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**DESIGN AND EVALUATION OF ANIMATION-BASED
VIDEO MODELING TO ENHANCE USER
EXPERIENCE FOR ASD LEARNERS**



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Abstrak

Konsep Pengalaman Pengguna (UX) telah dikaji dengan meluas, dan disepadukan dalam pelbagai aplikasi interaktif bagi manfaat pelbagai golongan masyarakat. Banyak video telah dibuat untuk tujuan pendidikan dan latihan. Walau bagaimanapun, kebanyakan video telah dibangunkan untuk pelajar biasa, yang sangat jarang berlaku untuk pelajar yang mengalami gangguan spektrum autisme (ASD). Video sedia ada didapati kekurangan nilai hiburan dan gagal membangkitkan keseronokan, yang membawa kepada kebosanan dalam kalangan pelajar. Di samping itu, video-video sebegini tidak selalu membantu. Ini menimbulkan cabaran berikut: (1) Bagaimanakah kita memastikan pelajar ASD menganggap kandungan pembelajaran sebagai menghiburkan dan menyeronokkan? (2) Mampukah kandungan pembelajaran yang menghiburkan dan menyeronokkan membantu pelajar ASD? Dalam usaha menangani cabaran tersebut, kajian ini mencadangkan model konsep Pembelajaran Berbantuan Pemodelan Video berasaskan Animasi untuk ASD (aVMAL4ASD), yang boleh menggalakkan pengalaman pengguna yang positif dengan memastikan pelajar ASD berasa terhibur, seronok, dan dibantu. Matlamat utama kajian ini adalah untuk mengusulkan model konsep aVMAL4ASD, dalam meningkatkan pengalaman pengguna dengan memastikan kandungan pembelajaran yang menarik, menyeronokkan dan membantu untuk pelajar ASD. Kajian ini menggunakan Metodologi Penyelidikan Sains Reka Bentuk (DSRM), yang terdiri daripada empat fasa utama: (1) analisis keperluan, (2) pembangunan model, (3) pengesahan model (melalui semakan pakar dan prototaip), dan (4) penilaian (melalui ujian pengalaman pengguna). Model yang diusulkan telah ditentukan melalui semakan pakar dan prototaip. Hasilnya, ia telah diterima secara positif oleh lima orang pakar. Di samping itu, penemuan dalam ujian UX menunjukkan bahawa video yang dibangunkan dengan penerapan model aVMAL4ASD meningkatkan pengalaman yang menghibur dan menyeronokkan untuk pelajar ASD. Sementara itu, prestasinya dalam dimensi membantu terbukti menghasilkan sedikit peningkatan, terutamanya dalam melengkapkan lukisan secara sendiri. Kajian ini memberi sumbangan yang memadai dalam aspek teoritikal dan praktikal.

Kata Kunci: Pengalaman Pengguna, Model konsep, Pembelajaran berbantu video animasi, Pelajar ASD, Reka bentuk animasi.

Abstract

User Experience (UX) concept has been widely studied, and integrated in various interactive applications for the benefit of various societies. Numerous videos have been created for educational and training purposes. However, most of the videos were developed for normal learners, which is very rare for learners with Autism Spectrum Disorder (ASD). Existing videos have been found as lacking entertainment value and fail to evoke enjoyment, resulting in boredom among learners. Furthermore, those videos are not always helpful. This raises the following challenges: (1) How do we ensure that ASD students consider learning content to be entertaining and enjoyable? (2) Can entertaining and enjoyable learning content be helpful to ASD students? In addressing these challenges, this study proposes a conceptual model of Animation-based Video Modeling Assisted Learning for ASD (aVMAL4ASD), which can promote positive user experience by ensuring the ASD learners feel entertained, enjoyed, and helped. The main aim of this study is to propose the aVMAL4ASD conceptual model, in enhancing user experience by ensuring engaging, enjoyable, and helpful learning content for ASD learners. This study employs the Design Science Research Methodology (DSRM), comprising four key phases: (1) requirement analysis, (2) model development, (3) model validation (through expert review and prototyping), and (4) evaluation (via user experience testing). The proposed model has been validated through expert review and prototyping. As a result, it has been positively accepted by five experts. Additionally, the findings of UX testing indicate that the video produced with incorporation of the aVMAL4ASD model promote entertaining and enjoyable experiences for ASD learners. Meanwhile, its performance in the helpful dimension shows a slim increase, especially in independently completing the drawing. The research provides sufficient contributions in theoretical and practical aspects.

