Early Childhood Imagineering: A Model for Developing Digital Storytelling

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Abstract

The objectives of this research were 1) to synthesize the model of early childhood Imagineering for developing digital storytelling; 2) to establish the model of early childhood Imagineering for developing digital storytelling; 3) to evaluate the model of early childhood Imagineering for developing digital storytelling. The research methodology was divided into three phases: 1) the documents in the Imagineering process, including the LA-OR model process and the stop motion animation process, were synthesized to establish the model of early childhood Imagineering for developing digital storytelling; 2) a model of early childhood Imagineering was established in order to develop digital storytelling; 3) the suitability of the model of early childhood Imagineering for developing digital storytelling was evaluated. The results showed that the model of early childhood Imagineering for developing digital storytelling consisted of the four following steps: 1) L: Leading to Learn consisted of imagination; 2) A: Active Learning consisted of two factors: Designing and Development; 3) O: Opinion Sharing consisted of Presentation; and 4) R: Reflective Thinking consisted of two factors: Improvement and Evaluation. According to an evaluation from experts, it was shown that the experts strongly agreed on the development model of early childhood Imagineering for developing digital storytelling.

Keywords: early childhood Imagineering, early childhood, digital storytelling, stop motion

1. Introduction

Education prepares a new generation to have both intellectual and emotional intelligence in order to be able to survive under different circumstances. Education in early childhood years is particularly important. It is a part of the educational system that encourages early learners to thrive throughout their lives (Wang, Sun & Li, 2019). There are many ways to encourage, educate and deliver quality learning information to young children. One of the most effective methods is to pass information through storytelling (Prasetya & Hirashima, 2018; O'Byrne, Stone, & White, 2018)

Storytelling is recognized as an important approach by which humans understand their experiences and comprehend how to share that experience with other members of society (Kim & Tse Crepaldi, 2021). For early childhood education, storytelling is a learning activity that is the foundation for the development of a child's vocabulary and literacy (Cekait & Björk-Willén, 2018). Storytelling is a narrative that has been paired with our lives for a long time, from childhood until adolescence or adulthood. They are simple narratives that allow young children to imagine with a variety of media such as physical media, images or storytelling toys. Early childhood is a time when parents or guardians are influential. Therefore, children often hear stories from their parents or family members. This has a great effect on their development (Isik, 2016). However, young children can sometimes read a story on their own or have teachers read it for them. It is one acceptable way in which to pass information on and to create characteristics that are appropriate for young children. They can also learn to present content and stories in the form of multimedia that can also enhance their interests (Prasetya & Hirashima, 2018). Multimedia is a source of text, sound, still images, animation and interesting presentation techniques. Thus, it can attract the attention of young children in various forms. For example, movies, games, cartoons, animations, and fairy tales appear to result in young children's curiosity, learning and skills. Young children are born into a world of digital technology that is ubiquitous, and it is easy to access fairy tales via a personal computer, mobile phone or tablet. These young children were also born and raised in an environment full of multimedia such as picture books, online books and social media on the internet (Li, 2018). By combining digital technology with multimedia, ICTs are

used to support learning and teaching. It enables the development of work of educational value that can be easily used in schools or education (Stošić & Stošić, 2015).

Digital storytelling is the presentation of creative ideas that are combined with multimedia and consists of still images, motion pictures, music or text, powered by digital technology or ICT. They are presented in minutes (Bernard, 2006) and may be created primarily for entertainment. The role of digital storytelling in teaching and learning has become inevitable (Preradovic, Lesin, & Boras, 2016). Teachers can use digital storytelling to support young children's learning by encouraging them to express their own ideas and knowledge through interactions with computers (O'Byrne, Stone, & White, 2018) Digital storytelling is therefore a creative way that young children can learn to create stories with digital tools to pass on their knowledge and ideas by themselves (Tse, Chan, & Chu, 2020). Digital storytelling also develops creativity, problem solving and motivation in young children, while giving them the opportunity to express their thoughts and experience from different points of view (Cheng & Chuang, 2019). Therefore, digital storytelling is a tool for fostering young children's imagination with opportunities to generate new knowledge, do their best and improve their learning process. In addition, digital storytelling can open paths to creativity and collaboration (Cheng & Chuang, 2019). It encourages young children's knowledge and understanding of digital technology and information (Bernard, 2006). It also has a noticeable increase in their self-esteem (Chao-Fernandez, Román-García, & Chao-Fernandez, 2017). Young children should therefore be encouraged to actively participate in an environment in which they are engaged (Kervin & Mantei, 2016).

