

# EMOGAMIFICATION TO REDUCE EMOTIONAL AND BEHAVIOURAL RISK OF SCHOOL DROPOUT AMONG PRIMARY STUDENTS

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# Abstract

The objective of this study was to test the Emogamification apps among the primary school children to reduce their emotional and behavioural risk of school drop. The research method was Quasi experimental design, with 60 participants age range 7 to 12 years, boys (N=29, girls (N=31) from primary level of education of school in Selangor, were recruited for the study. Emotional and Behavioural Risk Scale of School dropout among Primary School Children was administered for pre and post assessment. Students were divided randomly in control group (30) and therapy group to play Emogamification (30). The Emotional Behavioural risk scale of school dropout was administered to assess the pre and post results, among therapy and control group. Results reveals that there was significant mean difference among the score of pre (M=85.233) and post (M= 73.033) among therapy group of Emogamification. There was significant differences for the control group and therapy group of Emogamification. There was statistical differences for the control group and therapy group of Emogamification to their pre and post results analysis. Emogamification app is an effective tool to enhance emotional competency and behavioural management among primary school children. The research provided evidence that the application has usability and efficacy to be administered in school and counselling settings.

Keywords: Emogamification, Emotional, Behavioural, Primary School, Students

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# 1. Introduction

Since technologies are always evolving, it has become an important platform for changing human life and behaviours. Mobile phones have been a major part of our lives nowadays. The growing preference of using mobile phones and the adaptation of mobile phones into our lives has shown that it has potential to promote health and general wellbeing of its users. The use of mobile phones has attracted not only adult users, but also children (Mee Mee et al., 2020). The vast number of available applications have made a major impact that can provide an opportunity and help people change their social behaviour, enrich education and promote health (Narimani et al., 2019). There are several applications that have been developed to identify or develop emotions in users; adults and children. These efforts to create applications that are specifically for people with learning disabilities, is a great step taken to create awareness. The future technologies can help people with learning issues and their social environment in the field of education, and communication (Putra et al., 2018).

A story-based game application called 'My Drama' developed by Shen et al. (2016) was designed for young people with autism to guide them with emotion recognition, understanding and expression of emotions in social context and being empathetic with others. The game includes drama therapy, mobile game design and also playful elements that is incorporated to make the game interesting and attractive to the children (Hursen & Bas, 2019). The games are effective and valuable educational tool for recognising emotions while the compilations of photographic emotional expressions have boosted communication. Another game called 'Learn with Rufus: Feelings and Emotions' is designed to guide children acknowledge simple and difficult feelings and emotions, to determine how emotions are communicated and to designate them (Kouvava et al., 2022).

Child psychologist, educators and researchers need valid and reliable emotional- behavioural measures that are appropriate for use in a variety of community settings involving children when studying about emotional and behavioural risks. Emotional and behavioural risks, such as anxiety, depression, disruptive behaviours, anger and stress, are a form of mental health (Nand et al., 2019) problems in children that are categorised as either internalising or externalising problems Researchers believe that emotional and behavioural problems in children predict a wide range of negative outcomes in adulthood, including substantial difficulty in many crucial life domains such as family functioning, mental health, education and job (Herman et al., 2020).). For example, it is well

documented that oppositional defiant symptoms in childhood may predict not only conduct disorder and antisocial personality disorder. Children who exhibit problematic behaviour at school are more likely to struggle early, often, and throughout their school careers (Nelson et al., 2007) and will have ramifications for day-to-day activities, including attendance in school, learning capacity, drug abuse, aggression and social relationships (Verhulst, Koot & amp; Berden, 1990) and tend to remain throughout adulthood. Emotional issues in children including anxiety, stress, depression, among others, often manifest themselves in later childhood. Due to many children have not yet gained the required language and understanding to communicate their emotions in a way that is understandable, it may be difficult for the parents or other caregivers to see them in their children at an early age (Hassan et al.,2021)). Thus, children with emotional and behavioural issues are more likely to develop future difficulties that interfere with many domains of their lives and negatively impact their mental health. The technology-based gamification are effective ways to reduce the issues and prevent the further mental health issues regarding emotional competency.

