

# GAYA PENGAJARAN GURU MATEMATIK SEKOLAH RENDAH: KAJIAN LITERATUR

YEE MEI HEONG\*

MOHD FAISAL BIN MAHMAD\*\*

WAN AZRUL SHAFUAN WAN HASSAN\*\*\*

KOK BOON CHING\*\*\*\*

ANDIKA BAGUS NUR RAHMA PUTRA\*\*\*\*\*

mhyee@uthm.edu.my (*Penulis Koresponden*)\*, katak1481@gmail.com\*, wanazrulshafuan@gmail.com\*\*\*, bckok@uthm.edu.my\*\*\*\*, andika.bagus.ft@um.ac.id\*\*\*\*\*

## Abstrak

Matematik merupakan salah satu mata pelajaran penting dalam sistem pendidikan negara. Namun, secara umumnya murid beranggapan bahawa matematik merupakan satu mata pelajaran yang agak sukar untuk dikuasai kerana mereka tidak mempunyai minat untuk belajar. Pemilihan gaya pengajaran yang sesuai dapat menarik minat murid untuk belajar. Secara tidak langsung proses pembelajaran juga dipermudahkan bagi membolehkan murid memahami isi pelajaran. Kejayaan atau kegagalan murid dikaitkan dengan gaya pengajaran yang digunakan oleh guru semasa mengajar. Gaya pengajaran guru menjadi salah satu komponen pemindahan kandungan pengajaran yang menyeluruh dan sebagai faktor penentu utama kejayaan pembelajaran murid. Oleh itu, gaya pengajaran yang diguna dalam Pengajaran dan Pembelajaran (PdP) haruslah bersesuaian dengan aktiviti dan objektif yang ingin disampaikan bagi meningkatkan kesediaan murid untuk belajar dan seterusnya tahap kefahaman mereka.

**Kata Kunci:** Gaya pengajaran Grasha, matematik, sekolah rendah

Sent: 1<sup>st</sup> February 2023

Revised: 30<sup>th</sup> March 2023

Published: 30<sup>th</sup> September 2023

- 
- \* Fakulti Pendidikan Teknikal dan Vokasional, Universiti Tun Hussein Onn Malaysia, 86400 Batu Pahat, Malaysia  
\*\* Fakulti Pendidikan Teknikal dan Vokasional, Universiti Tun Hussein Onn Malaysia, 86400 Batu Pahat, Malaysia  
\*\*\* Fakulti Pendidikan Teknikal dan Vokasional, Universiti Tun Hussein Onn Malaysia, 86400 Batu Pahat, Malaysia  
\*\*\*\* Fakulti Kejuruteraan Elektrik dan Elektronik, Universiti Tun Hussein Onn Malaysia, 86400 Batu Pahat, Malaysia  
\*\*\*\*\* Jabatan Kejuruteraan Mekanikal, Universiti Negeri Malang, 65145 Malang, Indonesia.

# TEACHING STYLES OF MATHEMATICS TEACHERS IN PRIMARY SCHOOLS: A LITERATURE REVIEW

YEE MEI HEONG\*

MOHD FAISAL BIN MAHMAD\*\*

WAN AZRUL SHAFUAN WAN HASSAN\*\*\*

KOK BOON CHING\*\*\*\*

ANDIKA BAGUS NUR RAHMA PUTRA\*\*\*\*\*

mhyee@uthm.edu.my (Corresponding Author)\*, katak1481@gmail.com\*\*,  
wanazrulshafuan@gmail.com\*\*\*, bckok@uthm.edu.my\*\*\*\*, andika.bagus.ft@um.ac.id\*\*\*\*\*

## Abstract

*Mathematics is one of the important subjects in the education system of this country. However, students generally think that Mathematics is a subject that is quite difficult to master because they do not have the interest to learn. The selection of appropriate teaching style(s) can attract students to learn. Indirectly, the learning process is also simplified, therefore allowing students to understand the content of lessons. The success or failure of students is associated with the teaching style(s) that teachers use while teaching. Indirectly, teachers' teaching style(s) becomes one of the components of a comprehensive teaching content transfer and as a major determining factor of student learning success. Therefore, the teaching style(s) adopted in delivering Teaching and Learning (T&L) should be appropriate to the activities and objectives to be presented to students in order to increase students' willingness to learn and in consequence, their level of understanding.*