Keywords: User Experience, Conceptual model, Animation-based video assisted learning, ASD learners, Animation design.

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List of Abbreviations

UX	User Experience
ASD	Autism Spectrum Disorders
aVMAL	Animated Video Modeling Assisted Learning
aVMAL4ASD	Animation-based Video Modeling Assisted Learning for ASD
CDC	Centres for Disease Control and Prevention
CLT	Cognitive Load Theory
CTML	Cognitive Theory of Multimedia Learning
DSRM	Design Science Research Methodology
HCI	Human-Computer Interaction
ID	Instructional Design
MOE of China	Ministry of Education of the People's Republic of China
SPL	Self-paced Learning
SCL	Student-centered learning
ADDIE	Analyze, Design, Develop, Implement, and Evaluate
SAM	Successive Approximation Model
UCD	User-Centered Design
VBL	Video-based Learning
VMAL	Video Modeling Assisted Learning
WHO	World Health Organization
ADHD	Attention Deficit Hyperactivity Disorder

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Users typically acquire either positive or negative experiences when participating in activities involving other parties, during which they may develop a mix of feelings, thoughts, and perceptions. According to ISO 9241-210, User Experience (UX) is defined as the cognitive impression and response of individuals towards the use or anticipated use of products, systems, or services. With the advancement and progress of the latest technologies, user experience becomes crucial as it can facilitate users' positive perceptions of products or services (Juliá Nehme, Torres Irribarra, Cumsillem, & Yoon, 2021; Dening et al., 2022; Mohamad & Hashim, 2021; Fleury, Vanukuru, Mille, Poinot, Agnès, & Richir, 2021; Irshad, Rambli, & Sulaiman, 2020; Valencia et al., 2021).

Specifically, positive UX not only considers classic elements such as usability, ease of use, and efficiency (Dening et al., 2022) but also other aspects of UX such as satisfaction and aesthetics (Zainun, Lam, Bakar, & Ismail, 2018; Mohamad & Hashim, 2021b). Additionally, Fleury et al. (2021) proposed to pay attention to the factors like stress and novelty, while Agnus Revang (2007) delineated the UX wheel, which includes a more detailed breakdown of UX elements, totalling 30 elements such as learnability, accuracy, and joy of use. In summary, the factors influencing UX share

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Appendix A

Approval Letter of Data Collection from UUM

APPLICATION FOR OFFICIAL LETTER		
INSTRUCTIONS		
To be completed by the applicant		
ONLY COMPLETED FORM WILL BE PROCESSED		
Name:	XU MIAO MIAO	
Telephone No:	01111836207	Matric No.: 904483
IC/Passport No:	E72187457	Semester: A232
E-mail:	xu_miaomiao@ahsgs.uum.edu.my	Session: A203 MAY 2020/2021
Program:		
Current Structure of Study:		
☐	Coursework	
☐	Coursework and Dissertation	
☒	Research	
Please tick (✓) whichever is applicable		
☐	Attendance record for visa renewal	
☒	Data collection	
Thesis title : _____		
User Experience design in Animation-based Video Modeling		

Student's signature : <u>Xu Miao Miao</u>		
Supervisor's signature & stamp : _____		
FOR OFFICE USE ONLY		
Date received : _____		Date Processed : _____
Date Emailed : _____		

Appendix B

Profile of Experts

Experts	Profile
A	She is a senior lecturer in School of Universiti Teknologi Mara (UiTM). She has vast knowledge and experience in Children-Computer Interaction (CCI), UX, Children with Disability. Her previous research on a conceptual model development was highly related to this study. Therefore, this study sought for her opinion and suggestion in reviewing the model.
B	She is a senior lecturer in school of Multimedia Technology Department School of Multimedia Technology and Communication Universiti Utara Malaysia. Her main research interest is interaction design for children particularly in evaluation with and by young children. Therefore, her specialization in the defining the design guideline for children is very useful for the model improvement.
C	She is currently working as a lecturer in Universiti Teknologi Mara (UiTM), and it has been for 15 years now in the Computer Science field. Her educational background and previous research experiences gave significant contribution to this study.
D	He currently working as a lecturer in Chong Qing Industry Polytechnic College, and he has also involved in some projects with creative video development in China. It is important to this study to have expertise that is knowledgeable in aVMAL for ASD students.
E	He is a lecturer with 17 years working and researching experiences in Zhejiang Normal University. And he also worked with some professional animation companies to developer animation. Therefore, his expertise about animation design principle and animation development process is very useful in this study.