# 2. Method:

A quasi-experimental design was carried to conduct the study. Total 60 students using convenience sampling, from primary school in Selangor Malaysia, participated in the study, including 29 boys and 31 girls, with age range of 7-12 years old. The participants were randomly divided in two groups, control group and therapy group to administer the Emogamification intervention. Emotional and Behavioural Risk Scale of School dropout among Primary School Children was administered for pre and post assessment. The Questionnaire reliability was score on Cronbach Alpha value of .97 (Perveen et al., 2022) with contents validity score was reported 85%. The Pre and post analyses of the scale measured the differences in control group and therapy group of Emogamification App. The app was validated from 7 expert panel, including psychological, early childhood educators and primary school teacher, the overall content validity of app was score 88% among the expert panels. The app consisted the games based on emotional self-awareness, emotional social awareness, emotional selfmanagement, emotional social management and motivation based on the emotional competency model and theory. The app was friendly, convenient, age related and based on easy language and content for primary school children. The Emogamification activities domain included credit earning for each activity completion, overall credit encourages the child to play activity and see progress throughout the Emogamification. The activities included; (1) Self emotional awareness as storytelling, (2) Emotional expression, (3) Emotional mapping, (4) emotional understanding as what do you feel, (5) Self-efficacy, (6) Selfesteem, (7) Self-control, (8) Anger management, Stress management, (10)Attention (9) management, (11) To develop a goal, (12) Ambitious, Empathy, (14)(13) Social communication, (15) Talking to parent, and (16) Bully behaviour. All the activities focused on developing emotional competency for children to manage their emotions and behaviours towards themself and others. The 60 participants were required with convivence sampling, they were randomly divided in control group and therapy group of Emogamification, the participant' parents signed the informed consent to be enrolled for the study. After pre assessment the control group participated in usual activities for 7 days and the therapy group of Emogamification played daily for 30 mints for 7 days the Emogamification app. After one week, both groups' participants answered the

post assessment questionnaire. The responses were analysed for further statistical significance to evaluate the effects of Emogamification to increase their emotional competency.

#### 3. Results

Data obtained were analysed using descriptive and inferential statistics. According to Gurnsey (2018), descriptive statistics are used solely to describe the characteristics of a collection of scores and it includes the mean and standard deviation. The results show the difference of control group participants and therapy group of Emogamification among the primary school children. 60 students including boys (N=29) and girls (N=31) with age difference 7-12 with (M=9.52), all the children's parents were working with SPM and doctorate level of professional history, the children had average of 3 -4 sibling, from the middle-class economic status including race of Malays, Indians and Chinese. The participants were all from the same school and same level of education form 2.

Demographic Characteristics								
		Frequency	Percent	Valid Percent	Cumulative Percent			
	7	4	6.7	6.7	6.7			
	8	11	18.3	18.3	25.0			
Age	9	13	21.7	21.7	46.7			
Age	10	18	30.0	30.0	76.7			
	11	10	16.7	16.7	93.3			
	12	4	6.7	6.7	100.0			
Gender	Female	31	51.7	51.7	51.7			
	Male	29	48.3	48.3	100.0			
Race	Malay	30	50.0	50.0	50.0			
	Chinese	9	15.0	15.0	65.0			
	Indian	17	28.3	28.3	93.3			
	Others	4	6.7	6.7	100.0			
Siblings	1-2	25	41.7	41.7	41.7			
	3-4	32	53.3	53.3	95.0			
	4-5	3	5.0	5.0	100.0			

The demographic data shows that total of N=60 participants were recoded including control group and therapy group. The Malay were 30%, Indian

17% and Chinese 9%. The number of siblings 1-2 (25%), 3-4 (32%) and 4-5 (3%).