**Keywords:** *Grasha, mathematics, primary school, teaching styles*

Sent: 1<sup>st</sup> February 2023

Revised: 30<sup>th</sup> March 2023

Published: 30<sup>th</sup> September 2023

---

\* Faculty of Technical and Vocational Education, Universiti Tun Hussein Onn Malaysia, 86400 Batu Pahat, Malaysia

\*\* Faculty of Technical and Vocational Education, Universiti Tun Hussein Onn Malaysia, 86400 Batu Pahat, Malaysia

\*\*\* Faculty of Technical and Vocational Education, Universiti Tun Hussein Onn Malaysia, 86400 Batu Pahat, Malaysia

\*\*\*\* Faculty of Electrical and Electronic Engineering, 86400 Universiti Tun Hussein Onn Malaysia, Batu Pahat, Malaysia.

\*\*\*\*\* Department of Mechanical Engineering, Universiti Negeri Malang, 65145 Malang, Indonesia

## 1.0 Introduction

Mathematics is one of the subjects that must be studied by all students who follow the National Education System in Malaysia. Basically, mathematics is a branch of knowledge that arises from the process of reasoning on the environment and the universe (Jerry & Jamaludin, 2021). Cognitive, affective, psychomotor development and noble values are aspects that are given emphasis on in Mathematics education to produce useful citizens which is an aim in line with the goals of the National Education Philosophy (Sujadi, 2019). According to (Larkin & Jorgensen, 2016), many pupils consider mathematics as a difficult subject to master. In addition, students also say that Mathematics is a boring subject (Salehudin, Hassan & Hamid, 2015). To overcome this problem, experts in the field of research have studied various factors to identify the causes of deterioration and problems in mathematics learning in primary schools. According to Noor and Megat Zakaria (2018), factors contributing to the decline of mathematics learning are in terms of interest, attitude, poor basic skills, and poor problem-solving skills. In addition, another factor that has also caused the level of primary school students' mathematics to decline are the variations in methods and approaches taken to address the learning needs and styles of students, as not all teachers adopt appropriate and efficient teaching techniques (Ali et al., 2021). Such factors could contribute to a worsening trend in primary school students' mathematics scores.

Taking the above scenario, teachers are thus seen as the key agent of change in this educational reform (Baleghizadeh & Shakouri, 2017). Over the past few decades, teachers have been the focus of researchers in a variety of pedagogical studies conducted to examine teachers' beliefs, perceptions and thoughts related to behavior and achievement. Each teacher has a different teaching style depending on the context and needs of his/her students. Hedamejad, Hosseini and Ghonsooly (2017) stated that refer to teaching style as the personal qualities and attitudes of teachers in teaching that are reflected using teaching techniques, activities, and approaches in teaching specific subjects in the classroom. Teaching styles also represent teachers' behavior while teaching in the classroom. Each teacher has his/her own way, method, and strategy of teaching. This diversity in teaching styles has different effects on students' understanding (Che Mohd Noor & Ahmad, 2015). There are students who can understand lessons taught if teachers teach through speech only, but there are also students who find it too difficult to understand their teacher's teaching even though the teacher has conducted a variety of interesting activities. This shows that the teaching styles of each teacher is different, and the results of the teaching style implemented are also different for each student.

## 2.0 Definition of Teaching Style

According to Kartal and Basol, (2019) personal characteristics and qualities of teachers play an important role in teacher professionalism, especially in terms of selection and application of different teaching methods in learning and facilitation. In fact, Grasha, (1996) believes that a teacher's teaching style reflects a teacher's personal qualities, such as through the way he/she teaches, guides and directs the teaching process so as to affect students and their ability to learn. Students' success or failure is associated with their teachers' teaching style, i.e., the teaching methods used during teaching. Indirectly, teachers' teaching style becomes one of the components of comprehensive teaching content transfer and a major determining factor of students' learning success (Baradaran, 2016). Thus, it can be said that teachers' teaching styles represent their behaviour while teaching in the classroom. Some definitions to teaching style as described by other authors in their studies have been included in the table below.

