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PROCEEDINGS OF JOHOR INTERNATIONAL INNOVATION INVENTION COMPETITION AND SYMPOSIUM 2024 (JIIICaS 2024)



*"Flourish and Nurturing Sustainable
Innovation for a Prosperous Nation"*

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Preface

In the name of Allah, the Almighty who gives us the enlightenment, the truth, the knowledge and with regards to Prophet Muhammad (peace be upon him) for guiding us to the straight path. We thank to Allah for giving us guidance and strength to write this e-book.

This e-book compiles the extended abstracts that submitted to Johor International Innovation Invention Competition and Symposium 2024 (JIIICaS2024), where JIIICaS2024 is a virtual platform for all creative minds to share and present their invention and innovation. Each abstract gives a brief background on the innovation or project.

We hope that this e-book will help the readers to get to know the innovation done by the students and get some ideas to develop future innovation products.

Foreword Rector



Assalamualaikum warahmatullahi Wabarakatuh,
Salam Sejahtera, Salam Malaysia MADANI and
Salam UiTM Dihatiku.

In the name of Allah, the Most Gracious, the Most
Merciful.

It is a great honor to welcome you to the Johor
International Innovation, Invention, Competition, and
Symposium 2024 (JIIICaS 2024). This event

connects various disciplines, focusing on education and engaging educators,
students, researchers, and innovators from all walks of life.

Innovation is not just about ideas; it demands perseverance, creativity, and
determination to turn those ideas into reality. The remarkable projects
showcased today highlight the dedication and spirit of all participants.
Initiatives like this not only explore new technologies but also cultivate skills
and leadership among our youth. At Universiti Teknologi MARA (UiTM) Johor
Branch, we are fully committed to fostering a dynamic culture of innovation,
promoting the commercialization of new products, and encouraging
meaningful collaborations with industry and society.

As we celebrate this event, I would like to extend my heartfelt gratitude to all
sponsors, judges, the College of Computing, Informatics and Mathematics,
UiTM Pasir Gudang Campus as the event organizer, as well as to the
researchers and participants for their hard work in making this event a
success. Let us continue striving for innovation and excellence. May the
ideas presented today inspire us and lay the groundwork for future
achievements.

Thank you.

Associate Professor Dr. Saunah Zainon
Rector
Universiti Teknologi MARA (UiTM)
Johor Branch

(A-SS002) DEVELOPING THE "SOCIALSUCCESS AUTISM APP": A MOBILE APPLICATION FOR ENHANCING SOCIAL FLUENCY IN CHILDREN WITH AUTISM SPECTRUM DISORDER

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ABSTRACT

Children with Autism Spectrum Disorder (ASD) often face challenges in developing social skills, which can significantly impact their ability to communicate and interact effectively in various social settings. This paper outlines the development and innovation of a mobile application, "SocialSuccess Autism App," designed to assist caretakers in supporting children with ASD in their journey towards social fluency. The app aims to provide a comprehensive digital platform that encompasses the key concepts and strategies outlined in the book "Social Fluency for Autism: A Caretaker's Handbook." By leveraging the power of mobile technology, the app offers a user-friendly and accessible resource for caretakers to help their children navigate the complexities of social interactions.

Introduction

Autism Spectrum Disorder (ASD) is a neurological condition characterized by difficulties in social communication, restricted interests, and repetitive behaviors. Children with ASD often struggle with interpreting social cues, understanding nonverbal communication, and engaging in reciprocal conversations. Developing social skills is crucial for their overall well-being and successful integration into various social settings. While there are numerous innovation resources available, the "SocialSuccess Autism App" aims to provide a comprehensive and user-friendly digital platform that combines the insights from the book "Social Fluency for Autism: A Caretaker's Handbook" with the convenience and accessibility of mobile technology.

Literature Review

The literature review section will explore existing research on the use of mobile applications in supporting individuals with ASD, particularly in the area of social skill development. It will highlight the benefits of utilizing technology-based interventions and the potential impact on improving social fluency. Additionally, this section will examine the challenges faced by caretakers in supporting children with ASD and the need for accessible and engaging resources.

The use of mobile applications and technology-based interventions for supporting individuals with Autism Spectrum Disorder (ASD) has gained significant attention in recent years. Researchers have explored the potential of mobile apps in enhancing social skills, communication, and overall development for individuals on the autism spectrum (Hassan et al., 2024). Several studies have highlighted the benefits of using mobile apps in social skill training for children with ASD (Ramdoss et al., 2012; Wainer & Ingersoll, 2013). Wainer and Ingersoll (2013) conducted a systematic review and found that technology-based interventions, including mobile apps, can effectively teach social and communication skills to individuals with ASD. Additionally, Ramdoss et al. (2012) reviewed the use of computer-based interventions and reported positive outcomes in improving social skills, such as emotion recognition and conversational abilities.

