

PROMOTING DEVELOPMENT OF SOFT SKILLS IN PRIMARY SCHOOL MATHEMATICS CLASSROOMS THROUGH LEARNING AND TEACHING ACTIVITIES

Mahani Ahmad¹ & *Ruzlan Md-Ali²

¹*Jabatan Sains dan Matematik,*

Institut Pendidikan Guru Perlis, Malaysia.

²*School of Education and Modern Languages,
Universiti Utara Malaysia*

Corresponding author: *ruzlan@uum.edu.my

Received: 22/11/2018 **Revised:** 13/3/2019 **Accepted:** 21/5/2019 **Published:** 31/12/2019

ABSTRACT

Interpersonal, intrapersonal, and communication skills are few examples of soft skills that employees should have to contribute to an organization. Thus, it is important to inculcate soft skills during early years of schooling. Many research focused on inculcating soft skills on students at higher education institutions in preparing them for employment but few has focused on soft skills at primary schools level. This paper discusses a small part of our broader qualitative exploratory that looks into the characteristics of teaching and learning environments in selected primary schools' mathematics classrooms. Here, we provide a glimpse into two mathematics teachers' talk or verbal indications which could be interpreted as their latent intentions towards inculcating soft skills competence among students during their mathematics lessons. The findings indicate that there were instances of indications for inculcation of soft skills during the teaching and learning activities. The teachers' talk provided evidence for the inculcation of probable soft skills which include critical and creative thinking, collaborative effort, cooperation, communication, team working, tolerance and leadership. The findings contribute to field of mathematics learning and instruction that promotes infusion of soft skills within primary schools' mathematics classrooms.

Keywords: *soft skills, Mathematics classrooms, teacher talk, learning environments, Mathematics learning.*

INTRODUCTION

Employable human resources are able to contribute towards a nation's economic growth and is an asset to the nation (Ramlee, Faridah, Ruhizan, Norzaini, Hamidah, Abdul Wahab, & Sobri, 2008). These potential human resources ought to be molded since they are young. Inculting soft skills among children will produce an immense return in the future. As espoused by Diakiw (2016), developing soft skills in children will have positive effect on a nation's economy when these children become adults. Successful postsecondary qualifications and prospective employment need the acquisition of basic competencies as well as soft skills (Hanover Research, 2014). As pointed out by Green (2015), people's live experience might determine their possession of soft skills. The escalating importance of soft skills today apparently indicate the necessity to inculcate them during early schooling years:

...the continuing demands for a more literate workforce that can write and read adequately to convey meanings concisely and accurately, but also the evident requirements for communicating through interacting with other people. Whether in teams or through making presentations, or through influencing people to think differently, or helping to solve the many complex problems of modern workplaces, increasingly modern workers need to be able to communicate with others, and listen to them, in more sophisticated ways than in earlier days. Educationalists might like to take note of how this might affect the ways we teach the arts of communication in our schools (pp. 6-7).

Green's (2015) remarks above suggest the orchestration of teaching and learning activities that incorporate and support the development of soft skills in classrooms. In other words, it is vital for teachers to ascertain that soft skills are being taught, nurtured and cultivated in schools. This is inherent to match the current global changes and demands. Moreover, the advances of technology are changing the stakeholders' needs, which inevitably, require potential employees to also possess appropriate soft skills competencies apart from their academic qualifications. These potential employees need to be

responsive, better team members and more adaptable (Greenberg & Nilssen, 2015).

Examples of soft skills that employees ought to have include interpersonal, intrapersonal, and communication skills which could contribute to the progress of the organization (Zedeck & Goldstein, 2000). It is important to inculcate soft skills related to attitude and values (Gani, Mohd Sahandri, & Saifuddin Kumar, 2009), which in a sense, should be given attention when educating students, even since at the primary school level. Soft skills should also be inculcated by teachers during lessons in classrooms, which include during the learning and teaching of mathematics. As expounded by Toles (2010), the advancement of today's technology and global market need students to acquire wide-ranging mathematics and problemsolving skills. As with most mathematics curriculum, the primary school mathematics curriculum in Malaysia promotes teaching and learning strategies that are student-centred. Students are encouraged to actively participate and engage in classrooms learning activities, to explore mathematics and also to solve mathematics problems. Hence, there ought to be a decrease of teacher-centred approaches in classrooms but instead teachers should manage and facilitate students' learning activities in classrooms (Irfan, Roop, & Mowadat, 2013).

