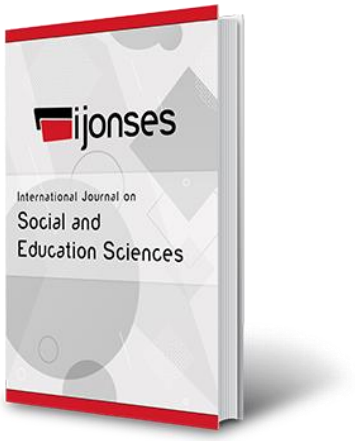

www.ijonses.net

Incorporating Jigsaw Strategy to Support Students' Learning through Action Research

Norafiah Haji Jainal
IBTE Sultan Saiful Rijal Campus, Brunei Darussalam

Masitah Shahrill
Universiti Brunei Darussalam, Brunei Darussalam

To cite this article:

Jainal, N. H., & Shahrill, M. (2021). Incorporating Jigsaw strategy to support students' learning through action research. *International Journal on Social and Education Sciences (IJonSES)*, *3*(2), 252-266. https://doi.org/10.46328/ijonses.75

International Journal on Social and Education Sciences (IJonSES) is a peer-reviewed scholarly online journal. This article may be used for research, teaching, and private study purposes. Authors alone are responsible for the contents of their articles. The journal owns the copyright of the articles. The publisher shall not be liable for any loss, actions, claims, proceedings, demand, or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of the research material. All authors are requested to disclose any actual or potential conflict of interest including any financial, personal or other relationships with other people or organizations regarding the submitted work.

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

International Journal on Social and Education Sciences (IJonSES) is affiliated with
International Society for Technology, Education, and Science (ISTES): www.istes.org

International Journal on Social and Education Sciences
2021, Vol. 3, No. 2, 252-266 https://doi.org/10.46328/ijonses.75

Incorporating Jigsaw Strategy to Support Students' Learning through Action Research

Norafiah Haji Jainal, Masitah Shahrill

Article Info

Article History

Received:
19 October 2020
Accepted:
26 February 2021

Keywords

Cooperative learning
Jigsaw strategy
Action research
Marketing

Abstract

The study explored the use of cooperative learning strategy in students' learning of Marketing for Tourism subject. The sample of this study consisted of 19 final year Diploma students from the Travel and Tourism services course. The study utilizes an action research approach, which involves the process of improving the method of teaching and students' learning through several repetitive cycles. The aim of the research is to investigate the use of cooperative learning by adopting the Jigsaw strategy in order to enhance students' understanding of the subject. The objectives of the study were achieved through the use of pre- and post-achievement tests, observations, semi-structured interviews and reflection. The findings of this study showed improvements in the students' test results. The outcome concurred with previous study findings that indicated the Jigsaw strategy supports better performance in students' learning. The students' perceptions of working together in a structured group improved as they enjoyed using the strategy, and the skills that contributed to the features of cooperative learning were developed throughout the process. The students also felt the need to rely on each other for information, being responsible, and by supporting each other improved their social and collaborative skills.

Introduction

The pedagogical practice of cooperative learning has increasingly attracted the attention of researchers. There is a large body of literature by Johnson and Johnson (2001) and Slavin (1996), which indicates that students improved both academically and socially when students are given the opportunities to interact with each other to achieve shared goals. Cooperative learning approach provides a significant gap when compared to teacher-centered learning. It enables students to work with their peers socially and practice the skills that are required for development (Dollard & Mahoney, 2010). Furthermore, using cooperative learning such as Jigsaw in the classroom have many effects such as improvements of academic performance, higher self-esteem and more positive views about school altogether (Winslow, 2020). Johnson and Johnson (1999) mentioned that when students worked cooperatively, they put more effort into achieving positive outcomes because of the supportive relationships with their peers in constructive ways.

Cooperative in general as described by the Search for Common Ground (2003) is a joint effort between parties

to determine facts where discussions are made face-to-face which encouraged participation among everyone. Moreover, respect is emphasized, decision is authorized by each of the members, the outcome need to be in satisfaction by everyone and the relationships are promoted through trust and being positive with each other. Being cooperative in classroom settings focused on students working together which could offer outcomes that enable the students' learning to be more conducive and productive. Stahl (1994) stated a few criteria are needed for cooperation to take place successfully, such as a clear set of learning outcomes, agreed targeted outcome by each student, clear set of instructions for the task, heterogeneous group set, sufficient learning time and the availability of recognition and rewards.

The use of cooperative learning strategies could assist students in the development of the 21st Century skills that comprised of collaboration, creativity, critical thinking and communication skills (Lai & Viering, 2012). There are several cooperative learning strategies available in the literature, such as think-pair-share, thinking-aloud pair problem solving, the three-step interview, STAD (Student Teams Achievement Division), Jigsaw, TGT (Teams Games Tournaments) and GI (Group Investigation) (Astarini et al., 2019; Azmin, 2016; Benek & Bezir Akcay, 2019; Damit et al., 2015; Duraman et al., 2015; Halimah & Sukmayadi, 2019; Kani & Shahrill, 2015; Lee et al., 2018; Lim et al., 2016; Mahari et al., 2019; Morera-Fernandez et al., 2020; Simpol et al., 2018; Sulaiman & Shahrill, 2015; Vijayan et al., 2016). Cooperative in general is defined as providing group work where everyone participates on a collective task to help each other in completing the task provided to them by the teacher (Barron & Hammond, 2008). This will produce a great output because students are working together (Ransdell & Moberly, 2003) in achieving the shared goal agreed among each and every team member. Similarly Akinbolola (2009) stated that cooperative learning is an instructional approach that allows students with different working ability to work in teams in order to accomplish a purpose. This is because the setting of the classroom for cooperative learning to take place allows the students to freely set themselves for discussions in complementing each other's understandings (Veenman et al., 2002).