**Table 1:** Definition of teaching styles

No	Definition
1	A combination of teachers' motivations, personalities, attitudes, beliefs and strategies (Hedamejad, Hosseini & Ghonsooly, 2017)
2	The personal quality and attitude of a teacher in teaching that is reflected through the use of teaching techniques, activities and approaches of the teacher in teaching a particular subject in the classroom (Karimnia & Mohammadi, 2019)
3	Methods used by teachers when conducting teaching and learning activities in the classroom (Hussain & Ayub, 2012)
4	A combination of manners and behaviours inherent in the personality of a teacher that greatly influences the learning process (Grasha, 1996)
5	As the best measure of approaching students as consistent with several teacher methods (Fischer & Fischer, 1979)
6	Teachers' personal behaviours and media used to send to or receive data from students (Kaplan & Kies, 1995)
7	A distinctive feature shown by teachers that does not change regardless of what is taught (Conti & Welborn, 1986)
8	A teacher's preferred way of solving problems, performing tasks, and making decisions in the teaching process. May vary from individual to individual, and may sometimes differ between different groups, e.g., schools (Sternberg, 1997)
9	"Teaching style is" the teacher's personal behavior (Gregorc, 1979)

### 3.0 Types of Teaching Styles

Essentially, the teaching style(s) possessed by a teacher is the teacher's strategy of transferring knowledge related to the learning material in accordance with the planned learning objectives (Muhsin & Ahmad, 2019). One of the most significant challenges in the teaching profession is that teachers do not know the appropriate teaching style to be used to deliver the activities or content of Teaching and Learning (T&L) (Ali & sahabuddin, 2020). This challenge therefore causes students to may not be able to enhance their learning experience as well as understanding on the topics taught (Khandaghi & Farasat, 2019). Therefore, teachers need to identify the appropriate teaching style to be carried out in their T&L sessions. There are many teaching styles that can be identified and used by teachers as discussed by (Grasha, 1996, Weinberg, 1983 & Dressel & Marcus, 1982).

#### 3.1 A. Grasha's Teaching Styles (1996)

Anthony Grasha proposed five different types of teaching styles: expert, formal authority, personal model, facilitator, and delegator. Expert style is emphasized on by teachers who have extensive knowledge and expertise in the subject matter. Teachers who use this style want their students to be always prepared and prioritize the distribution of information to the greatest extent possible. According to the formal authority style, the teacher always provides positive or negative feedback to his students. They believe that students should be taught in a standard, accurate, and accepted manner that includes the school's teaching goals and the students' conduct rules as enshrined in school legislation. This type of teacher prefers structured instruction. Teaching should be done using personal examples and 'teaching by example' when it comes to the personal model style. Teachers frequently serve as models for students in terms of how to think and behave. The facilitator's style also emphasizes on interaction between the teacher and students. They provide guidance

and direction by asking questions, suggesting alternatives, and developing selection criteria. The overall goal is to develop students' independence, proactiveness, and responsibility. The delegator style, on the other hand, focuses on developing students' ability to learn independently. When putting a project together, students are encouraged to work independently.

### **3.2 Weinberg's Teaching Styles (1983)**

Weinberg (1983) proposed four teaching styles: direct teaching, peer teaching, problem solving, and the group approach. The teacher will make all decisions in a direct teaching style. Teachers will explain and point out things for students to learn, as well as evaluate and provide feedback. This style necessitates little cognitive or affective participation on the part of the students. On the other extreme is peer teaching style. This teaching style pairs two students with varying levels of ability. The desired response is explained and demonstrated by the teacher, then the students will evaluate one another based on the criteria presented by the teacher. The third style is the problem-solving style. The teacher will resolve the issue, and the students will respond in the manner that is most appropriate for them. Models then emerge from students' creativity and responses from other students. The final teaching style is the group approach style, which is used to cultivate social skills and promote acceptance amongst students of varying levels of ability.

### **3.3 The Teaching Styles of Dressel & Marcus (1982)**

Dressel & Marcus (1982) distinguished three types of teaching styles: discipline-centered, teacher-centered, and student-centered. A course has a fixed structure under a discipline-centered style. In the teacher-centered model, teachers are regarded as authoritative experts, the primary source of knowledge, and the focal point of all activities. Students thus are passive recipients of information in this teaching model. According to Lackey (1997) lectures clearly reflect a teacher-centered style and require students to play a passive role. Teaching in the student-centered model, on the other hand, is centred on students and their cognitive development. The teacher's goal is to help students understand knowledge development as a process rather than a product.