Today, many digital storytelling techniques are easily accessible to young children, either by themselves or with their parents and teachers. However, there is a limited number of opportunities for young children to imagine and create digital storytelling by themselves. There is still no process for designing and creating digital storytelling that is appropriate for them. Therefore, there is the development, analysis and evaluation of the model of early childhood Imagineering for developing digital storytelling, which combines instructional management models for the development of early childhood competencies with the LA-OR Model, Imagineering Model, A Model to Enhance Students' Learning Performance and Creativity in Thinking and Designing and Creating Digital Storytelling with Stop Motion technique to be a model for developing digital storytelling. Therefore, a model of early childhood Imagineering for digital storytelling should be developed, analyzed, and evaluated, which combines instructional management models of early childhood competencies with the LA-OR Model, the Imagineering Model, A Model to Enhance Students' Learning Performance and Creativity in Thinking and Designing, and Creating Digital Storytelling with Stop Motion.

2. Research Objective

1) To synthesize the model of early childhood Imagineering for developing digital storytelling.

2) To establish the model of early childhood Imagineering for developing digital storytelling.

3) To evaluate the model of early childhood Imagineering for developing digital storytelling.

3. Literature Review

3.1 Imagineering Learning Approach

Imagineering is a combination of the words imagination and engineering (Walt Disney Imagineering, 2010).They can be applied in teaching and learning at all levels of education (Nilsook et al., 2014) because imagination can occur at any level of the learner from kindergarteners to working-age adults. Instructors act as facilitators and manage the Imagineering to suit the age of learners. Instructors also learn how to encourage learners to create their own ideas from their imagination in a systematic way. As a result, learners can formulate problems that lead to the work, can propose a process in the form of a project to build, can work well with others, and can know how to think, design and create the work themselves. Moreover, they can express themselves by presenting their own work in different ways as well as listening to suggestions and criticisms. This leads to improvement until the work is perfect according to learners' imagination, and this helps them love to learn. It is a learning that is truly student-centred (Nilsook et al., 2014). The details of Imagineering are as follows:

1) The imagination: Learners from kindergarten age always have imagination in their thoughts (Dere, 2019). For example, by giving small children clay to mould, they can shape this into monsters of various forms according to their own imagination, though it may not be beautiful like monsters in fiction or cartoons. However, these are their imaginations from their own experiences and are important to them (Hedegaard, 2016; de Assis, 2019). As adults, if they continue to develop their imagination, they will become great thinkers and valuable creators. When they grow up and study at a college or university, they will be able to create pieces of work through solving problems by using their imagination and brainstorming, and this may be shared with others. They can rely on existing

knowledge to study the possibilities of imaginary things and try to make these things come true (Macknight, 2016). What teachers need to understand is to give students the freedom of imagination and accept their opinions, even if their opinions do not match (de Assis, 2019).

2) The design: Learners must not be blocked from thinking and imagining the design. Imagineering does not require design rules or models. There is no limit on freedom or design (National Film Board of Canada, 2018). There are tools to help the design that reflect the imagination of learners, such as drafting, illustrating, illustrating through stories, writing a sequence of steps for mutual understanding and making a workpiece layout. Instructors need to provide advice and assistance, or teach how to sketch, write a storyboard and write a script step by step (National Film Board of Canada, 2018; Grant, 2013). However, instructors do not go into editing the imagination or the designs that the learners are working on (de Assis, 2019). It is a flexible learning process that can be adjusted according to the learners' minds at any time.

3) The development: This is the stage where learners begin to create what they have designed. It is something that comes out of the imagination and literally takes shape (National Film Board of Canada, 2018; Grant, 2013). Learners at all levels can create their own work in all subjects if the instructors accept the ideas and imaginations that they have designed without being stuck with the object that would have come out beautiful, practical, quality and efficient. Imagineering does not require the beauty and perfection of a piece. If the results are tested for usability, performance and quality it can be used; it is something that is acceptable, pleasant and admirable. But if learners are unable to create a work as they imagine it, it is considered as a prototype of their imagination, not a failure of learning (Nilsook et al., 2014). Works that are prototypes, which students can describe through their imagination and creativity, are the starting point for further development.