Cooperative approach promotes better student performance because it allows the students to develop their capabilities in class through demonstrating their skills and competencies among their peers (Ransdell & Moberly, 2003). Cooperative approach promotes a two-way process because the students are able to gain support from their peers when they receive and provide suggestions as well as encouragement to work better (Akinbobola, 2009; Ransdell & Moberly, 2003). This manages the students to work cooperatively. As such, teachers need to make good preparation by giving careful attention to the planning of the lesson to ensure the overall process to the method works and the interactions among students are achieved (Barron & Hammond, 2008). Cooperative approaches provide positive learning among students because it uses a variety of learning activities in improving their understanding of a subject, indicating that cooperative approach is a successful teaching strategy (Akinbobola, 2009).

In order for cooperative learning to be successful, five important features are crucial to be developed over time (Felder et al., 2000). They are positive interdependence, individual accountability, face-to-face interaction, social skills and group processing (Benek & Bezir Akcay, 2019; Johnson et al., 1991; Jones & Jones, 2008). Explanations to each of the five important features of cooperative learning are explained as follows. Firstly,

positive interdependence is developed as the individual in the team rely on the other members for their ideas (Jones & Jones, 2008), thus promoting trust within each of the members to aid in gaining successful performance in their marks. Students develop a sense of responsibility in their learning, as they are aware that the success of their group lies within the success of each and every one of the team members. Slavin (1996) stated that when one student ignores to provide understanding of the given material towards others, each of the team members might fail and this contributes to a failure in the group work. With the realization of ensuring that each member in their team gained the same knowledge, it provides them with the motivation of having the team members discuss and teach the material as well (Slavin, 1996). It implies that the students in a team work together in the learning process.

Secondly, individual accountability involves the students being responsible for their own learning by doing things together in their own group (Johnson & Johnson, 1999) because they feel the responsibility to improve their own grades. Therefore, they tend to participate in the group work to ensure the group achieve good outcome for their own benefit (Jones & Jones, 2008). Several ways to structure the accountability of the students include providing them with individual test, selecting one person to represent the entire group or to have each of the students explain what they have learned (Johnson & Johnson, 1999). These provide the assessment for the teacher to understand the learning process of the students.

Thirdly, face-to-face interaction focuses on students promoting each other's success through discussions, asking questions and supporting each other in the completion of their task (Jones & Jones, 2008). Such interactions develop students to treat everyone with respect by valuing their opinions, staying focused and encouraging others to talk (Slavin, 1996). Johnson and Johnson (2009) stated that uninvolved students not contributing to the learning with others are silent students who need to be encouraged for the process of learning to be successful. Dialogues are crucial for the success of learning in terms of constructive feedback (Jones & Jones, 2008).

Fourthly, Jones and Jones (2008) stated that students might not have the necessary social skills to work effectively with others, therefore cooperative learning can encourage social and interpersonal development as students learn how to work together (Ferrer, 2004). Social skills may cover leadership, trust building, decision-making, communication and conflict management (Johnson & Johnson, 2009; Kani et al., 2014). And finally, group processing involves the cohesion within the team members that allow them to develop their teambuilding skills (Slavin, 1996). Engaging in the group process by identifying any problems relating to the members and solving them can prove that students are working together effectively (Johnson & Johnson, 1999) in order to achieve their shared goal. Reflecting on their cooperation during the group work will increase their quality of interpersonal relationship more (Jones & Jones, 2008).

Cooperative learning has proven to provide several benefits (Walmsley & Muniz, 2003) to the students' learning. One of the benefits is through the promotion of learning for every student and building heterogeneity among the students (Li & Lam, 2013). Cooperative learning allows each student of different learning abilities to work together in the same learning environment and simultaneously, being sensitive to their needs.

Furthermore, cooperative learning promotes academic achievement (Othman et al., 2012; Veenman et al., 2002; Zahara, 2010) of the students through the stimulation of critical thinking (Li & Lam, 2013). It encourages students to actively construct their own meaning from the information gained beforehand with any information they acquired (Michael, 2006). It enables students to find a relation between the theories taught with real-life problems and to analyze issues by finding a way to improve the situation. Li and Lam (2013) mentioned that cooperative learning improved the communication skills of the students in terms of managing conflicts. This is because students aimed to reach a same goal that requires them to work together (Veenman et al., 2002). Due to the same-shared goal, members in the group tend to deal with arguments efficiently, ensuring each and every member agrees to a same decision.

Jigsaw is one of the strategies of cooperative learning as it exercises the effort of working in teams for each of the students by reaching a favorable outcome (Halimah & Sukmayadi, 2019; Morera-Fernandez et al., 2020; Qiao & Jin, 2010; Vijayan et al., 2016). Jigsaw is formed when each student in a team becomes responsible for teaching other peers through a set of learnt materials (Ledlow, 1996). It reduces students' reluctance in participating in class discussions and shown to create active learning.

