



International Teaching Aid
Competition 2023

Reconnoitering Innovative Ideas in Postnormal Times

iTAC

2023

iTAC 2023
INTERNATIONAL TEACHING AID COMPETITION
E-PROCEEDINGS

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PREFACE

iTAC or International Teaching Aid Competition 2023 was a venue for academicians, researchers, industries, junior and young inventors to showcase their innovative ideas not only in the teaching and learning sphere but also in other numerous disciplines of study. This competition was organised by the Special Interest Group, Public Interest Centre of Excellence (SIG PICE) UiTM Kedah Branch, Malaysia. Its main aim was to promote the production of innovative ideas among academicians, students and also the public at large.

In accordance with the theme "Reconnoitering Innovative Ideas in Post-normal Times", the development of novel ideas from the perspectives of interdisciplinary innovations is more compelling today, especially in the post-covid 19 times. Post-pandemic initiatives are the most relevant in the current world to adapt to new ways of doing things and all these surely require networking and collaboration. Rising to the occasion, iTAC 2023 has managed to attract more than 267 participations for all categories. The staggering number of submissions has proven the relevance of this competition to the academic world and beyond in urging the culture of innovating ideas.

iTAC 2023 committee would like to thank all creative participants for showcasing their innovative ideas with us. As expected in any competition, there will be those who win and those who lose. Congratulations to all the award recipients (Diamond, Gold, Silver and Bronze) for their winning entries. Those who did not make the cut this year can always improve and join us again later.

It is hoped that iTAC 2023 has been a worthy platform for all participating innovators who have shown ingenious efforts in their products and ideas. This compilation of extended abstracts published as iTAC 2023 E-Proceedings contains insights into what current researchers, both experienced and novice, find important and relevant in the post-normal times.

Best regards,

iTAC 2023 Committee
Special Interest Group, Public Interest Centre of Excellence (SIG PICE)
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REDEFINE READING COMPREHENSION WITH TARSIA: AN INNOVATION

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ABSTRACT

In the global context, students in Malaysia scored lower than the OECD average in reading, mathematics, and science in PISA conducted in 2018. In the field of English education, reading is perceived as a boring and complex process as well as one of the challenging components where students find it difficult to comprehend and tend to give up easily when they look at complex or longer text. Hence, the purpose of this paper is to describe how Tarsia is used to facilitate students' reading comprehension and to explore the effectiveness of Tarsia in improving students' collaboration and communication in ESL classrooms. By using the ADDIE model as the research model, 34 participants from lower secondary students in Setapak, Kuala Lumpur were selected based on convenience sampling. The significant impacts on students' reading comprehension were proven through pre and post-tests and a simple survey. TARSIA benefited the students in understanding the reading text easily and inculcating the elements of the 4Cs besides acting as useful teaching aid among teachers. TARSIA could potentially be game-based materials, designed for English reading classrooms for A2-B1 achievers. This language innovation aided collaboration and cooperative learning among learners, which is parallel to active learning. TARSIA, is indeed a great teaching tool that may assist ESL educators to enhance their students' reading comprehension since it is versatile, adjustable and user-friendly, despite a few limitations that can be improved. It also has a great potential for usage in language classrooms in assist Malaysia in achieving the goals set forth in its English Language Syllabus.

Hence, it is reasonable to conclude that TARSIA may have significant commercialisation potentials.

Keywords: ESL, Tarsia, reading, collaboration, communication

INTRODUCTION

The process of reading comprehension involves communication between the reader and the text. Through the use of prior knowledge and efficient reading comprehension techniques, the reader derives meaning from the text as they read (Alghonaim, 2020). This has linked to our PISA results in 2018. The result showed that Malaysian pupils mostly performed below the OECD average in reading, Maths, and Science (OECD,2019). Most pupils, who came from low-income families achieved at least Level 2 reading proficiency, representing 54% of them. Due to their poor reading comprehension abilities, they generally struggle to connect with lengthier and more complicated reading texts. This has caused the four language skills to be poorly acquired. However, those who scored Levels 5 or 6 on the PISA reading exam are proficient readers who can follow lengthy texts, understand abstract ideas, and distinguish between facts and opinions based on implicit clues. Consequently, Malaysia encourages the concerned parties to improve pupils' English language abilities, particularly reading comprehension, in accordance with the Malaysian Education Development Plan (PPPM).

Since students are facing difficulty in understanding complex and longer texts, they tend to give up easily when dealing with one. As a result, they lose their motivation and end up not enjoying reading and become passive learners in the process. This does not bode well since in both the primary and secondary English Language textbooks and *Dokumen Standard Kurikulum dan Pentaksiran (DSKP)*, students are targeted to master the necessary skills to become independent readers throughout their years of schooling. Thus, it is the teacher's responsibility to help the students in understanding their reading materials, cater to the students' needs and make the lesson less dreadful by considering students' different learning styles in planning their lessons and preparing lesson materials. Concerning this matter, this paper aims to design, develop and evaluate the use of TARSIA in facilitating students' reading comprehension and in improving students' collaboration and communication in ESL classrooms. The innovation part lies within the fact that previously it was used widely in mathematics (Koss, 2022), vocabulary (Jalok, 2019) and grammar (Mattheoudakis & Panteliou, 2022) whereby in this article TARSIA is utilised for reading comprehension skill.