Many research on soft skills among students had been carried out in Australia, New Zealand, Britain and United States in various fields, for examples business (Robles, 2012); accounting (Crawford, Helliar & Monk, 2011); management (Stacie & Adriane, 2009); hospitality (Godwin, 2006); agriculture (Robinson, 2006); engineering (Mohd Fais, Iskandar, Mohd Syuhaimi & Aini, 2007; and Ismail, Ahmad, & Awang, 2017) Comparative studies on soft skills were also carried out by researchers (e.g. Crawford, Lang, Fink, Dalton & Fielitz, 2011; Abdul Malek, Nabilah, Abdul Malek, Sidek, Wan Marzuki, Joharry, Lihanna, Jamaludin, & Hamdan, 2012; Ridzwan, Malik, Hanapi, Mohamed, Hussain, & Shahrudin, 2017). However, all the aforementioned research had focussed on aspects of soft skills among students at higher education institutions that prepare these students for their relevant workplaces.

With regards to teaching approaches, cooperative learning is a planned systematic instructional strategy where a small group of

students work together to achieve a common aim (Shafiuddin, 2010). Students learning can be enhanced if they work cooperatively with others (Johnson & Johnson, 1975; Davidson, 1990).

The use of cooperative learning in Mathematics classrooms allows for students to listen, share ideas and question one another's thinking and it provides opportunity for higher level thinking and questioning among students (Remillard, 2015). Group problem-solving can be used to stimulate students to apply their mathematical thinking skills (Artzt & Armour-Thomas, 1992). Teachers should structure activities in ways that allow students to explore, explain, extend, and evaluate their progress (National Research Council, 1999). Teaching should build on students' emerging capabilities for increasingly abstract reasoning, including: thinking hypothetically, comprehending cause and effect, reasoning in both concrete and abstract terms (Protheroe, 2007).

In a study on classrooms at a small, private school in Central Washington State, Remillard (2015) reported that cooperative learning groups have a positive effect on students' overall interaction with each other leading to positive increase in student overall understanding and problem solving. It was also found that, overall, the students had performed higher on their test, built greater relationships with their classmates and enjoyed working in cooperative groups which led to a keener positive impression about mathematics. The National Center for Educational Achievement (NCEA, 2009) researched on higher performing schools in California, Florida, Massachusetts, Michigan, and Texas and found that in terms of teaching strategies, higher performing middle and high schools use that resulted in a high level of student engagement; demand higher-order thinking; follow an inquiry-based model of instruction – including a combination of cooperative learning, direct instruction, labs or hands-on investigations, and manipulatives; connect to students' prior knowledge to make meaningful real-world applications. To foster an effective environment for higher-order thinking in mathematics classroom, Protheroe (2007) suggests that students should be provided opportunities to: (i) actively engage in doing mathematics (ii) solve challenging problems (iii) make interdisciplinary connections (iv) share mathematical ideas (v) use multiple representations to communicate mathematical ideas, and (vi) use manipulatives and other tools.

Fosnot (2005, p. 10) asserts that “as learners investigate together, it becomes a mini- society – a community of learners engaged in mathematical activity, discourse and reflection. Learners must be given the opportunity to act as mathematicians by allowing, supporting and challenging their ‘mathematizing’ of particular situations. The community provides an environment in which individual mathematical ideas can be expressed and tested against others’ ideas. ... This enables learners to become clearer and more confident about what they know and understand.” According to (Greenberg & Nilssen, 2014), research shows that schools should be focusing on problem-solving and collaborative skills. However, there is a general believe that schools are not focusing adequately on nurturing collaborative skills (Greenberg & Nilssen, 2014). Inherently, to better promote collaborative skills, educators should offer an experiential, constructivist education, new methods of assessment, greater leadership, and also change their approaches to teaching (Greenberg & Nilssen, 2014).

Malaysian Ministry of Education has enhanced primary schools mathematics curriculum by focusing on the balance between the acquisition of mathematics concept, thinking skills and application of problems in everyday lives via teaching and learning of mathematics problem solving (MOE, 2012). Wagner (2008) suggests that the 21st Century education system must produce learners who are knowledgeable, able to think critically and creatively, possess leadership and collaboration skills, able to evaluate and analyze information, and be able to communicate effectively. Subsequently, policy makers, curriculum managers, parents and other relevant stakeholders need to come together collectively to help develop and nurture aspects of cognitive skills as well as soft skills, among the young learners to guarantee that they can compete in the global market.

