Validation of Emogamification app Module to Reduce Emotional and Behavioural Risk of School Dropout among Primary Students

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Abstract
Emotional competency is great concern to develop among children's, with the increased statists of emotional and behavioural issues for risk of school dropout among students. Emogamification is an aid of strategies to build better emotional competency skills for children in primary school. The objective of this study was to test the Emogamification apps module for validity and reliability. To develop the module, the researcher used ADDIE model which incorporates five primary phases, namely Analysis, Design, Development, Implementation and Evaluation. The study used a try out groups which combined 30 participants from primary school children with age range (7-12 years), and 5 experts from the field of psychology, special education, early childhood education and primary school teacher using convivence sampling. According to the content validity scale by expert the Emogamification app module has cumulative score of .87% accuracy for age relevancy, clarity of activities and the feature for developing emotional competency among primary school children's. The reliability of Emogamification app module was measured by using the self-report questionnaire of The Emotional Behavioural of school dropout risk scale, the overall reliability of Module was scored .98 Cronbach's alpha coefficients on all the activities of the module among the primary school children after playing the games activities for a week. The results reveals that the Emogamification app is an effective, reliable and valid 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 primary school, special education and counselling settings.
Keywords: Reliability, Validity, Emogamification, Emotional, Behavioural, Primary school, Students

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 it users. The use of mobile phones has attracted not only adult users, but also children (Santoso et al, 2021). 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. There are several applications that have been developed to identify or develop emotions in users; adults and children (Fiuza-Fernández et al, 2022). These efforts to create applications that are specifically for people with learning disabilities, is a great step taken to create awareness (Bussu, & Pulina 2020). The future technologies can help people with learning disability and their social environment in the field of education, communication and ant issues related to the people's personal basic needs. Children with learning issues, such autism spectrum disorders (ASD), attention-deficit hyperactive disorders (ADHD), and slow learners tend to have more visual capabilities, thus making mobile applications attractive to them. A story-based game application should be designed for children's to guide them with emotion recognition, understanding and expression of emotions in social context and being empathetic with others (Narimani, 2019). The game includes therapeutic contents in to mobile game also playful elements that is incorporated to make the game interesting and attractive to the children (Lloyd, 2019). The game indicates a consistent storyline and playing as a first-person character to gather emotional expression photographs in a known surrounding in accordance to the storyline. The game-based activities are being a 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(Holly , 2013).

The emotional competency skills, which are represented, are an effective approach for modelling emotional intelligence and developing emotional intelligence skills that children require in order to be ready for school (Rivers et al. 2013). Emotional awareness and regulation predict school engagement and adjustment. Children's understanding of oneself emotional regulation strategies develop over time, and sometimes, may include ineffective ones. Emotional knowledge predicts future outcomes, interpersonal relationships predict academic outcomes, and social-emotional behaviours predict school outcomes (Jennings et al. 2009). In early life, social and emotional intelligence development is crucial. Theoretically and empirically, it has been shown that boosting emotional in early life is important for assuring the success of forming and sustaining a positive self-image. Children with higher emotional competency have superior attention spans, a greater capacity for compassionate behaviour, better academic performance, and more pleasant peer connections and interactions (Khawaja, 2017). Game based learning is often thought of as an educational technique that encourages student engagement and motivation. In recent years, an increase interest in using gamification to study emotions, engagement and motivation amongst the research community (Putra et al. 2018). Gamification has been described as the notion of incorporating game elements into products or services in order to attract more users and increase the user's overall experience, engagement and loyalty

Given the potential benefits of a mobile application for children with unique learning difficulties, we concentrated on building an application that focuses on enhancing children's essential learning skills through the application of cutting-edge technology. Emogamification is a powerful tool designed to engage children. By combining elements of emotions and gamification, it creates an immersive and interactive experience that captivates young minds. Through the use of emoticons and game-like features, children are motivated to participate and learn in a fun and engaging way. This innovative approach not only enhances their educational experience but also fosters emotional development and social interaction. Emogamification is revolutionizing the way children engage with educational content, making learning an enjoyable and rewarding experience for all. Current research has designed 'Emogamification', a mobile application that will be used 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 (Mayer, 1997). There are sixteen (16) activities in the Emogamification game, which are integrated with the competency of each domain of emotional competency; self-awareness, self-management, social awareness, social management and motivation. The application has significant contribution to children emotional development and management in school setting, and counselling. The apps designed for children have proven to be useful tools for personal and social management. These applications provide a range of features and functionalities that assist children in various aspects of their lives.

