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A Prototype Graphic Design Mobile Application Development as a Medium to Assist Creatives with Attention Deficit Hyperactivity Disorder

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ABSTRACT

Attention Deficit and Hyperactivity Disorder (ADHD), is a neurodevelopmental condition known or characterized by recurrent symptoms of impulsivity, hyperactivity, and inattention that can have a major influence on social interactions as well as academic or professional performance. This paper provides a development process of a prototype mobile application that will help managing attention deficit and hyperactivity disorder (ADHD) in young adults. The target audience involved creative industry young adult aged 22-35 years old living in Cardiff, United Kingdom. The mobile application is embedded with important features such as time and task management, focus and productivity booster, Memory and organization aids, emotional regulation and wellbeing. Other features are; accountability and support, as well as easy access to health practitioners and support which aims to enhance workflow efficiency and foster sustained engagement. Drawing on existing literature and case studies, this study examines the potential impact of digital interventions in mitigating ADHD-related challenges within the creative industry. The findings suggest that personalized, user-centered design principles can significantly improve productivity and accessibility for ADHD creatives. This research contributes to the growing field of inclusive technology, advocating for innovative digital solutions that support neurodivergent individuals in creative professions.

Keywords: Graphic design; attention deficit hyperactivity disorder (ADHD); Creatives; Learning

1.0 INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental condition that impacts children's capacity to focus, control their impulses, and successfully manage their energy levels (Drechsler *et al.*, 2020). The symptoms of ADHD, which include impulsivity, hyperactivity, and inattention, may be quite problematic in educational settings, especially when it comes to creative pursuits that call for prolonged concentration (Emser *et al.*, 2018). Since many kids with ADHD find it difficult to learn using conventional ways, it is necessary to look into alternate strategies that meet their particular cognitive requirements (Sun, Yu, and Zhou, 2022). A viable strategy is to use graphic design as a tool to encourage and support youngsters with ADHD's creativity. While addressing attention-related issues, graphic design can offer a structured yet adaptable medium that fosters creative expression through the use of visual communication, structured layouts, and interactive components (Nejati and Derakhshan, 2021).

As a visual and expressive art form, graphic design especially embedded in technology such as mobile application is essential to education and cognitive growth. It can represent a useful tool for kids who have trouble with traditional teaching methods because of its capacity to explain difficult concepts, appeal to a variety of senses, and produce aesthetically pleasing structures (Gilbert *et al.*, 2023). Graphic design provides a more interesting and palatable method for kids with ADHD, who frequently struggle to assimilate vast volumes of information in written formats (Fekete and Lucero, 2019). The learning process can be improved by customizing graphic design to draw in viewers and keep them interested by utilizing components including colour psychology, typography, imagery, and spatial organization (Barfield and Driessnack, 2018). The importance of creativity in creatives with ADHD is well known, and numerous studies indicate that people with ADHD frequently have high levels of creativity and divergent thinking. However, issues with organization, attention control, and task persistence frequently limit their potential. The strengths and difficulties of creatives with ADHD are not often accommodated by traditional learning environments, which are sometimes inflexible and heavily text-based (Cerezo *et al.*, 2019). However, graphic design provides a different medium that fits with their innate preference for hands-on, visual learning. Graphic design may effectively bridge the gap between creativity and cognitive function by offering ADHD kids a safe space for creative development through organized yet visually appealing materials (Emser *et al.*, 2018). It is critical to remember that each person's presentation and severity of ADHD symptoms may vary. While some people exhibit hyperactivity and impulsivity, others show mostly symptoms of inattention. In some circumstances, all three types of symptoms may coexist. According to Magnin and Maurs (2017), ADHD can have a significant impact on daily functioning, such as academic accomplishment, professional productivity, interpersonal relationships, and overall quality of life. Medical specialists frequently diagnose it after conducting a thorough analysis of symptoms, medical history, and assessment tools. A comprehensive diagnostic and treatment strategy can help with symptom management and overall functioning (Weibel *et al.*, 2020).

Therefore, the aim of this study is to design mobile application with embedded graphic design that can be utilized as a tool to support creatives with ADHD in developing their artistic skills and improving their cognitive engagement. The objectives of this study were to encourage self-development and upliftment, reduce dependability on care support or special needs, maintenance of social values using the mobile application for creatives with ADHD.