4) The presentation: This is a process whereby all learners are required to bring out their developed work (Pornsawan et al., 2019), either alone or in a group, and present it orally as an exposition. Any work, invention, innovation, art, engineering or any processes that are created by the learners will be presented in front of the class as a beginning (Melinda, 2011). Depending on their abilities, they can present in various forms such as an oral presentation, a board presentation, a poster presentation, or multimedia slides. Teachers may organize exhibitions in classrooms, schools, colleges, or universities, where students manage their own presentation space. There should also be competitions and awards for learners but without ranking, yet they can be rewarded with heart and star stickers, or gold, silver and bronze medals instead (Pornsawan et al., 2019). Moreover, every workpiece should receive one of the awards and should receive comments, appreciation, or positive feedback. Instructors may submit the work of their learners or select the best one into a competition at the school, provincially or nationally.

5) The improvement: This is the process of reflecting on the results of the presentation. When learners present their own work in a variety of ways, instructors play a role in advising them, along with other learners (Jitsupa et al., 2015). The instructors may invite tutors and experts to provide additional feedback. However, they need to be careful in giving feedback that exceeds the learners' abilities or giving negative feedback to the point that it becomes insulting. This can lead the learners to stop and give up on their imagination. On the contrary, instructors should give appropriate advice to encourage their learners to improve their performance. The instructors should also provide sufficient time for the learners to revise their work until they get the final results that reflect their true imagination (Chatwattana & Nilsook, 2017). Their final work does not have to be the best, but it can be the one that shows the learners' true imagination.

6) The evaluation: This is the final step that learners and instructors should do together. The learners should evaluate whether or not their work is based on their initial imagination and answer the questions that were set at the beginning (Chatwattana & Nilsook, 2017). They also need to evaluate their own performance based on the quality of their actual work while the instructors evaluate the summary in order to compare with the learners. In addition, the instructors evaluate the design, the imaginative work, the presentation, the effort and the collaboration of the learners. Regardless of whether the results are complete or defective, the quality of the work can be evaluated in its entirety (Nilsook et al., 2014; National Film Board of Canada, 2018: Grant, 2013; Jitsupa et al., 2015).

3.2 Digital Storytelling with Stop Motion

Digital storytelling is storytelling that combines the capabilities of a wide variety of digital and multimedia technologies for storytelling. It is a tool that promotes learning for both teachers and learners (Bernard, 2006; Robin, 2008). It can act as a communication medium between the messenger and the receiver which helps to create understanding. It also provides easy access to the content, a reduction of the gap between teachers and students and an understanding of risky or difficult stories. Many things cannot be accurately explained solely via speaking or writing. Therefore, digital storytelling will enable the communication to be accurate and direct to the objectives of messengers and recipients. Although there are many forms of intermediary media and they are used for different

purposes - print media, audio, video, including real objects and toys - digital storytelling media has unique features because of its multimedia and interaction. This will help to increase the knowledge, skills, abilities and attitudes of learners more effectively (Tse et al., 2020). Digital storytelling is a computer-generated digital medium that allows for presentation and dissemination through computer networks.

Here, Digital Storytelling with Stop Motion is a story for early childhood created with digital technology with Stop Motion techniques. It is a type of animation technique that is applied to the creation of digital storytelling. It is a simple animation creation technique that can be done by easily taking a still image with a camera on a mobile phone. The still image is converted into animation and can be animated by a computer program or mobile application. By bringing each slide in a different way, gesture or position, it creates a life-like movement in a fast and continuous story (Farrokhnia et al., 2020). Digital Storytelling with Stop Motion can be created in a variety of ways, including drawing, cutting, pasting, using models or figures, using real objects or toys and using computer programs (Maselli, 2018). Digital Storytelling with Stop Motion allows the development of the imagination without limits. It can also make it easier to explain complex content, incomprehensible matters and abstract opinions. Moreover, it can clearly emphasize important parts according to the motion and mood of the characters (Shaw, 2008). With modern tools such as computers, mobile devices, both Android and iOS operating systems, tablets and social networks (Social Media), used to produce and distribute work, Digital Storytelling with Stop Motion is more convenient and helps to reduce costs in developing storytelling (Grabuloska et al., 2013). This has resulted in its increasing popularity among mobile phone users. It is a lot easier for teachers and learners to create Digital Storytelling with Stop Motion for education both in and out of the classroom (Fleer & Hoban, 2012). It is also an important resource for finding information and learning to create Digital Storytelling with Stop Motion. Therefore, it helps to develop Digital Storytelling with Stop Motion for learning that becomes something which can be created for both teachers and learners.