## **4.0 Approaches, Strategies, Methods and Techniques in Teaching and Learning Mathematics**

### **According to Teaching Style**

Teaching style is an important element that will influence the effectiveness and success of a teacher's teaching as reflected by the achievement of targeted objectives. The effectiveness of learning in mathematics is proven when the activities used in learning encompass the standard processes of mathematics learning namely comprehension, reasoning, communication, relevance, problem solving, and representation (Santas, Özcan & Adúriz-Bravo, 2021). Therefore, teachers must master and fully understand the teaching style that suits students' needs (Santas et al., 2021). The teaching styles most preferred by students is the facilitator type where students expect teachers to help guide the learning needed by students (Khalid, Akhter & Hashmi, 2017). The facilitator style is by far the latest and most popular teaching style in 21st century learning. Teachers act as a facilitator who only guides students when necessary, so that students are always on track in achieving the desired learning objectives.

According to Karamustafaoğlu, Cakir & Celep (2015) awareness of appropriate teaching styles to be applied by teachers is important in educational approaches to educate individuals to master lifelong learning skills and to meet the needs of teacher responsibilities. In essence, the mastering of teaching styles by teachers enable students to complete assignments well (Shahbudin, 2003). Table 2 below is a match of the use of approaches, strategies, methods, and techniques according to the different teaching styles as proposed by (Grasha, 1996).

**Table 2:** Matching The Use of Approaches, Strategies, Methods and Techniques According to Teaching Style

(Source: Grasha Teaching Style, 1996)

<b>Style</b>	<b>Approach</b>	<b>Strategy</b>	<b>Methods and Techniques</b>
Expert	Deductive	Teacher-centered	<ul style="list-style-type: none"> <li>- Practice</li> <li>- Q&amp;A</li> <li>- Brainstorming</li> </ul>
Formal authority	Deductive	Teacher-centered	<ul style="list-style-type: none"> <li>- Demonstration</li> <li>- Storytelling</li> <li>- Visits</li> <li>- Simulation</li> </ul>
Personal model	Deductive	Teacher-centered	<ul style="list-style-type: none"> <li>- Demonstration</li> <li>- Storytelling</li> <li>- Visits</li> <li>- Simulation</li> <li>- Role play</li> </ul>
Facilitator	Elective	Student-centered	<ul style="list-style-type: none"> <li>- Discussion</li> <li>- Problem solving</li> <li>- Play</li> <li>- Q&amp;A</li> <li>- Practice</li> </ul>
Delegator	Elective	Student-centered	<ul style="list-style-type: none"> <li>- Discussion</li> <li>- Debate</li> <li>- Simulation</li> <li>- Problem Solving</li> </ul>

## 5.0 Importance of Teaching Style in Mathematics

For implementing T&L sessions, there are many ways and strategies of teaching that teachers can use to deliver content. However, according to Che Mohd Noor and Ahmad (2015), each style used will also give a different effect to students. It can be concluded that the teaching style used by teachers is different, therefore different results will also be obtained for each student. The teaching style used by teachers plays an important role in attracting students to learn and understand what the teachers are teaching. This is because according to Mohd Nordin and Ahmad (2015) teaching style is the first aspect that will attract students thus indirectly, affect students' academic results.

In addition, the teaching styles used by teachers can also be seen through several aspects namely the way teachers teach, the interaction between teachers and students, learning activities conducted, and student evaluation methods. Through the formal authority teaching style, teachers provide careful planning and emphasize on clear learning objectives before beginning teaching (Husin, 2017). This is something that is important in order to ensure the acquisition of students' learning during the learning process. In a teacher's effort to achieve maximum learning outcomes,

careful planning will help convince students of the approach adopted. Creatively designed teaching is also able to improve student achievement, and this depends on the efforts of teachers to produce such learning (Rahman, 2017).

Therefore, the interaction used by the teacher should be a two-way interaction in both oral and written forms. The interaction process was found to help teachers increase students' potential during the learning process (Johari, Mohd Fakhruddin & Suhid, 2017). The learning activities carried out by teachers are student-centred; that is, they give students the opportunity to form their own understanding from their learning experiences (Mohamed Noh et al., 2017). This also shows that teachers practice the facilitative teaching styles. As a facilitator, the teacher's teaching is more directed towards developing the students' ability to be independent, take initiative and take responsibility for themselves. The teacher's role as a facilitator is to familiarize students with collaborative activities. Collaborative learning strategies will encourage students to think at a higher level to give feedback, brainstorm, encourage and question students as well as control the process of transferring learning to students (Van Leeuwen & Janssen, 2019; Chun Abdullah, 2019). The success of student achievement corresponds to the teacher's ability and role as a facilitator (Siregar, Rosli & Maat, 2019; Singh et al., 2018) in instilling high-level thinking to help them rise to a higher level Singh et al., (2018).

