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iGen Digital Learners: Let's Collaborate via Coggle

Pavitthra Arulchelvan¹, Prathibarani Veramuthu², Perbinder Kaur Pajan Singh³, Melor Md Yunus⁴

[1]SJK T Kuala Terla, Cameron Highlands, Malaysia
[2]Beaconhouse Sri Lethia, Klang, Malaysia
[3]SK Seri Kelebang, Ipoh, Malaysia
[4]Universiti Kebangsaan Malaysia, Bangi, Malaysia
Email: pavitthra92@gmail.com, melor@ukm.edu.my

Abstract

The Forth Industrial Revolution emphasizes creativity skill in the demand of 21st century learning: requiring learners to be active and responsive. Therefore, this innovation is a switch from the traditional paper-pencil method to digital based learning; aiming to facilitate students in the primary and secondary schools to collaborate and respond actively by exploring effectively a variety of topics and skills through the pictorial module guidelines. Significantly, the integration of listening, speaking, reading, writing, grammar and language arts skills was ignited through fun and creative manners. This study involved 40 primary and 40 secondary participants from Klang, Selangor, Cameron Highlands, Pahang and Ipoh, Perak. The action research data were gathered through pre and post-tests, observations and survey questionnaires. It was evidenced that students were able to collaborate and brainstorm ideas clearly using Coggle. They sustained high level of attention, interest, active participation and engagement throughout the lessons. Observations revealed that students had the ability to expand the digital mind maps from pictures to words, phrases, sentences and paragraphs. It provided technology infused fun learning context which instilled and boosted students' self-confidence and kindle interest in using English Language communicatively through active knowledge construction. Hence, this innovation can be utilized effectively by educators throughout Malaysia due to its flexible features to enhance English Language learning and teaching.

Keywords

Active Collaboration, 21st Century Learning, English Language Digital Learning, Social Constructivism, Learning Equivalence Theory

1. Introduction

Digital learning in the Fourth Industrial Revolution is an everyday routine experienced by the 21st century learners around the world. Surprisingly, the Z-generation in schools has been researched to possess an attention span of only 8 seconds during learning process (Adobe, 2018; Vitro, 2018). Previous researches showed improvement in pupils' achievement by implementing collaborative learning and digital tools (Allyson, 2015; Ronald, 2014; Sangra & Gonzalez-Sanmamed, 2016). However, there is a need for research to find on how these collaborative learning through digital tools could retain pupils' attention while making them active in the classroom. Observing at how these digital learners learn, latest theories of learning with technology have been researched and developed. In this research innovation, learning equivalent theory (Anderson, 2016) and social constructivism (Secore, 2017; Tanggapan, 2018; Topolovcan & Matijevic, 2016) were merged to bring about the ultimate understanding of how they learn in classrooms. Assisted by digital technologies, they were able to make connection between content, peer and teacher.

Therefore, iGen Digital Learners: Let's Collaborate via Coggle is innovated to cater the needs of students' interest, attention, active participation, feedback to rectify errors and present ideas popped up in their minds. Coggle is a collaborative freeware mind-mapping tool that simplifies complex things. It allows real-time brainstorming, unlimited image and link upload, downloads, exports, comments and chats (Coggle, 2018). Based on the given topics and skills, learners searched for relevant content, expanded it by posting descriptions, questions and responses. Peers viewed and evaluated their Coggle diagram. They left opinions and corrective feedback in the message box. The feasible features of Coggle allowed students to insert images, videos, links, texts, comments, share through email and even download to save and print.

English has become a fun and interesting language to be learnt and used by the 21st century learners (Campbell, 2018). However, they face challenges (Khamkhong, 2018) in responding actively in the target language. Most of the time, they are passive towards learning and reluctant to respond during English lessons. This is due to utilization of unattractive and less effective learning materials. The learning approaches and techniques do not match their learning styles. This paper aims to investigate the effectiveness of Let's Collaborate via Coggle modules in enhancing the learning of English Language skills and identify its advantages in encouraging collaborative learning.

