EZ Research Monograph Vol. IV, 2015

English Language

No	Title	Abstract	School	Author
1	Using Action Research to Implement an Oral Discourse Approach for Teaching Composition Writing	English Composition writing requires thinking as one writes and it demands that a pupil uses written sentences to connect ideas to present a composition story in a coherent manner. Yet, English composition writing remains a challenge for many pupils and they do not enjoy it. This research responds to this challenge by doing three things. First, it gets to the core of what a composition writing lesson should be like, by adopting an “Oral Discourse Approach” as described by Golub (1970) and Wyans (2008), to help pupils generate ideas and supply reasons to ensure that each idea flows logically. The compilation of written ideas would then enable pupils to construct their individual composition in a coherent manner. Second, it expands the work of Golub (1970) and Wyans (2008) by incorporating the use of a “Plot Graph” to help pupils order and organize their ideas. The application of “arrows and numbered boxes” in a Plot Graph helps pupils visualize how the flow of ideas forms a sequence of events leading to the climax and how it resolves, thereby showing how a composition story is developed in a step-by-step manner from start to end. Third, it uses the Dialectic Soft Systems Methodology described by Dick (2000) and Tay and Lim (2007) to explain how the process of composition writing can be described as progressing through four dialectics. The experience of the instructional approach described in this paper may be adapted by fellow teachers for composition writing in other languages.	St Hilda's Primary School	Christina Wong Hsui Peng

Maths

No	Title	Abstract	School	Author
1	Flip Your Students' Learning in Mathematics – An Action Research Study	This paper aims to examine the impact of using the Flipped Model approach (Bergmann & Sams, 2012) in a secondary three Normal Academic classroom. Students watched videos / lessons at home and were given opportunities in class to show what they have learnt. They collaborated with one another using a process called Learning in Teams which is a modified version of Team Based Learning. A total of 20 students were involved in this study which lasted a year. Pre- and Post-test were conducted and their results are presented in this study together with some possible recommendations for future research.	Hai Sing Catholic School	Radha Devi Oonnithan
2	One Size Doesn't Fit All – Differentiated Instruction in Secondary Mathematics	This paper aims to give its readers an insight on how differentiated instruction can be carried out in mixed ability mathematics classrooms. It explains on how lessons were differentiated based on the process and taking into account students' learning profile. A total of 148 students from secondary three express were involved in this study. The students first took a survey to determine their most preferred way of learning. Lesson packages were then designed for two chapters in the syllabus. This paper also discusses further on the data collected and some of the limitations that has to be considered.	Hai Sing Catholic School	Radha Devi Oonnithan
3	Mathematical Modelling as Alternative Learning Approach in JC Mathematic Curriculum	The traditional lecture and tutorial system has been a widely implemented system in Singapore's tertiary education for many years. With the evolution of the educational and social climate, this conventional approach of instruction is slowly losing its appeal in terms of motivating students in gaining new knowledge. With an aim to improve students' collaborative problem solving skills, different learning activities that are largely non-conventional in the way knowledge and skills are acquired were carried out with mathematics students at Temasek Junior College (TJC). Real world tasks were used to develop problem solving skills through mathematical modelling. Teachers worked in professional learning teams and made different modifications to the implementation of mathematical modelling. In this paper, there will be a description on the design of the mathematical modelling tasks and how the tasks were carried out each year to enhance students' learning.	Temasek Junior College	Yeo Chiu Jin Ting Siew Choon Gan Chin Koon