Appendix C

Sample of Invitation Email



Appendix D

Sample of Appointment Letter



PUSAT PENGAJIAN TEKNOLOGI MULTIMEDIA DAN KOMUNIKASI
SCHOOL OF MULTIMEDIA TECHNOLOGY AND COMMUNICATION
Universiti Utara Malaysia
06010 UUM SINTOK
KEDAH DARUL AMAN
MALAYSIA



Tel: 604 - 928 5801
Faks (Fax): 604 - 928 5804
Laman Web (Web): <http://www.smmtc.uum.edu.my>

Ref. No. : UUM/CAS(SMMTC)/P-5
Date : 13 May 2024

Ts. Dr. Siti Zulaiha Binti Ahmad
Kolej Pengajian Pengkomputeran, Infomatik dan Matematik
UiTM Cawangan Perlis Kampus Arau
02600 Arau
Perlis

Dear Ts. Dr. Siti Zulaiha Binti Ahmad,

APPOINTMENT AS EXPERT REVIEWER FOR USER EXPERIENCE DESIGN IN ANIMATION-BASED VIDEO MODELING

Thank you for agreeing to be an expert reviewer in a PhD. Study at the following researcher.

Research Name : Xu Miaomiao
Matric No. : 904483
School : School of Multimedia Technology and Communication,
Universiti Utara Malaysia
Research Title : User Experience Design in Animation-Based Video Modeling
Supervisors : Prof. Ts. Dr. Ariffin Abdul Mutalib
Dr. Hammuzamer Irwan Hamzah

For your information the researcher will use the model for his research and he needs your expertise to review the proposed model in a few dimensions as stated in the review form.

Your cooperation, time and assistance one greatly appreciated.

Thank you.

"MALAYSIA MADANI"
"SERVICE THE NATION"
"KEDAH SEJAHTERA – NIKMAT UNTUK SEMUA"
"KNOWLEDGE VIRTUE SERVICE"

Sincerely yours

ASSOC. PROF. DR. MOHD. KHAIRIE AHMAD
Dean

School of Multimedia Technology and Communication

Tel. : 04-9285800 Faks : 04-9285804
HP : 019-4709686 Emel : khairie@uum.edu.my

Universiti Pengurusan Terkemuka
The Eminent Management University



Appendix E

Sample of Consent form for Expert



Consent Form of Expert Reviewer for Conceptual Model of
Animation-based Video Modeling Assisted Learning for Autism Spectrum Disorder
(aVMAL4ASD) Students
School of Multimedia Technology and Communication
College of Arts and Science
Universiti Utara Malaysia(UUM)

1. I have accepted the official appointment letter from UUM. With the expertise and the existing **knowledge that I have, I volunteer to be an expert reviewer for "Conceptual Model of aVMAL4ASD Students"** proposed by Xu Miao Miao under supervision of Prof. Ariffin Abdul Mutalib and Dr. Hammuzamer Irwan Hamza.
2. I understand that the expert review process is designed to gather information and comments in improving the proposed model.
3. I understand that no part of the proposed model may be reproduced, stored in retrieved system, or transmitted in any form or by any means, electronic, mechanical photocopying, recording, or otherwise, without prior permission from the researcher and her supervisor.
4. I understand that the researcher will not identify me by name in any report using information obtained from the questionnaire, and that my confidentiality as a participant in this study will remain secure. Subsequent uses of records and data will be subject to standard data use policies which protect the anonymity of individuals and institutions.
5. I understand that this study has been reviewed and approved by the School of Multimedia Technology and Communication, College of Arts and Science, UUM.
6. I have read and understood the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.
7. I am given a copy of this consent form.

A handwritten signature in black ink, appearing to read 'Arifah'.

My Signature

DR. ARIFAH FASHA ROSMANI
COMPUTER SCIENCE AND MATHEMATICS DEPARTMENT,
UITM PULAU PINANG,
PERMATANG PAU CAMPUS,
13500 PULAU PINANG.

Date 13/5/2024

My Printed Name and Official Stamp

Signature of the Researcher

Appendix F

Sample of Instrument for Expert Review

INSTRUMENT FOR EXPERT REVIEW

MODEL OF ANIMATION-BASED VIDEO MODELING ASSISTED LEARNING FOR AUTISM SPECTRUM DISORDER (aVMAL4ASD) STUDENTS

Dear Prof/Assoc. Prof/Dr./Sir/Madam

EXPERT REVIEW OF CONCEPTUAL MODEL OF aVMAL4ASD

I am Xu Miao Miao and currently pursuing PhD study at Universiti Utara Malaysia. With great pleasure, I am pleased to inform that you have been selected as one of the experts to be involved in this study based on the following reasons:

- i) Have academic qualification (Master/PhD) either in **HCI** or **Multimedia** or **Educational Technology** or **Computer Science** areas, and/or
- ii) Have been studying/researching/teaching/practicing **HCI** or **Multimedia** or **Educational Technology** or **Computer Science** area for at least 5 years.

