Understanding Swimming Instructors' Knowledge Growth in Teaching Swimming to Children with Autism

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Abstract

Autism is a neurodiversity that leads to physical, psychosocial, health, mental and cognitive challenges. Children with autism are proposed to take up swimming as it is claimed to improve their social integration and physical strength besides preventing them from drowning fatalities. However, many swimming instructors are reluctant to teach autistic children as they lack training and teaching experiences. Thus, there is a need to investigate how swimming instructors develop their knowledge to teach children with autism so that this can be shared with other future swimming instructors who will work with autistic children. Based on purposeful sampling, two swimming instructors were chosen to be involved in this qualitative case study. Data collection involved a demographic questionnaire, observations, and semi-structured interviews. Braun & Clarke's (2006) guide was used for thematic analysis. Findings indicate that swimming instructors' knowledge growth involves
instilling trust among learners and learning about autism from many sources. It is suggested that special education programmes integrate this information in their curriculum to prepare future swimming instructors for children with autism in meeting the needs of this population.

Keywords: Autism; Swimming Instructor Knowledge Growth; Instilling Trust; On-going Learning

1. Introduction

According to American Psychiatric Association (2000, 2013), autism is a neurodevelopmental disorder and its diagnostic criteria encompass impairments in social interaction, communication skills, motor performance, and restricted and repetitive patterns of behaviour, activities and interests. The pervasiveness of autism is progressively increasing. World Health Organization (2021) reported that the pervasiveness is 1 in 270 people worldwide. In Malaysia, a report by Family Health Division in 2006 stated that an estimation of 1.6 in 1000 people suffered from autism, whereas in a newer study by Bakar and Bakar (2019), it was recorded that about 47,000 children were diagnosed with autism in Malaysia.

Individuals that are diagnosed with autism face many physical, psychosocial, health, mental and cognitive challenges (Gregor et al., 2018; Mannion & Leader, 2013). However, Aleksandrovic, Jorgic, Block and Jovanovic (2016), Ennis-Cole (2015) and Mische Lawson et al. (2019) have stressed that swimming is part of aquatic activities that can be stimulating and motivating to children with autism since swimming can allow them to increase their eye-contact, attention, social skills, balance, muscle strength and physical movement skills that can be then translated to land.

In an earlier study, Fragala-Pinkham et al. (2011) found that children with autism who participated in swimming activities had a significant improvement in the level of physical activity if compared to their counterparts who did not. Another study conducted by Mische Lawson et al. (2019) also discovered that children with autism who participated in swimming programmes showed (i) better physical movement after undergoing water orientations like blowing bubbles, putting body parts in the water and floating with support, and (ii) better stimulation for their sensory arousal as swimming provides consistent resistance, pressure and temperature. Next, according to this study, parents reported that by participating in swimming lessons, their children had increased strength and endurance.

A study conducted by Pan (2010) found that children with autism who underwent swimming programmes showed improvement in the hand grip, upper and lower extremity muscle strength, flexibility and cardio-respiratory endurance as effects of swimming towards musculoskeletal systems. In a later study, Chu and Pan (2012) discovered that children with autism who participated in swimming programmes also had the ability to conduct interactions with their friends. Also, Mische Lawson et al. (2019) asserted that children with autism who took swimming programmes were calm and displayed less stereotypical behaviours such as crying and throwing tantrums. Thus, swimming is regarded as useful for children with autism since it can enhance their social integration and physical strength.

Besides the aforementioned benefits, swimming is crucial to be learned by children with autism since drowning is a leading accidental cause of death for them (Peden, & Willcox-Pidgeon, 2020; Shavelle, Strauss, & Pickett, 2001). They have a higher risk of drowning because of their impulsiveness, lack of awareness of the lurking danger of water, poor judgment besides lacking in swimming skills. Swimming in this context refers to having water competency, i.e. water-safety awareness and basic swim skills to survive common drowning situations (Denny et al., 2019). Previous research has suggested that swimming lessons should be provided to this population to prevent them from drowning fatalities (Alaniz, Rosenberg, Beard, & Rosario, 2017; Guan & Li, 2017).