At the end, the teacher evaluates students through students' involvement, responses given throughout the learning session, as well as answers to questions given by the teacher through activity books or textbooks. This process shows that assessment is implemented throughout the learning process, a method that can improve the teaching that takes place (Lu'luil Maknun, 2018). On the other hand, through the expert teaching style, teachers are more likely to adopt teachercentred teaching by holding activities that challenge students' thinking and encourage competition. However, under this method, teachers do not care about the differences that exist among students (Basumi & Hassan, 2019). This therefore helps train students to think creatively and critically without expecting teacher's guidance. This shows that it is important for a teacher to know the effective teaching style appropriate for a learning topic to be presented in the classroom.

## **6.0 Factors Affecting Teachers' teaching Styles**

One of the important factors that need to be considered in the effort to improve students' achievement is the teacher's own factor (Cheng, Yunus & Mohamad, 2016). This is because teachers are a critical factor that determines the success and effectiveness of educational programmes (Vellymalay, 2017) as they have a major role in influencing students' interests and attitudes towards the subjects studied and in turn, affect students' achievement in academic fields related to their learning (Ismail & Othman, 2012). Moreover, effective teaching is the most critical part in the world of education. An effective and competent teacher is a teacher who meets the set standards and can teach effectively (Ilahi, 2020). However, there are many factors that can influence teachers' implementation of effective teaching methods or styles.

The gender factor is the most popular and frequently studied factor for its influence on teachers' Grasha-Riechmann teaching styles. According to classroom Karimnia and Mohammdi (2019) gender issues have long been considered a factor that has an important impact on teachers' teaching styles. Karimnia and Mohammdi (2019) explained that the teacher gender factor can influence teachers' behaviour - female teachers are seen to differ from male teachers in terms of classroom management, topic selection and example-giving in explaining lesson content. In addition, female teachers are said to be more likely to practice student-centered teaching and highlight feminine characteristics such as being caring and supportive towards students (Ambusaidi & Al-Farei, 2017). In fact, Oritz (2018) argued that female teachers are more likely to be involved in interpersonal behaviour and close relationships, thus contributing to fostering a sense of

belonging amongst students. In contrast, male teachers generally have a competitive and achievement-oriented behavioral nature. Accordingly, the differences in nature between female and male teachers are likely to contribute to the use of different teaching styles in the classroom.

The second factor is the teaching experience factor. This is because previous studies have shown that there are differences in teaching strategies and styles by teachers with different levels of teaching experience. For example, a study by Batjo and ambotang (2019) found that senior teachers' teaching strategies are more traditionally conceptualized. The analysis also showed that teachers with 6 to 10 years of teaching experience comply with each instruction and implement teaching according to the guidelines of the education system that has been set. Their teaching experience over the years has influenced the perception of their own knowledge and skills (Dewale, Gkonou & Mercer, 2018). Meanwhile, the group of teachers who have low experience that is 1 to 5 years of teaching experience do not implement the teaching that has been set and are not skilled in implementing teaching according to the concept of 21<sup>st</sup> Century Learning. In such situations, teachers do not know what purpose and how to use the technology in their classroom and it is stated that this can be an obstacle in the integration of technology (Graham, Borup, & Smith, 2012; Sahin, Akturk & Schmidt, 2009; Niess, 2011). Therefore, to create an effective learning environment, teachers need to be actively involved in the integration process and be efficient in using technology (Akturk & Saka Ozturk, 2019).

Furthermore, Illahi (2020) also proved that teachers' teaching experience has a statistically significant influence on teaching style, classroom management creativity, as well as teachers' pedagogical skills. Thus, teachers who are more experienced in the profession are said to be more creative and skilled in managing classroom activities compared to less-experienced teachers. Accordingly, teachers with different levels of teaching experience are often the main focus in the context of Grasha-Riechmann's teaching style research, given the existence of differences in pedagogical skills and teaching strategies between teachers of different levels of teaching experience.