Consequently, the implementation of action research in the present study is to improve on the planning process of cooperative learning using Jigsaw. This is because few challenges may arise during the intervention such as increase in noise levels, social talk, unclear objectives, students' reluctance to contribute and the application may be seen not contributing to students' learning. Implementing action research allows in devising a better method to the strategy during the reflection process and a different loop may then be planned using the same strategy.

The Present Study

The aim of the study is to investigate the use of cooperative learning in students' learning in the subject Marketing for Tourism. The main objectives of the study are to investigate the use of cooperative learning for the teaching and learning of Marketing for Tourism; to adopt a learning strategy that can be practiced in the classroom; and to investigate how the learning strategy is useful to enhance students' understanding on Marketing for Tourism. Based on the rationale of the study, two research questions were developed. Firstly, how does the Jigsaw strategy support students' learning of 'Marketing for Tourism'? And secondly, what are the students' perceptions in using the Jigsaw strategy?

There is a large body of research on cooperative learning which focuses on every major subject at all grade levels (Slavin, 1996). However, there are still limited studies, which focus on Vocational and Technical Education subjects like Marketing. The findings of this research will be useful in improving other teachers' professional and pedagogical practices and more importantly, it can provide a better understanding for other instructors on the use of cooperative learning in their lessons. In addition, these findings could inform us about the extent to how cooperative learning could improve students' learning and to gain an understanding of students' attitudes towards learning with their peers.

Method

Action research is defined as a research that provides improvement to the professional practice of teachers and understanding of students' learning (Chou, 2010; Halim et al., 2010) by collecting and analyzing data related to the development of the classroom lessons (Nasrollahi et al., 2012). This implies that action research provides teachers with better ideas and insights on how to plan their lesson according to methods that can accommodate the students' learning to be more conducive. Teachers will be encouraged and supported with the application of action research, and they will be able to practice several learning strategies that can best suit the students' learning by improving the teachers' own teaching based on the action research outcomes (Chou, 2010). New approaches will always be adopted and applied to the students' learning (Yaman, 2010) to cater to which strategy provides better students' performance.

The action research model displayed in Figure 1 was adopted. The process of action research involves four different stages: (a) planning for the action of teaching guided by problems and issues identified during teaching and learning, (b) acting upon the planned lesson, (c) collect and analyze the data, and (d) reflecting upon the data collected by evaluating the outcomes of the lesson and to focus on what had been lacking throughout the process of teaching and learning. The process continues to a new cycle by going through the same steps on an improved plan of action.

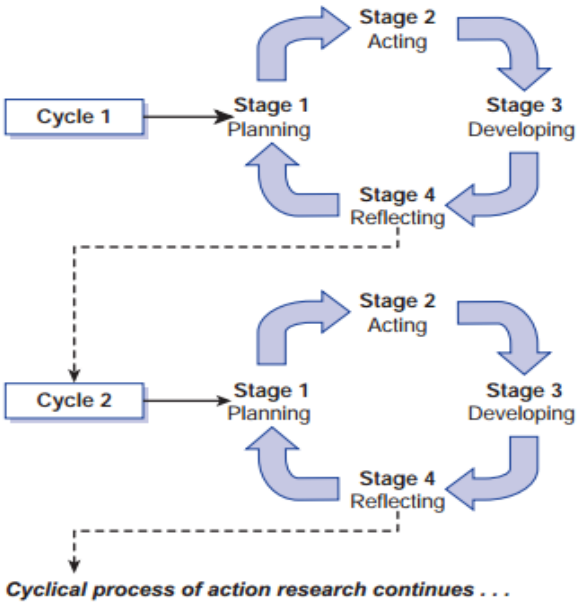

Figure 1. Action Research Process (Source: Mertler & Charles, 2011)

The detailed outline of the research design for the present study is displayed in Figure 2. During the planning stage of the action research, issues and problems were identified which contributed to the topic to be addressed. The issues and problems were in relation to the lack in students' understanding of the theoretical terms and poor learning cooperation. Following this, information in regards to the best-suited approach to be used was found by reviewing literatures on cooperative learning, and Jigsaw strategy was chosen. A plan was later developed in

order to construct how to implement the Jigsaw approach into the classroom setting.

A set of guideline was developed to facilitate the teaching strategy: (a) to choose a learning material to be covered of the particular subject, (b) to prepare questions for the pre- and post-achievement tests, (c) to prepare guided questions that iterates important points in the learning material, (d) to allocate students into an expert group, and (e) to allocate students in forming the Jigsaw group. After the plan was revised, the intervention took place. This is the second stage of the action research, which is the acting stage. The acting stage is done to collect and analyze date. Observation took place during the acting stage; pre- and post-achievement tests and interviews were done during the second and third stages and the analyses afterwards. During the final stage, the data collected were translated and compiled along with the researcher's own reflection about the intervention that took place. From the reflection, any matters that lack during the intervention need to be improved to accommodate the need for a better teaching and more conducive learning for students. This would supposedly be done for the next cycle of the action research.

