Effectiveness of Integrating Multiple Intelligence Theory in English Teaching and Learning: A Systematic Literature Review

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Abstract: A systematic literature review (SLR) can help to guide the evolution and the research fields, recommend a categorization, and helps to determine the primary issues to demonstrate current and future research directions and theoretical development that will help with the research. This SLR aims to highlight and summarise the effectiveness of integrating the multiple intelligence theory in English teaching and learning. It employed a four-step method for the systematic evidence syntheses review method which were 1) question formulation, 2) systematic searching, 3) quality assessment, and 4) data extraction, from two primary databases; Web of Science and SCOPUS, and a supporting database which is Google Scholar. The analysis pointed out to these main themes: teaching effectiveness and student attributes. The former consisted of three subthemes which were teaching strategies, teaching materials and student interests, while the latter suggested two subthemes of gender and social development. This SLR offers beneficial insights into the current research limitations and to provide recommendations on future study areas or directions. It helps to facilitate critical discussions and to be able to make such comparisons to previous research outcomes.

Keywords: Teaching effectiveness; Multiple Intelligence Theory; Student attributes; Systematic Literature Review

1. Introduction

The theory of Multiple Intelligence, which was developed by Howard Gardner in 1983, suggested that there are more than one intelligence, hence, the name Multiple Intelligence (MI). Gardner's theory has become a reference for the education, teaching, and training communities to understand and teach many aspects of human intelligence, learning style, personality, and behaviour in many fields, particularly education. The theory suggests that different intelligence areas may be independent of each other, namely, a person can be low in one domain area but high in another as each person has his or her own intelligence but in varying degrees of strengths and skills.

In education, individuals who have different types of intelligence might have different kinds of learning styles. Hence, individuals can benefit learning the most when the instructional activities are

catered according to their intelligent types (Armstrong, 2008, Sadeghi, 2013, Wilson, 2018, Bowker, 2020, Yavich and Rotnitsky, 2020). Thus, MI theory can help classroom instructors to identify their students' needs in that classroom instructors can be fully aware of the ways of one's learning, making it easier for them to prepare the syllabus and conduct lessons. The nine different intelligences that classroom instructors need to be aware of are i) interpersonal, ii) intrapersonal, iii) verbal-linguistic, iv) bodily-kinesthetic, v) visual-spatial, vii) logical-mathematical, vii) musical-rhythmic, viii) naturalist, and ix) existential.

Despite the availability of various literature review methodologies on MI, the systematic literature review (SLR) outweighs typical literature counterparts that are rife with various issues involving reviewer and selection bias and broad selection (Robinson and Lowe, 2015, Ali and Usman, 2018, Owens, 2021, Li and Rainer, 2023). Consequently, this SLR aims to bridge the research gap by depicting the literary works and to determine the primary issues as well as future research directions.

2. Methodology

The current study will contribute to the current literature with an SLR on the effectiveness of multiple intelligence theory in English teaching and learning. SLR provides researchers and practitioners with a structured and categorized view of what has been produced in the relevant literature (Shaffril et al., 2021a). With SLR, it could be used to map the evolution and research fields, propose a specific categorisation, and identify the primary issues that are portraying current trends, future research directions and theoretical development (Ibrahim & Sapian, 2021).

In this study, the SLR will present the selection of articles on the effectiveness of multiple intelligence theory in English teaching and learning. The very first step of the SLR process is to identify the review protocol development and validation. A review protocol outlines the incorporation of a list of steps and processes into empirical reviews to specify the positioning, review, and development of multiple study types, alleviate bias and enhance transparency and systematic review quality (Shaffril et al., 2021a)., This study employed the Reporting Standards for Systematic Evidence Syntheses (ROSES) for the review protocol development and validation. This is because, resultantly, ROSES has proven to be more comprehensive and appropriate in assisting social sciences research compared to the preferred reporting items for systematic reviews and meta-analyses (PRISMA) that is extensively used in medical and scientific disciplines (Ibrahim & Sapian, 2021).