## **7.0 Conclusion**

In conclusion, there are many teaching styles that can be used by teachers in T&L sessions, and these teaching styles are also an important factor in determining the level of understanding of students as it can attract students to continue learning without feeling bored of a subject. Every teacher has a different personality, experience, and background. This situation will indirectly shape and create a different teaching style for each teacher in delivering T&L sessions. However, the teaching style used by teachers is not necessarily appropriate to the activities and topics of teaching conducted. Therefore, teachers need to diversify their teaching styles in the classroom and not just focus on one teaching style only to create effective teaching in the classroom. Teachers play an important role in producing excellent students, and this role should be seen from the early stage by first choosing the style or method of teaching to be used by the teacher him/herself.

## **8.0 Acknowledgements**

This research was supported Ministry of Higher Education (MOHE) through Fundamental Research Grant Scheme (FRGS/1/2021/SSI0/UTHM/02/15). This research was partially supported by UTHM Registrar. In addition, we also want to thank to the Government of Malaysia which provide MyBrain15 programme for sponsoring this work under the self-funded research grant and L00022 from Ministry of Science, Tecchnology and Innovation (MOSTI).



## References

- A. F., Grasha (1996). Teaching with Style: A Practical Guide to Enhancing Learning by Understanding Teaching and Learning Styles.
- A. F., Grasha (1996). Teaching with Style: A Practical Guide to Enhancing Learning by Understanding Teaching and Learning Styles.
- A. F., Grasha (1996). Teaching with style: The integration of teaching and learning styles in the classroom. *Essays on Teaching Excellence*, 7(5), 1995-96.
- A. F., Gregorc (1979). Learning/teaching styles: Potent forces behind them. *Educational Leadership*, 36(4), 234-236.
- A., Baradaran (2016). The relationship between teaching styles and autonomy among Iranian female EFL teachers, teaching at advanced levels. *English Language Teaching*, 9(3), 223-234.
- A., Karimnia, & N., Mohammadi (2019). The effects of teachers' gender, teaching experience, and brain dominance on their teaching styles. *International Journal of Research in English Education*, 4(1), 37-46.
- A.M., Ali, N. A., Karim, A., Mohamed, & N., Ismail (2018). Aplikasi gaya pengajaran dan pembelajaran aktif dalam subjek Kemahiran Dinamika bagi merealisasikan pendidikan abad ke-21. *Sains Humanika*, 10(3-2).
- Akturk, A.O. & Saka Ozturk, H. (2019). Teachers' TPACK levels and students' self-efficacy as predictors of students' academic achievement. *International Journal of Research in Education and Science (IJRES)*, 5(1), 283-294.
- Ambusaidi, A., & Al-Farej, K. (2017). Investigating omani science teachers' attitudes towards teaching science: The role of gender and teaching experiences. *International Journal of Science and Mathematics Education*, 15(1), 71-88.
- B., Fischer, & L., Fischer (1979). Styles in teaching & learning. *Educational Leadership*, 36, 245-254.
- Batjo, N., & Ambotang, A.S., (2019). The influence of teacher's teaching towards quality of teachers' teaching. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, 4(2), 30-42.
- Chun, Tiew & Abdullah, Melissa. (2019). Malaysian Online Journal Of Educational Management (Mojem) The Teaching Of Higher Order Thinking Skills (Hots) In Malaysian Schools: Policy And Practices. 7. 1-18.
- D., Sarıtaş, H. Özcan, & A., Adúriz-Bravo (2021). Observation and inference in chemistry teaching: a model-based approach to the integration of the macro and submicro levels. *Science & Education*, 30(5), 1289-1314.
- Dewaele, J. M., Gkonou, C., & Mercer, S. (2018). Do ESL/EFL teachers' emotional intelligence, teaching experience, proficiency and gender affect their classroom practice?. In *Emotions in second language teaching* (pp. 125-141). Springer, Cham.
- E. J., Kaplan, & D. A., Kies (1995). Teaching styles and learning styles: Which came first? *Journal of Instructional Psychology*, 22(1), 29-33.