Gamified Learning Theory

According to the theory of gamified learning, gamification design enhances academic

participation (Zaric, Roepke, Lukarov & Schroeder, 2021). It is based on Piaget's theory of brain development and can result in the activation of schemata and the retention of long-term memories. Jigsaw puzzles are a useful educational instrument that fall under the category of gamified learning (Cavalcanti, Valls, Contero & Fonseca, 2021). Its usage in language learning sessions is greatly influenced by the teachers. Students will move physically and cooperate in groups to solve the jigsaw puzzle, which can be seen as a remedy to this endemicity when used with reading comprehension tasks (Wulandari, Shofiyah & Kurniawan, 2022). Thus, using jigsaw puzzles in teaching can be perceived as a useful and student-centered tool for teaching reading comprehension strategies.

The Use of TARSIA in Language Classroom

TARSIA is a software package that enables teachers to create and customise engaging mathematical jigsaw puzzles to fit into their instruction (Koss, 2022). In this project, it is used in improving students' reading abilities. It is student-generated material and encourages group participation and increase the amount of students talk through discussion. Through the use of TARSIA in language classroom, students are exposed to a variety of questions to enhance their understanding of the reading texts. The elements of the 4Cs namely collaboration, communication, creativity, and critical thinking are promoted as well along with the 21st century elements. It creates interactive and interesting learning experiences and makes reading comprehension less daunting. It also employs the concept of versatility as it suits all levels of students since the teachers are free to choose any reading texts and generate questions in any way that they perceive as parallel with their instruction.

MAIN FINDING

Through the use of TARSIA, students were able to communicate and collaborate while also improving their reading comprehension. This can be proven based on the statistical result that showed below.

Table 1: Overall Information from the Implementation

		Paired Samples Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PRETEST	8.79	34	1.754	.301
	POSTTEST	10.56	34	1.133	.194

According to Table 1, the mean score of the pre-test of the 2 classes is 8.79, whereas the mean score for the post-test after the implementation of the TARSIA was conducted is 10.56.

Table 2: Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	PRETEST & POSTTEST	34	.746	.000

Table 3: Paired Samples t-test of the pre-and-post-test mean scores

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PRETEST - POSTTEST	-1.765	1.182	.203	-2.177	-1.352	-8.704	33	.000

Table 2 and Table 3 provide clear evidence of the effectiveness of TARSIA in improving reading comprehension. Results of the paired sample t-test show that mean scores differ before treatment ($M = 8.79$, $SD = 1.754$) and after taking treatment ($M = 10.56$, $SD = 1.133$) at the 0.05 level of significance, $t(33) = -8.704$, $n=34$, $p<0.05$, 95% CI for mean difference: -2.177 to -1.352, $r = 0.746$. On average, the score was about -1.765 points greater than before the treatment.

We can therefore conclude that there is a statistically significant difference between the pre-test and post-test scores, or between the scores before TARSIA is introduced and the scores after Tarsia is utilised in the class because the innovation administered was effective as students showed improvement in their comprehension.

Table 4: Descriptive Statistics on the Implementation of TARSIA in Language Classroom

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
I like this lesson	34	4	5	4.85	.359
The use of Tarsia/Jigsaw Puzzle made the lesson interesting	34	4	5	4.79	.410
This lesson improved my reading skills	34	3	5	4.65	.597
I paid full attention throughout the lesson	34	3	5	4.59	.557
This lesson helped me to understand the reading passage better	34	4	5	4.56	.504
Valid N (listwise)	34				

The survey findings that were presented to the students after the implementation session are shown in Table 6. Likert scale was used in this survey, with 5 as "Strongly Agree" and 1 marked "Strongly Disagree". Though these descriptive statistics statements were arranged from highest mean scores to lowest mean scores, we can see that the mean scores ranged from 4.56 to 4.85,

which is still high. Hence, it can be claimed that respondents strongly agreed with all of the statements. Most of the students liked this lesson as the statement got the highest mean score (M=4.85). This data also supported students' responses in 1 open-ended question, when they claimed that "This activity is very good. I like it. Make me excited and happy" and "Do more fun activities like this so we can play with our friends. mingle more". Some respondents claimed "I need more activities like this to improve my skills" and "I like the game. Easy for me to find the answer". These two statements are relatable with the 3rd and 5th survey statements, which are "This lesson improved my reading skills" (M=4.65) and "This lesson helped me to understand the reading passage better" (M = 4.56)

In addition to these findings, there are also recommendations made by the students on how TARSIA may be more effectively used in ESL classes. Firstly, respondent S6 proposed that TARSIA could also be done individually. For students with good comprehensibility, this will undoubtedly increase the challenges they face. In contrast, for A2 to B1 students who struggle with this skill, they require more time in finishing the task. In addition, respondent S16 said that it would more engaging if the students have access to videos or other visual aids while completing it. Another significant suggestion made by them is the implementation of TARSIA in grammar lessons as well to make the lessons more engaging and interactive

CONCLUSION

The design and development of TARSIA as the foundation of the study produced a positive effect on the teaching and learning of reading comprehension to secondary school students of lower to intermediate proficiency. Results of both pre and post-tests indicated significant outcomes as the learners experienced gradual progress in inculcating their reading comprehension skills. Learners' physical attachment to enhance their reading comprehension skills in accordance with their syllabus and applying the knowledge in the process of solving TARSIA boost their confidence in facilitating their reading skills. This has proven that TARSIA is a great teaching tool that may assist ESL educators enhance their students' reading comprehension since it is versatile, adjustable, and user-friendly, despite a few limitations that can be improved. It also has a great deal of potential for usage in language classrooms to assist Malaysia in achieving the goals set forth in its English Language Syllabus. For future study, the effectiveness of TARSIA may be explored in writing, speaking as well as in grammar lessons. Secondly, it is recommended that in the future, TARSIA is experimented on specific populations such as Orang Asli or children in vulnerable situations.

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