Table	2
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Mean Comparison of Control group and therapy group pre assessment and post assessment score of Emotional behavioural risk Scale of School dropouts							
Group Mean Std Error 95% Confidence Interval							
	Group	Ivicali	Stu. LITOI	Lower Bound	Upper Bound		

Overall score of Pre-test	Control	81.233	1.755	77.720	84.747
Assessment	Therapy	85.833	1.755	82.320	89.347
Overall score of post-test	Control	79.567	1.700	76.163	82.970
Assessment	Therapy	73.033	1.700	69.630	76.437

Figure of Mean Comparison between Control group and therapy group of Emogamification



There was significant mean difference in pre assessment of control group M=81 and therapy group M=85, while the post assessment results of control group (M=79 and therapy group (M=73).

Results revealed that there was significance difference of mean among control group and therapy group after application assessment

Table 3							
Multivariate Tests <sup>a</sup>							
	Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
	Pillai's Trace	.785	104.123 <sup>b</sup>	2.000	57.000	.000	.785
	Wilks' Lambda	.215	104.123 <sup>b</sup>	2.000	57.000	.000	.785
Intercept	Hotelling's Trace	3.653	104.123 <sup>b</sup>	2.000	57.000	.000	.785
	Roy's Largest Root	3.653	104.123 <sup>b</sup>	2.000	57.000	.000	.785
	Pillai's Trace	.703	67.402 <sup>b</sup>	2.000	57.000	.000	.703
	Wilks' Lambda	.297	67.402 <sup>b</sup>	2.000	57.000	.000	.703
Group	Hotelling's Trace	2.365	67.402 <sup>b</sup>	2.000	57.000	.000	.703
	Roy's Largest Root	2.365	67.402 <sup>b</sup>	2.000	57.000	.000	.703
Inferen	ntial statistics on the	other hand	l strive to m	ake inferences	and predict	ions based	on the data
gathered	(Cohen et al., 2011)	by testing	the propose	d hypotheses. I	n this study	, all the hy	potheses were
tested	by using Two-way	MANOVA	A regards to	gender and wo	rking place	for all vari	ables. The
assumption	ns of independence	of observat	ions and ho	mogeneity of v	ariance/cov	variance we	ere checked and
met. Bi	variate scatterplots v	vere checke	ed for multi	variate normali	ty. The mai	n effect for	r control and
therapy group pre and post assessment score was statistically significant, F=(2,57) Wilk's $\Lambda = 0.29$ ,							
partial $\eta 2 = .70$ ), p <0.00.							
			Tab	le 4			

Tests of Between-Subjects Effects							
Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	

Group	Overall score of Pre-test data	814.017	1	814.017	3.459	.068
r	Overall score of post test data	2693.400	1	2693.400	12.354	.001
a. R Squared = .056 (Adjusted R Squared = .040)						
b. R Squared = .176 (Adjusted R Squared = .161)						

The score between groups shows significant difference (p<0.001) in the overall score of post assessments between groups of control group and therapy group Emogamification. The results show the post assessment results has significant variation of score as compared to pre assessments between the groups of control and therapy of Emogamification.

# 4. Discussion

The Study analysed the effects of Emogamification app among the primary school students. The mean differences of control group and therapy group validated the assumption that Emogamification app is effective to reduce the emotional and behavioural risk of school dropouts among primary school children. Given the potential benefits of a mobile application for children with unique learning difficulties, we concentrated to test an application that focuses on enhancing children's essential learning skills of emotional awareness and management through the application of cuttingedge technology (Parra González et al., 2019). Current research has designed 'Emogamification', a mobile application that was used as therapy intervention to help primary school children, especially slow learner to improve their emotional intelligence (EQ). The activities developed in the game were based on the domains proposed in Goleman's Theory of Emotional Intelligence (2001). There are sixteen (16) modules in the Emogamification game, which are integrated with the competency of each domain of emotional intelligence; self-awareness, self-management, awareness, social management social and motivation. Some studies has found that emotional awareness correlates with other areas of emotional functioning, such as acknowledging and classifying emotional stimuli. As children with higher levels of emotional awareness have been shown to have better social and environmental adjustment, higherquality friendships, and fewer emotional and behavioral problems, it stands to reason that developing these skills early on is important for children's interpersonal functioning (Ezatibabi, & Ghasemi, 2021). Emotional awareness in children has not been studied as much as in the older age group. This is probably due to lack of instrument to study the variable among children. A study by Mancini et al. (2013) showed that gender and verbal skills are predictors of children's emotional awareness. The researchers found that the female