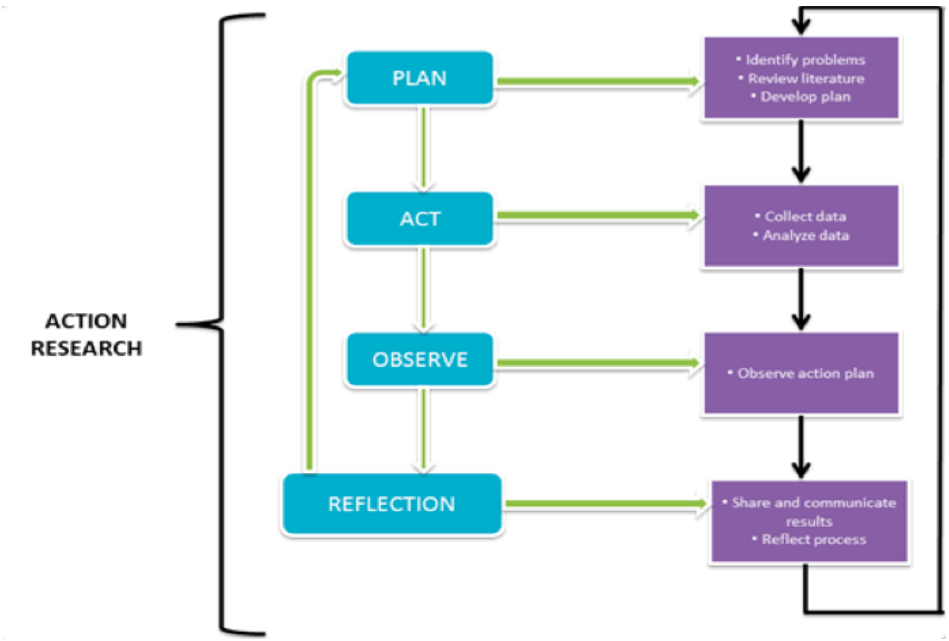

Figure 2. Step-by-Step Process of Action Research

Convenience sampling was used when choosing the participants. It encourages good access to the collection of data and the participants chosen provide a good sample in representing students who are undertaking the taught subject, Marketing for Tourism. The participants consisted of 19 final year Diploma students from the Travel and Tourism Services course of the Tourism Department at a Technical and Vocational College in Brunei Darussalam. The data collection used in the action research includes pre- and post-achievement tests, participation observation, semi-structured interviews and reflection. The different instruments were employed to answer the research questions developed earlier. A pre-achievement test was done before the intervention of the lesson. This was to determine the students' prior knowledge of the learning materials. The questions to the pre-achievement test were set-up according to the learning objectives of the lesson where definition, terms and strategies were taken into consideration. After the intervention, the post-achievement test was given out to

determine what students had learnt and understood. The post-achievement test questions similarly to the pre-achievement test were constructed based on the learning objectives. Both tests measure the changes in the performance of students' results. The tests were therefore administered to provide clarification on students' ability of understanding the learning materials better (Hsu, 2011) when implemented to the group of sample chosen. The allocated time for each test was 30 minutes and the test consisted of short answer questions based on the topic 'Marketing Mix'. There were only eight questions that were designed with reference to previous examination papers thus assuring the validity of the questions.

Another instrument to collection of data used was participant observation. Participant observation involves a researcher to participate and interact in the intervention in order to experience similar events as the sample (Oeye et al., 2007). The first author as the researcher needed to be involved with the students when the intervention was taking place. A colleague from the college observed the lesson during the intervention and the outcome of the lesson was discussed towards the end of the intervention based on an observation checklist. The checklist was discussed and constructed with the assistance of the colleague. Once the checklist was constructed, it was reviewed to confirm the categories listed in relation to the cooperative learning model were covered. Through the discussions with the colleague, the lesson can then be improved if there were deficiencies in the observed teaching areas.

The observation list was divided into several categories, which focused on (a) classroom organization, (b) classroom management, (c) presentation of content, (d) group facilitation, (e) monitoring, and (f) lesson summary. The categories were created based on the cooperative learning model, which includes individual accountability, mutual interdependence, fact-to-face interaction, interpersonal skills and self-assessment of team functioning (Asoodeh et al., 2012; Jones & Jones, 2008; Prince, 2004). Meanwhile, semi-structured interviews were conducted to collect in-depth and more focused information (Jennings, 2001) from the students. This was to provide a better understanding on the students' engagement during the Jigsaw intervention on the subject material. The interviews were done after the intervention and the post-achievement test were handed out. The questions for the interviews adopted Ghaith's (2001) study and rephrased accordingly to suit the intervention process. The five students who were interviewed comprised of those who directly participated in the study, both male and female students and between the age group of 17-19 years old. During the interviews, the questions asked focused on the intervention using the Jigsaw strategy and working in groups in general, on whether students enjoyed being in groups, if participation is encouraged together with whether decision-making were circulated. These formed the bases that complement the five features of cooperative learning.

The interview was conducted in the English Language but any responses in the Malay Language were also accepted. During the interview, the students were encouraged to express their own views without having the difficulty to translate it. Each interview took 10 to 15 minutes since there were only 12 questions. They were informed beforehand in the consent forms and verbally that the interview would be audio recorded. A hand phone was used for recording, transcribing purposes and as future reference in the writing and analyzing of data. This provided an advantage as loss of important information may be made during the interview process due to natural limitation in handling memory.

Results and Discussion

The first research question investigated how the Jigsaw strategy supports the students' learning of 'Marketing for Tourism'. The findings from the data collected through the pre- and post-achievement tests and the participant observation are used to answer this question. As shown in Table 1, there is a great improvement to the results of the test scores. The difference between the pre- and post-tests mean score is 6.2 and a positive achievement was achieved, thus illustrating that the Jigsaw strategy supports the students' learning. The positive result of the tests could have been affected by the small number of students taking part in the post-test in comparison to the pre-test. The number of students present during the test may have affected the results of the mean. However, this outcome could indicate that the Jigsaw strategy supports students' learning. In their study, Walker and Crogan (1998) found that there were positive effects to the academic performance of their students using the Jigsaw strategy because of the role-taking responsibility that students had to adhere to.