While research has informed about the positive physical, mental and social effects of swimming on children with autism and the need for it to be learned to prevent drowning, many swimming teachers remain apprehensive in teaching them. This can be understood as handling children with autism can be very challenging. According to Gray (1998), their behaviours may not be fully understood nor appreciated. They normally have lower social engagement and reactions than their normal peers (Kokina & Kern, 2010). They typically exhibit disruptive behaviours such as crying, shouting, hitting, kicking, pinching, throwing tantrums and yelling loudly during class activities (Ali & Frederickson, 2006; Ozdemir, 2008). Lacking in training and teaching experience with children with autism (Kraft & Leblanc, 2017), facing the challenge to adapt teaching styles to provide autistic children's specific needs and safe learning environment (Pearn & Franklin, 2013), as well as

experiencing their challenging behavioural and emotional disorders (Tant & Watelain, 2016) are some of the factors that have resulted in many swimming teachers feeling anxious to teach this population (Conatser, Block, & Gansneder, 2002).

A literature search in Scopus for the keywords "swimming teacher training" and "autism" yielded none; whereas a literature search in Google Scholar with the similar keywords yielded only one article suggesting how and what to teach for individuals working with children with autism. In the study, Jull (2012) outlined that clear instruction, 3-second prompt, praise, rapport, and visual supports are among the skills that swimming teachers or instructors should utilise when teaching swimming to children with autism.

Little empirical research on swimming teachers' training in handling children with autism has indicated that there is a need for study of this subject. This is also in line with Kraft and Leblanc's (2017) claim that swimming teachers have obtained limited training to plan lessons for these children and consequently suggested that there is a need to investigate further how swimming teachers develop their knowledge to teach children with autism. Besides, a study by Peden and Franklin (2020) also focussed more on the children's negative prior aquatic experiences which can result in water phobic behaviours but did not touch on the issue of what type of knowledge and how to attain it which is important to be embraced by swimming teachers to teach children with autism successfully. Rather than focussing on the negativity, the time has come for both autistic children and their swimming teachers to experience some feelings of success and achievement in learning and teaching swimming. Thus, this leads to the objective of the present study, that is to build on literature by exploring swimming teachers' knowledge development in teaching children with autism swimming. The findings can assist future swimming teachers working with swimmers with autism to means that can boost their preparedness in implementing water competency activities for children with autism, and thus help this population enjoy a better life equality. The main research question guiding this study is: How do swimming teachers develop knowledge to effectively teach swimming to children with autism?

2   Methodology

This study employed a qualitative case study approach as it had a small sample size of swimming teachers who taught children with autism. They were individuals with unique experiences and whose insights (Bakar, 2015; Creswell, 2007; Merriam, 2009; Zaidah Zainal, 2007) could be discerned in detail and learnt the most (Bogdan and Biklen,1992; Yin, 2009). This approach fitted well with the aim of the study: to explore and understand the swimming teachers' knowledge development in teaching swimming to children with autism.

2.1   Participants

After receiving the ethical approval from the researchers' University Ethics Committee, the primary researcher contacted a swimming pool in Penang, Malaysia. Five swimming teachers replied to the primary researcher and gave their consent to participate in the study. Two of the swimming teachers had been teaching for only four months and this did not fulfil the criterion of the number of years they had been involved in teaching autistic children swimming (Kraft, 2019). Eventually, taking into account the experiences, readiness to take part in the study, accessibility, and communicative skills, three swimming teachers were chosen based on purposeful sampling (Cresswell & Plano Clark, 2011; Bakar & Bakar, 2019; Palinkas, Horwitz, Green, Wisdom, Duan, & Hoagwood, 2015) to generate the most information about the phenomenon under study (Kaplan & Maxwell, 2005; Merriam, 2009). These swimming teachers had each (i) obtained the Bronze Medallion, a life-saving award conferred by the Life Saving Society Malaysia and this is the most basic and minimum criterion a swimming teacher must possess, and (ii) taught at least one child diagnosed with autism during the time of data collection. A table of swimming teachers' demographic information is provided in Table 1.

Table1: Swimming Teachers' Demographic Information

Swimming teacher	Lutfi	Jefri	Syazman

Age	44	48	26
Ethnicity	Malay	Malay	Malay
Sex	Male	Male	Male
Certification	Bronze Medallion, Bronze Cross, Certified Swimming Teacher & Certified Swimming Teacher for the Disabled	Bronze Medallion, Bronze Cross, Certified Swimming Teacher & Certified Swimming Teacher for the Disabled	Bronze Medallion, Certified Swimming Teacher & Bachelor of Sports Science and Coaching Science
Number of years teaching swimming	6	6	2
Number of years teaching swimming for autistic children	5	5	2

Note: Pseudonyms were used to retain anonymity

2.2   Researchers
The primary researcher, a PhD scholar in educational psychology and has also obtained a specialized training in teaching swimming as well as physical education, led the study. Three other researchers carried out other tasks such as carrying out observations, interviewing, collecting data, analysing data and preparing documentation. Two researchers have master's degrees in physiotherapy and another researcher is doing a master's degree in sports science psychology. The other has a PhD in civil engineering and was elected as a mentor for this research project.