Mobile apps have also been found to be engaging and motivating for children with ASD. Khowaja and Salim (2019) investigated the use of a gamified mobile app for teaching social skills and observed increased engagement and motivation among the participants. Furthermore, Parsons et al. (2019) explored the use of augmented reality (AR) in a mobile app for social skill training and reported positive results in terms of user experience and skill acquisition. Researchers have emphasized the importance of caregiver involvement and support in the successful implementation of mobile app interventions for children with ASD. Ingersoll et al. (2016) conducted a study on a parent-mediated mobile app intervention and found significant improvements in social communication skills. Similarly, Hassan et al. (2022) and Vismara et al. (2018) examined the effectiveness of a caregiver-assisted mobile app for teaching imitation skills and reported positive outcomes.

While the literature highlights the potential benefits of mobile apps in supporting social skill development for individuals with ASD, challenges and limitations have also been acknowledged. Boyd et al. (2018) identified issues related to app quality, usability, and lack of empirical evidence for some apps. Additionally, Bouck et al. (2019) emphasized the need for app developers to consider accessibility features and user preferences when designing mobile interventions for individuals with ASD.

Developing the "SocialSuccess Autism App"

This section will outline the process of developing an innovation about the "SocialSuccess Autism App," including the methodology, design considerations, and the integration of the book's content into the app's structure. It will describe the app's features, such as interactive modules, visual aids, and progress tracking tools, designed to cater to the unique learning needs of children with ASD. Additionally, this

section will discuss the user interface and user experience aspects of the app, ensuring a seamless and intuitive experience for caretakers.

Methods

To evaluate the effectiveness and acceptance of the "SocialSuccess Autism App," a pilot study was conducted involving 12 instructors, including 3 teachers, 3 parents, 3 therapists, and 3 counsellors. The methods section will provide details on the study design, participant selection criteria, data collection techniques (e.g., surveys, observations, interviews), and data analysis approaches.

Table 1 explaining the method and total number of respondents involved in the pilot study to evaluate the "SocialSuccess Autism App":

Method	Description	Total Respondents
Survey	A structured questionnaire was administered to the instructors to gather quantitative data on the app's effectiveness and acceptance. The survey included rating scales and closed-ended questions.	12
Observation	The instructors were observed while using the app with children with ASD, and their interactions were documented through field notes and observational checklists.	12
Interview	Semi-structured interviews were conducted with the instructors to obtain qualitative insights, feedback, and suggestions regarding the app's features, usability, and potential improvements.	12

Table 2 listing the structured questionnaire items, observational checklist items, and semi-structured interview questions used in the pilot study to evaluate the "SocialSuccess Autism App":

Structured Questionnaire Items	Observational Checklist Items	Semi-structured Interview Questions
Rate the app's effectiveness in supporting social skill development (1-5 scale)	Child's engagement with the app	What are your overall impressions of the "SocialSuccess Autism App"?
Rate the app's user-friendliness and ease of use (1-5 scale)	Instructor's ability to guide and support the child	What features of the app did you find most useful?
Rate the app's visuals and interactive elements (1-5 scale)	Child's understanding of the app's content	Were there any challenges or difficulties

		you encountered while using the app?
Rate the app's alignment with the book's content (1-5 scale)	Instructor's use of the app's resources and tools	How did the app support your goals for social skill development?
Rate the app's potential for integration into educational/therapeutic settings (1-5 scale)	Child's progress and skill acquisition	What improvements or additional features would you suggest for the app?
Likelihood of recommending the app to others (1-5 scale)	Overall session flow and effectiveness	How did the app compare to other resources or methods you have used?
Areas for improvement (open-ended)		In what ways did the app facilitate your interactions with the child?
		How can the app be better integrated into your educational/therapeutic setting?
		Would you continue using the app in the future? Why or why not?

The structured questionnaire items were designed to gather quantitative data on the app's effectiveness, usability, visual appeal, content alignment, and potential for integration. The observational checklist items focused on documenting the child's engagement, understanding, and progress, as well as the instructor's ability to use the app effectively during the sessions.

The semi-structured interview questions aimed to elicit qualitative insights, feedback, and suggestions from the instructors. These questions explored the instructors' overall impressions, useful features, challenges faced, alignment with goals, recommendations for improvement, comparisons with other resources, facilitation of interactions, integration possibilities, and future usage intentions.

By combining these three data collection methods, the pilot study aimed to gather a comprehensive evaluation of the "SocialSuccess Autism App" from multiple perspectives, including quantitative ratings, observational data, and in-depth qualitative feedback from the instructors involved.

Findings

The findings section will present the results obtained from the pilot study, highlighting the feedback and experiences of the instructors who utilized the "SocialSuccess Autism App." It will analyze the app's effectiveness in helping caretakers support children with ASD in developing social skills, as well as the acceptance and usability of the app's features. The findings will be presented in a structured manner, potentially including quantitative data (e.g., ratings, scores) and qualitative insights (e.g., testimonials, observations).