2.1 The Review Protocol Development and Validation

The implementation of a review protocol in SLR is the reporting standards for systematic evidence synthesis. This is vital in any SLR to ensure complete process performance and the attainment of study objectives as well as the reliability and validity of the findings (Shaffril et al., 2021a).

There are four primary steps that need to be conducted to produce a complete SLR: 1) formulation of research questions, 2) systematic searching strategies, 3) quality appraisal, and 4) data extraction (Figure 1). Each step plays an important role towards process completion.
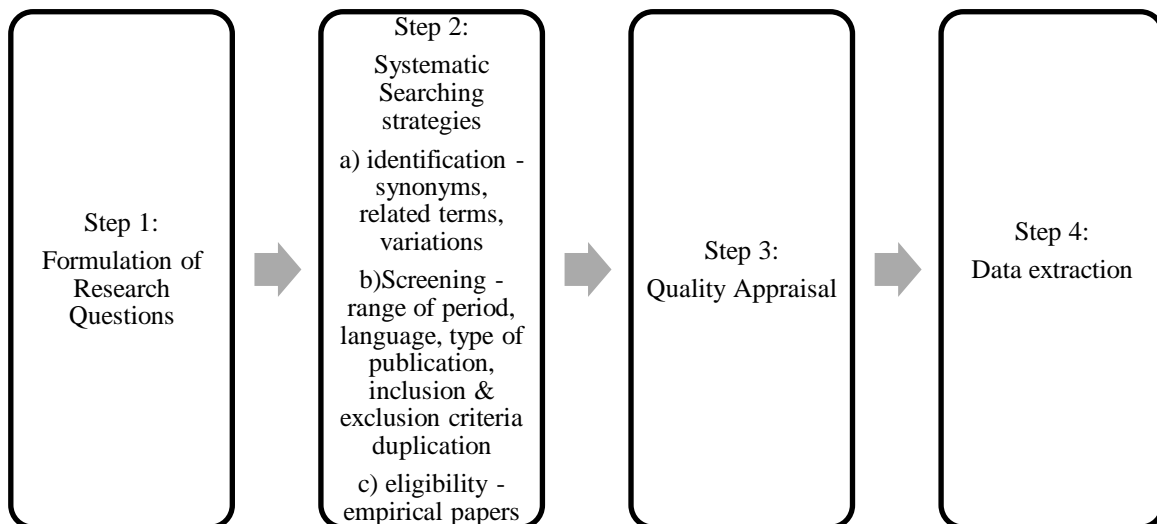
Step 1: Formulation of Research Questions	Step 2: Systematic Searching strategies a) identification - synonyms, related terms, variations b)Screening - range of period, language, type of publication, inclusion & exclusion criteria duplication c) eligibility - empirical papers	Step 3: Quality Appraisal	Step 4: Data extraction

Fig. 1 The Review Protocol

Step 1: Formulation of research questions

The formulation of research questions is essential to screen related articles to avoid redundancy. The research questions in the current study were formulated based on PICo which was commonly used by the researchers to generate research questions in SLR. It developed with the Problem or Population (P), Interest (I), and Context (Co) (PICo) model for a systematic categorisation and mapping of past research. It helps to identify the related articles and to categorise past research which will then make it easier on the selection of the articles. Okoli (2015) emphasised the specificity of research questions to avoid highly selective articles, time consumption and data comparison and management intricacies. The use of the PICo model is significant for research question formulation in this study to avoid such problems. The PICo must be integrated with the research question. As for this study's context, the Multiple Intelligence reflected the (P) or Population, (I) or Interest demonstrated on the effectiveness and the (Co) or Context will be the illiteracy in English Language. The application of PICo in this study, helps to navigate this study on the PICo-oriented study question: "How effective is Multiple Intelligence in English teaching and learning?