Table 1. Mean Result of Pre- and Post-Test Scores

	Pre-Test	Post-Test	Change
Mean Scores	6.7	12.9	+ 6.2

In order to further investigate the use of Jigsaw in the lessons, observations were used to gather data to answer the first research question. Jigsaw strategy does not only improve students' learning performance, but it similarly provides opportunities for individual students to develop their cooperative skills. Using the observation checklist, a colleague, who was the participant observer during the lesson, commented that students were cooperative amongst themselves. Through cooperation, these individual students performed better than working alone. When students collaborate, individual students' performance improved in comparison to students who work alone (Lai & Viering, 2012). In addition, the colleague observed that the teacher plays a vital role in facilitating the learning, in providing instructions prior to the start of the lesson in ensuring the learning process was understood, and monitoring if the students was on track with their responsibilities by listening and checking on each group during their discussions. The teacher needs to organize communicative activities without letting the students be on their own (Qiao & Jin, 2010). This provided the students with a clear idea on how the process for the learning strategy can take place so there will be no confusions. The names of each of the members were written down on the board so students can shift easily from expert to Jigsaw group. It was clear that the students should contribute, listen and encourage others to participate during the intervention. These were stated during the early stage of the intervention. The tables and chairs were arranged in a group setting manner so the students can have a better face-to-face discussion with their peers.

The provision of the learning materials (Qiao & Jin, 2010) in terms of the set of questions to guide students on what they need to cover when teaching their peers was also provided. This will allow the students to be confident on the materials to be taught to their peers since it is consistent with the learning outcomes of the lesson. During the Jigsaw intervention, the students showed positive interaction as they listened to their peers who were the expert, only interrupted when they did not understand what were taught and at times tried to consult the teacher to clarify what had been explained to them. These findings concurred with Gillies (2004)

who stated that students in cooperative learning were less likely to dominate, more likely to listen to each other and share ideas.

The second research question seeks to acquire the perceptions of the students in using the Jigsaw strategy using the semi-structured interview data. When asked whether the strategy helps the students to understand the topic easily, some students provided positive feedback. The students admitted to the need for everyone's involvement whilst in the Jigsaw group because each participant relied on each other in order to understand the whole topic (see Figure 3). Therefore, the Jigsaw strategy does promote positive interdependence among the students.

> *"…because we need to give each other opinion and…Opinion and give new ideas and we can correct the mistakes any mistakes*" (Student 1)
>
> "*Because everyone participated, nada [no] choice. Because if ia sendiri inda tau, payah jua ia kan explain rah urang tu [if the person doesn't know the topic, it'll be difficult to explain to others]*." (Student 3)

Figure 3. Transcripts for Students' Positive Interdependence

The Jigsaw strategy also promotes individual accountability among the students because they felt the need to make their peers understand the topic. The students felt that it was their responsibility in presenting the topic so that their peers understood and remembered what they have taught by aiding them through (see Figure 4). Meanwhile, face-to-face interaction is evident throughout the intervention as well. Students, in comparison to unstructured cooperative learning group discussion, preferred to use the Jigsaw strategy because there was more interaction amongst them. The interview responses in Figure 5 showed that students were able to participate more during the intervention, and importantly, there were additional opportunities in developing their decision-making skills.

> *"So if macam in a group atu [when in a group], macam rasa [it feels like] it's our group responsibility to sampaikan [present] the topic, the sub-topic, so macam [it's like] we want them to understand and we want them to ingat [remember], to remember apa yang kami ajar atu [what we have taught]."* (Student 1)
>
> *"Very much. We're the ones who have to help them to understand"* (Student 2)
>
> *"Yes, because I am the one who has to teach my friends about the topic, make them understand."* (Student 4)

Figure 4. Transcripts for Students' Individual Accountability

> *"Buleh lah [It's possible] for Jigsaw."* (Student 3)
>
> *"Yang baru ani [the latest method], yes…because kami semua inda faham and let everyone ajar mengajar [we couldn't understand but we let each other teach."* (Student 2)
>
> *"70% yes. Pasal kami [because we] debate, they explained their answers and lastly, we ended up with the right answer and then asked for clarification."* (Student 5)

Figure 5. Transcripts for Students' Interactions

Based on the students' interview responses, they also developed mutual understanding during the Jigsaw strategy due to a shared goal. This was evidenced when Student 5 mentioned, *"…we shared goal*". There were no significant negative effects as majority of studies of methods using group goals provided positive effects (Slavin, 1996). The students were also motivated to learn through the use of cooperative learning (see Figure 6).

> *"In a way yes, because it feels like a challenge for me that I could understand it better than other people considering no one knows about the topic."* (Student 4)
>
> *"The spirit of the group boleh [can] boost up our energy to study…"* (Student 1)

Figure 6. Transcripts for Students' Motivation to Learn

When the students are working together and groups are often being redesigned, they may be motivated and able to improve on their academic achievements (Slavin, 1996; Guneysu & Tekmen, 2010). Jigsaw provided the process of forming and allocating students into groups by letting them experience learning and teaching with different peers throughout the lesson. Hence, students became motivated as they gain new and better knowledge from each other. Although Jigsaw can improve students' learning, it still has its own limitation. It also depends on whether each of the members within the group is motivated and willing to participate in the activities. For example, Student 5 stated, *"It depends on my group. If they really want to work, then I put more effort into the role, but if they don't want, 'I don't want to hear what you say', I tend to …then I don't care."*

There were agreements from the students where they find it interesting to work in groups as it encourages teamwork, different student opinions that made it possible to develop better thinking as well as promoting interactions (see Figure 7), and they become more motivated to learn. Gillies (2004) stated that students in cooperative learning group were willing to listen to their peers more in order to share their own ideas and information. Moreover, the data shown in Figure 8 revealed that the students enjoyed using the Jigsaw strategy because they found it to be interesting due to several reasons.