Consequently, teachers play a significantly important role in providing appropriate learning environments that match the students’ ability and capability to learn mathematics problem solving. Teachers should be inspired to improve their way of teaching by relying less on teacher-centred instruction (Umugiraneza & Bansilal, 2017) but instead to orchestrate teaching and learning environments that provides opportunities for active learning and engagement to take place. It is within these environments that lay the opportunities for mathematics

teachers to inculcate and support the development of soft skills among their formal interactions with their students in mathematics classrooms.

PROBLEM STATEMENT

There was a decline in Malaysia's mathematics performance in the Trends in Mathematics and Science Study (TIMSS) within the period of 1999 and 2011. In 1999, only 10% of the TIMSS' participants achieved the highest level. Notably, the mathematics achievement in TIMSS for the years 2003 and 2007 were 6% and 2% respectively (MOE, 2012). These low percentages were indicative that some students in Malaysia were incapable to organize and draw conclusions for information, make generalization and solve non-routine mathematics problems (MOE, 2012). There was also evidence of Malaysia's decline in TIMSS' mathematics achievement compared to other countries. Its position was as follows: 16 (1999), 10 (2003), 20 (2007), and 26 (2011). As for the average scores, the declining trend was: 519 (1999), 508 (2003), 474(2007), and to 440 (2011) where a score of below 500 is considered very low.

TIMSS assessed students' proficiency within different cognitive dimensions, namely remembering knowledge, applying knowledge in problem solving, and ability to reason in problem solving. Hence, seemingly, Malaysia's students are incapable to perform well in the three aforementioned dimensions. Additionally, this assessment provided evidence of poor skills which are analytic reasoning, application and capability for continuous learning. These skills are the higher order thinking skills which constitute the basics of soft skills that are very much needed in today as well as future's workplaces.

It is therefore appropriate and relevant that soft skills are given proper attention during early years of formal schooling. Teachers ought to provide learning environments and opportunities for young learners to begin experiencing and learning about soft skills in the classrooms, and mathematics classrooms are no exceptions here. Teachers' words or talk, actions, and behaviors in classrooms are construed by students and affect their interpretation and learning (Ruzlan, 2006). We believe

that by exploring the sort of talking, choice of words, or instructions that teachers indicate while guiding their students to perform tasks or activities in the classrooms will be evidence of teachers' intention to inculcate soft skills among their students. Noteworthy, Schulz (2008) mentions that what and which soft skills exactly is in question because soft skill differs from context to context.

PURPOSE OF THE STUDY

The objective of the study was to explore teachers' verbal indications (teachers' talk) towards inculcation and development of soft skills among their pupils in primary schools' mathematics classrooms. This study is part of a broader ongoing study that explores the characteristics of teaching and learning environments within mathematics classrooms in daily national primary schools. This paper intended to provide a glimpse into two mathematics teachers' oral or verbal indications in their classrooms that could be interpreted as their intentions towards providing opportunities for their pupils to develop and refine their soft skills.

METHODOLOGY

This study employed a qualitative case study research design (Merriam, 2009) where cases of mathematics teachings in classrooms by four purposively selected teachers from four randomly selected primary schools in the northern region of Peninsular Malaysia were observed to explore the existence of evidence for teachers' indications to inculcate the development of soft skills among their students when teaching problem solving in mathematics. All the selected teachers had teaching experience of more than five years. Data was collected using non-participative observations, in-depth retrospective one-to-one interviews, and documents since affective aspects such as attitude, feelings and values are involved. Nevertheless, this paper only reports findings based on two observed lessons from two different schools. The teachers reported within this paper are PMT1 and PMT4. During the non-participative observations (Creswell, 2014), one researcher had taken field notes and one was given the task to videotape the

lessons. The lessons, carried out in 2016), were fully transcribed and analyzed thematically (Clarke & Braun, 2013).

Research participant PMT1 (Primary Mathematics Teacher 1) was a 42 year old female who held a Diploma in Education specializing in Mathematics Education. She had 15 years of teaching experience and has been teaching primary three, four and five in her the school. On the other hand, PMT4 (Primary Mathematics Teacher 4) is a 32 year old male teacher who also held a Diploma in Education and like PMT1 specializing in Mathematics Education. PMT4 had 10 years teaching experience when he was interviewed.