Mother Tongue

No	Title	Abstract	School	Author
1	A Self-Determined Learning Approach for Chinese Oral Skills in Primary Schools	As pointed out by Kenyon and Hase (2013), the essence of self-determined learning is that in some learning situations, the focus should be on what and how a pupil wants to learn, not on what is to be taught. It is one in which the pupil chooses what is to be learned and even how they might learn it. This study comprises three stages and six action research cycles. First, it applied the notion of Social constructionism whereby, the pupils worked in pairs to produce video clips using the school premises such as canteen, track and field or classroom as the 'social world' and using the Chinese Language to express their thoughts and feelings. Second, a set of criteria and rubrics was developed to brief the pupils on the intended expectations from their video clips; and to guide them on how to use the rubrics for their language skills, namely, clarity of speech, pronunciation, voice projection, and making eye contact in order to show confidence and interesting content to audience. Third, pupils used the set of rubrics to carry out self and peer assessments to select their best video clip for class demonstration and for final assessment by teacher. The gathered survey results for this study explicated the fact that, through this self-determined learning approach, the pupils developed the desire and the skills to be better and active learners for Chinese Language.	Angsana Primary School St Anothony's Canossian Primary School Rosyth School	Florence Soh Lay Lay Kok Yuet Heng Fiona Ng Keng Choon
2	Enhancing Primary 5 (Grade 5) Students' Skills in Answering ML Comprehension Questions Based on Character Traits	Reading comprehension is a dynamic process, which requires interaction between the reader and the text. Effective reading comprehension is the culmination of mastering vocabulary, phonics and reading comprehension skills. A person having good comprehension skills is considered as an active reader, with the ability to interact with the words by understanding its complete meaning and the concept behind it. However, through our yearly result analysis, it is often observed that our Primary Five (P5) Malay Language pupils are unable to understand the reading text at a deeper level and connect the phrases to form meaning. This action research study provides insights into how acquiring comprehension skills can be optimised through the use of Probable Passage, a pre-reading strategy that helps pupils focus on the characters, setting, conflict, resolution, and vocabulary of the story before they read it. Our focus is on	Yu Neng Primary School	Mdm Siti Fatimah Mdm Wahidah

		identifying character traits in the comprehension passages and the P5 pupils were taught to identify the correct qualities and/or attributes of the characters in the comprehension texts. Annotation skills through Web 2.0 tool called Crocodoc, which encourage active reading and improve pupils' understanding of any reading text, were also integrated to aid the use of Probable Passage. All these strategies aim to improve their ability to think critically and analytically, which will in turn allow them to answer the comprehension question on character traits, correctly. Our results analysis has proven that 92.8% of pupils have achieved better comprehension marks after being exposed to the techniques of Probable Passage and annotation tool through Crocodoc.		
3	Hook On To The Figure (A strategy to the Teaching of Narrative Essay Writing)	We experience amusement, the sublime, sorrow, joy, pleasure, and awe in our ordinary life. These are the starting point for aesthetics, the starting point for reflecting on the nature, the value, and the quality of our experiences of the natural and constructed environments and of various aspects of ordinary life. This has led to the theme of this research study – To empower students' Narrative Essay Writing skills using Malay Language with a view that they put their experiences in words and associated them with ideas of creativity and contrasted with reason and logic. This research study responds to this challenge by doing three things. First, it adopts the "Making Thinking Visible" approach by Ritchhart (2011) as the main framework for the derived Narrative Essay Writing programme in this study. Second, it uses the thinking routine of "See-Think-Wonder" for students to experience in a multitude of ways for a given object, event, or a series of events. Third, it incorporates my personal teaching strategies on how to induce richness in narrative writing by ensuring students include "See", "Hear", "Smell", Taste", "Feel", "Think" and use "metaphors" and "poems" in their writing. Finally, experiences and knowledge gained for teaching "narrative essay writing" are described as a series of five action research cycles with a view to show other fellow teachers what it would be like in their class with their students.	Bedok Town Secondary School	Fawziyah Binte Ali

Physical Education

No	Title	Abstract	School	Author
1	The influence of Instructional Models on teaching effectiveness and student's level of perceived engagement in Handball PE lesson	Direct Instruction (DI) Model is purported to be efficient in teaching basic skills. On the other hand, the skills learnt from standalone drill practice may not be transferable to game situation. While Games Concept Approach (GCA) is thought to be effective in reaching this goal, the efficacy of these Instructional Models has not been investigated in Physical Education Lessons. This study investigated the effect of these two Instructional Models on teaching effectiveness and student's level of perceived engagement in Handball PE lessons. It was found that both DI and GCA Instructional Models can be as highly engaging and enjoyable. This study also found that students taught with the GCA could win games with significantly lesser number of passes ($p = 0.0391$) and hence more efficient. The study proposed that the number of occurrence of skill such as number of passes can be used to assess skill in PE lesson.	Dunman High School	Charlene Kuah Li Ping Chew Tah Lee Christie Ang Sor Yim Faizal Mokmin Tang Yew Seng