Step 2: Systematic searching strategies

Systematic searching strategies consist of three stages which are *identification*, *screening*, and *eligibility*. Two primary databases were utilised in this study, Web of Science (WoS) and SCOPUS while the supporting database was Google Scholar. Web of Science and SCOPUS are sufficient for process completion as both, being the leading indexed databases, satisfied the minimum number of two in conducting SLR (Cooper et al., 2018). In fact, SCOPUS that is used in this study as the database, offers advanced search features, user-friendly search, and analytic tools, has worldwide subject scope with daily-update information and controls the quality of published articles with a multidisciplinary approach (Khaw et al., 2022). Google Scholar acted as a supporting database as the relevant articles originated from this database (Ibrahim & Sapian, 2021). Despite arguments on the reliability of using Google Scholar (Gusenbauer and Haddaway, 2020), some scholars acknowledged the usage due to wider coverage than the other databases (Alexander, 2020; Gusenbauer, 2019; Haddaway et al.,2015). Google Scholar works as a supplementary database that is being used to offer various perspectives and to minimize selection bias. Moreover, it is practical and easier to access as compared to the other two databases.

The *identification* stage searches for a similar topic, synonyms, or related terms as well as the variation to the topic. This study might use similar words or phrases to search for past research in the three databases. Identification is a crucial process as keyword selection ascertains the inclusion of all literary works in database searching (Ibrahim & Sapian, 2021). There are some methods such as

searching for the synonyms in the online dictionary, searching for the main keyword variations as well as using related terms to look for past research. In this study's context, the related term would be 'English Language', 'Multiple Intelligence', 'English teaching and learning, and 'school students to represent the effectiveness of multiple intelligence and English language based on the aforementioned citations. The keywords are used to search for related articles to simplify the process which were 'Multiple Intelligence', 'English Language', and 'English language and teaching'. In this process, the identification process involves searching for the synonyms of this study's keywords, thus, any related terms or variation of the main keywords such as 'Multiple Intelligences', 'English Language illiteracy', and 'School students' has been carried out. This method of identification, which uses synonyms, related terms, or variation help the researcher to acquire a variety of relevant articles for this study. This is because there are ample options of keywords for the database to search (Khaw et al., 2022). A total of 323 were found based on the search procedures.

This *screening* stage was conducted to screen the articles collected in three databases as it was impossible to review all 323 articles found. Eligibility, inclusion, and exclusion criteria played important roles to identify better publications within the limitations of the study area (Kitchenham et al., 2009). Hence, the screening took place to screen and identify the articles' year range or limit it to a certain period as the release of timelines should be restricted when the relevant research could have been published over a certain period (Higgins and Green, 2011). This means researchers should consider having a time frame for period-based identification as it is vital to deter the mission of essential studies (Okoli, 2015). As it is best to have recent and current articles reviewed, the researchers decided to only consider having the past five years' articles related to this study. Hence, all the articles published in the year 2018 to 2022 were duly reviewed in this study as the first inclusion criterion.

To fulfil the second inclusion criterion, the researchers only chose empirical articles and removed any book chapters, conference papers, reviews, and conference reviews to the exclusion criterion. For Google Scholar, due to the very large number of results, the researchers had to take some measures to reduce the number of results to something more feasible to analyse (Kruse et al., 2016). With the help of the exclusion of book chapters, conference papers, reviews and conference reviews, the result showed only 45 articles. The rest of the articles were omitted as they failed to fulfil the criterion. The next criterion was language, as only English-language articles were selected taken and reviewed. Only English-language articles were selected based on the researchers' language familiarity to avoid potential misinterpretations while reading the articles (Shaffril et al., 2021a, 2021b). A few languages other than English that were identified such as Indonesian, Persian, and Russian were, thus, filtered in this study. In these three databases, there were duplications found, which were later omitted from the list. The items were then sorted out alphabetically following their titles.

Tables 1 and 2 below show the keyword search strings used in the three data bases and the inclusion and exclusion criteria used in the screening process respectively.