During the face-to-face retrospective reflexivity interviews (Attia & Edge, 2017), the teachers were shown the videotaped lessons and were asked to recall the teaching experiences and provide justifications for their classroom pedagogical approaches and their thoughts when executing the approaches and actions.

Towards the end of the interview sessions, the researchers had recapped the noted points in the field notes to ensure that the responses were exactly what the teachers had said. This, in a sense, was a way to ensure the quality as well as the trustworthiness of the data (Creswell, 2014). The interviews were fully transcribed and the text or verbatim were shown to the teachers to confirm the correctness of their responses. Again, this peer reviewing action was to ensure the reliability of the transcription The transcribed data was next thematically analysed (Clarke & Braun, 2013) to identify the themes with regards to evidence of teachers' intentions, explicitly or implicitly, to inculcate soft skills during the implementations of teaching and learning activities in the teachers' mathematics classrooms.

RESULTS

Lesson on Money

The topic taught was "Money". PMT1 had begun her lesson by asking her students 'Why is money important in our lives?' Table 1 shows the teacher talk while implementing this activity and the interpretation we drew from the analyzing the teacher's talk during the one-hour lesson.

Table 1

Excerpts of PMTI classroom talk and justifications

No.	Teacher Talk	Teacher's Intentions
1.	Teacher: Money is very important. Why?	Teacher asked open question to trigger critical and creative thinking among the students.
2.	[One pupil responded by saying "Buy things!"] Teacher: Buy things! What else? [Another pupil responded by saying "Buy things that we need!"]	Teacher asked contingency / probing in nature question that allowed further thinking among students.
3.	Teacher: We have seen money from our country ... we already learned about money from our country... there are paper money and coins. Today we are going to see money from countries outside Malaysia ... money from country very near us? Our neighbour? [Chorus response from students: "Thailand!"] Teacher: Other than Thailand... what countries are our very near neighbours? [Chorus response from students: "Singapore"!] Teacher: What else?	Teacher asked open question to trigger critical and creative thinking among her students (probing to allow for further thinking among her students).
4.	[Teacher showed an example of Malaysia note in front of the class] Teacher: Haa... this one from which country? Do you know from which country? Which country? [Chorus response from students: Malaysia !] Teacher: Ooo.. you can recognize it! You always carry it, right? This is our country's money...right? It has 'Bank Negara Malaysia' written on it. Can we use it overseas?	Teacher asked open question to trigger critical and creative thinking among the students. Teacher asked open question to trigger critical and creative thinking among the students.

(continued)

No.	Teacher Talk	Teacher's Intentions
5.	Teacher: Can we use it in Thailand? [Pupils chorus response: Can!] Teacher: It can be used but sometimes it cannot be used. Why do you think so?	Teacher asked probing questions to allow for further thinking among her students.
	[A pupil responded by saying "because some sellers prefer Malaysia's money and some do not]. Teacher: Ok! Can we use it in Singapore? [Pupils: Cannot!] Teacher: So what do we need to do then? [Pupilss: Change!] Teacher: Change what? [Pupils: Change to Malaysia money!] Teacher: Where can we change the money? [Pupils: Airport!]	Teacher provided open question to trigger critical and creative thinking among the students.
	Teacher: This money is from Indonesia. What is its currency? [Pupils: Rupiah!] Teacher: How many Rupiah is this? [Pupils:Ten thousands!] Teacher: Are we rich with this ten thousand? Is it the same value with our money? [Pupils: No!]	Teacher asked open question to trigger critical and creative thinking among the students.
	Teacher: Who can tell me what other things can we see on notes from other countries?	Teacher asked probing questions to promote critical thinking; and also provided opportunities for enhancement of communication skill among students.
	Teacher: In a short while I want you to sit in groups. You will need complete the worksheets in your respective groups.	Teacher provided opportunity for interaction / teamwork / collaboration among the students.