1.2 Importance of technology in creatives with attention deficit and hyper activity disorder

The significance of technology in helping with creatives with ADHD cannot be overemphasized because technology can help creatives with attention deficit hyperactivity disorder (ADHD) focus, organize, and study more effectively (McDaniel and Radesky, 2018). Technology, through bespoke applications, assistive gadgets, and adaptive learning platforms, can give personalized support to overcome the issues of ADHD (Kandati, Sirasanambeti and Hussain, 2024). Creatives with Attention Deficit Hyperactivity Disorder (ADHD) benefit greatly from technology embedded with graphic design since it improves their understanding, learning, and engagement. Creatives with ADHD frequently have trouble focusing, staying organized, and processing information. Well-considered technologies embedded with graphic design can improve the readability, accessibility, and aesthetic appeal of learning materials (Cibrian *et al.*, 2021). The following are some assistive technologies utilized to help creatives with attention deficit and hyperactivity disorder.

2.0 Creativity and attention deficit and hyperactivity disorder

Individuals with ADHD frequently display high levels of divergent thinking, which is an essential component of creativity (Weibel *et al.*, 2020). Divergent thinking refers to the ability to produce numerous unique answers to a problem, which is an important skill for creative individuals. According to research, people with ADHD thrive at idea generation but suffer with execution due to issues maintaining sustained attention and successfully managing tasks (Boot *et al.*, 2017). This creates a paradox: creative potential is high, but productivity is frequently hampered by executive function impairments. Abraham *et al.* (2006) noted that individuals with attention deficit and hyperactivity disorder can perform remarkably

well in artistic fields when given organized conditions and suitable tools. Digital therapies, such as mobile applications meant to enhance executive functions, have showed promise in improving ADHD persons' work management skills (Barkley, 2015). This lays the groundwork for investigating the potential of a graphic design mobile app as a tool to help creatives with ADHD.

2.1 The role of mobile applications in ADHD management

Mobile applications have become an important part of ADHD management efforts, providing features such as task organization, time management, and distraction reduction. Todoist, Evernote, and Trello are popular apps that assist ADHD individuals retain productivity by breaking down activities into manageable components (Fleming *et al.*, 2019). While these generic efficiency tools are valuable, they are not customized for the specific workflow of graphic designers with ADHD. According to Knight *et al.* (2020), ADHD-friendly programs should include features such as visible task tracking, minimalist user interfaces, and customizable notifications to avoid cognitive overload. Gamification components, such as rewards for task completion, have also been shown to increase motivation and engagement among ADHD users (Gazzaley & Rosen, 2016). These findings highlight the need of creating a mobile application that has ADHD-friendly features while still responding to the unique needs of graphic designers.

2.2 Graphic design challenges for attention deficit and hyperactivity disorder

Graphic design necessitates a combination of creativity and technical precision, which can be difficult for people with ADHD. Common challenges include organizing projects, losing track of time, and becoming easily sidetracked by digital interfaces (Swanson *et al.*, 2017). Traditional graphic design applications, such as Adobe Photoshop and Illustrator, can have complicated interfaces, which can lead to cognitive overload for ADHD creatives. According to Robison *et al.* (2021), simple, intuitive design solutions can considerably improve the usability and productivity of ADHD individuals in creative professions. Features like streamlined interfaces, guided workflows, and real-time communication tools can help to mitigate typical issues. Incorporating these concepts into a graphic design mobile app can help to create an accessible and friendly environment for ADHD creatives.

2.3 Proposed features for the prototype mobile application

The following are major important features of the prototype graphic design mobile application for ADHD creatives:

i. Task and time management

- *Smart to-do lists*: Simple, color-coded, and easy to edit.
- *Time blocking*: Schedule tasks in chunks to stay on track.
- *Pomodoro timer*: Focus timer with breaks to maintain attention.
- *Auto reminders and nudges*: Adaptive notifications based on incomplete tasks.

ii. Focus and productivity boosters

- *Distraction blocker*: Temporarily block distracting apps/sites.
- *Background noise and binaural beats*: Sounds to aid concentration.
- *Gamification*: Rewards and points for completing tasks.

iii. Memory and organization aids

- *Voice notes and quick capture*: Instantly record thoughts.
- *Photo notes*: Snap a picture of reminders or important info.
- *Cloud sync and cross-device access*: Ensure access across devices.

iv. Emotional regulation and well-being

- *Mood tracker*: Log emotions to identify patterns.
- *Breathing & relaxation exercises*: Help manage impulsivity and stress.
- *Personalized coping strategies*: Tips based on mood and behavior patterns.

v. Accountability and support

- *Buddy system*: Share goals and progress with a trusted person.
- *AI or chatbot coaching*: Friendly nudges and encouragement.
- *Community and forums*: Connect with others with ADHD.