Table 1. Keyword search strings used in the SCOPUS, Web of Science and Google Scholar databases

Databases	No. of articles
SCOPUS (TITLE-ABS-KEY(multiple intelligence English language school students) AND (LIMIT-TO (PUBYEAR,2022) OR LIMIT-TO (PUBYEAR, 2021) OR LIMIT-TO (PUBYEAR,2020) OR LIMIT-TO (PUBYEAR,2019) OR LIMIT-TO (PUBYEAR,2018)) AND (LIMIT-TO (DOCTYPE, "ar")))	29
Web of Science ((ALL=multiple intelligence)) AND ALL=(English language)) AND ALL=(school students)	151
Google Scholar allintitle: "English language" AND "school students" AND "multiple intelligence"	1160

<div align="center">Table 2. The inclusion and exclusion criteria</div>

Criterion	Inclusion	Exclusion
Publication Year	2018, 2019,2020,2021,2022	2018 and earlier
Publication Type	Articles with empirical data	book chapter, conference paper, review, and conference review
Language	English	Other than English

The next stage is the eligibility process. It was first carried out manually by removing any unrelated articles that did not match with the criteria set in the study by reviewing and screening the titles and the abstracts of each article. In this study, the researchers specifically searched for keywords like 'multiple intelligences', 'linguistic intelligence', 'English language', and 'school students' to narrow down the results in three databases. Having observed and satisfied the review protocol, a total of 225 articles data were accepted from the 1416 related journals that were available on the databases. Table 4 shows the details.

<div align="center">Table 4. Accepted articles from databases</div>

Data base	Number of related articles available	Number of accepted articles
SCOPUS	43	29
Web of Science	213	151
Google Scholar	1160	45
TOTAL	**1416**	**225**

Step 3: Quality Appraisal

Quality appraisal in this process helped the researchers to rate the articles and to check if the articles meet the necessary criteria. Any irrelevant content that did not fulfil the requirement of this study was then excluded. This helped the researchers to focus on the content that was relevant to the study and to avoid any bias. The authors graded the aforementioned articles by selecting one of three options: "yes", "no", or "can't tell" (Ibrahim & Sapian, 2021).

In this process, each researcher read the papers separately and assigned a score for procedure completion. The scores were compared and only papers that obtained a score of three or higher were accepted. For reliability checking, an expert on the topic was consulted to confirm the researchers' decision, especially when there were disputes on the scores given. As Ibrahim and Sapian (2021) claimed, only experts were sought for the final decision on the selected articles when the authors disagreed on any particular articles

Step 4: Data extraction

Eighteen (18) articles were accepted after the post-screening, eligibility, and quality appraisal processes. The researchers focused only on the articles that were published from 2018 to 2023 to investigate the research trends on multiple intelligences among students throughout the period of six years. There were only two articles from Web of Science and the remaining 16 were from Google Scholar and none from Scopus.

3.   Findings

The analysis generated two themes and five sub-themes from the data (as shown in Table 5).

Table 5. Themes and Sub-themes

Theme	Sub-themes
1. Teaching effectiveness	Teaching strategies
	Teaching materials
	Student interests
2. Student attributes	Gender
	Social development

3.1   Teaching effectiveness

The first significant theme emerged from the articles was teaching effectiveness. This is the theme that was researched on and discussed in most of the articles. The articles mostly discussed the effectiveness of the MI integration in classroom instructions and the effects on students' performance and interest. Under this teaching effectiveness theme, three sub-themes, namely, teaching strategies, teaching materials and student interests were also dominantly found in the studies done.