With that, I would like to humbly solicit your feedback on the proposed design model. I strongly believe that with the capabilities you have, you will be able to complete this expert review **within 1 week**.

This study proposes the **Conceptual Model of aVMAL4ASD**, which is specifically designed for autism spectrum disorder (ASD) students. The main objective of this study is to propose Conceptual Model of aVMAL4ASD that is able to promote positive learning experiences and experience by ensuring the ASD students feel entertaining, helpful, and enjoyable.

One part of this research is to evaluate the proposed model in a few dimensions. The review questions are designed to evaluate:

- i) relevancies of the proposed components and elements of aVMAL4ASD for each segment the extracted design elements and principles, and
- ii) readability and understandability of the model.

Additionally, based on your expertise, experiences, interests, and creativity, I would like to humbly solicit your comments and suggestions in improving the proposed model. The information supplied will be treated as confidential and will be used for the research purposes, which may be reported anonymously in academic publications.

Please feel free to contact me by email (xu_miaomiao@ahsgs.uum.edu.my) in regard to any queries or my supervisors Prof. Ariffin Abdul Mutalib (am.ariffin@uum.edu.my) and Dr. Hammuzamer Irwan Hamzah(zamer@uum.edu.my).

Thank you for your time and assistance.

Instruction:

The review instrument is attached with the figures of:

- i) The basic model (Figure 1)
- ii) The detail conceptual model (Figure 2)

Please read and go through the figure of Conceptual Model of aVMAL4ASD carefully. Once this is done, with the expertise your posses, please complete the questions in the provided spaces.

PART I: EXPERT/REVIEWER DETAILS

(*required to fill-in)

Name* : _____

Age : _____

Gender : ☐ Male ☐ Female

Highest Education level : _____

Experiences* : _____ years

Area of Expertise : _____

PART II: ITEM TO REVIEW

Based on the proposed conceptual model (as illustrated in Appendix A-Figure 2), please tick(✓) an appropriate option.

1.	The proposed components and elements in the following segment are relevant		Some are definitely NOT relevant	Some may be NOT relevant	All are relevant	Comments
	Design Segment	Multimedia				
		Interaction				
	Content Segment	Content Structure				
		Content Composition				
		Development Process				
		ID Model				
	Learning Segment	Learning Techniques				
		Learning Theories				
		Learning Approaches				
	User Segment	Actors/Instructors				
		Audience				
	Technology Segment	Hardware				
		Software				
Internet						

2.	The proposed design principles for a VMAL4ASD in each design components are understood		Need very detail explanations	Need some explanations	Easy to understand	Comments
	Interaction Design	Direct manipulation behavior				
	Multimedia Design	Text				
		Graphics				
		Video				
		Animation				
		Audio				

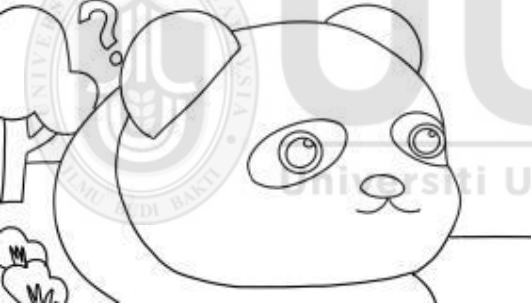
3.	The terms used are easy to understand.		YES		NO
4.	The relationship and connection/flows of all the segments and components are logical.		YES		NO
5.	Overall, the conceptual model is readable.		YES		NO

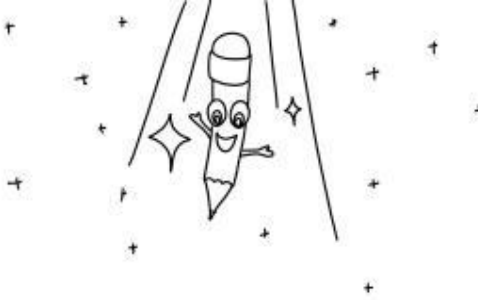
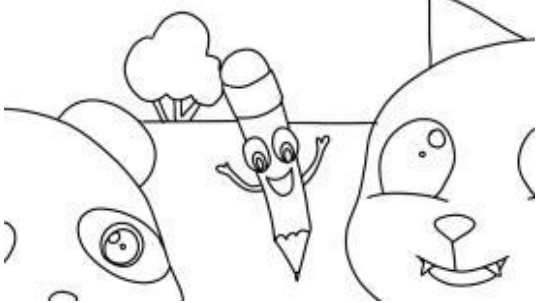
6. Please write your further comments below.

