because they give up easily if they cannot solve physics problems. Based on this survey of study, students agreed that physics was very useful because it could relate to the surroundings and was fun to learn. Some of the students feel that the confidence level of students with physics will be enhanced if they do revisions after class has finished, have a specific time to study physics, and spend lots of time practising physics. This study also revealed some factors that influence students' motivation to self-regulated learning in studying physics subjects. A notably highest value with 94.3% of the students agreed that encouragement from their lecturers motivates them to study. Others, such as parents, siblings, and peers' relationships, also significantly contribute to motivating them to study physics. The university environment, facilities, and infrastructure are also factors that motivate students to focus more on physics learning. Financial situation and active participation in extracurricular or university activities are two more elements that may serve as motivators for students to pursue physics education.

For students to achieve their full potential, self-regulated learning is of the utmost importance. About 89.3% of students believe they must try hard to make their lessons fit together to maintain a good grade. A considerable number of students also believe that they need to summarise physics topics after class, manage their time very well, keep working on them until they are finished, and try using different approaches other than slide notes and reference books. Any important idea or information from subtopics can be notified using their own words and notes. Students also need to prepare before beginning to study and need to challenge themselves to independently access physics topics. To sum up, there is a moderately positive relationship between motivation and self-regulated learning among students with (r = .464*). Similar research was also conducted by Leobisa and Namah (2020) who strongly agreed that learning achievement is influenced by student motivation and discipline. Furthermore, including games into the instructional process may create a more relaxed environment, enhance motivation to learn, and develop a sense of responsibility in students toward the process of learning (Mokhtar, M. I. et al. 2019).

5.2 Pedagogical Implications and Suggestions for Future Research

Future research should focus more on gender variations in students' performance towards physics. Furthermore, it would be useful to investigate students' performance towards physics in different schools and universities. Specifically, the performance of physics students from various nations could be examined to determine whether their performance on the subject matter was influenced by cultural background. Future research and analysis also could be extended to a sizable number of additional schools or universities for various subtopics not specific to physics subjects only to gain a deeper knowledge of students' performance towards any subjects and how these may affect their conceptual comprehension and attitude.

6. APPENDIX

i. Survey Instrument (quantitative study)

Table 9: Section A - Demographic Profile

Q1	Gender	Male	Female
Q2	Institution	Centre of Foundation Studies, UiTM Dengkil	Centre of Foundation Studies, USIM

Table 10: Section B - Motivational Beliefs (Students Perspective)

ITEM
BQ1 Learning physics is fun
BQ2 I am good at physics
BQ3 Knowledge of physics is useful for everyone
BQ4 I can understand Physics if I study hard enough
BQ5 Instead of memorising essential knowledge in physics the way it is presented, I relate it to what I already know
BQ6 If I cannot solve a Physics' problem within 10 minutes, then I give up and leave it
BQ7 I do Physics revision after class has finished
BQ8 I spend lots of time to practise physics in assignment
BQ9 I have a specific time to study physics
BQ10 I think I will receive a good grade in physics subject
BQ11 Physics gives me such satisfaction
BQ12 I am confident when solving physics problem
BQ13 Even when I do poorly on a physics test, I try to learn from my mistakes
BQ14 It is important for me to learn what is being taught in physics class

Table 11: Section B - Motivational Beliefs (Students Motivation)

ITEM
CQ1 Participating in any university activities or co-curricular motivate me to study
CQ2 Financial circumstances motivate me to study
CQ3 Encouragement from parents motivate me to study
CQ4 Encouragement from siblings motivate me to study
CQ5 Peers relationship motivate me to study
CQ6 Encouragement from my lecturer motivate me to study
CQ7 The university environment motivate me to study
CQ8 The university facilities and infrastructure motivate me to study

Table 12: Section C - Self-Regulated Learning Strategies

ITEM
DQ1 I acquire the capability to independently access physics topic
DQ2 I acquire the capability to summarise physics topics after the class.
DQ3 I have the ability to effectively manage my time for studying physics.

DQ4 I acquire the capability to explore physics in different approaches (Other than slide notes and reference book)
DQ5 When I study, I put important ideas into my own words.
DQ6 When studying, I copy my notes over to help me remember material.
DQ7 When I am studying a topic, I try to make everything fit together.
DQ8 Even when study materials are dull and uninteresting, I keep working until I finish.
DQ9 Before I begin studying, I think about the things I will need to do to learn.
DQ10 I work hard to get a good grade even when I don't like a class.

ACKNOWLEDGEMENT

The authors express their appreciation to Universiti Teknologi Mara (UiTM), Cawangan Selangor, Kampus Dengkil, Universiti Sains Islam Malaysia and MILA University for their financial and in-kind support of this study.

AUTHORS' CONTRIBUTION

AWAL carried out the abstract, objectives, conceptual framework, methodology, discussion, conclusions and implications. HMM did the introduction while NFAK and NK did the literature review sections. AWAL, SAZ and KSSKMN collected and refined the data and performed the data analysis using IBM Statistics (Statistical Package for the Social Sciences) Version 28 for analysis. All authors read and approved the final manuscript.

CONFLICT OF INTEREST

None declared.

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