The teaching strategies employed in the classrooms indicate that classroom instructors play a vital role in developing the students' MI. Two articles published in 2019 highlighted the importance of applying the right strategies in teaching. Yanrong's (2019) article emphasises that classroom instructors should teach students in accordance with their aptitude, showing that the right strategy would help improve students' proficiency. Muttar (2019) affirmed that the instructional strategies would help to cater to the students' intelligence and were necessary to develop both dominant and less dominant intelligence as they could increase the ability of students to engage in the problem-solving tasks. Similarly, Juliani, Syafitri and Seli (2021) in their article mentioned that every student varied in their intelligence and that classroom instructors needed to figure out which strategies could match their intelligence and determine the most suitable strategies to be used in order to facilitate diversity on their MI profile.

In addition, Liu (2022) suggested that classroom instructors should provide teaching materials according to the students' intelligence which then would help them to develop their intelligence. He mentioned that applying the MI theory to teaching and designing the teaching activities definitely would help classroom instructors to have a deep understanding of teaching materials. Similarly, Zaini (2019) put forward that classroom instructors should design suitable materials for the students as this would encourage them to be involved in the learning process and at the same time allow them to recognise the students' prominent type of intelligence. With suitable materials that are set according to their intelligence, students' proficiency in the English language can be improved. For instance, students who have linguistic intelligence as their dominant intelligence will find it helpful if classroom instructors employ various forms of teaching activities to provide students with multiple opportunities for meaningful language practice so that the students can promote the development of their language ability (Liu, 2022). Additionally, Liu added that when classroom instructors designed the teaching activities, they should fully think about the intellectual characteristics of each student and adopted various teaching methods and learning, which can arouse students' interest in English learning and cultivate students' comprehensive language ability.

Another sub-theme that emerged in the analysis was students' interest in the English language. Zheng (2021), Aminatun et al., (2018), Ishak et al., (2022), Maravilla et al., (2020) and Tian (2021) all emphasised that one of the factors that help improve students' performances in the English language was their interest in the English language itself. Interest in the English language can be developed when students have a deep understanding when they are involved in learning activities. Significantly, once the interest has been developed, students can be excellent in English. Classroom instructors can play a vital role in identifying the dominant and less dominant students' intelligence as it will help the classroom instructors to shape or mould the students' interests. Classroom instructors are also advised to create a learning strategy based on the students' interests as it will improve the students' performance and avoid any students being left out when learning the English language. The application of MI theory

teaching mode can effectively guide students to actively pay attention to learning content, mobilise and stimulate students' interest in learning, enable students to obtain further development on the existing level and foundation, and optimise the effect of English teaching (Tian, 2021).

3.2 Students attributes

The second theme found in this study was attributions to students' MI. Two sub-themes emerged under this theme, which are gender and social development.

Studies by Muttar (2019) and Ishak et al., (2022) found that gender differences had an impact and effect on students' MI. According to Ishak et al., (2022), female respondents perceived their selves better than their male- counterparts in items related to self-regulation, reading activity, being a natural leader, and learning language through songs. Male students, on the other hand, were better in terms of physical activities, verbal and written communication, strategy games, and science-related subjects. This study highlighted the importance of applying the suitable MI skills according to students' gender to avoid biasness as every student varies in their intelligence. It is significant for classroom instructors to identify male and female differences in learning the English language because, when the theory of MI is integrated in the classroom, the gender differences will be able to minimise the gap. Salih (2019) supported this contention as his study found that male students perceived bodily-kinesthetic intelligence as higher than other intelligences. Subsequently, this shows that male students prefer to have activities that involve physical activities which can help them in understanding the English language better.

Another sub-theme that emerged under this theme is social development Studies have found that the integration of MI in the classroom instructions will develop students' social development and facilitate the development of some soft skills such as social skills and employment skills. Employment skills were mentioned in a study conducted in Malaysia by Zaini (2019). He put forward that students had to acknowledge their strengths and work on their weaknesses for better performance in language learning as well as to prepare for the working world. The finding is significant as English language plays a significant role in students' life that will help them to do well in their work in the long run if they have excellent command and proficiency in the English language. Learners who are 'aware of their most productive mode of learning meet with greater success in both education and the workforce than those people who attempt to learn and work through a mode with which they are incompatible' (Brunton et al, 2006). Zheng (2021), and Ishak et al., (2022) mentioned that students who identified their strengths and intelligence are able to have self-confidence because they are confident in their strengths, and this helps them to communicate better and have a good command of English. MI can assist in identifying students' dominant and less dominant intelligence and facilitate their learning. When the students are comfortable with suitable learning that are set according to their intelligences, students are found to be more confident in themselves which helps them with their social skills and engagement.