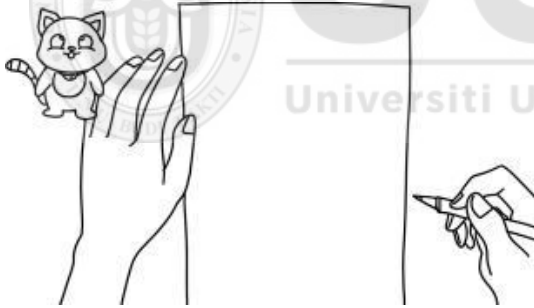
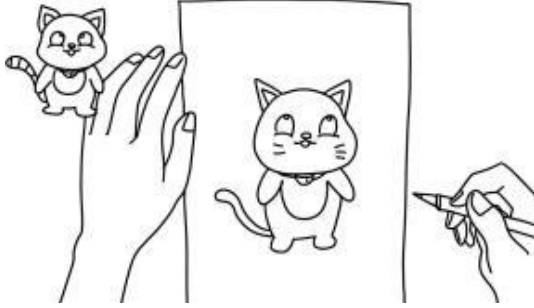
Appendix G

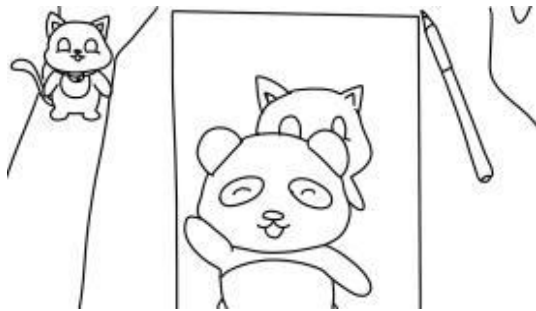
Storyboard for aVMAL4ASD-Drawing a Rainbow Cat

Title Drawing a Rainbow Cat Scene Magic Forest Time Daytime Characters Lulu, Dinuo, Qiqi, Rainbow Cat, Magic Paintbrush		
Scene	Picture	Dialogue
Opening Section		
1.	 The scene gradually transitions from the trees to the grass, where Lulu is drawing, Qiqi and Dinuo are posed as stationary models for the drawing.	Voice over: The Magic Forest is a beautiful and mysterious place. There are filled with joy of the little artists Lulu, Dinuo, and Qiqi.
2.	 The scene shifts, and Lulu smiles when she look at her drawing.	
3.	 Qiqi and Dinuo are smiling too.	

4.	 The scene shifts, and the camera zooms in. The color of the forest gradually fades away when a gust of wind blows through.	
5.	 They are shocked when they see the grey forest.	
6.	 Lulu is confused when she see the grey forest.	Lulu: What happened to the colors in the forest? Dinuo: It's not just the forest, our colors have disappeared too.
7.	 Qiqi cried and asked what to do.	Qiqi: What are we going to do?