> *"…because of different opinions."* (Student 2)
>
> *"Like I said, it is interesting compared to just listening. I don't like the part where I just have to listen, just write. I prefer doing activities"* (Student 4)
>
> *"I'm trying to develop this kind of thing, try to work better with other people since I'm more of a solo flyer so I want to improve myself with other people, team play work. Before, we only had to discuss and then that's it… The teamwork in the Jigsaw really works."* (Student 5)

Figure 7. Transcripts for Students' Views about Teamwork

> *"…it's fun and easier to understand."* (Student 2)
>
> *"Because everyone participated, nada [no] choice."* (Student 3)
>
> *"I do, in a way it is interesting because it is something which has never been done in classes."* (Student 4)
>
> *"Yes, that method is effective for me."* (Student 5)

Figure 8. Transcripts for Students' Views about Jigsaw Strategy

Based on the findings, it is evident that Jigsaw strategy supports students' learning as the students' achievement test scored positive, and they maximized each other's learning through working together. Moreover, students' attitudes towards the Jigsaw strategy provided a positive outcome as students enjoyed using the Jigsaw strategy in class, which they found to be interesting. This shows that Jigsaw promotes learners' participation and enthusiasm in learning (Qiao & Jin, 2010). Participation in class is enhanced when Jigsaw is introduced which held the students responsible and they become part of the whole learning process. As such, students felt they were important and opportunities were given to them (Dollard & Mahoney, 2010).

Conclusion

The study showed that cooperative learning supports students' learning in the Marketing for Tourism subject. The Jigsaw strategy promotes the basic elements of cooperative learning, which included positive students' interdependence, individual accountability, promoting interaction, appropriate use of social skills and group processing (Johnson & Johnson, 1999). The use of Jigsaw strategy in the classroom has ensured that the students work together by becoming more involved in promoting each other's learning and in participating equally. Gillies (2004) stated that as each student work cooperatively; it encourages commitment and working towards the same goal. Therefore, cooperative learning approach using Jigsaw matches the learning style of the students and can be employed as part of the teaching style in improving one's own professional practice. The students in this present study were keen on learning using the Jigsaw strategy because it provided them with a different learning environment in comparison to the traditional method of talk and chalk in addition to the unstructured group work. Subsequently, cooperative learning is useful in enhancing the students' understanding of the subject, as their performance based on the results of the achievement tests was positive. Students took the responsibility in teaching their peers to understand the learning material better, understood the content of the topic using their own examples to facilitate their learning, value each other's opinion and gained higher self-esteem.

Recommendations

There were several limitations during the process of the research. Improvements were possible as the study took on an action research approach. Since the present study was conducted on a small sample, future improvements may require the study to be conducted on another different sample of students learning the same unit, the Jigsaw strategy can be used on a different topic in the Marketing for Tourism subject or other disciplines, and the students' perceptions may be measured quantitatively if the sample used is much larger. Furthermore, in between the intervention, other minor limitations can be improved should the action research be further developed. The Jigsaw strategy needs to be structured by taking into consideration the student absentees. The expert or Jigsaw group may have odd numbered students, which indicate that a group may have missed out on the learning process. Therefore, group structuring is important when Jigsaw is implemented in the classroom. Likewise, the process of intervention may be improved by providing other than the guideline questions, such as recommended background readings for the students by assembling them beforehand and telling the students what they should study for their next class and to let them do their own research online in order for them to

understand the content better.

Cooperative learning is recommended for teachers to use as part of their teaching strategy because it provides ample evidence of support in students' learning. Students participate more and since members in a group consisted of heterogeneous ability, provided that teachers structure the group properly, it enhances students' learning with better understanding. As a cautionary advice, teachers who decide to use Jigsaw as their teaching strategy, they need to have adequate understanding of how the method works. Besides, teachers will need to have excellent resources and knowledge of why and how they want to incorporate this learning strategy into their teaching. By doing so, the learning process will be more organized. In addition, teachers need to emphasize to students the importance of equal participation, being interdependent and accountable, and to have cohesion with each team member. Teachers need to inform their students to take control of their learning by becoming actively involved. This would ensure the success of the cooperative learning being incorporated. Teachers will also need to provide students with the opportunity to evaluate their own ability during the group work to ensure that the five features to cooperative learning had been achieved.

The implication on the use of cooperative learning in future research may require several considerations. The tasks provided to students need to be more challenging in order for them to think critically as mentioned earlier on the need for the acquirement of the 21st Century skills. Future research may need to look at how students manage their groups when conflicts emerge. Consequently teachers may need to familiarize themselves with cooperative learning strategy in order to be more structured in fostering open communication between teachers and students.

Acknowledgements

The authors are grateful to the participants and teachers from the Tourism Department at one of the Technical and Vocational Colleges in Brunei Darussalam for their involvement in this study.