Sciences

No	Title	Abstract	School	Author
1	Use of Claim-Evidence-Reasoning (C-E-R) In Teaching Of Science	In this research study, the Claim-Evidence-Reasoning (C-E-R) approach was adopted to help pupils with difficulty in explaining scientific phenomenon. Science teachers leveraged upon an Info-Communication Technologies (ICT) mindtool, such as “Google spreadsheet” or “Popplet”, in their C-E-R approach for helping pupils in crafting scientific explanation via the following manner: pupils make a claim and proceed to gather appropriate evidence to support that claim. They then articulate the scientific principles that connect the claim and evidence. In addition, the elements of C-E-R were used to establish a rubric of conditions for marking the pupils’ test questions. The gathered results from the pre-test and post-test in this research study shows that the competency of the pupils in crafting scientific explanations has improved after using this ICT-enabled C-E-R approach.	Gongshang Primary School	Lim Wan Szi Low Peggy (Liu Peggy) Corrine Cheong Mui Lie Widayu Bte Kemat Seah Jia Fen Sabrina
2	A Scaffolding Strategy for helping Secondary Science Students Construct Scientific Explanations for Experimental Based Questions in Science	The study of Science in essence involves the explanation of phenomena by inferring the reasons for occurrences and justifying the significance of the observed event (Nagel, 1961; McNeil & Krajcik, 2008). This raises a challenge for the educator: How can we equip students with the requisite knowledge, skills, and dispositions for answering science questions? This research study responds to this challenge by doing five things. First, it adopts an action strategy with reference to Feldman’s approach to art criticism- DINE (whereby “D” is describe, “IN” is interpret, “E” is evaluate). Students adopt this action strategy to construct arguments and explanations needed for phenomena posed on them. Second, it incorporates a bite-size classroom-teaching to equip students with the pre-requisite knowledge. During teaching, an educator teaches directly on a “need-to-know” basis and with focus on context that can help students move forward in their inquiry with DINE. Third, it introduces a set of focal lessons for students to work on. Each focal lesson comprises a set of step-by-step instructions and tasks to be carried out by students. Each task takes into consideration the appropriate zone of proximal development (ZPD) whereby the level of potential development is determined through problem solving in collaboration with fellow students (Vygotsky, 1978). Fourth, it	Pasir Ris Secondary School	Deborah Goh Hui Hui Zulaiha Shireen Bte Mohd Salleh

		provides the justifications for our integrated use of DINE, Bite-Size Teaching, and Focal Lesson as a collective whole via the Connective Approach as described in the work of Strawson (1992), Tay (2003), and Tay et al (2010). Lastly, it demonstrates the cycles that one goes through when embarking on an action research journey.		
3	An Action Research Study on bringing Physics Activities out of the laboratory and into the classroom for inquiry-based learning	How can we, as educators, provide opportunities for students to move beyond being passive recipients of knowledge to become knowledge builders, capable of producing innovative and creative solutions to problems? How can we help students make this leap – from intuitive understandings and natural curiosity to knowledge creation – to a space where ideas can be transformed into formalised understanding and further questioning? While there is no one recipe for success, this research study describes a set of key features for inquiry-based learning that offer promise in supporting students to become thoughtful, motivated, collaborative and innovative learners, capable of engaging in their own inquiries for the learning of physics. These key features include: the adaptation of laboratory lesson into a set of activities that can be taught via inquiry-based learning in class; the application of 5E Instructional Model (that comprises the five phases of Engage, Explore, Explain, Elaborate, or Extend, and Evaluate) as described in the work of Sing and Chew (2009) for conducting the lessons; the refinement of the 5E Instruction Model by incorporating five essential features of inquiry-based science outlined in National Science Education Standards (2000); and the active role of educators throughout the process in establishing a culture where ideas are respectfully challenged, tested, redefined, and viewed as improvable, moving students from a position of wondering to a position of enacted understanding and further questioning.	Pasir Ris Secondary School	Chiang Shu Lee