2.3   Data collection and trustworthiness
The data collection process was divided into three phases. The data were collected using a demographic questionnaire, observations, and semi-structured interviews. In Phase 1, the demographic questionnaire served as a preliminary data source to obtain the swimming teachers' education background and experiences.
In Phase 2, as suggested by previous studies (Hall, 2013; Kraft & LeBlanc, 2018) two observations took place on two occasions for each swimming teacher to allow researchers to observe elements that swimming teachers might not be aware of or were not willing to talk about (Merriam, 2009). The primary and two other co-researchers were each assigned to observe a specific swimming teacher during his swimming lessons. Each swimming lesson took place for an hour and involved an individual lesson for a learner with autism. Field notes were written and compiled during the swimming lessons so that the swimming teachers' teaching strategies used to teach their learners with autism could be identified. Then, these strategies were inquired further by the researchers during the interviews with the swimming teachers in Phase 3 to know how these strategies were learned and used by them with the autistic learners.
In Phase 3, semi-structured interviews consisted of mainly open-ended questions (Merriam, 2002) were administered with each of the swimming teachers to enquire into why and how they used their specific teaching strategies with their autistic learners. Some of the interview questions included were:
(a)   Do you feel prepared teaching swimmers with autism after you have obtained your teaching certificate in swimming?

(b)   What are the resources that you refer to when you want to upgrade your knowledge about autistic learners?

(c)   Are there any challenges that you have found while teaching swimmers with autism?

These questions were validated by three expert qualitative researchers whose experience conducting qualitative research ranged more than five years.   While carrying out the interviews, probes for the swimming teachers' thorough explanations, feelings, experiences and thoughts as suggested by Taylor (2005) were also brought about. Where applicable, probes such as "please elaborate", "please explain" and "what do you mean by" as suggested by Cohcran and Patton (2007) were used.   All the interviews were conducted separately with each swimming teacher by the specific researcher who previously observed the former. The length of each interview was between 40 and 50 minutes at the time and date specified by the swimming teachers.   All the interviews were audio recorded and transcribed verbatim by the researchers who interviewed them.   Member checking was employed to ensure validity and reliability (Harper & Cole, 2012).   Member checking means that the interview transcripts were sent to the respective swimming teachers to read to ensure that what was transcribed was accurate. When the transcripts were affirmed accurate, the lead researcher took charge to read all of them in uninterrupted sessions to achieve a sense of totality (Moser & Korstjens, 2018) and possible themes that emerged. In addition, member checking of the interview transcripts and field notes containing swimming teachers' strategies used with learners with autism were all combined to triangulate the data and establish the trustworthiness of the collected data.

2.4   Data analysis

Analysis of swimming teachers' experiences in developing knowledge to teach swimming to children with autism was completed using Braun and Clarke's (2006) six-phase guide for thematic analysis. It is described as a method for identifying, analysing and reporting themes within data known as inductive analysis or bottom-up. Braun, Clarke and Weate (2016) argue that thematic analysis provides flexibility and abundance of meanings across data for researchers to make sense of them.   It is further argued as the most influential approach in social sciences (Maguire & Delahunt, 2017). The six-phase framework includes: (a) Becoming familiar with the data; (b) Generating initial codes; (c) Searching for themes; (d) Reviewing themes; (e) Defining themes; and (f) Writing up. The six-phase framework was not linear and the lead researcher had to move back and forth among the data since they were complex. For the first phase, transcripts were read several times to familiarise the data.   For the second phase, initial codes were generated and they characterised the swimming teachers' understanding of learners with autism and their experiences in teaching these children swimming. The initial codes among others were becoming aware that autistic children were different from other children and teaching them by repeating. After having a list of initial codes, the third phase was to reanalyse, search and sort the codes into candidate themes.   The candidate themes among others were: learning about autism through experiences; and learning about autism in a university course. The fourth step included the refinement of the candidate themes.   Next, the fifth step was to define, combine and further refine the candidate themes or to identify the quintessence of what each theme was about. When no new themes could be identified, the data were considered saturated.   The final step was to write the analysis in a "concise, coherent, logical, non-repetitive, and interesting account of the story the data tell – within and across themes" (Braun & Clarke, 2006; pg.23). An example of coding is given in Table 2.