vi. **Easy Access to health practitioners and support**

- *Directory of ADHD specialists:* A searchable list of therapists, psychiatrists, and ADHD coaches.
- *Telehealth integration:* In-app scheduling for virtual consultations.
- *Emergency help button:* Quick access to crisis hotlines and mental health support.
- *Nearby ADHD-friendly institutions and clinics:* Map-based locator for local resources.
- *Trusted ADHD organizations and support groups:* Links to verified ADHD communities, nonprofits, and research centers

2.4 Existing applications and case studies

Several existing apps have effectively combined ADHD-friendly features, which inspired the suggested idea. For example, the Procreate app for digital drawing has an easy user interface and gesture-based controls, making it more accessible to people with ADHD than traditional design software (Swanson *et al.*, 2017). Similarly, Canva makes design easier by providing pre-designed templates and drag-and-drop capability, lowering cognitive load and streamlining workflow (Knight *et al.*, 2020). Fleming *et al.* (2019) emphasize the need of personalized customization in digital tools for ADHD persons. Applications such as Focus@Will, which uses neuroscience-based music to improve concentration, show the value of merging cognitive enhancement approaches into digital solutions. These case studies offer helpful ideas into creating an ADHD-friendly graphic design application.

2.5 Future research directions and development challenges

While the creation of an ADHD-friendly graphic design mobile application has numerous advantages, certain problems must be overcome. One major problem is combining simplicity and functionality; too simple tools may lack the elements required for professional graphic design, whereas complicated interfaces may cause cognitive overload. Furthermore, enabling accessibility across several devices and operating systems is critical to maximizing usefulness. Future study should include user experience studies with ADHD creatives to improve interface design and functionality. Integrating artificial intelligence (AI) for personalized workflow recommendations and adaptive learning could boost the application's efficacy (Boot *et al.*, 2017). Collaboration with ADHD-focused psychologists and UX designers can bring useful insights into improving user engagement and productivity.

3.0 METHODOLOGY

3.1 Target audience

This research project is targeted at creative industry young adults within 22 – 35 years old living in Cardiff, Wales, United Kingdom. This age bracket is the workforce that will sustain the future of a nation. It is within this same age group that extreme victims are rare and more malleable due to their goal in life. Figure 1 showed areas of consideration in Cardiff, United Kingdom.



Figure 1: Map Showing areas of consideration in Cardiff

3.2 Double diamond designer model

Double Diamond Designer Model and Gibbs Reflective Cycle constitute the study's methodology with Ideo-Design Process as an approach to provide solution to the problems and challenges faced by creatives with ADHD. The double diamond designer model is illustrated in figure 2.

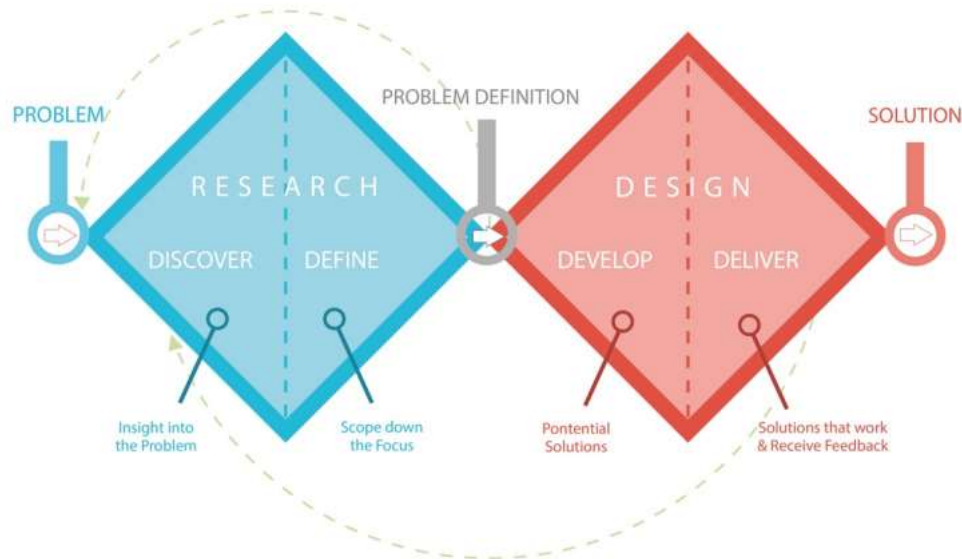


Figure 2: Double diamond designer model

Discover: The process starts by questioning the challenges of people living with ADHD. Identifying their ultimate need, which is to be happy and free from anxiety.