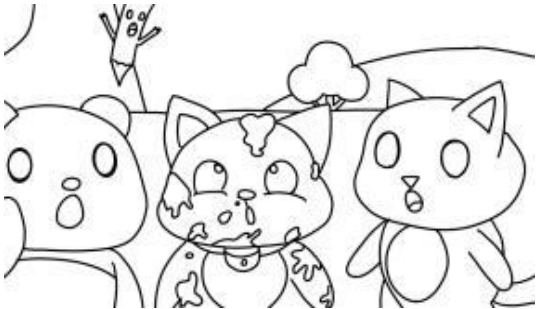
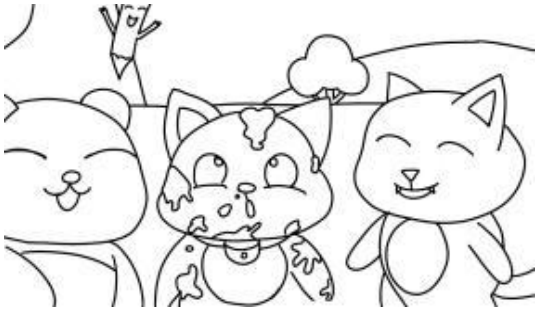
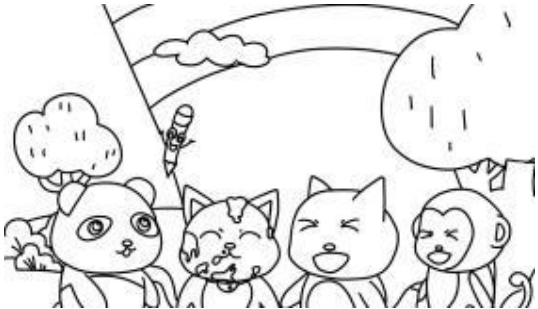
8.	 Lulu have a good idea.	Lulu: Don't worry, we can call the Magical Paintbrush. Kids, let's all shout together: Ohhhh... Magic Paintbrush, Ohhhh... Magic Paintbrush.
9.	 With a whoosh, the Magic Paintbrush appears, accompanied by sparkling, twirling magic.	
10.	 The Magic Paintbrush landed next to Lulu. Qiqi and Dinuo look at the Magic Paintbrush with surprise, and Qiqi stops crying. Qiqi asks how the magic paintbrush can bring back the color of the forest. Lulu and Dinuo nod next to him.	Magic Paintbrush: Here I am! How can I help you? Qiqi: Magic Paintbrush, how can we restore the colors to the forest?
11.	 The Magic Paintbrush spins and recites the mantra.	Magic Paintbrush: Paintbrush, paintbrush, shining bright, please tell me what happend?

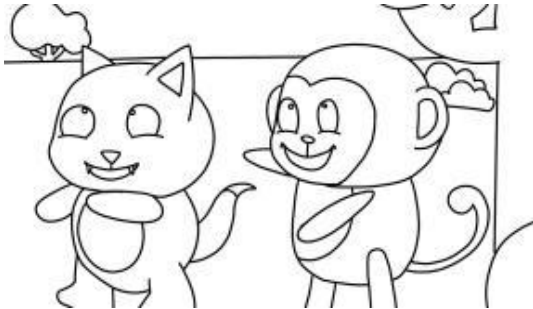
12.	 The camera switches to show a picture of Rainbow Cat, and the underneath of the picture have a word --missing.	Magic Paintbrush: Oh no, the Rainbow Cat who controls the colors, is missing. But don't worry, you just need to draw it, and the forest's colors will be restored!
13.	 Lulu, Qiqi, and Dinuo looked at the magic paintbrush and blinked.	Lulu, Qiqi,, Dinuo: What are we waiting for? Let's grab our paintbrushes! Voice over: Kids, are you ready with your paintbrushes and paper? Let's help them draw together! We're about to start drawing!
Learning Content Section		
14.	 Point-of-view video modeling of drawing the shape of a rainbow cat.	
15.	 After a teacher complete to draw the shape of the Rainbow Cat.	Lulu: Draw a round head, a round head, then pointy ears, pointy ears. Next are round eyes, round eyes, and a round nose, round nose. Then draw a small mouth, small mouth. On each side of the small mouth are long whiskers, long whiskers. Don't forget the little bell on the neck. Next, draw long arms, long arms, followed by a big body, with a round tummy, round tummy. Then draw short

		legs, short legs. Finally, draw a long tail, long tail.
16.	 After complete the shape of Rainbow Cat, Lulu appears on the screen.	
17.	 Lulu and button ✓ and button ✗ appear on the screen.	Lulu: Kids, have you finished your drawing? If you're done, please click Button ✓. If you're not done, please click Button ✗. If you're done, please click Button ✓. If you're not done, please click Button ✗.
18.	 After students click to proceed to the next step, a thumbs-up appears, accompanied by the text "Kids, you're amazing!" next to the image.	Lulu: Kids, you're amazing! You finished so quickly."
19.	 After a teacher complete to color the Rainbow Cat.	Lulu: "Kids, let's color the Rainbow Cat together!""Don't color outside the lines, okay? A black nose, black nose. The rainbow cat winked mischievously at the audience. Warm and cheerful background music plays as the screen gradually fades out. A red nose, a red nose. Blue eyes, blue eyes, a yellow

		tummy and ear. Yellow tummy and ear. A purple body, purple body. How do we color the rainbow tail? How do we color the rainbow tail? From top to bottom, first red, red, then orange, orange, yellow, yellow, green, green, cyan, cyan, blue, blue, purple, purple. All these colors make up the Rainbow Cat's tail. Red, orange, yellow, green, cyan, blue, purple—this is the Rainbow Cat's tail. Finally, don't forget the orange bell, the orange bell!
20.	Lulu and button ☐ and button ☐ appear on the screen.	Lulu: Kids, have you finished your drawing? If you're done, please click Button ☐. If you're not done, please click Button ☐. If you're done, please click Button ☐. If you're not done, please click Button ☐.
21.	After students click to proceed to the next step, a thumbs-up appears, with the text "Kids, you're amazing!" next to the image.	Lulu: Kids, you're amazing! You finished so quickly."
Closing Section		