- F. C., Jerry, & K. A., Jamaludin (2021). Pelaksanaan Pembelajaran Berasaskan Inkuiri Kritis Dalam Mata Pelajaran Matematik. *Jurnal Dunia Pendidikan*, 3(2), 386-400.
- M. F., Ismail, & M. S., Othman (2012). Faktor-faktor yang mempengaruhi pencapaian pelajar dalam pengajaran & pembelajaran bahasa Arab: Satu tinjauan di SMAP Kajang. *Persidangan Kebangsaan Pengajaran Dan Pembelajaran Bahasa Arab, 2012*(2012), 173-189.
- G. J., Conti, & R. B., Welborn (1986). Teaching-learning styles and the adult learner. *Lifelong*
- G., Kartal, & H. C., Basol (2019). Generic teacher competencies and the English language teacher education program in Turkey. *Novitas-ROYAL (Research on Youth and Language)*, 13(2), 134
- Graham, C. R., Borup, J., & Smith, N. B. (2012). Using TPACK as a framework to understand teacher candidates' technology integration decisions. *Journal of Computer Assisted Learning*, 28(6), 530-546. <http://www.apeco.org/schools/faculty/chp4.html>
- I., Sujadi (2019). Peranan pembelajaran matematika pada penguatan nilai karakter bangsa di era revolusi industri 4.0.
- Illahi, Nur. (2020). Peranan guru profesional dalam peningkatan prestasi siswa dan mutu pendidikan di era milenial. *Jurnal Asy-Syukriyyah*, 21(1), 1–20. *Prosiding Silogisme*, 1(1).
- K., Larkin, & R., Jorgensen (2016). 'I hate maths: why do we need to do maths?' Using iPad video diaries to investigate attitudes and emotions towards mathematics in year 3 and year 6 students. *International Journal of Science and Mathematics Education*, 14(5), 925-944.
- L., Cheng, M. M., Yunus, & M., Mohamad (2016). Issues contributing to low performance of English in a national school in Song, Sarawak. *Proceedings of the ICECRS*, 1(1), v1i1-519.
- Lackey (1997). APEO Faculty Manual, Chapter 4. [On-line]. Available: *Learners and the Disciplines. The Jossey-Bass Series in Higher Education*. Jossey-Bass Inc., 433 California St., San Francisco, CA 94104.
- Lu'luil Maknun, A. R. (2018). Telaah Kurikulum dan Sistem Pembelajaran Sekolah Dasar di Finlandia Serta Persamaan dan Perbedaannya dengan Kurikulum 2013 di Indonesia. *Prosiding Seminar dan Diskusi Nasional Pendidikan Dasar 2018*, 64-70.
- M. A., Al Muhsin, & N. Z., Ahmad (2019). The emergence of education 4.0 trends in teaching Arabic Islamic finance curriculum design: A case study. *International Journal of Psychosocial Rehabilitation*, 23(4), 1019-1029.
- M. A., Khandaghi & M., Farasat (2011). The effect of teacher's teaching style on students' adjustment. *Procedia-Social and Behavioural Sciences*, 15, 1391-1394.
- M. MS., Noor, & MAZ., Megat Zakaria (2018). *Motivation, attitude and performance review among primary pupils through virtual learning environment. Sains Humanika*, 3(2), 7-13.
- M. R., Mohd Nordin, & M., Ahmad (2015). Pendekatan Didik Hibur Dalam Pengajaran dan Pembelajaran Bahasa Melayu: Tinjauan Terhadap Sikap dan Minat Murid Orang Asli di Negeri Perak. *Jurnal Penyelidikan Dedikasi*, 77-90.