Method
The current study implied the ADDIE model which incorporates five primary phases, namely Analysis, Design, Development, Implementation and Evaluation, design to develop, validate and test the reliability of the Emogamification App module. The needs analysis study of phase one involved a quantitative and qualitative study. Total of N=10 primary school teachers and N=10 students participated in this research phases of interview using purposive sampling. The results of thematic analysis revealed the themes of four components of emotional issues among children including, self-awareness, self-management, social awareness and social management. Based on the finding researcher developed the instrument of emotional behavioural risk scale of school dropout among primary school children, overall reliability was score on Cronbach Alpha value of .97 for all the items of Primary School Dropout Emotional and Behavioural Risk Scale (Perveen et al, 2022) which were based on the module activities for the Emogamification app. The scale was validated by 7 experts included primary school teachers, psychologist, and special education teacher and early childhood teachers (content validity score=80%) and module was validated by 7 expert from psychology, special education, early childhood and teachers of primary school. The reliability value index of a module was measured using the items of either the activity objectives or procedure which included into a questionnaire from 30 primary school children with age range (7-12) years, by using convivence sampling. Hence, a rating scale was constructed to receive the feedback from the participants. The rating scale was face validated by 7 professionals, had high face validity and reliability values. The permission from the Ministry of Education and the school administration, ethical approval from RMIC and permission from participants parents were followed to carry out the research.

Results

The study results show that the validation of the activities in the Emogamification app module score higher than .80% among all the panel of experts. Based on the finding of 5 experts participated in the validity research, the overall validated shows high accuracy on the contents, age relevancy and feature of the games were appropriate for the development of the emotional competency among primary school children.

Table 1
Panel of experts and field of expertise/academic training

Expert	Field of Expertise/Academic Training	CUMULATIVE SCORE
1	Psychology lecturer	86.6%
2	Special Education lecturer	94.4%
3	Early childhood education lecturer	78.1%
4	Early childhood education lecturer	84.2%
5	Primary school teacher	89.5%
Overall score		**86.6%**

Content validity was tested form 5 experts, working in fields of psychology, early childhood, special education and primary school teacher. The overall validity was measured by the total score of each domain of relevance, age appropriateness, and feature for the emotional competency of all expert .86%. which indicated a good score to measure the content validity of module.

Table 2
Descriptive statistics for the Emogamification module app categories (N = 30)

	No. of activities	M	Cronbach's α	Cronbach's α based on Standardized Items
Self awareness, self management and motivation	9	3.65	.976	.977
Social awareness and social management	7	3.80	.971	.972

Table 2 results revealed that there was score Cronbach α .97 on self-awareness and self-management, motivation, social awareness, social management aspects of activities related to the Emogamification app module. The results indicated that this module activities have accepted level of reliability on all aspects of activities.

Table 3
The values of reliability of Emogamification app module on each activity's domain

Activities of Emogamification app module	Cronbach's α	Result
Self-emotional awareness	.923	Accepted
Emotional expression	.828	Accepted
Emotional mapping	.885	Accepted
Emotional understanding	.856	Accepted
Self-efficacy	.819	Accepted
Self-esteem	.943	Accepted
Self-control	.928	Accepted
Anger management	.823	Accepted
Stress management	.941	Accepted
Attention management	.954	Accepted
Goal development	.889	Accepted
Ambitious	.899	Accepted
Empathy	.910	Accepted
Social communication	.920	Accepted
Talking to parents/teacher and peers	.894	Accepted
Bully behavior	.875	Accepted

Overall results of table 3 indicated that each domain of Emogamification activities were in the range of acceptable score.