22.	 Rainbow Cat use magic to make the forest once again bursts with beautiful colors.	
23.	 Lulu, Dinuo, Rainbow Cat, and Qiqi all happily appeared in the forest.	Rainbow Cat: Thank you, little artists Qiqi, Dinuo, Lulu, and all the kids for your help in restoring the beautiful colors of the forest.
24.	 Just as everyone was immersed in joy, Lulu accidentally stepped on the color pencils.	
25.	 The pencils flew up and landed on the Rainbow Cat.	

26.	 The Rainbow Cat turn into a multicolored cat. Everyone was stunned for a moment.	
27.	 Then Lulu and Dinuo burst into laughter.	
28.	 The Rainbow Cat looked at its colorful body and couldn't help but laugh as well.	Rainbow Cat: It looks like I've become a living piece of art!
29.	 As everyone laughed joyfully, Lulu suddenly said, "I think we can take this opportunity to review the steps for drawing the Rainbow Cat!"	

30.	 Qiqi and Dinuo are eager to drawing again.	Qiqi and Dinuo: Yay, we get to draw again! Let's add a bit of a challenge today. Draw the Rainbow Cat according to the voice prompts!
31.	 Animation-based video modeling to help students review the drawing steps. The screen displays text prompts: 1. Start drawing the shape of the Rainbow Cat from the head.	Voice over: Draw a round head, pointy ears, big eyes, a cute nose, a smiling mouth. Then give it small hands and a big body, don't forget the short little feet. Finally, a round tummy and a little bell.
32.	 The screen displays text prompts: 1. Start drawing the shape of the Rainbow Cat from the head. 2. Being careful not to color outside the lines.	Finish by coloring the the Rainbow Cat.
33.	 All animals and Magic Paintbrush wave goodbye together.	Voice over: Qiqi and Dinuo have also completed their Rainbow Cats—how beautiful they are! Time flies when we're having such a great time. It's time to say goodbye.

34.	 The rainbow cat winked at the audience.	Rainbow Cat: “If you want to watch it all over again, click on Replay. Bye, kids!”
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Appendix H

Observation Instrument A

Observation Instrument A to determine user experience on entertaining, enjoyable and helpful towards application aVMAL4ASD

Entertaining Indicator Code (Suggestion)

1. 吸引注意力(Attracting and capturing attention)
2. 挑战(Challenge)
3. 娱乐性(Entertaining)
4. 投入性(Engaging)
5. 引导性(Guiding)

PID	Observed Participants Behavior/action 观察到的参与者行为/动作	Entertaining Indicator Code 娱乐性的指示代码	aVMAL4ASD Scene aVMAL4ASD 场景

Enjoyable Indicator Code (Suggestion)

1. 新颖的(Novelty)
2. 成就(Accomplishment)
3. 享受(Enjoyment)
4. 微笑(Smile)
5. 积极的言语表达(Positive vocalization)
6. 有趣的(Interested)

PID	Observed Participants Behavior/action 观察到的参与者行为/动作	Enjoyable Indicator Code 令人愉快的指示代码	aVMAL4ASD Scene aVMAL4ASD 场景

Helpful Indicator Code (Suggestion)

1. 视频内容(Video content)
2. 动画(Animation)
3. 旁白(Voice over)
4. 结束部分(Closing section)
5. 独立性(Independence)

PID	Observed Participants Behavior/action 观察到的参与者行为/动作	Helpful Indicator Code 有用性的指示代码	aVMAL4ASD Scene aVMAL4ASD 场景



Appendix I

Observation Instrument B

Observation Instrument B to determine user experience on entertaining, enjoyable and helpful towards application aVMAL4ASD

Personal Details:

Please provide your answer and tick where appropriate.