References

Akinbolola, A. O. (2009). Enhancing students' attitude towards Nigerian senior secondary school physics through the use of cooperative, competitive and individualistic learning strategies. *Australian Journal of Teacher Education*, *34*(1), 1-9.

Asoodeh, M. H., Asoodeh, M. B., & Zarepour, M. (2012). The impact of student-centred learning on academic achievement and social skills. *Procedia – Social and Behavioral Sciences*, *46*, 560-564.

Astarini, M. I. A., Juwita, L., & Setiawan, A. H. (2019). Comparison of learning method effectiveness between jigsaw and team game tournament on achievement and interpersonal relationship skill in nursing freshmen. *Indonesian Nursing Journal of Education and Clinic*, *3*(1), 63-70.

Azmin, N. H. (2016). Effect of the jigsaw-based cooperative learning method on student performance in the general certificate of education advanced-level psychology: An exploratory Brunei case study. *International Education Studies*, *9*(1), 91-106.

Barron, B., & Hammond, L. D. (2008). Teaching for meaningful learning: A review of research on inquiry-based and cooperative learning. Edutopia. Retrieved from http://www.edutopia.org/pdfs/edutopia-teaching-for-meaningful-learning.pdf

Benek, I., & Bezir Akcay, B. (2019). A new cooperative learning technique: Question jury. *International Journal of Research in Education and Science*, *5*(2), 681-708.

Chou, C. H. (2010). Investigating the effects of incorporating collaborative action research into an in-service teacher training program. *Procedia – Social and Behavioral Sciences*, *2*, 2728-2734.

Damit, A. H., Shahrill, M., & Roslan, R. M. (2015). Investigating the effectiveness of an assessment task through collaboration in a Bruneian classroom. *Mediterranean Journal of Social Science*, *6*(6 S1), 214-223.

Dollard, M. W., & Mahoney, K. (2010). How effective is the jigsaw method when used to introduce new science curricula in middle school science? *Ontario Action Researcher*, *10*(3). Retrieved from http://oar.nipissingu.ca/PDFS/V1033.pdf

Duraman, H. S. A. H., Shahrill, M., & Morsidi, N. M. H. (2015). Investigating the effectiveness of collaborative learning in using the snowballing effect technique. *Asian Journal of Social Sciences & Humanities*, *4*(1), 148-155.

Felder, R. M., Woods, D. R., Stice, J. E., & Rugarcia, A. (2000). The future of engineering education 11. Teaching methods that work. *Chemical Engineering Education*, *34*(11), 26-39.

Ferrer, L. M. (2004). Developing understanding and social skills through cooperative learning. *Journal of Science and Mathematics Education in S.E. Asia*, *27*(2), 45-61.

Ghaith, G. (2001). Learners' perceptions of their STAD cooperative experience. *System*, *29*(2), 289-301.

Gillies, R. (2004). The effects of cooperative learning on junior high school students during small group learning. *Learning and Instruction*, *14*(2), 197-213.

Guneysu, S., & Tekmen, B. (2010). Implementing an alternative cooperative learning method. *Procedia Social and Behavioral Sciences*, *2*, 5670-5674.

Halim, L., Buang, N. A., & Meerah, T. S. (2010). Action research as instructional supervision: Impact on the professional development of university based supervisors and science student teachers. *Procedia – Social and Behavioral Sciences*, *2*(2), 2868-2871.

Halimah, L., & Sukmayadi, V. (2019). The role of "jigsaw" method in enhancing Indonesian prospective teachers' pedagogical knowledge and communication skill. *International Journal of Instruction*, *12*(2), 289-304.

Hsu, Y. L. (2011). Engaging students' learning process in business management: A case study of activity-based teaching in hospitality marketing class. *African Journal of Business Management*, *5*(25), 10271-10275.

Jennings, G. (2001). *Tourism research*. Melbourne: John Wiley & Sons.

Johnson, D. W., & Johnson, R. T. (1999). Making cooperative learning work. *Theory into Practice*, *38*(2), 67-73.

Johnson, D. W., & Johnson, R. T. (2001). Learning together and alone: Overview and meta-analysis. *Asia Pacific Journal of Education*, *22*(1), 95-105.

Johnson, D. W., & Johnson, R. T. (2009). An educational psychology success story: Social interdependence theory and cooperative learning. *Educational Researcher*, *38*(5), 365-379.

Johnson, D. W., Johnson, R. T., & Smith, K. A. (1991). Active learning: Cooperation in the college classroom. Edina, MN: Interaction.

Jones, K. A., & Jones, J. L. (2008). Making cooperative learning work in the college classroom: An application of the "five pillars" of cooperative learning to post-secondary instruction. *Journal of Effective Teaching*, *8*(2), 61-76.

Kani, N. H. A., Nor, H. N. H. M., Shahrill, M., & Halim, R. H. A. (2014). Investigating the leadership practices among mathematics teachers: The immersion programme. *International Journal of Contemporary Educational Research*, *1*(2), 113-121.

Kani, N. H. A., & Shahrill, M. (2015). Applying the thinking aloud pair problem solving strategy in mathematics lessons. *Asian Journal of Management Sciences and Education*, *4*(2), 20-28.

Lai, E. R., & Viering, M. (2012). *Assessing 21st Century Skills: Integrating Research Findings*. Pearson.

Ledlow, S. (1996). Using jigsaw in the college classroom. Center for Learning and Teaching Excellence, Arizona State University.