4	Supporting Scientific Literacy in Chemistry	This study explores how language-specific support enhances students' learning in Science. Students' experiences in learning Science should extend beyond the understanding of scientific concepts and include skills in helping them to read and write Science effectively. A conscious effort is needed to make explicit the language support required for students to construct a scientific explanation. This purposeful and systematic support takes the form of carefully crafted scaffolds in instructional resources, as well as meaningful classroom talk and interaction between teachers and students to aid students in constructing, connecting and communicating scientific explanations and content knowledge. Despite the relatively small number of students and teachers involved in this study, the study has demonstrated the potential of carefully designed learning tasks and classroom discourse in meeting targeted learning objectives.	Junyuan Secondary School English Language Institute of Singapore	Chia Boh Peng Tay Hui Min Teo Wil Ping Goh Peck Eng Siti Zaleha Tow Li Wan Caroline Ho Jenny Ho* Gavin Lee
5	My Personal Action Research Journey to Securing the Connections Between Science Learning Activities and Student Outcomes	Science education in Singapore and USA has a common dual student outcome of imparting strong subject mastery; and nurturing scientific habits of mind and practices. Learning activities prevalent in science classrooms are aimed at engaging students, providing learning environments catering to students' learning profiles and achieving science student outcomes. However, studies show many students still do not understand basic Nature of Science elements and students are unable to apply learning in new situations. This means that curriculum time and resources spent in planning and implementing activities contributed little to achieve the two student outcomes mentioned above. This action research study focuses on being responsive to current science curriculum, learners as inquirers and science teachers as facilitators of inquiry. It hopes to orchestrate changes in science teachers' lesson planning and classroom practices so as to bring into classrooms purposeful, strategic and engaging learning activities. This study comprises a series of three Action Research (AR) cycles where each encompasses research, critical reflection and recommendations for primary and secondary science teachers to create stronger connections between science learning activities and science students' outcomes.	Tanjong Katong Girls' School	Christine Sim

6	Use of Team-Based Learning (TBL) in Ionic Equilibrium Chemistry Lecture	Team-Based Learning (TBL) is a teaching and learning strategy developed by Duke-NUS Graduate Medical School Singapore (Parmelee, 2012) for its daily seminar style classroom teaching. In this action research study, this strategy was applied to an experimental group of 4 classes of Junior College Year-1 (JC1) students in Meridian Junior College (MJC) for 4 lessons instead of the traditional teacher-centred mass lectures, in acquiring new knowledge on Ionic Equilibrium. The effect sizes of these 4 classes and other classes in the control group were measured. The result shows that the use of TBL has a significant impact on students' conceptual understanding for this commonly perceived difficult topic. In particular, the TBL approach offers the following benefits to the college: Firstly, it encouraged students towards self-directed learning via learning the content at their own pace before going to class to solve problems. Secondly, the use of Info-Communication Technology (ICT) tools in TBL such as teacher-recorded videos, YouTube and the Learning Management System (LMS) had further enhanced students' learning since they were easily accessible resources to support their learning of abstract concepts. Thirdly, its constant review process whereby the teachers and students interact among themselves to seek out disconfirming evidences with a view to develop new insights unknown to the teachers. In addition, the perception survey amongst students in the experimental group also shows a learning preference using TBL over traditional lectures.	Meridian Junior College	Chong Kian Seng Loh Wee Chin Rosalind Chan Xin Wei Ong Dunhao Kelvin
7	Use of the THINK© Cycle and 5 Es' Framework in curriculum design	The THINK© Cycle is a novel problem-solving pedagogy created and used by the Integrated Program in Temasek Junior College. With the THINK© Cycle in place, learning is shifted from content-learning tasks to ideas and content-creation by students. It is also a process-wise approach in which students are posed with engaging and difficult problems designed by teachers such that students can learn higher order and teamwork skills (Albanese & Mitchell, 1993). The 5 Es' framework; Enduring understanding, Excite, Enrich, Eureka (satisfaction when one finds or discovers something), and Evaluate which I conceptualised, serves as a guide to teachers to understand the sequence of lessons and to design the curriculum. Together, the THINK© Cycle and the 5 Es' framework form the THINK package which is used to design the Secondary School curriculum in the Integrated Program. The aim of the curriculum	Temasek Junior College	Varella Alan Joseph

		designed is to engage the students and keep them on task whilst imparting them with necessary live skills. Students are engaged when they are attracted to their work, persist despite challenges and obstacles, and take delight in accomplishing their work (Schlecty, 1994). In this action research study, two Secondary 4 (grade 10) classes were taught using this curriculum. The classes were then assessed using the College's engagement survey. The results of the survey showed that the classes undergoing the lessons designed using the THINK© Cycle and the 5 Es' framework were better engaged than the group undergoing traditional treatment.		