Age: _____

Disability degree: _____

Experience of using mobile phone/tablet: _____ Years

Gender: ☐ Male ☐ Female

User Experience Observation Instrument B

This instrument is divided into three segments, i.e. Entertaining, Enjoyable and Helpful. Please read the statement carefully and tick your answer according to your own opinion/perception.

Entertaining

		Strongly Disagree			Strongly Agree		
1.	aVMAL4ASD-Drawing a Rainbow Cat attracts and captures student attention.	1	2	3	4	5	
2.	aVMAL4ASD-Drawing a Rainbow Cat arouses student's emotions through animation.	1	2	3	4	5	
3.	aVMAL4ASD- <i>Drawing a Rainbow Cat</i> is pleasing and appealing to student's eye.	1	2	3	4	5	
4.	aVMAL4ASD- <i>Drawing a Rainbow Cat</i> is pleasing and appealing to student's ear.	1	2	3	4	5	
5.	The way aVMAL4ASD-Drawing a Rainbow Cat presents content is interesting.	1	2	3	4	5	
6.	aVMAL4ASD-Drawing a Rainbow Cat entertains students with animation.	1	2	3	4	5	
7.	aVMAL4ASD-Drawing a Rainbow Cat engages	1	2	3	4	5	

	student through animation,video, text and etc elements.					
8.	aVMAL4ASD-Drawing a Rainbow Cat provides sufficient guides for drawing learning.	1	2	3	4	5

Enjoyable

		Strongly Disagree			Strongly Agree	
1.	The student enjoys watching aVMAL4ASD- <i>Drawing a Rainbow Cat</i> very much.	1	2	3	4	5
2.	The student enjoys learning through the video modeling method provided by aVMAL4ASD- <i>Drawing a Rainbow Cat</i> .	1	2	3	4	5
3.	The student enjoys learning at own pace when watching aVMAL4ASD- <i>Drawing a Rainbow Cat</i> ..	1	2	3	4	5
4.	The student feels happy when watching aVMAL4ASD- <i>Drawing a Rainbow Cat</i> .	1	2	3	4	5
5.	The student feels excited when learning with aVMAL4ASD- <i>Drawing a Rainbow Cat</i> .	1	2	3	4	5

Helpful

		Strongly Disagree			Strongly Agree	
1.	aVMAL4ASD- <i>Drawing a Rainbow Cat</i> helps student understand drawing operation.	1	2	3	4	5
2.	The animation in aVMAL4ASD- <i>Drawing a Rainbow Cat</i> helps student understand the lesson content.	1	2	3	4	5
3.	Voice over in aVMAL4ASD- <i>Drawing a Rainbow Cat</i> helps student understand the instruction.	1	2	3	4	5
4.	On-screen text instruction in aVMAL4ASD- <i>Drawing a Rainbow Cat</i> is clear for student.	1	2	3	4	5
5.	The text color in aVMAL4ASD- <i>Drawing a Rainbow Cat</i> helps student read well.	1	2	3	4	5
6.	The closing of aVMAL4ASD- <i>Drawing a Rainbow Cat</i> section helps student much in recalling the knowledge which student had learned previously.	1	2	3	4	5
7.	aVMAL4ASD- <i>Drawing a Rainbow Cat</i> helps student to maintain or increase student's independence.	1	2	3	4	5

Appendix J

Parental Consent Form

《家长知情同意书》

我是马来西亚北方大学 2021 级多媒体专业的博士研究生徐苗苗, 拟进行通过视频教学生画画提升学生学习体验的研究, 本研究已通过北方大学的审核和批准, 在此诚挚征求您的同意与配合。本研究希望通过视频教学生画画, 让学生在学画画时能感受到提供的视频内容是娱乐性的, 有趣的和有帮助的。

对于本研究, 我将进行以下说明: 期间共开展 1 节课的视频教学, 教学以一对一的方式进行, 一节课大约 30 分钟。我会安排孩子在一个单独的教室观看视频并 完成一幅绘画作品。

为了观察和记录孩子的学习情况, 本人需要在研究过程中对孩子的学习过程进行录像和拍照记录, 但为尊重您和孩子的隐私权, 本研究承诺: 干预实施期间所收集的所有视频, 照片, 以及所有涉及个人资料的部分, 都将以匿名的形式呈现, 仅供本次研究使用, 绝不泄漏, 敬请放心。如果您对研究有任何的疑问, 请随时与我联络, 非常感谢您的支持与配合!

敬祝 身体健康 万事如意

博士研究生 徐苗苗敬上

家长知情同意书回执

如果您同意您的孩子参与本研究, 请在下方签名:

学生姓名:

家长签字:

日期