Define: In this stage, findings are generated from understanding of the problems and needs of people with ADHD which proves it is achievable.

Develop: It was discovered that there are many ways that could be used to assist people with ADHD such as; Use of Medication, Therapy, Meditation, Coaching, Tribe and Self-Healing Practices.

Deliver: Having researched and discovered that most assistance available works for certain time frame. This led to the design and development of a self-help mobile application called “TENT” for Self-Healing Practices.

3.3 Gibbs reflective cycle

Gibbs model can be referred to as learning through repetition, this reflective model was created by Professor Graham Gibbs in 1988, developed from theoretical model of four stages of experiential learning cycle in 1984 by David Kolb, (Adeani, Febriani and Syafryadin, 2020) as presented in Figure 3.

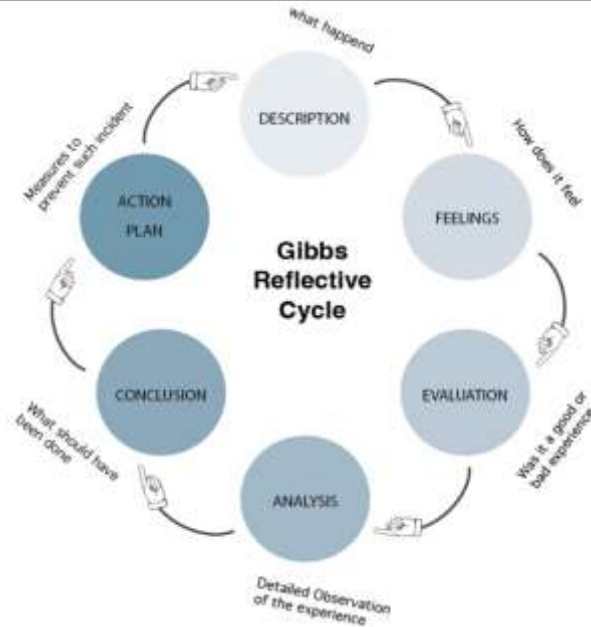


Figure 3: Gibbs reflective cycle

Source: Contreras et al., 2020).

Gibbs Reflective Cycle is made of six stages, which are; Description, Feelings, Evaluation, Analysis, Conclusion, and Action Plan. Using Persona of a Male Marketing Graphic Designer with ADHD as an example to explain how the different stages of Gibbs model helped in the research.

Description: Failing to generate or design a flyer that was supposed to be used for digital marketing campaigns the next day, on the Company’s social media pages. This was a task given by his line manager.

Feeling: Recalling this experience causes a displeasure and grief as he did not accomplish his task and resulting to the Company not having a post to engage their audience.

Evaluation: This did not occur as a result of loss of memory or an oversight, but absolute inattention and lack of concentration while on duty.

Analysis: The experience can be avoided through proper documentation or setting up of reminders. This action will drag his attention once the notification sound beeps.

Conclusion: To have a list of priorities set, a means of notification and allocate time to task. These few actions can aid to avoid such circumstance.

Action plan: Usage of special aid mobile apps like “Tent”, sticky notes, notepads etc. to write and document daily task or activities ahead.

3.4 Ideo-design process

Applying Ideo-Model to a design process of this study’s mobile application will be subjected into six different stages. It is in a sequence as every stage needs the previous stage to draw reference. The stages are; Observation – Ideation – Prototype – User Feedback – Iteration – Implementation.

Observation: The primary pain point of people with an ADHD is to have control and live a successful life. ADHD brains have a lot to offer the world, they tend to be generous, funny, think outside the box, working with ideas that are new, wrestling with problems that are challenging and dedicating themselves with problems that are of personal interest (Mccabe, 2017).

Ideation: Using the demography of the target audience for this project, is easy to decipher that the old traditional way of approaching such mental health will not be fully effective. Such as Therapy, Meditation, Coaching etc. Creatives are keen to engage within an interactive system or process. There is the need to create Tent to house all that is needed on this Self-Healing journey such as links to booking

therapy appointment, appointment with a medical practitioner, joining tribes/forums, setting do-list task, gamification links, and other non social opportunities.

Prototype: Creation of Tent as Self-Help app backed by the Government recognized institution will boost the confidence and success of creatives with ADHD. The initial test to be conducted will use five volunteers, that is estimated to last over period of sixty-one days. This will help to generate data on the user experience and impact it creates.