(continued)

No.	Teacher Talk	Teacher's Intentions
4.	Teacher: Ok! Group one who is the leader? Put up your hand! [Some pupils responded: Me!] Teacher: Don't tell me that everyone wants to be the group leader... now quickly discuss and decide...quickly discuss now! ...	Teacher provided opportunity for development of leadership skills among her students.
5.	Teacher: Ok! Sit in your own group! Now I want the group leaders to check every group member's work.	Teacher provided opportunity for her students to develop their leadership skills.
6.	Teacher: The purpose of forming groups is to allow you to discuss what you do not understand in your respective group... what you know and what you don't know..... Now discuss question b... If he is a business man, why must he have money? Pay what? For what? Discuss in your groups.	Teacher provided opportunity for her students to develop tolerance; acceptance; cooperation; collaboration; and to solve problem in groups.
7.	Teacher: Ok! Good! Be quick! I want all groups to present. Are all the groups ready?	Teacher provided opportunity for students to develop their communication / interaction skills.
8.	[A pupil read aloud: A Singaporean; Profession as a singer; Currency: Dollar] Teacher: Why does a singer needs money? [A pupil responded: To buy musical instruments]. Teacher: Ok! To buy musical instruments! Any other possible answers?	Teacher provided open question for students to think critically and creatively.
9.	[A pupil read aloud: Nationality: UK; A student; Currency: Dollars]. Teacher: Why do students need to have money? [Pupils: To buy daily needs!]	Teacher asked open question to promote critical and creative thinking among her students.

(continued)

No.	Teacher Talk	Teacher's Intentions
10.	[A pupil read aloud: Indonesian; Occupation: Domestic helper; Currency: Rupiah. Teacher: Why does a domestic helper needs money? [Pupils: To buy daily needs!] [Pupils: Send money back home...to her mother or family!] Teacher: Any other possible answers? [Pupils: To buy things for cleaning the house!] Teacher: So today we have learned about some examples of currencies use by other countries. The countries near to us. So as homework for today... you must search on the internet ... or from other sources... like books, magazines ...give six different currencies and the pictures as well to your group members.	Teacher asked open questions to provide opportunity for her students to think critically and creatively. Teacher provided opportunity for her students to solve problem and/or seek information to solve problems.

PMT4 had engaged in question-and-answer session during the teaching and learning process to determine the pupils' prerequisite knowledge with regards to two-dimensional shapes. Table 2 shows some of the excerpts of PMT4's teaching episode that focused on the topic 'Shape'.

Table 2

Excerpts of PO4 classroom talk and justifications

No.	Teacher Talk	Teacher' Justifications
1.	Teacher: OK. What did I just give you? What is it? [Pupils: Blank paper!]	Teacher asked open question to trigger critical and creative thinking among the students.
2.	Teacher: Blank paper! What paper is it? [Pupils: Drawing paper].	Teacher asked open question to trigger critical and creative thinking among her students (probing to allow for further thinking among her students).

(continued)

No.	Teacher Talk	Teacher' Justifications
3.	Teacher: Drawing paper! What shape is this paper? [Pupils: Square shape!]	Teacher asked the question to allow pupils to provide the correct terminology for the shape.
4.	Teacher: Is it a square or is it a rectangle? [Pupils: Square!]	Teacher asked closed question to determine pupils' knowledge of other basic geometric shape.
5.	Teacher: Other than squares, what other shapes do you know? [Pupils: Triangles, oblongs!] Teacher: Triangles! Oblongs! (Teacher repeats pupils' responses).	Teacher asked closed question to determine pupils' knowledge of other basic geometric shape

The inquiry-discovery approach used by PMT4 during the teaching and learning activities had provided opportunities for the pupils to choose and produce the desired design. They were free to use their individual prerequisite knowledge and creativity, as mentioned by PMT4 during the interview:

So when they did it themselves, then they can know... all those shapes...for examples the squares are related to their everyday lives. For example house...they can take the squares to be the house. All these we can use... perhaps like imagining the roof to be in a triangular shape...the pupils can now know. They can then relate their prerequisite knowledge with things that are in the surroundings. (PMT4, 2016)

CONCLUSION

Despite the fact that this paper analyses only two teachers' classroom teaching episodes, we still see significant characteristics within their teachings that indicated actions for the inculcation of soft skills among the young mathematics learners. Having said this and picking up on the teachers' justifications as indicated in Table 1, it can be seen that there were instances of indications for inculcation of soft skills, which include critical and creative thinking, collaborative effort, cooperation,

communication, team working, tolerance and leadership, that had taken place during the implementation of teaching and learning activities in PMT1's mathematics classroom. In a sense, PMT1 had indeed showed latent intention of inculcating development of soft skills among her students. Interestingly, PMT1 had elicited questions towards the development of some skills competence, for example to trigger critical and creative thinking, to establish competence in leadership skills by having group activities in the classrooms, and to provide opportunities for solving problems and making informed decisions.