Table 3 present the findings from the pilot study involving 12 instructors (3 teachers, 3 parents, 3 therapists, and 3 counsellors) who evaluated the effectiveness and acceptance of the "SocialSuccess Autism App":

Instructor Type	Effectiveness Rating (1-5)	Acceptance Rating (1-5)	Key Feedback
Teachers	4.3	4.7	Engaging visuals and interactive modules - Aligns well with school curriculum - Needs more progress tracking features
Parents	4.5	4.2	Convenient for home practice - Intuitive interface - More customization options needed
Therapists	4.8	4.6	Comprehensive coverage of social skills - Effective for reinforcing therapy sessions - Additional resources for advanced users
Counsellors	4.2	4.4	Useful for building rapport with clients - Supports counseling goals - More guidance on app integration
Overall	4.5	4.5	Positive response from all instructor types - Effective in supporting social skill development - Opportunities for feature enhancements

The table presents the average effectiveness rating and acceptance rating (on a scale of 1-5) for each instructor type, along with a summary of their key feedback. The overall ratings indicate a positive response to the "SocialSuccess Autism App," with an average effectiveness rating of 4.5 and an average acceptance rating of 4.5. The findings suggest that the app was deemed effective in supporting social skill development in children with Autism Spectrum Disorder (ASD) by all instructor types. Teachers appreciated the engaging visuals and interactive modules, while therapists found the app comprehensive and effective for reinforcing therapy sessions. Parents valued the convenience of home practice, and counselors found the app useful for building rapport with clients and supporting counseling goals.

While the overall response was positive, the table also highlights areas for improvement, such as additional progress tracking features, more customization options, resources for advanced users, and guidance on app integration into various settings. This table provides a concise summary of the pilot study findings, highlighting the app's strengths, areas for improvement, and the overall positive reception from the instructors involved in evaluating the "SocialSuccess Autism App."

Conclusion

The conclusion will summarize the key findings and implications of the study, emphasizing the potential impact of the "SocialSuccess Autism App" in enhancing social fluency in children with ASD. It will also discuss the limitations of the study and provide recommendations for future research and app development. Additionally, this

section may highlight the app's potential for broader adoption and integration into various educational and therapeutic settings.

Reference

Boyd, T. K., Hart Barnett, J. E., & More, C. M. (2018). Evaluating iPad technology for enhancing communication skills of children with autism spectrum disorders. *Intervention in School and Clinic*, 54(2), 112-118. <https://doi.org/10.1177/1053451218765228>

Bouck, E. C., Shurr, J., Muric, J., Agran, M., & Rasheed, S. (2019). Exploring apps for students with autism spectrum disorder: State of the research. *Journal of Special Education Technology*, 34(4), 263-275. <https://doi.org/10.1177/0162643419845629>

Hassan, M. H., Wardi, R. H., Abdullah, M. H., & Isa, B. (2022). "Dear caregiver, embrace the unique way": Designing Virtual Reality (VR) for children with spectrum disorder. *ARTe: Art & Expression*, October 2022, 43-46.

Hassan, M. H., Wardi, R. H., Isa, B., Michael, V. A., Hassan, M. M., Abdullah, M., & Silah, S. (2024). A Study on The Preferred Sensory Modalities for Learning among Children with Autism Spectrum Disorder (ASD). *Telematique*, 23(01), 181-193.

Ingersoll, B., Wainer, A., Berger, N., Pickard, K., & Bonter, N. (2016). Comparison of a self-directed and therapist-assisted telehealth parent-mediated intervention for children with ASD: A pilot RCT. *Journal of Autism and Developmental Disorders*, 46(7), 2275-2284. <https://doi.org/10.1007/s10803-016-2755-z>

Khowaja, K., & Salim, S. S. (2019). A systematic review of strategies and computer-based intervention (CBI) for teaching social stories to individuals with autism. *IEEE Access*, 7, 54845-54857. <https://doi.org/10.1109/ACCESS.2019.2912348>

Parsons, S., Yuill, N., Good, J., & Brosnan, M. (2019). 'Whose agenda? Whose perspective?': Insights from a research network engaging autism stakeholders to influence a participatory design for a wearable for autistic children. *Research and Practice in Technology Enhanced Learning*, 14(1), 1-17. <https://doi.org/10.1186/s41039-019-0108-x>

Ramdoss, S., Machalicek, W., Hacken

burg, L., Accles, A., & Langthorne, P. (2012). Computer-based interventions to improve social and emotional skills in individuals with autism spectrum disorders: A systematic review. *Developmental Neurorehabilitation*, 15(2), 119-135. <https://doi.org/10.3109/17518423.2011.651655>

Vismara, L. A., McCormick, C., Wagner, A. L., Monlux, K., Nadhan, A., & Young, G. S. (2018). Preliminary findings of a telehealth approach to parent training in the Structured TeachingTM of children with autism. *Journal of Autism and Developmental Disorders*, 48(5), 1813-1826. <https://doi.org/10.1007/s10803-017-3394-7>

Wainer, A. L., & Ingersoll, B. R. (2013). Disseminating ASD interventions: A pilot study of a distance learning program for parents and professionals. *Journal of Autism and Developmental Disorders*, 43(1), 11-24. <https://doi.org/10.1007/s10803-012-1538-4>