gender have a higher emotional awareness than their counterparts. A key factor in determining whether or not a child will develop an awareness of their own and other people's emotions is the degree to which they can recognize emotions on other people's faces. Thus, the capacity to understand and manage one's emotions is crucial for children to flourish in school and society (Fiuza-Fernández et al., 2022).

Emotional understanding and management is integrated in the activities as mobile game app which pictorial and content presentation. The designs of the activities allow children to be involved in the process of collecting information related to their emotional links with their environment. A number of studies have shown that mind mapping can be used effectively at a variety of educational levels to foster student development in a variety of subject areas (Cendros & Gadanidis, 2020). Mind mapping may provide children with skills that could lead them to success throughout their lives. These skills include multidimensional problem-solving, thinking, creativity, conceptualization, analysis, synthesis, and cooperation. Mind mapping may provide children in early childhood with these skills. Children's learning and cognitive abilities, in addition to their fine motor skills, can be developed through the use of mind mapping (Polat & Atis-Akyol, 2021). According to Udayar, Fiori and Bausseron (2019), when it comes to mobilizing self-regulatory mechanisms that are powerful enough to influence both subjective and objective performance, having the perception of being able to understand and use one's emotions is essential. Emogamification is app based game to teach children to regulate their thoughts, actions and emotions so they can get things done with more understanding. Self-control is a complex skill that develops over time, as children get older; they develop self-control in three areas; movement control, impulse control and emotional control (Gurney, 2018). Abolghasemi, Barzegar and Rostamoghli (2014) showed that children with learning disabilities who struggle with impulse control issues can benefit tremendously from participating in programs that teach self-control. This research also investigates both emotional and behavioral issues to be effectively managed by Emogamification. This is a significant step towards identifying children who may need professional assistance and enabling the execution of important policy choices to promote

the well-being of children with emotional and behavioral problems in Malaysia. Children need to be taught to be self-aware of their emotions, as well as their behaviors (Narimani, et al, 2019). Children may learn to tackle obstacles with confidence and a positive attitude by being aware of their emotions, having those feelings validated, and learning to regulate those feelings. Adult may provide children with encouragement and validation as they go through the process of discovering and naming their emotions (Vasilevska et al, 2019). A child who is experiencing emotions of sadness or frustration as a result of attempting something new might get reassurance from their parents, teachers, or therapists, for instance. They are also able to point the children in the proper way so that the child may feel the satisfaction that comes with achieving their goals.

# 5. Conclusion

To conclude, in order to properly grasp what Emogamification have to offer for the emotionally developed of children, it is vital for game design as well as game research to combine gamification with emotional intelligence (Arzone, et al 2020). The children will also use the mobile application at home under the supervision of their caregivers, and to collect input from educators, caregivers, and children as well as analyses the acquired sensor data. Understanding and managing emotions is crucial for children with learning disabilities since it influences their behavior (Bussu & Pulina, 2020) which helps them to successfully assimilate into society. Using mobile and sensor technology has the potential to be beneficial to assist children with learning issues and their caregivers in daily life. The use of Emogamification to measure emotional intelligence, it's an attempt to make the measuring procedure more entertaining for the children, and also to increase the game accessibility by making it more therapeutic as an online platform.

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