The problem stated above was evidenced in three schools in the demographic regions of Klang, Cameron Highlands and Ipoh. Research data revealed that 82.5% children learn better when they help their friends. Passive students become more active through collaborative learning (Tanggapan, 2018; Vitro, 2018) whereby it gives them the chance to be communicative with the material and their friends. Therefore, researchers had innovated Coggle, the collaborative digital mind mapping in learning skills of listening, speaking, reading, writing,

grammar, literature and Higher Order Thinking Skills (HOTS). Theories of learning through technology (Anderson, 2016; Vitro, 2018) proved that learners construct and grasp knowledge effectively. The innovation modules maximised students' engage-time within the stipulated period by brainstorming in groups, expanding ideas, responding to questions, making corrections and conducting presentations. The flexible features of Coggle allowed students to insert images, videos, links, and texts by elaborating them into branches of descriptions, questions and responses. They were able to share the completed diagram via email. Peers and teacher were invited to provide corrective feedback and add on points in the message box. Essentially, student-centred learning takes place with teacher becoming the facilitator, guiding wherever necessary. Researchers believe that involving students in digital learning collaboratively (Adobe, 2018; Secore, 2017; Topolovcan & Matijevic, 2016) enhances their interest, motivation, self-esteem, and belief in their abilities to present confidently.

2. Literature Review

Figure 1 shows learning equivalence theory's cycle of learning interactions between student, teacher and content introduced by Moore (1989). It is stated that the description of educational communications as being made up of student, teacher and content cooperation. In the aim to promote deep and meaningful learning, these possible interactions highly collaborate (Hyeyoung, 2015) to each other. The collaboration is between student-content, student-teacher and teacher-content. Student-content interaction helps student engage in learning by constructing knowledge independently. Teacher and student interaction ensures teacher plays the role as facilitator to foster learning. Teacher and content interaction focuses on how teacher uses the available learning content to instill learning. Brown (1994); Burns & Joyce (1997), states that the skill of speaking involves an interactive process of receiving and processing information which involves producing meaning.
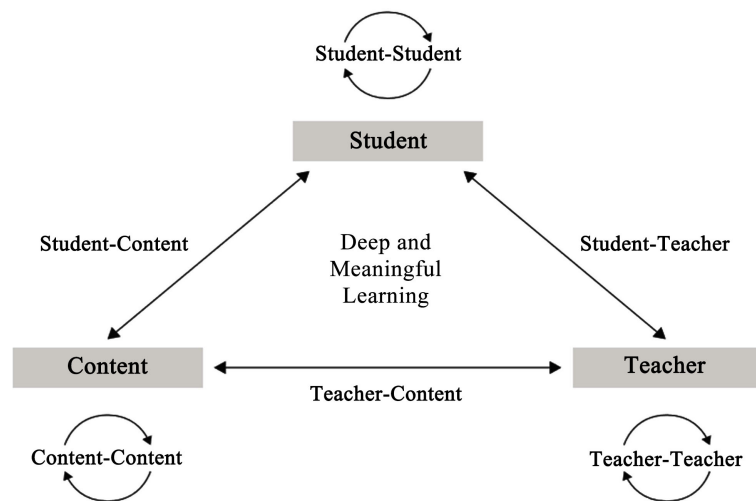

Figure 1. Learning equivalence theory.

While, Mandusic & Blaskovic (2015) explained social constructivism as a theory which allows individual knowledge construction such as project based learning. The theory of social constructivism is a few thousand years old and has contributed widely in attaining knowledge independently. Together, innovative and constructivism learning improves connectivity among students, teacher and content.

Collaborative learning is about two or more people learn or attempt to learn something together. It is about learning the sharing of authority and acceptance of responsibility among the group members for their actions (Amreet, Harun & Wan, 2013; Styati & Latief, 2018). It looks at attaining knowledge socially. Focus is about the importance of common inquiry in learning. It is a process through which learners begin to gain knowledge whereby it is created rather than something that is transmitted from the facilitator or teacher to the learner (Mohamad & Siti 2016). According to Mills & Durden (1992) the collaborative learning strategies which have been carried out lately has been cited that it has been copied by schools overcome ills faced in education. Mills & Durden (1992) supports this idea by stating that students learn more when they are able to converse and work together.

3. Methodology

This action research was conducted based on the Kemmis and McTaggart's model 1988 (Yee & Gan, 2017). It involved 40 primary and 40 secondary participants from Pahang, Selangor, and Perak. They were 20 students from the district of Cameron Highlands followed by another 20 from Kinta Utara district of Perak primary schools while 40 participants comprised of Klang, Selangor which is a private secondary school. The research data were gathered through pre and post-tests, observations and survey questionnaires.

Figure 2 shows modules of Let's Collaborate via Coggle that prepared for the learning of vocabulary, grammar, writing, literature and HOTS in English Language classroom. Each skill comprised of a cycle with 5 steps. After completing each step, students received a reward token. They collected their token in groups which amounted to 5 tokens per group. Students participated in presentation sessions to enhance their listening and speaking skills upon completing the Coggle Diagrams. During the presentation, they prompted oral questions and justified the brainstormed ideas, feedbacks and corrections.