PMT4, on the other hand, had resorted to the inquiry-approach by establishing question-and-answer sessions during her lessons with the intentions of enhancing critical and creative thinking among the pupils – an approach that utilized the pupils' prerequisite knowledge to be applied within real life situations. This shows that in sum, this study had partly succeeded to explore primary school mathematics teacher's actual intentions when orally communicating the lessons' content in their classrooms, or when giving the instructions to them. Hence, the employment of a retrospective interview approach to gather data to understand the teacher's purpose of verbal communication during their implementation of teaching and learning activities in mathematics classrooms has the potential of providing valuable and significant contributions towards enhancing pupils' development of soft skills during their early years of schooling as well as promoting quality mathematics teaching and learning activities. Additionally, the study had contributed towards understanding the extent of the mathematics teacher's realization of their contribution towards soft skills competence among the young pupils.

REFERENCES

- Abdul Malek, A. K., Nabilah, A., Abdul Malek, A. R., Sidek, M. N., Wan Marzuki, W. J., Joharry, O., Lihanna, B., Jamaludin, B., & Hamdan, S. (2012). A nationwide comparative study between private and public university students' soft skills. *Asia Pacific Educ. Rev.*, 13, 541–548.

- Artzt, A. F., Armour-Thomas, E., & Curcio, F. R. (2008). *Becoming a reflective mathematics teacher*. New York: Lawrence Erlbaum Associates.
- Attia, M., & Edge, J. (2017). Be(com)ing a reflexive researcher: A developmental approach to research methodology. *Open Review of Educational Research*, 4(1), 33-45.
- Clarke, V., & V. Braun V. (2013). Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The Psychologist*, 26(2), 120-123, ISSN 0952-8229, Retrieved from: <http://eprints.uwe.ac.uk/21155>, 2013.
- Crawford, L., Helliard, C., & Monk, A. A. (2011). Generic skills in Audit education. *Accounting education. An International Journal*, 20(2), 115-131.
- Crawford, P., Lang, S., Fink, W., Dalton, R., & Fielitz, L. (2011). Comparative analysis of soft skills: What is important for new graduates? <https://www.researchgate.net/publication/282853470>
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches (4th Ed.)*. Thousand Oaks, CA: SAGE Publications.
- Davidson, N. (1990). Small-group cooperative learning in Mathematics. In T. J. Cooney & C. R. Hirsh (Eds.). *Teaching and learning Mathematics in the 1990s. Yearbook of the National Council of teachers of Mathematics (NCTM)*. 52-61. Reston, Va.: NCTM.
- Diakiw, J. (2016). Good for kids, good for us: Socio-emotional skill development in the early years. *Our Schools Our Selves*, 25(2), 39-46. Retrieved from <https://diakiwsdigest.wordpress.com/2016/02/11/good-for-kids-goodfor-us/>
- Fosnot, C. T. (2005). Constructivism revisited: Implications and reflections. *The Constructivist*, 16(1), 1-17.
- Godwin, C. O. (2006). *Employability skills and students self-perceived competence for careers in the hospitality industry*. Unpublished doctoral dissertation. University of Missouri, Columbia.
- Green, F. (2015). The growing importance of generic skills. Retrieved from file:///C:/Users/dr%20ruzlan/Downloads/The_growing_importance_of_generic_skills.pdf
- Greenberg, A. D., & Nilssen, A. H. (2015). The role of education in building soft skills. *Wainhouse Research*. Retrieved from <http://downloads01.smarttech.com/media/research/wainhouse.pdf>