Discussion

Current research provided as valid and reliable tool as Emogamification app module for child psychologist, educators and researchers to work emotional-behavioural issues among primary school children. The results of validity and reliability are appropriate for use in a variety of community settings involving children when studying about emotional and behavioural risks. Emotional and behavioural risks, disruptive and autism spectrum disorders, are a form of mental health problems in children that are categorised as either internalising or externalising problems(El-Radhi, 2015). Many researchers concluded 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 (Trentacosta et .al, 2013). For example, it is well documented that oppositional defiant symptoms in childhood may predict not only conduct disorder and antisocial personality disorder (ASPD) in adolescence and adulthood, but also drug use, unsafe sexual activities, and severe criminal activities (Magai, Malik & Koot, 2018). The validation of a tool is an ongoing process that achieves a higher level of consistency the more the psychometric features of the instrument are defined by the type of instruments being used and the reason for using it. Validation will also be determined for that particular instrument in a variety of settings and with a variety of population groups (Pallas & Villa, 2019). The degree to which an instrument provides a sufficient representation of the material that it is designed to cover is what is meant to be referred to as its "content validity" (Streiner, Norman and Cairney, 2015). On the other hand, an instrument does not have to go into extensive detail regarding each of the components that go into making up a concept. This would make the instrument much too vast. Therefore, the instrument needs to have a sample that is representative of the several domains and probable problems that are associated with the idea of interest (Alarcon et al, 2008). The twenty items of the survey measured here

include the most important issues with regard to primary school dropout and their emotional-behavioural risk.

The sixteen (16) activities on the Emogamification module proved to be reliable and valid based on the internal consistency reliability coefficient of .97 found in this research is excellent. The app resulted in two major domains; Self-awareness, self management and motivation (9 activities); Social awareness and social management (7 activities). Both of the domains yielded excellent internal consistency of .97 respectively. The module content validity was reviewed by seven professionals with experience in dealing with emotional issues among children of 80% and above is considered as the module having high content validity (Gurnsey, 2018). All the steps included in the activity needs to be followed thoroughly to measure the reliability of a module app. Emogamification is an application used to aid the primary school student specifically with emotional issues to improve their emotional intelligence. The activities developed were based on the emotional intelligence domains. Design features like as points badges and leader board may motivate users to achieve their goals by awarding them with the 'victory' they deserve as a reward for their effort (Hassan, et al 2021). In Emogamification there will be a process to collect the points from each themes (Sorina, & Roman, 2019). Emotional understanding is the capacity to predict the emotion a person would feel as a result of a certain situation. In order for individuals to have the capacity to comprehend emotions, they need to have had their own experiences to learn what feelings are generated by a specific event. Understanding the consequences is an essential component of this process. Understanding emotions requires figuring out where they come from (Valiente et al, 2020), in order for children to be able to comprehend the emotions of others, they must first learn to identify and name their own feelings. It is possible to discern the beginnings of emotional language in a child as young as two years old, and this comprehension continues to grow throughout the ages. When it comes to complicated emotion like guilt and appreciation, children have a hard time comprehending them (Pyne, 2019).). Children are capable of distinguishing between different emotions. The children discover that they may feel a variety of emotions at the same time, both positive and negative, as young as eight years old. They also understand that emotional responses do not always represent what a person is genuinely experiencing, and that emotions should sometimes be concealed (Estrada,et al, 2021) . The findings of this research contribute in ways to increase awareness among parents, community and society on their understanding and conception regarding children with emotional and behavioural issues that may lead to school dropout. This research also gives the idea for whole community to not take school dropout as a minor issue in today's society.

Conclusion

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 behavioural problems in Malaysia. Children need to be taught to be self-aware of their emotions, as well as their behaviours. 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. 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. Emogamification is a method that utilizes gamification strategies to enhance

emotional competency skills in primary school children. By incorporating elements of games and play into the learning process, it aims to engage and motivate students while fostering their emotional development. Through various activities and exercises, children are encouraged to identify, understand, and regulate their emotions, as well as develop empathy and social skills. This approach not only helps children build a strong foundation in emotional intelligence but also promotes a positive and inclusive learning environment. Emogamification has shown promising results in equipping children with the necessary emotional skills to navigate challenges and thrive academically and socially.

Acknowledgement

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