Lee, C., Li, H-C., & Shahrill, M. (2018). Utilising the think-pair-share technique in the learning of probability. *International Journal on Emerging Mathematics Education*, *2*(1), 49-64.

Li, M. P., & Lam, B. H. (2013). Cooperative Learning. The Hong Kong Institute of Education, 1-33.

Lim, M. T. L., Shahrill, M., Mundia, L., Tengah, K. A., Tan, A., & Mahadi, M. A. (2016). An alternative approach to teaching: Implementing a cooperative learning strategy STAD at the junior college level. *Advanced Science Letters*, *22*(5/6), 1725-1729.

Mahari, Z., Jawawi, R., Amjah, Y., Husain, S., Petra, N. A., & Shamsu, L. S. (2019). Enhancing primary students' understanding of social studies through the Jigsaw approach. *Journal of Education and Learning (EduLearn)*, *13*(3), 425-430.

Mertler, C. A., & Charles, C. M. (2010). *Introduction to Educational Research* (6th ed). Pearson Education.

Michael, J. (2006). Where's the evidence that active learning works? *Advances in Physiology Education*, *30*, 159-167.

Morera-Fernandez, M., Morera-Mesa, A., Morera-Fumero, M. A., Hernandez-Perez, J., & Morera-Fumero, A. L. (2020). Student-student and student-teacher interactions through the jigsaw ii method in the teaching of the economics subject in secondary education. *International Journal of Educational Research Review*, *5*(2), 118-125.

Nasrollahi, M. A., Krish, P., & Noor, N. M. (2012). Action research in language learning. *Procedia – Social and Behavioral Sciences*, *47*, 1874-1879.

Oeye, C., Bjelland, A. K., & Skorpen, A. (2007). Doing participant observation in a psychiatric hospital – Research ethics resumed. *Social Science & Media*, *65*(11), 2296-2306.

Qiao, M., & Jin, X. (2010). Jigsaw strategy as a cooperative learning technique: Focusing on the language learners. *Chinese Journal of Applied Linguistics*, *33*(4), 113-125.

Othman, H., Asshaari, I., Bahaludin, H., Tawil, N. M., & Ismail, N. A. (2012). Students' perceptions on benefits gained from cooperative learning experiences in engineering mathematics courses. *Procedia-Social and Behavioral Sciences*, *60*, 500-506.

Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education*, *93*(3), 223-231.

Ransdell, M., & Moberly, D. A. (2003). A journey into cooperative learning with teacher education students, *Essays in Education 6*. Retrieved from http://www.usca.edu/essays/vol62003/ransdall.pdf

Search for Common Ground (2003). Cooperative problem-solving: A guide for turning conflicts into agreements. Retrieved from http://www.sfcg.org/resources/training/pdf/cpsguide.pdf

Simpol, N. S. H., Shahrill, M., Li, H-C, & Prahmana, R. C. I. (2018). Implementing thinking aloud pair and Pólya problem solving strategies in fractions. *Journal of Physics: Conference Series*, *943*(1), 012013.

Slavin, R. E. (1996). Research on cooperative learning and achievement: What we know, what we need to know. *Contemporary Educational Psychology*, *21*(4), 43-69.

Stahl, R. J. (1994). The essential elements of cooperative learning in the classroom. ERIC Clearinghouse for Social Studies. Social Science Education Bloomington IN. ED370881.

Sulaiman, N. D., & Shahrill, M. (2015). Engaging collaborative learning to develop students' skills of the 21st century. *Mediterranean Journal of Social Sciences*, *6*(4), 544-552.

Veenman, S., van Benthum, N., Bootsma, D., van Dieran, J., & van der Kemp, N. (2002). Cooperative learning and teacher education. *Teaching and Teacher Education*, *18*, 87-103.

Vijayan, V., Shahrill, M., Abbas, N. A., & Tan, A. (2016). Exploring the graphs of functions using the jigsaw approach. In M. Shelley, S. Alan, & I. Celik (Eds.), *Proceedings of the International Conference on Education in Mathematics, Science & Technology* (pp. 447-456). Bodrum, Turkey: Gaziantep University.

Walker, I., & Crogan, M. (1998). Academic performance, prejudice, and the jigsaw classroom: new pieces to the puzzle. *Journal of Community & Applied Social Psychology*, *8*, 381-393.

Walmsley, A. L. E., & Muniz, J. (2003). Cooperative learning and its effects in a high school geometry classroom. Connecting Research to Teaching. The National Council of Teachers of Mathematics.

Winslow, M. P. (2020). *The Jigsaw Classroom: Engaging Students with Cooperative Learning*. Encompass. Retrieved from https://encompass.eku.edu/swps_facultygallery/60/

Yaman, S. (2010). Conceptual change of pre-service teachers: A longitudinal action research study in ELT. *Procedia: Social & Behavioural Sciences*, 3, 227-236.

Zahara, A. (2010). A comparison of cooperative learning and conventional teaching on students' achievement in secondary mathematics. *Procedia: Social and Behavioral Sciences*, *9*, 53-62.

Author Information

Norafiah Haji Jainal
https://orcid.org/0000-0002-0072-2228
IBTE Sultan Saiful Rijal Campus
Simpang 125, Jalan Muara
Brunei Darussalam

Masitah Shahrill
https://orcid.org/0000-0002-9395-0798
Universiti Brunei Darussalam
Jalan Tungku Link, Gadong
Brunei Darussalam
Contact e-mail: *masitah.shahrill@ubd.edu.bn*