Table 2.   The Example of Coding in the Second, Third and Fourth Phases of Thematic Analysis

Generating Initial Code 2nd phase	Searching for Candidate Theme 3rd phase	Review and Define Theme 4th and 5th phases
"There were students who did not pay attention and just wanted to play. After meeting	Learned about autism through talking to parents	

with this type of children for many times and after talking to their parents, I realised they were children with autism and needed special classes." (Jefri)		How an understanding of autism is gained
"I learned about what autism is when I learned about the supervision and management of Paralympians." (Syazman)	Learned about autism in a university course	
"With autistic learners, we have to repeat the same movement many times." (Jefri)	Repeat movement many times when teaching autistic children	
		Use repetitions
"They need to be taught a movement multiple times." (Syazman)	Repeat movement many times when teaching autistic children	

3   Results and Findings

Three main themes surfaced from the analysis of this case study. They aimed to answer the main research question by investigating three swimming teachers' experiences in developing their knowledge for teaching children with autism. The themes are written in the subsequent order: learning from more experienced swimming teachers, having consistent conversations with parents, and learning from experiences.

3.1   Learning from more experienced swimming teachers

The swimming teachers reported that learning from more experienced swimming teachers who had taught learners with autism longer than them was useful. Before working full time teaching swimming to autistic learners, Syazman joined the club he was working with as an apprentice for six months. He disclosed that despite learning about autism in a university course, the observations he made on his mentors helped him learn practical strategies to handle autistic learners. Because children with autism can be moody, he shared that his mentors had special sequences to calm them down.

Jefri attributed his mentors as facilitators who helped him expand his knowledge about learners with autism. Although he had

obtained a certification for teaching the disabled, he believed that each learner had special characteristics and therefore having discussions with his mentors would open the opportunity for him to know more about each of the learners:

"These children are unique. Each has different characters. So, discussing with people who have taught them for quite some time can help me learn about these children."

The discussions and relevant information shared enriched both his and the mentors' strategies:

"Our discussions and experiences, combined, allowed us to come up with new methods of teaching these learners."

Lutfi credited his mentor for sharing the notes and teaching journals the latter wrote about his autistic learners with the former:

"I can't thank him better. His teaching journals about each of his autistic learners are to me almost perfect. There are detailed notes, colours, and graphs for him and others to know about the advancement of each of the learners. It's like reading a reference book with very real subjects. I think my mentor is very passionate about teaching these children. And his passion is shared with me, which I think I learn quite a lot from. I have got myself a certificate to teach the disabled but

learning from him gives me the confidence to teach these children."

To Lutfi, his mentor and his notes were influential. The notes were regarded as authentic for Lutfi to develop his knowledge about teaching swimming to learners with autism.

It can be proposed that since basic courses that swimming teachers obtain may not offer them with enough guidelines to teach learners with autism, it is useful for the new swimming teachers to learn from and be guided by more experienced mentors.

3.2   Having consistent conversations with parents

The swimming teachers believed that consistent conversations with parents of autistic learners was beneficial. At the start of every class, the swimming teachers would briefly ask the parents to inform them about their children's food intake and ways of behaving before coming to class on that day so that the swimming teachers would be prepared for the children's possible tantrums and mental state, and to also switch strategies if needed. The swimming teachers usually met their learners once or twice a week. They explained that there was no number of specific sessions prescribed for each learner but most parents would send their children repeatedly after seeing that noticeable improvements had taken place in their children's behaviours when they underwent swimming classes. Lutfi explained that with each conversation with the parents, he tried to provide concise and objective suggestion to them.

To Jefri, parents' feedback about their children's performances was a reinforcement to his teaching strategies and a source of his happiness as a swimming teacher:

"I appreciate parents' feedback because I can then safely tell myself that my strategies with their children are correct. You can't be happier when parents actually tell you that after some swimming sessions, their children can sleep better, befriend others in school, not be disruptive, and be more loving towards their siblings. Their parents told me that even their teachers in school and day-care centres are happy with these changes. That really makes my day!"

Syazman deliberately prepared a specific portfolio for each learner. After his working hours, he would take an hour to reflect and write down information about all his learners. His communication with parents about the learners' progress or retrogression in terms of their behaviours and his teaching strategies were recorded for him to refer to for patterns, self-improvement, self-learning toolkit and reinforcement with future learners.