3.1. Procedure

First, the pre-test was conducted among the respondents. Then, the modules of Let's Collaborate via Coggle designed for grammar, vocabulary, writing, literature and HOTS skills were implemented in the respective English lessons. During the integration of innovation, data were collected by observing students' work in terms of pictures, videos & email responses. After innovation, respondents answered post-test items. Respondents were also given survey question-

naires. Analysis of data was done by comparing pre-test and post-test mean scores, students' work and survey responses. The analysis was then interpreted by triangulating findings. The findings were further discussed to draw conclusions.

3.2. Findings

The research findings include pre-test and post-test scores, observation of students' work and responses in survey questionnaires.

Table 1 shows pre-test and post-test scores of 80 respondents. Pre-test and post-test were administered before and after the implementation of Let's Collaborate via Coggle modules. Pre-test items included vocabulary spelling, subject-verb agreement simple sentences, paragraph writing, literature characters and HOTS comprehension questions. In the pre-test, it was observed that the students scored low marks ranging from 20% to 60%. While for the post-test, results showed marks ranging from 40% to 100%. Therefore, it was seen that the percentage in score difference increased from 10% to 80% among all participants. The results obtained showed improvement in their mean scores from 38 (pre-test) to 67 (post-test) in terms of achieving mastery of vocabulary, simple sentences, paragraph writing, literature characterizations and HOTS questioning and justifying. Thus, the post-test mean is comparatively higher than the pre-test mean; evidencing effectiveness of Let's Collaborate via Coggle modules in enhancing the learning of English Language skills.

Figure 3 shows students' works which are collaborative learning, digital Coggle maps, presentation and question and answer sessions. Participants showed abundance of excitement and enjoyment by creating their own digital Coggle diagram in order to enhance their listening, speaking, reading, writing, literature and HOTS. Significantly, the presentation session boost students' confidence and self-esteem to speak in English Language. Indirectly, iGen Digital Learners: Let's Collaborate via Coggle developed their motivation to come forward courageously and share their ideas individually, in pairs and also in groups. As an appreciation, students were given reward tokens for their active and successful participation. It set a pavement for them to do self discovery and active knowledge construction because students who had Internet connection at home diligently came up with various ideas themselves. They created, shared and provided constructive feedback on their Coggle diagrams. It was noticed that they were able to learn collaboratively via digital tool in classroom as well as at home. The intervention built their confidence to channel their opinions as it was their first attempt. With the positive spirit they showed, changes took place considering their performances in their post test.

Figure 4 shows advantages of Let's Collaborate via Coggle Modules. Survey results showed that 78.3% participants mostly agreed that they enjoyed learning while 81.3% strongly agreed that the innovation boost their self-esteem and collaborative learning among friends and teacher. Findings of survey also revealed