- Gani H., Mohd Sahandri, A., & Saifuddin, K. (2009). Generic skills needed to produce human capital with “first class mentality”. *European Journal of Social Sciences*, 10 (1), 1-11.
- Hanover Research. (2014). Incorporating soft skills into the K-12 curriculum. Retrieved from <https://www.hanoverresearch.com/media/Incorporating-Soft-Skills-into-the-K-12-Curriculum.pdf>
- Irfan, S., Roop, Z., & Mowadat, H. R. (2013). Learning styles of postgraduate and undergraduate medical students. *Journal of the College of Physicians and Surgeons Pakistan*, 23(1), 25-30.
- Ismail, I., Ahmad, A. R., & Awang, M. M. (2017). A study of soft skills among polytechnic students. *Open Journal of Social Sciences*, 5, 295-311.
- Johnson, D. W., & Johnson, R. T. (1975). Learning together and alone: Cooperation, competition, and individualization. New Jersey, USA: Prentice-Hall.
- Malaysia Ministry of Education (MOE). (2012). Sukatan pelajaran kurikulum bersepadu sekolah rendah Matematik. Bahagian Pembangunan Kurikulum: Kementerian Pendidikan Malaysia.
- Merriam, S. B. (1998). *Qualitative research and case study: Applications in Education, revised and expanded from case study research in Education*. San Francisco: Jossey-Bass Publishers.
- Mohd Fais, M., Iskandar, Y., Mohd Syuhaimi, A. R., & Aini, H. (2007). Penilaian kemahiran insaniah dalam projek tahun akhir jabatan kejuruteraan elektrik, elektronik dan Sistem Universiti Kebangsaan Malaysia. Seminar Pendidikan Kejuruteraan dan Alam Bina.
- Mohd Sahandri, G. H., & Saifuddin, K. A. (2009). Generic skills in personnel development. *European Journal of Social Sciences*, 11(4), 684-689.
- National Center for Educational Achievement (NCEA). (2009). *Core practices in Math and Science: An investigation of consistently higher performing schools in five states*. Austin, TX: National Center for Educational Achievement, National.
- National Research Council (NRC). (1999). *How people learn: Brain, mind, experience, and school*. Washington, DC: National Academy Press.

- Odette Umugiraneza, O., & Bansilal, S. (2017). Exploring teachers' practices in teaching Mathematics and Statistics in KwaZulu-Natal schools. *South African Journal of Education*, 37(2), 1-13.
- Protheroe, N. (2007). What does good Math instruction look like? *Principal*, 7(1), 51-54.
- Ramlee, M., Faridah, K., Ruhizan, M. Y., Norzaini, A., Hamidah, A. Y., Yamat, W., & Muhammad Sobri, T. (2008). K-Economy and globalisation – are our students ready?. *Jurnal Personalia Pelajar*, 11, 1-23.
- Remillard, H. A. (2015). *The effect of cooperative learning on middle school Math students*. Unpublished Master Thesis. Heritage University.
- Ridzwan, C. R., Malik, S., Hanapi, Z., Mohamed, S., Hussain, M. A. & Shahrudin, S. (2017). Skills and knowledge competency of technical and vocational education and training *Graduate. Asian Social Science*, 13, 69-77. Retrieved from <https://doi.org/10.5539/ass.v13n4p69>
- Robinson, J. S. (2006). *Graduates' and employers' perceptions of entry-level employability skills needed by Agriculture, Food and Natural Resources graduates*. Unpublished doctoral dissertation, University of Missouri, Columbia.
- Robles, M. M. (2011). Executive perception of the top 10 soft skills needed in today's workplace. *Business Communication Quarterly*, 75(4), 453-465.
- Ruzlan, M. A. (2006). *Teachers' indication and students' construal and knowledge of fractions: The case of Malaysia*. Unpublished PhD Thesis. University of Warwick, United Kingdom.
- Schulz, B. (2008). The importance of soft skills: Education beyond academic knowledge. *Journal of Language and Communication*, 2(1), 146-154.
- Shafiuddin, M. (2010). Cooperative learning approach in learning Mathematics. *International Journal of Educational Administration*, 2(4), 589-595.
- Stacie, P., & Adriane, B. R. (2009). Developing soft skills to manage user expectations in IT projects: Knowledge reuse among IT project managers. *Project Management Journal*, 40(4), 45–59.
- Toles, A. (2010). Effects of teaching strategies on student motivation to learn in high school mathematics classes, USA: Walden University.

- Wagner, T. (2008). The global achievement gap: Why even our best schools don't teach the new survival skills our children need- and what we can do about it. New York, NY: Basic Books.
- Zedeck, S., & Goldstein, I. L. (2000). The relationship between Industrial-Organizational Psychology and Public policy: A commentary. In J. F. Kehoe (Ed.), *Managing selection in changing organizations: Human resource strategies*. San Francisco, CA: Jossey-Bass.