Digital Storytelling with Stop Motion is a digital storytelling technique that learners are interested in, it is fun, exciting to learn and stimulates learners. This is because it is a new idea that challenges the learners' ability to make them want to learn and create their own work (Grant, 2013). Learners are very satisfied with this activity because they can do it by themselves, think creatively and express their opinions (Jitsupa et al., 2018). It is also important to work as a team and communicate between group members (Sun et al., 2017). In addition, they learn more about relevant topics and content while creating the animation, and they also learn how to use computers and computer programs.

Teachers must know their students. For example, young learners who are new to digital technology for developing Digital Storytelling with Stop Motion should first learn simple instructions. For older learners or those in higher education, teachers can add more complex instructions, issues, and technologies (Melinda, 2011). However, students should develop Digital Storytelling with Stop Motion according to their interests and imagination first so that they can learn and understand the principles of Digital Storytelling with Stop Motion. The length of a Digital Storytelling with Stop Motion that the students should try to do should be about 1-2 minutes. Since creating a Digital Storytelling with Stop Motion requires a large number of photographs or illustrations to tell a story, it may be boring for the learners. After the learners have mastered the principles of Digital Storytelling with Stop Motion, teachers can then assign assignments of various lengths and complexity, with special techniques and additional academic content or problems.

3.3 Digital Storytelling for Early Childhood

Young children at the early childhood level are those from birth to age 8. They can be divided into 1) Infants and toddlers: birth to 36 months 2) Pre-schoolers: 3- and 4-year-olds 3) Kindergartners: 5- and 6-year-olds 4). Primary grades 6, 7, and 8-year-olds (NAEYC, 2018). At this age, it is imperative to receive the care and attention of parents and teachers as it is the most important stage of life. Their bodies and minds are in full development which creates curiosity and learning. Early childhood learning resources can be initiated in their surroundings, indoors, outdoors, or from childcare centres and homes, preschools, kindergartens, and primary grade schools, etc. Learning from interacting with others such as parents, teachers and friends, or interacting with materials such as toys or real objects can affect the development and learning of children in four areas: physical, emotional, intellectual and social, and especially in language and communication development. This is because children rely on language learning and communication with those they interact with, in a talking and playing manner or from storybooks and picture books. Children at this age are full of thinking and imagination. The use of language and communication that is suitable for their age can foster development, especially in intelligence. In Standard 9 it is the use of language that is age-appropriate in communication, in Standard 10 the ability to think that is fundamental to learning; Standard 11 imagination and creativity; and Standard 12, a positive attitude towards learning and the ability to seek knowledge that is age-appropriate in recognizing and expressing ideas, feelings

through the media, materials, toys and creating workpieces. Providing experiences for young children therefore emphasizes children's interactions with various media and learning resources to create a connection between early childhood education and grade 1.

Digital Storytelling with Stop Motion is digital storytelling that relies on the power of digital technology for design and development, so teachers can apply it to pre-schoolers. For example, creating motivation or inspiring learners before a lesson can enhance teachers' teaching styles and techniques, and this can improve the learning outcome of the learners and their technological cognitive skills (Roblyer et al., 2009). It is important to note that any course can be designed and developed with Digital Storytelling with Stop Motion, for example, English Language, Mathematics, Science, Social Science, Health, Arts, Technology and Media Cognition.

Teachers often create Digital Storytelling with Stop Motion for early childhood education. Therefore, teachers should know about the early childhood education curriculum issued by the Ministry of Education to meet the needs of learners' development as much as possible. Using Imagineering processes also helps teachers to design and create easier and more efficient teaching tools. There is a clear procedure that can be traced or reversed. Moreover, it is not time-consuming because creating Digital Storytelling with Stop Motion can use basic computer programs that are already familiar to teachers and learners. To attract learners' attention to Digital Storytelling with Stop Motion, there should be sounds such as narration, music, and sound effects. Teachers and learners can search the Internet or record their own voices from the built-in microphone. Once teachers know how to proficiently and professionally create Digital Storytelling with Stop Motion, they can teach their students to design and create Digital Storytelling with Stop Motion themselves. It is a proactive teaching and learning management where the learners can do activities by themselves, in groups or individually, depending on the problems and objectives of the course and instructor.