4. Discussions

The selected articles had affirmed the importance of the MI theory in the English language classroom. The studies claimed that MI assists students to learn better and have a deep understanding of the English language. This is supported by the studies conducted by Yanrong (2019), Muttar (2019), Juliani, Syafitri and Seli (2021), Ishak et al., (2022), and Aminatun et al., (2018) which stressed that with the right and suitable strategies, students could grasp the idea of having a better proficiency in the English language. The strategies employed in English teaching and learning are very important to classroom instructors as classroom instructors would have in-depth understanding about the students' strengths and weaknesses (Ilhan-Beyaztas, 2019). When classroom instructors are able to identify the students' dominant and less dominant intelligence, it will certainly help the classroom instructors to design effective materials which will benefit the students. The strategies for English teaching and learning created should thus, depend on the students' needs, intelligence, and classroom instructors' approaches to their students.

Studies by Ishak et al., (2022), Tian (2021), Liu (2022), and Zaini (2019) highlighted that materials provided by classroom instructors should consider the students' multiple intelligences in order to help them achieve high proficiency in the English language. Students who have not been exposed to suitable ways of learning the English language might find it difficult to cope with the first basic

competency (Ishak et al., 2022). This proves that teaching strategies and materials in the classroom should be sufficient and effective to the students according to their multiple intelligences. The MI theory helps both classroom instructors and students to achieve their goals. Additionally, to apply the theory of multiple intelligences to the teaching activities of English majors, it is necessary to fully consider and analyse the various differences in students, select teaching materials reasonably, and carry out scientific teaching activity design to ensure the interest of teaching (Tian, 2021). The importance of suitable English materials in the classroom will enhance the students' interest and slowly develop their intelligence which will help them to make full use of their strengths and weaknesses when learning the English language.

Although strategies in teaching English and teaching materials are significant to improve students' proficiency in English, however, the interest of the students should be considered as well. Zheng (2021), Aminatun et al., (2018), Ishak et al., (2022), Maravilla et al., (2020), Zhao et al., (2021) and Tian (2021) emphasized that one of the factors that help improve students' performances in the English language was their interest in the English language itself. Zhao et al., (2021) mentioned that students had low interest in learning English and learned it only to cope with the grades in the examination. This is when MI theory comes into place where classroom instructors can play a vital role in shaping and moulding the students' interest by analysing their intelligence. When the intelligence(s) has been identified, classroom instructors are then able to design English teaching and learning materials and activities accordingly based on the theory of multiple intelligences.

The first theme of this study shows that teaching effectiveness is indeed important in the English classroom to improve the students' proficiency in the English language. Furthermore, another reason that contributes to students' multiple intelligence is the students' attributes. Evidently, students' multiple intelligence is based on his or her background, gender as well as social development. Studies by Salih (2019) and Ishak et al., (2022) confirmed that multiple intelligence varies in both females and males, and classroom instructors need to identify the students' multiple intelligence through gender differences to avoid any gender bias from occurring. It is shown that males are better at physical activities while females are better at reading activities, self-regulation, and being natural leaders. Females and males are different in terms of their interests and tendency towards developing their multiple intelligence and classroom instructors play an important role to take responsibility in order to balance between the male and female students. Given the issue involving gender, classroom instructors should consider a proper approach to avoid any students from being left out of learning the English language. Classroom instructors should be able to combat any problems relating to gender biases and make sure that no student should be left behind and come up with an appropriate approach to deal with the problem (Tadesse et al., 2020).