User feedback: The essence of having 5 users for the first test-run is to get odd feedback. This will help in determining priority and narrow down the integration.

Iteration: Feedbacks and reviews from the users will assist in refining and finalizing the design system.

Implementation: In this stage all necessary updates are augmented and integrated. The app will be relaunched after passing all the necessary checks like NHS Digital Tools Library assessment and other vital certifications

3.5 Limitations

Just like any other project with good potential to solve problem, there is always challenges and limitation in the scope of usage and expansion of the mobile application.

- i. How to gain trust for victims of ADHD to use the app is of a major concern. As this project would need victims to identify and involve themselves with government process such as the initial registration, that is part of the ethical consideration.
- ii. Collaboration with health practitioners, foundations and individuals for a long term. Most individuals or organization can likely find it hard to associate, maybe due to policies governing them, inadequate means for expansion or personal opinions.
- iii. Lack of existing similar product to draw reference. Despite having numerous publications, journals and books to cite, there was not a defined system as Tent to gain idea on the user experience or user interface on what form this project should take.
- iv. Absence of market research, interviews with stakeholders, and promotional campaigns. As it is not-for-profit project, there is no need to engage with market research or other promotional means to gain users. The target audience are vulnerable people, their safety and confidentiality are of utmost priority that is why the Government is involved.
- v. Optimal engagement by users. It is one thing to onboard users, and it is another thing for them to engage. For future expansion and growth, the mobile app would incorporate mile stone achievements to celebrate, appreciate and reward users. This will lead to more engagement and participation.
- vi. Availability of funding. Finance is a crucial part and plays a huge role in running and maintenance of the app. Even though it relies solely on funding and sponsorship, there should be plan in place for continuity and progress of the app financially.

3.6 Ethical consideration

This project will be in collaboration with NHS for accurate assessment and safety measures to protect users. It will be an engagement based on voluntary participation. The terms and condition for usage of this project will hold all vital information users should be aware of, concerning policies, funding, potential impacts and confidentiality of their personal data prior to consenting. Users will be required to present a witness in the person of a parent, guardian, guarantor or partner. This helps to manage accountability by involving a third-party, individual identity will remain unknown to the researchers and developers or forum moderators. Log on Usernames will only come from NHS registration partnership, this helps to narrow down onboarding to the real demography needed.

4.0 CONCLUSION AND RECOMMENDATIONS

This study emphasizes the significance of digital technologies in education and ADHD training, which is extremely successful and productive, as well as facilitates and improves evaluation, intervention, and instructional processes for creatives with ADHD. Some notable applications utilized for ADHD intervention include; mobile devices or application that carry educational activities, various ICT apps,

artificial intelligence (AI), science technology, engineering and mathematics (STEM) and ROBOTICS that elevate educational procedures to new performance levels, and friendly games. Furthermore, the development of a prototype graphic design mobile application customized to creatives with ADHD has the potential to address significant productivity issues in this group. By adding ADHD-friendly features such as minimalistic design, task management tools, and gamification aspects, the program can improve workflow efficiency and enable sustained creative engagement. While existing applications provide useful design ideas, additional study and user-centered development are required to create an optimized tool that addresses the specific demands of ADHD creatives. As technology advances, employing digital solutions to assist neurodivergent individuals in creative sectors offers a promising route for creativity and inclusivity. People with ADHD can participate in activities that improve their ability to sustain attention and reduce distractions by utilizing attention and concentration-focused mobile applications. Mobile applications for cognitive training may target ADHD-related cognitive processes such as working memory or attention. Self-monitoring software or applications promotes self-awareness and self-control by allowing users to track their progress, activities, and symptoms. Mobile application for mindfulness and relaxation offer techniques to emotional and stress management.

Therefore, working with healthcare professionals or ADHD specialists may help guide the selection, development and application of mobile apps for managing ADHD. In general, mobile apps can help manage the difficulties associated with ADHD and offer helpful assistance and empowerment. When used properly and in conjunction with other therapy, they may help ADHD patients become more organized, focused, productive, and generally happier.

RECOMMENDATIONS

Based on the study, the following recommendations were suggested:

- i. The application should have a clean and simple design to reduce cognitive overload.
- ii. Provide an option to hide unnecessary tools or notifications and allow users to personalize their interface for comfort.
- iii. Provide structured workflows to help users stay organized and simplify interactions with intuitive gestures.
- iv. Reduce the number of steps needed to perform common actions and ensure users can work without internet distractions.

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