3.4 LA-OR Model Learning Management

The LA-OR Model is a learning management model for developing the competency of children at La-or-Utid Demonstration School, Suan Dusit University. It emphasizes that children should use thinking skills as a tool in self-seeking knowledge in order to encourage children's learning development in four areas: physical, emotional, social and intellectual development through the four-step learning process (Ungurapinund et al., 2017) as follows.

1) The process of leading to learn (L: Leading to learn) is to stimulate interest in children so they become attentive and eager to learn (Brown & Patton 2017; Hatherly & Chapman, 2013), for example, storytelling (Yulsyofriend, 2018), setting up the environment, allowing children to interact with their surroundings and real objects that promote a response to learning (Tadesse, 2016; Cooper, 2015; Önder, 2018) and using the senses to explore concrete learning materials (Brillante & Mankiw, 2015) to motivate children to develop curiosity and interest.

2) The process of active learning (A: Active learning) allows children to learn and take action by themselves. It allows them to discover facts and knowledge on their own through various activities. Children will experience things by themselves (UNICEF, 2018) so that they can observe, explore, learn from the environment around them and search for their own knowledge (Australian Government Department of Education and Training, 2018; Parker, & Thomsen, 2019).

3) The process of exchanging opinions (O: Opinion sharing) is the exchange of opinions of children based on what they have learned from doing activities and by interacting with others which results in their learning. They can use these opinions as a supplement to their own learning or to learn new things from the exchange of opinions (Cook et al., 2017; Test & Lee, 2010).

4) The process of reflective thinking (R: Reflective thinking) is when children can apply what they have learned from the previous three stages. Then, they reflect their thoughts through questioning, conversation and telling stories or events that the knowledge has developed. It is a review of what they have learned and can actually apply in real life (Choy & Oo, 2012).

4. Method

The research methodology was divided into three phases as follow:

1) The synthesis of an early childhood Imagineering to develop digital storytelling by reviewing documents, searching the literature and related research with regard to the Imagineering process, the LA-OR model process, and the stop motion animation process.

2) The establishment of the model of early childhood Imagineering for developing digital storytelling.

3) The evaluation by nine experts of the model of early childhood Imagineering for developing digital storytelling. This consisted of three experts in the early childhood field, three experts in Imagineering, and

three experts in digital storytelling and stop motion.

5. Results

Table1 shows the synthesis of an early childhood Imagineering to develop digital storytelling by reviewing documents, searching the literature and related research with regard to the Imagineering process, the LA-OR model process, and the stop motion animation process.

According to Table 1, the synthesis of early childhood Imagineering to develop digital storytelling consists of four steps:

L: Leading to learn

A: Active learning

O: Opinion sharing

R: Reflective thinking

Table 1. The synthesis of early childhood Imagineering to develop digital storytelling

Topic	Concepts	Example of activities/Materials/Equipment	Reviews	Evaluation
Leading to learn	Children learn new things when they are ready and it meets their interests. They learn through an interaction with an environment and use all five senses to explore concrete learning materials.	- listening to music - listening to fairy tales and various story - observation - conversation - smell - tasting - playing games - real objects	Scott, 2017; Kivunja, 2015; Lillard, 2013; Pennsylvania Department of Human Services, 2014; Lillard, 2012; Pekdogan & Akgul, 2016;Brown et al. & Patton et al., 2017; Hatherly et al., 2013	Observe the children's attention.
Active learning	Children learn and experience things by themselves in order to discover facts and knowledge through activities.	- field trip - using questions - interview - doing research - demonstration - learning from experts or lecturers - learning from real objects	(Brame, 2015), Pekdoğan & Kanak, 2016), (Samuelsson & Carlsson, 2008), (Gordon & Browne, 2015), (Zosh et al, 2017), (Felder et al, 2009), (NAEYC, 2012), (Peirce, 2013), (UNICEF, 2018), (Parker R. & Thomsen et al, 2019)	Observe children's behaviours in the activity.
Opinion sharing	Interaction with others results in a better learning and understanding of other people's opinions. Children can use their opinions to supplement their own learning or learn new things from each other.	- games - exchange opinions - answering questions	Owen & Razali, 2018; Cook, Dearing, & Zachrisson, 2017; Department of Education (NSW), 2018; Nurani et al, 2020; DeCapua & Tian, 2015; Aktürk H. et al., 2011; Lee, 2015; Law, 2015; Test et al. & Lee et al., 2010	Observe children's interactions and opinions.
Reflective thinking	This is the stage where the children apply what they have learned from the previous three steps in their daily life. Then, they reflect upon their thoughts through questioning, conversation and telling stories or events that the knowledge has developed. It is a review of what they have learned and can actually apply in real life.	- answering questions in various situations - conversation - storytelling through pictures - storytelling through drawing - worksheet	Gómez-Barreto et al., 2020; Bjorck-Åkesson et al., 2017; Satjatam et al., 2016; Dervent, 2015; Izumi-Taylor et al., 2010; Epstein, 2003	Observe children's behaviours in the activity.