- M. Weinberg (1983). *The Search for Quality Integrated Education: Policy and Research on Minority Students in School and College. Contributions to the Study of Education, Number 7*. Greenwood Press, 88 Post Road West, Box 5007, Westport, CT 06881.
- M., Khalid, M., Akhter, & A., Hashmi (2017). Teaching Styles of Secondary School English Teachers and Learning Styles of Their Students and Relationship of Teaching Learning Style Match with Students' Achievement. *Bulletin of Education and Research*, 39(3), 203-220.
- Mohamed Noh, N., Abdullah, N., Kung Teck, W., & Hamzah, M. (2017). Keberkesanan pendekatan Flipped Classroom dalam pembelajaran Sains di Sekolah Rendah. *Jurnal Pendidikan Sains Dan Matematik Malaysia*, 7(2), 106-118.
- N. N., Salehudin, N. H., Hassan, & N. A. A., Hamid (2015). Matematik Dan Kemahiran Abad Ke-21:
- N., Husin (2017). Penggunaan Laman Web Sebagai Transformasi Dalam Pengajaran Dan Pembelajaran Pendidikan Islam. *Online Journal of Islamic Education*.58-73
- N., Hussain, & N., Ayub (2012). Learning Styles of Students and Teaching Styles of Teachers in Business Education: A Case Study of Pakistan. *Procedia - Social and Behavioural Sciences*, 69, 1737– 1740. Elsevier BV
- Niess, M. L. (2011). Investigating TPACK: Knowledge growth in teaching with technology. *Journal of Educational Computing Research*, 44(3), 299-317
- Ortiz, M. J. (2018). Gangs and environment: A comparative analysis of prison and street gangs. *American Journal of Qualitative Research*, 2(1), 97–117.
- P. L., Dressel, & D., Marcus (1982). *On Teaching and Learning in College. Reemphasizing the Roles of*  
 Perspektif Pelajar (Mathematics and the 21st Century Skills: Students' Perspective). *Jurnal Pendidikan Matematik*, 3(1), 24-36.
- R. J. Sternberg (1997). *Thinking Styles*. New York: Cambridge University Press.  
 Review. doi:10.1016/j.edurev.2019.02.001.
- S. H. Shahabudin (2003). Continuing education and lifelong learning: contributions to individual and organisational performance in Latin America. *Towards a global health workforce strategy*.
- S. N., Rahman (2017). Pendekatan Gamifikasi Dalam Pengajaran Dan Pembelajaran Terhadap Murid Tingkatan Dua Bagi Topik Ungkapan Algebra. Masters thesis, Universiti Tun Hussein Onn Malaysia.
- S. Z., Che Mohd Noor, & A. R., Ahmad (2015). Kreativiti Guru Dalam Meningkatkan Kefahaman Dan Penghayatan Sejarah. *Proceeding: 7th International Seminar on Regional Education*, 457-468.
- S., Baleghizadeh, & M., Shakouri (2017). Investigating the relationship between teaching styles and teacher self-efficacy among some Iranian ESP university instructors. *Innovations in Education and Teaching International*, 54(4), 394-402
- N. S., Johari, F., Mohd Fakhrudin, & A., Suhid (2017). Pendekatan Dan Kaedah Pengajaran Ibadah Solat Guru Pendidikan Islam Menurut Perspektif Murid. *Online Journal of Islamic Education*. 4653.

- S., Karamustafaoğlu, R., ÇAKIR, & A., Celep (2015). Relationship between the attitudes of science teachers towards technology and their teaching styles. *Participatory Educational Research*, 2(3), 67-78.
- Sahin, I., Akturk, A. O., & Schmidt, D. (2009). Relationship of preservice teachers' technological pedagogical content knowledge with their vocational self-efficacy beliefs. In Society for Information Technology & Teacher Education International Conference (pp. 4137-4144). Association for the Advancement of Computing in Education (AACE).
- Singh, C. K. S., Singh, R. K. A., Singh, T. S. M., Mostafa, N. A., & Mohtar, T. M. T. (2018). *Developing a Higher Order Thinking Skills Module for Weak ESL Learners*. *English Language Teaching*, 11(7), 86. doi:10.5539/elt.v11n7p86.
- Siregar, N. C., Rosli, R., & Maat, S. M. (2019). Development of the D-geometry module based on discovery learning. *International Journal of Academic Research in Progressive Education and Development*, 8(3), 99-109.
- T., Heydarnejad, A., Hosseini Fatemi, & B., Ghonsooly (2017). An exploration of EFL teachers' teaching styles and emotions. *Journal of Applied Linguistics and Language Research*, 4(2), 26-46
- Van Leeuwen, A., & Janssen, J. (2019). *A Systematic Review of Teacher Guidance During Collaborative Learning in Primary and Secondary Education*. *Educational Research*
- Vellymalay, S. K. N. (2017). Bahasa interaksi dan hubungan antara etnik dalam kalangan murid di bilik darjah. *JuPiDi: Jurnal Kepimpinan Pendidikan*, 1(3), 14-28.
- Z., Ali, N. A., Sahabuddin (2020). Which dominant teaching style are you? A preliminary study among practitioners at a higher education institution. *Journal of Educational Research & Indigenous Studies (JERiS)*, 2 (1). pp. 1-7. ISSN 2682-759X
- Z., Basumi, & H., Hassan (2019). Pengaruh Faktor Jantina Dan Opsyen Guru-Guru Bahasa Inggeris Terhadap Gaya Pengajaran. *International Journal of Humanities Technology and Civilization*, 2, 79-86.