that 78.3% participants had improved their responds. This finding is referred to the issue identified earlier as students being reluctant to respond, whereby the innovation had successfully motivated students to respond actively through collaborative learning. In addition, 77.5% respondents agreed that they presented Coggle digital mind map confidentially and 67.5% had improvised their ability to provide justifications (HOTS). Besides, 65.8% respondents created their own Coggle map at home based on topics and skills desired; contributing to self learning at own pace. Significantly, the advantages of having flexible features and being interesting and attractive with 59.5% most agreed value, respondents had improved their English and Thinking skills (56.3%). While, 93.8% strongly suggest iGen Digital Learners: Let's Collaborate via Coggle innovation to their friends to enhance quality of learning.
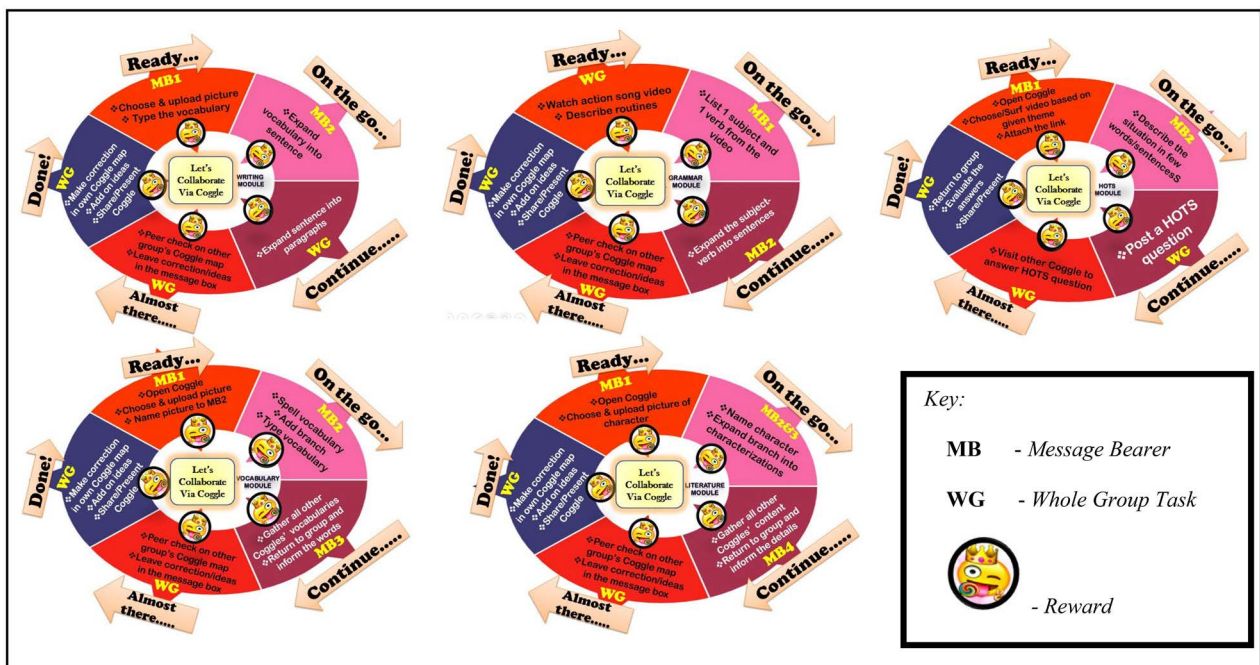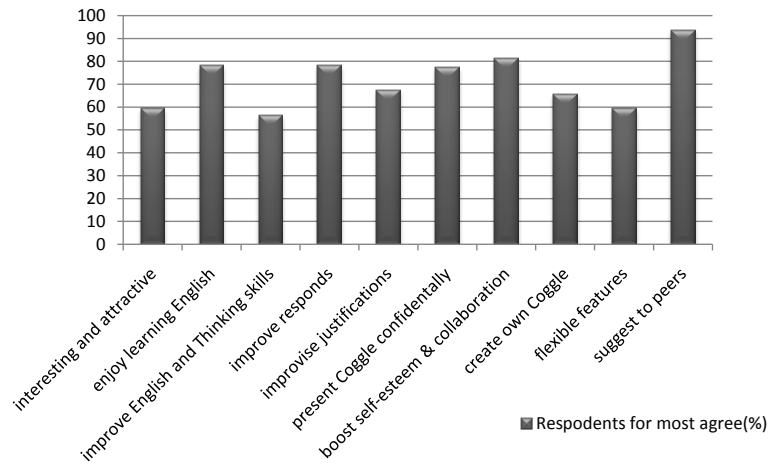

Figure 2. Let's collaborate via coggle modules.

Figure 3. Students' work. Observation of students' works (Pictures, Videos & Responses in email).

Advantages of Let's Collaborate Via Coggle Modules

Figure 4. Advantages of let's collaborate via coggle modules. Survey questionnaires (Advantages of Let's Collaborate via Coggle modules in encouraging collaborative learning).

Table 1. Pre-test & post-test scores.

Respondents (R)	Pre-test scores (%)	Post-test scores (%)	Difference in scores (+%)
R1	20	70	50
R2	20	70	50
R3	20	60	40
R4	20	60	40
R5	60	90	30
R6	50	70	20
R7	20	60	40
R8	60	90	30
R9	50	80	30
R10	20	50	30
R11	20	50	30
R12	20	50	30
R13	20	80	60
R14	40	70	30
R15	40	90	50
R16	20	50	30
R17	30	70	40
R18	20	50	30
R19	20	40	20
R20	25	60	35
R21	30	55	25

Continued

R22	25	65	40
R23	45	70	25
R24	50	80	30
R25	60	85	25
R26	60	80	20
R27	60	90	30
R28	60	85	25
R29	55	75	20
R30	50	85	35
R31	60	75	15
R32	40	60	20
R33	20	55	35
R34	60	95	35
R35	35	70	35
R36	45	65	20
R37	60	95	35
R38	60	85	25
R39	40	60	20
R40	60	80	20
R41	20	60	40
R42	20	40	20
R43	60	80	20
R44	60	100	40
R45	40	80	40
R46	20	40	20
R47	20	60	40
R48	60	100	40
R49	40	60	20
R50	20	40	20
R51	20	40	20
R52	40	80	40
R53	60	100	40
R54	20	60	40
R55	20	30	10
R56	20	60	40
R57	40	80	40
R58	20	40	20