Along the same line, social development in students is also very crucial to help them engage with others in the English classroom without being shy to help them improve their social skills. Social skills are needed in English classrooms to boost their self-confidence and to achieve greater results in the English language especially in mastering linguistic intelligence (Abd Rahman et al., 2022). Studies found that MI helps students to feel more confident in their strengths and weaknesses and are able to improve their English language thus making them comfortable in learning using the dominant and less dominant intelligence. Zheng (2021), and Ishak et al., (2022) found that the ability to identify their strengths and weaknesses can help students to grow and feel comfortable in learning the English language. Classroom instructors who encourage students to use their MI in learning English help them develop social skills in their lives, hence, making it easier for them to face the outside world and develop employment skills. All in all, as English language is important, the integration of MI theory in the classroom can benefit the students in terms of developing their social skills.

5.   Implications, research gap, and recommendation for future studies

Although it is undoubtedly that the theory of multiple intelligence has positive impacts on both students and classroom instructors, it is also important for the classroom instructors to take into account the students' background, gender, and knowledge beforehand to provide suitable materials and approaches to the students. This is because when classroom instructors understand that no one-size-fits-all, any biases can be avoided. Studies by Zheng (2021), Aminatun et al., (2018), Ishak et al., (2022), Maravilla et al., (2020), Zhao et al., (2021), and Tian (2021) have highlighted the importance of MI

theory in English teaching and learning, indicating that the MI theory help classroom instructors to analyse and identify the students' intelligence before designing material and suitable approaches. Since every student varies and have their own capabilities and characteristics, it is important for classroom instructors to acknowledge the students' differences and to plan ahead the activities to attract the students to have interest in learning the English language.

Zhao et al., (2021) in their study suggested that indicating the proposed English teaching design and teaching effect evaluation method design based on the theory of multiple intelligences can improve students' interest in English learning to a certain extent. Many classrooms still employ the traditional way of teaching and evaluation system which can no longer adapt to the needs of the times (Zhao et al., 2021) and multiple intelligence should be applied in English classrooms in order to see major improvements. Thus, Yanrong (2019) emphasised that the theory of MI provides a theoretical basis and a new direction for English teaching.

However, more studies should be conducted to find out the factors of multiple intelligences in students, this is because only a few articles mentioned the factors of multiple intelligence in students. These studies are important in order to measure the students' intelligence based on their background and upbringing. Although many studies have looked into the importance of the integration of MI in English classrooms, only a few discussed the internal and external factors that lead to students having those strengths and weaknesses. The current review only focuses on the articles published from 2018 to 2022, and only a few were eligible following the review protocol.

Thus, future studies should consider studying the background, characteristics, and the students' knowledge of multiple intelligences. As much research has emphasised the importance of MI, the background of students could vary across the world due to religion, culture, and environment. None of the articles found discussed religion, culture as well as an environment that allows students to perceive and develop such intelligence. These studies could help others to know more in-depth about the students' characteristics based on their religion, culture, and environment.

6.   Conclusion

This SLR examined the effectiveness of the integration of MI theory in English teaching and learning. The review offers some insightful information on the effectiveness of MI as far as English classroom instruction is concerned. The significance of teaching strategies and teaching materials in relation to students' interest and performance, as well as student's attributes should be the defining factors for classroom instructors to consider integrating the MI theory in the teaching and learning process.

Although studies on MI have been replete, they are never conclusive. There are more perspectives that can be explored such as the culture and background, so that more factors can be taken into consideration when classroom instructors plan to integrate MI in their classroom instruction.

7.   Co-author contribution

Hairudin, S.N. and Ariffin, K. conceived, planned and wrote the manuscript. Ariffin, K. Ibrahim, M.N.A., De Mello, G., Husin, M., Omar, N.H and Ishak, N. contributed to the supervision of the study. All authors provided feedback and contributed in shaping the study, analysis and manuscript.

8.   Acknowledgment

9.   References

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