Art

No	Title	Abstract	School	Author
1	An Action Research Study on using Elegant Tasks for Primary One pupils to Learn Art	This action research study explored the use of Elegant Tasks for thirty primary one pupils from a typical public school in Singapore to learn Art. According to Sandra Kay, an elegant task is an open-ended-problem approach that serves to elicit ‘creative thoughts’ and ‘elegant’ or ‘aesthetically meaningful’ solutions from pupils. Apart from making the teaching of art interesting, the use of Elegant Tasks helps to amuse the pupils into developing an awareness of his or her own style of thinking including, its strong points as well as its weaknesses. Qualitative data were collected through focus group discussions. The findings from this study showed that pupils like the adoption of Elegant Tasks in their art lessons as they were given enough room to explore materials, make new discoveries, and work collaboratively in groups. Besides, this approach has also developed a strong sense of ownership and pride in their artworks as witnessed from pupils’ presentation of their artworks at the end of each elegant task topic.	Ngee Ann Primary School	Poh-Lim Shir Pei, Fiona

Inter-Discipline

No	Title	Abstract	School	Author
1	Enriching learning of gifted pupils through overseas collaboration, leveraging on Information Communications Technology (ICT)	This paper outlines the journey that we have taken in Gifted Education Department, St Hilda's Primary School (SHPS) in the implementation of our strategic project, entitled GLOBE. GLOBE stands for Global Learning Online beyond Borders Exchange. It is aimed at developing pupils in their capacity for enriched learning and cultural understanding, through overseas exchanges and collaborations. We leveraged on the boundless possibilities of ICT to enable a borderless learning environment by embarking on one-to-one computing, whereby each pupil used a personal device such as a tablet or a laptop, for this ubiquitous learning. A case study approach (Yin, 2004), was adopted to find out the impact of such collaborations on the learning of pupils in the area of cross-cultural understanding. This was done in specific reference to one such overseas collaboration; collaboration between St Hilda's Primary School Grade 5 pupils and Waggrakine Primary School Grade 6 pupils. We approached the development of pupils' cultural understanding with two main pedagogical strands: collaborative learning (CoL) and self-directed learning (SDL) in a cross-cultural context, leveraging on ICT using the online platform of Edmodo. From teachers' observations and pupils' written responses, it was evident that Waggrakine pupils and St. Hilda's pupils had learnt much from the collaboration. They reflected that they had a deeper understanding of their own culture and the differences and similarities with their Australian and Asian friends.	St. Hilda's Primary School	Zahira Mohamed Sedik Ng Ding Xuan Andy
2	Using Action Research to adopt a Pedagogical Framework in lesson	This Action Research study was conducted to derive a consistent curriculum implementation approach for the teaching fraternity in St Hilda's Primary School. It covers five aspects. First, it gets to the core on how to develop a research-validated pedagogical framework for constructing teaching practice and curriculum on a firm scientific foundation. Second, it illustrates how the derived pedagogical framework is incorporated into two templates, namely, a lesson implementation template and a reflection template. Third, it describes an	St. Hilda's Primary School	Teo Kah Sze Ho Wai Leng, Irene

	implementation & reflection	adopted timeline that uses the single and double-loop learning theories by Argyris and Schön (Anderson, 1997) to help fellow teachers in planning and delivering their lessons that are “fit for purpose”. Fourth, the research study employed two sources of data, a survey taken by 98 teachers and the lesson reflections written by the teachers. Lastly, this Action Research was conducted with the view of showing fellow teachers, especially the beginning teachers how they can use the pedagogical framework to implement their lesson plans and reflect upon them.		
3	Structured Journaling – Feedback as an Assessment for Learning	Students are generally hesitant in giving feedback to teachers with regard to their understanding. This action research study describes the use of journaling for students to voice their area of concern, in a safe way without affecting their self-esteem to their respective teachers. The teacher in turn uses this feedback to monitor his or her teaching process and make adjustments where necessary with the empirical evidence on how the students are receiving his or her teaching. The gathered survey results revealed that with this journaling approach, students became self-directed in their learning, engaged during lessons, aware of their teacher’s questions and teaching approach, confident in clarifying doubts, and motivated in their learning.	Coral Secondary School	Dominic Sim Chwee Siang Anna Phang
4	Kindle the Spark for Learning into a Flame for Neighbourhood Children in Singapore	“Every child counts”. This is the motivation that drives this action research journey to transform a group of children, who spend most of their time loafing in the neighbourhood, into active and responsible learners for their academic studies. This paper does three things. First, it dealt with this group of children as a complex adaptive system (CAS). Second, it adopted interventions that are consistent with CAS. These interventions rehabilitated these children and weakened their misconceptions in academic studies. Lastly, it demonstrates the cycles that one goes through when embarking on an action research journey.	Research@East Zone, Temasek Junior College	Sangeetha Ponnamma Pillai