Continued

R59	60	93	33
R60	50	66	16
R61	30	86	56
R62	43	63	20
R63	33	56	23
R64	60	93	33
R65	33	50	17
R66	70	96	26
R67	56	76	20
R68	40	56	16
R69	33	73	50
R70	43	53	10
R71	36	53	17
R72	36	50	14
R73	40	56	16
R74	36	50	14
R75	36	46	10
R76	33	46	13
R77	40	53	13
R78	33	43	10
R79	50	70	20
R80	48	75	27
Mean score	38	67	29

4. Discussion

The effectiveness of Let's Collaborate via Coggle modules in enhancing English Language skills is being found out where this innovation is versatile in discovering various primary and secondary topics and skills (Allyson, 2015; Yunus, 2017) through its appealing and flexible features. Its advantages in encouraging collaborative learning (Mandusic & Blaskovic, 2015; Ronald, 2014) among primary and secondary pupils (Sangra & Gonzalez-Sanmamed, 2016; Yarbro et al., 2016) are identified as the students easily share it via email with peers and teacher for correction, feedback and presentation purposes. Research by Mandusic & Blaskovic (2015) explains team based learning promotes active sharing, discussion, ideas negotiation and ability to evaluate others' ideas.

Significantly, Ronald (2014) highlights team based learning enhances thinking skills; that was seen during the implementation of Coggle modules in classrooms. Coggle Diagram too can be stored permanently and can be adopted and adapted as a continuation to future lessons. They were able to expand the con-

tent in digital maps as they collaborated among peers and teacher; parallel to findings by Katherine et al. (2016) where digital learning promotes group task. According to Lauren, Jasmine, & Susan (2017) digital connectivity among peers instills active, authentic and anchored learning. In this research, collaborative learning had indirectly path them to present their ideas confidently.

Pupils prefer technology based learning as the presentation session boosts their self confidence to construct knowledge actively (Laura, 2017; Mattar, 2018; Ponciano, 2015). In this way, the effectiveness of learning equivalence theory and social constructivism application in this research had bring about understanding of deep and meaningful learning connecting peer, content and teacher. Importantly, it also sparked students' creativity (Ponciano, 2015) to do self-exploration on desired themes at home as they learn at own interest and pace. They were also able to print it into hardcopies as their evidence. So, it can be used for evaluation by teachers and school administration.

iGen Digital Learners: Let's Collaborate via Coggle promotes easy and free access anytime anywhere and active knowledge constructions among students. It develops their intrinsic and extrinsic motivation (Ponciano, 2015) through rewards and opportunity to select the content with teachers' facilitation (Mandusic & Blaskovic, 2015). The digital mind mapping allowed active collaborative learning thus retains students' attention span while being highly interesting to be used in various topics and skills (Maryam & Ali, 2015). It also integrates content, pedagogy and technology (Anderson, 2016) which guide teachers to facilitate students efficiently by following the modules (Mandusic & Blaskovic, 2015). The findings are in line with Lauren, Jasmine, & Susan (2017) research that innovative and active knowledge construction improves learning connectivity among students, teacher and content.

Policy makers can introduce this innovation as a part of English and ICT syllabus in the Education Blueprint which will indirectly produce tech-savvy generation. According to Calvert (2018) and Ponciano (2015) digital learning resources enhance learners' motivation, excitement, self confidence and self-engagement through collaborative learning (Norizan & Murad, 2014). Though, iGen Digital Learners: Let's Collaborate via Coggle needs internet access and net books to be assessable by all users. Therefore, school administration need to set ways so teachers and students will be able to benefit the innovation. Further research of this innovation would consider in focusing on one main skill by integrating Coggle in textbooks.

5. Conclusion

Technologies have been proving to play vital roles in human capitalization globally. In education, it has become fundamental to seriously look into usage of digital innovations. This is where iGen Digital Learners: Let's Collaborate via Coggle becomes a stepping stone in the ability to provide paradigm shift in the education system. Researchers strongly belief that iGen Digital Learners: Let's

Collaborate via Coggle has the ability to instill braveness among students with their brainy logical ideas to stand and stage themselves successfully. This shows in findings that the effectiveness of Let's Collaborate via Coggle modules in enhancing English Language skills is being found out where this innovation is versatile in discovering various primary and secondary topics and skills through its appealing and flexible features. Its advantages in encouraging collaborative learning are identified as the students easily share it via email with peers and teacher for correction, feedback and presentation purposes. When respondents were tested, they agreed that iGen Digital Learners: Let's Collaborate via Coggle boosted their self esteem and raised the confidence level to respond actively in English classroom.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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