All three swimming teachers highlighted the importance of parent-teacher communication as a source of swimming teachers' knowledge development. In this two-way communication, useful information from swimming teachers can be conveyed to parents. Likewise, parent feedback about their children's progress can also be communicated for teachers to reflect, reinforce and strategize with their learners.

3.3   Learning from experiences

After handling a considerable number of learners with autism, all three swimming teachers emphasized the importance of learning from experiences. Their experiences informed them that having their autistic learners' trust is the most crucial for lessons to move well.

Lutfi affirmed the same idea of learning from experiences and instilling trust. He related that many learners who joined his classes for the first time would be too fearful to even immerse their faces in the water and directing them to do so in words made no sense to them. His experiences taught him that these learners follow instructions through mirroring or modelling, and through direct instructions which contain three words the most since they do not register elaborative verbal instructions. To immerse the face of each learner in the water, he devised a way by putting both his hands under the armpits of the learner. Holding the learner tight, both him and the learner went under the water together. Repeating this and other movements together subsequently granted him the trust he needed from his learners to teach them further.

Syazman asserted the importance of that learning from experiences and getting their cooperation:

"These children spend time mostly with their parents or teachers in school. So, it is understandable that they will have problem seeing the presence of strangers and dealing with changes. When meeting them for the first time, I can sense that they are confused: seeing me, 'the stranger', and they can show tantrums

or meltdown like crying. But I believe that just anyone in the world would want to be talked to and treated nicely. I do just the same. Before the start of the class, I'll call my learner's name, ask him or her what he or she has eaten, and create a small talk. It doesn't matter even if the child can't answer you because of his or her autistic limitations. My experiences told me to be patient and kind; they will then give you their cooperation."

Their experiences provided these swimming teachers with the understanding that instilling trust among their learners with autism, who are synonymous with showing tantrums at the slightest changes of routines or meeting strangers, is essential in getting these learners' cooperation.

4   Discussion

The exploration of three swimming teachers' experiences deepens the understanding of their knowledge development to teach swimming to learners with autism. Their three key determinants for knowledge development include learning from more experienced swimming teachers, having consistent conversations with parents and learning through experiences that instilling trust among learners with autism right at the outset is essential. The following part will discuss the significance of these determinants in the larger research perspectives in this field.

It is suggested that learning from more experienced swimming teachers is a valuable source in enhancing swimming teachers' knowledge to teach learners with autism. This is in conformity with a previous study by Katene (2018) that proposes information exchange and collaborative learning between beginning swimming teachers and their experienced peers are constructive for boosting knowledge. Favero-Nunes, Silva, Carvalho and Anjos (2020) also revealed that the exchange of information, conversations, collaboration with experienced colleagues, and support from them are substantial criteria for any teachers teaching learners with autism. Although their study did not deal with swimming teachers but with mainstream teachers whose perception about educational inclusion of autistic learners in classes with other typical learners was sought for, this study marks its importance. This is so as autism is a complex spectrum to understand and deal with; therefore learning from each teacher's experience and obtaining concerted

knowledge will grant other teachers better preparation to work with learners with autism. Boyer and Lee (2001) and Duffy and Forgan (2005) have long advocated the significance of mentoring mechanism for novice teachers of learners with autism. In the present study, all three swimming teachers were fortunate that their mentors were willing to share practical strategies in handling autistic learners in swimming lessons.

Another finding from this study is that swimming teachers develop their knowledge through having consistent conversations with parents. These conversations allowed the teachers to receive feedback from parents and concurrently provide feedback to the latter about their children's behavioural and health benefits. A study done by Lobo (2020) emphasized the importance of this kind of communication since parents can relate to swimming teachers their children's positive effects that transpire with regards to swimming lessons. One of the swimming teachers reported feeling contented when parents told him about the changes in his learners' behaviours such as being more friendly, calm and compliant. This is in line with the study conducted by Johnson, Bekhet, Karenke and Garnier-Villarreal (2021) who reported that parents conveyed to swimming teachers the transformations of the same kind among their children after undergoing swimming lessons. In addition, feedback is found to strengthen the swimming teachers' belief in the strategies they used to teach the autistic learners. This supports the study carried out by Azad, Marcus and Mandell (2020) who proposed that parent-teacher communication can improve teachers' belief and capabilities in handling learners with autism. Another discovery of the present study is teacher feedback for parents. One of the swimming teachers advocated parents to cut down on certain food he understood could hamper his learners' abilities in learning swimming. This suggestion was also apparent in a study done by Bakar and Bakar (2019) which reported that swim instructors had advised parents not to let their autistic children consume specific food. Azad, Kim, Marcus, Sheridan and Mandell (2016) termed this type of feedback as problem-solving communication teachers and parents should conduct if parents are to achieve specific goals for their children. Unfortunately, according to them this type of

communication rarely occurs between the two parties.