A model for the development of early childhood Imagineering for developing digital storytelling is shown in

Figure 1.

According to Figure 1, the four steps of early childhood Imagineering: a model for developing digital storytelling consists of the following elements:

L: Leading

Leading to learn this activity stimulates students' interests and desire to learn things such as storytelling, telling stories, making conversation and playing games. This allows learners to use their imagination (Imagine) to create the ideas of the story (Ideas for the Story) and leads to the proposition (Problem) for creating digital storytelling. Learners should reflect on the story by writing or drawing on paper together with expressing opinions (Discussion) and analysing the feasibility of the ideas (Feasibility). The result is the concept of the story and the imagination of the learners.

A: Active learning

This is a step that allows learners to learn and practice by applying the results to design (Design) characters (Characters) and scene elements (Set and Props) for digital storytelling. They can create by drafting (Draft), writing a script (Script), writing a storyboard (Storyboard) and creating a prototype of digital storytelling (Prototype) with a computer program, together with expressing opinions (Discussion) and revising the prototype.

After that, the digital storytelling (Test) is tested. The result is a complete storyboard and with a prototype of digital storytelling that is ready to be developed (Development) and created (Create) into a full digital storytelling (Movie Production). Together, learners need to exchange opinions (Discussion), improve and revise. The end result is a completed digital storytelling.

O: Opinion sharing

Learners present their (Presentation) digital storytelling to experts (Show) for consideration of the work (Contest), to exchange knowledge and to receive comments and suggestions (Suggestion). The end result is a summary to improve digital storytelling.