The last finding which emerged was swimming teachers developing their knowledge through learning from their own experiences. This resonates the finding reported by Blassingame (2011) who stated the importance of life-long learning experiences in accommodating to the learners' needs besides having the basic knowledge gained about autistic learners through their formal learning. All three swimming teachers gave the indication that they were aware of the autistic learners' characteristics, such as following strict routines, the tendency to be disruptive if the routines were changed, as well as learning through mirroring. However, it was their hands-on experiences, reflections on the experiences and applying their reflections to the same or different learners in subsequent classes that help them handle these children well. Their learning from experiences is exactly what Kolb (2014) terms as experiential learning which requires any learners -- in this case the swimming teachers are the learners -- to undergo the process of learning by doing, to give thought to what is done and to perfect the understanding before it becomes concrete. In addition, the novel contribution that the present study includes is the teachers' experiences of gaining their learners' trust which according to them was essential in handling and gearing their autistic learners towards learning swimming. With regards to this, it is implied that their experiences signalled that trust must be gained right at the outset. However, ways of attaining their autistic learners' trust varied: through indicating to the learners that teachers are leaders who must be followed, through teachers and learners executing swimming drills together, and through teachers treating the learners with kindness and patience.

5   Limitations

Limitations are addressed due for the scope of this study. This study was carried out during the Recovery Movement Control Order in early 2021 which witnessed no objections from the Malaysian government for children to use swimming pools provided that the standard operating procedures for sports activities in swimming pools were observed strictly. Having said so, the initial plan of the study to include more swimming teachers of autistic

learners from various swimming pools or sites had to be withdrawn as some swimming teachers were unable to conduct their swimming lessons with the cancellations made by worried parents when cases of Covid-19 in the country upsurged. Having a bigger number of swimming teachers from various sites would have presented more interpretations of knowledge development in teaching swimming to learners with autism. Therefore, future research with a similar methodology is recommended with a bigger number of respondents from various sites should the pandemic subside.

6   Conclusion

With the pervasiveness of autism among the world population, continual studies pertaining to the wellbeing of this quarter are called for. Since swimming has been recommended as an activity that can be beneficial to children with autism to enhance their social integration and physical strength, research on this topic could not be more apt especially when drowning is a major contribution to their accidental deaths. Unfortunately, swimming teachers are reported feeling apprehensive in teaching learners with autism considering their knowledge to teach and handle these children is inadequate. Thus, this study aimed at exploring the swimming teachers' knowledge development in teaching swimming to children with autism. The findings have shed an understanding of the importance of learning from mentors, having conversations with parents of children with autism and learning from experiences.

The swimming teachers expressed the value of engaging with more experienced counterparts as a means of developing knowledge. In this engagement, they observed practical strategies to keep the learners with autism calm and safe while learning swimming, discussed the unique characters of different autistic learners and saw the practicality of having a journal written about each learner.

The swimming teachers also conveyed that engaging in conversations with parents of autistic learners contributed to their knowledge development. Through conversations, the swimming teachers could obtain feedback about the children's behavioural and health benefits. Thus, strategies that worked best with learners could be maintained and

reinforced for future use with other learners. In addition, these conversations too were platforms for teachers to share suggestions with the parents to adopt certain practices for the wellbeing of their children.

Learning from experiences also marked its significance in the swimming teachers' knowledge development. It appeared that in accommodating to the autistic learners' need, basic knowledge obtained from formal education must be supported by the hands-on experiences. Then, consistent reflections on both knowledge and hands-on experiences were performed so that best practices for the learners could be executed. Uniquely, the swimming teachers emphasized that gaining autistic learners' trust in the teachers right from their very first meeting would mark the success of subsequent classes.

Through this discussion of swimming teachers' knowledge development about handling swimming classes with learners with autism, it is hoped that special education programmes held in universities and colleges will take these suggestions into consideration. Practical sessions for university final year students who are trained to work with learners with autism may be made longer for them to have confidence in handling these learners. Besides, these suggestions may also provide an enrichment in knowledge to swimming teachers who are already working with learners with autism. In studying about swimming teachers' knowledge development, there emerged unexplored characteristics that make a successful swimming teacher for learners with autism. Future research may want to explore a number of these characteristics that entail effective swimming teachers for learners with autism.

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