R: Reflective thinking

Learners improve and revise (Improvement) digital storytelling according to the summary until complete (Revised) and summarize the digital storytelling (Conclusion). The end result is a completed digital storytelling. Every digital storytelling process requires evaluation (Evaluation), Process Evaluation, and digital storytelling (Product Evaluation) quality. Teachers and learners should conduct the evaluation together. The learners need to evaluate their work according to their imagination. The teachers need to provide a summary to correlate with the learners' evaluation of the design and creation of the imaginative work, its presentation and via teamwork. Even though the work is not complete, it will be evaluated and counted as a final product.
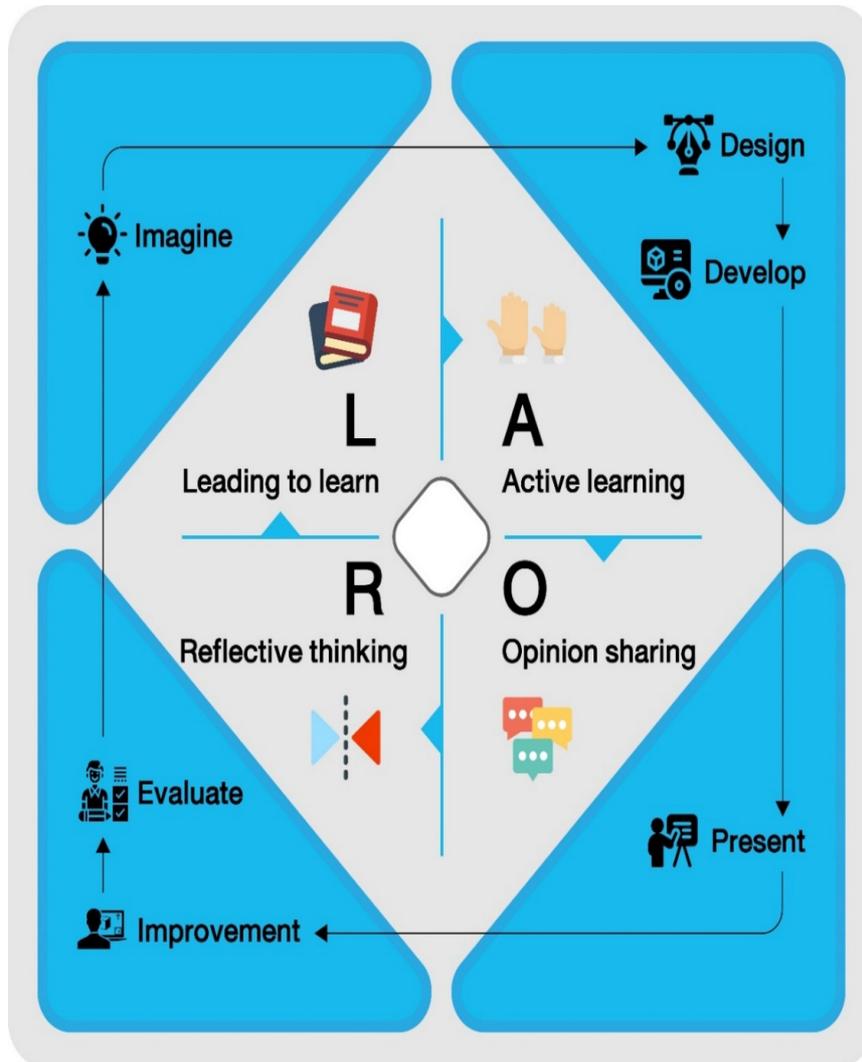
Figure 1. Early childhood Imagineering: A model for developing digital storytelling

The evaluation of the early childhood Imagineering: a model for developing digital storytelling is shown in Table 2.

Table 2. The evaluation of the early childhood Imagineering: A model for developing digital storytelling

List of Evaluation	$\bar{x}$	S.D.	Level of Appropriateness
1. L: Leading to learn	4.78	0.44	very high
2. A: Active learning	4.56	0.53	very high
3. O: Opinion sharing	4.33	0.50	high
4. R: Reflective thinking	4.44	0.53	high
Total Average	4.53	0.51	very high

According to Table 2, the overall evaluation result of the early childhood Imagineering: a model for developing digital storytelling was at a very high appropriate level ($\bar{x}$= 4.53, S.D. = 0.51). Considering each item, every item was at a very high appropriate level.

6. Discussion

According to the evaluation results of the early childhood Imagineering, a model for developing digital storytelling, the overall appropriateness was at a very high level. This also showed that the experts had consistent opinions. As shown in the synthesis, the early childhood Imagineering: a model for developing digital storytelling

consisted of four steps including: Leading to learn, Active learning, Opinion sharing, and Reflective thinking.

Leading to learn is the step that stimulates learners' interest and curiosity through storytelling, conversation and game play activities. Learners can use their imagination until they find the idea for a storytelling to develop digital storytelling by writing or drawing on paper, giving opinions (Discussion) and analyzing the feasibility of ideas (Feasibility) together. The result is a Story Idea from their imagination.

Active learning is the step where learners create (Design) characters (Characters) and scene elements (Set and Props) and a draft of a digital storytelling (Prototype) with a computer program, together with expressing their opinions (Discussion) and revising the prototype. Then, they create (Development) a full version of the digital storytelling (Movie Production). After that, the digital storytelling (Test) is tested. Together, learners need to exchange opinions (Discussion), improve and revise them. The end result is a completed digital storytelling.

Opinion sharing is the step that presents (Presentation) the digital storytelling to experts (Show) who consider the work (Contest) and give comments and suggestions (Suggestion) to the learners. The results are summarized to improve digital storytelling.

Reflective thinking is the step that improves and completes (Improvement) the digital storytelling according to the conclusion until the work is completed (Revised) and the digital storytelling is summarized (Conclusion). The end result is a completed digital storytelling. Then, various issues raised by the digital storytelling are evaluated by both learners and teachers together.

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